

REFINITIV

DELTA REPORT

10-K

PI - IMPINJ INC

10-K - DECEMBER 31, 2023 COMPARED TO 10-K - DECEMBER 31, 2022

The following comparison report has been automatically generated

TOTAL DELTAS	3731
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 CHANGES	140
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 DELETIONS	1692
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 ADDITIONS	1899
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**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, **2022** **2023**

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from **_** to **_**

Commission File Number **001-37824**

IMPINJ, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

91-2041398

(I.R.S. Employer
Identification No.)

400 Fairview Avenue North, Suite 1200,

Seattle, Washington

(Address of principal executive offices)

98109

(Zip Code)

Registrant's telephone number, including area code: **(206) 517-5300**

Securities registered pursuant to Section 12(b) of the Act:

Common Stock, \$0.001 par value per share

(Title of each class)

PI

(Trading Symbol)

The Nasdaq Global Select Market

(Name of each exchange on which registered)

Securities registered pursuant to Section 12(g) of the Act:

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
Emerging growth company	<input type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☒

As of June 30, 2022 June 30, 2023, the last business day of the Registrant's most recently completed second fiscal quarter, the aggregate market value of the Registrant's common stock held by non-affiliates based upon the closing price of such shares on The Nasdaq Global Market on such date was approximately \$1.3 2.1 billion.

As of February 3, 2023 February 2, 2024, 26,157,089 27,197,698 shares of common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of this report, to the extent not set forth herein, is incorporated in this report by reference to the registrant's definitive proxy statement relating to its 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the Securities and

[Table of Contents](#)

Table of Contents

	Page
Risk Factors Summary	3
Note Regarding Forward-Looking statements	3
PART I	
Item 1. Business	4 5
Item 1A. Risk Factors	11 12
Item 1B. Unresolved Staff Comments	30 32
Item 1C. Cybersecurity	32
Item 2. Properties	31 33
Item 3. Legal Proceedings	31 34
Item 4. Mine Safety Disclosures	31 34
PART II	
Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	32 35
Item 6. Reserved	33 36
Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations	34 37
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	48 49
Item 8. Financial Statements and Supplementary Data	50
Item 9. Changes in and Disagreements With Accountants on Accounting and Financial Disclosure	83 87
Item 9A. Controls and Procedures	83 87
Item 9B. Other Information	86 87
Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	86 88
PART III	
Item 10. Directors, Executive Officers and Corporate Governance	87 89
Item 11. Executive Compensation	87 89
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	87 89
Item 13. Certain Relationships and Related Transactions, and Director Independence	87 89

Item 14.	Principal Accounting Accountant Fees and Services	87 89
PART IV		
Item 15.	Exhibits and Financial Statement Schedules	88 90
Item 16.	Form 10-K Summary	91 93

[Table of Contents](#)

As used in this report, the terms “Impinj,” “the Company,” “we,” “us” and “our” refer to Impinj, Inc., unless the context indicates otherwise.

RISK FACTORS SUMMARY

Our business is subject to numerous risks and uncertainties, including those highlighted in the section of this report captioned “Risk Factors.” These risks include, but are not limited to, the following:

- we operate in a very competitive market and if we fail to compete successfully, then our business and operating results will suffer; market;
- RAIN adoption is concentrated in key industries markets and the extent and pace of RAIN market adoption beyond these industries markets is uncertain;
- our ability abilities to deliver platform enterprise solutions at scale are nascent;
- poor product quality could result in significant costs to us and impair our ability to sell our products;
- end users and partners must design our products into their products and business processes;
- an inability or limited ability of enterprise end user systems to exploit RAIN information may adversely affect the market for our products;
- alternative technologies or standards, or changes in existing technologies or standards, may adversely affect RAIN market growth enable products and our business; services that compete with ours;
- we obtain the products we sell through a limited number of third parties with whom we do not have long-term supply contracts;
- we are vulnerable to shortages of silicon wafer shortages, which have wafers or components used in our readers and gateways may continue to adversely affect our ability to meet demand for our products; products and adversely affect our revenue and/or gross margins;

- we rely on a small number of customers for a large share of our revenue;
- our ability to affect or determine end-user demand is limited in part because we sell and fulfill primarily through partners; partners and rarely to end users;
- our growth strategy depends in part on the success of strategic relationships with third parties and their continued performance and alignment;
- if we are unable to protect our intellectual property, then our business could be adversely affected;
- we are and may become continue to be party to additional intellectual property disputes which are could be time consuming; consuming and costly to prosecute, defend or settle; could settle, result in the loss of significant rights; rights; and could adversely affect RAIN adoption or adoption of our products or platform;
- we have a history of losses and have only achieved profitability intermittently and we cannot be certain that we will achieve or sustain profitability in the future;
- we have a history of significant fluctuations in our quarterly and annual operating results;
- our executive officers, directors and principal stockholders, together with their affiliates, beneficially owned approximately 22.0% 55.7% of our outstanding common stock as of December 31, 2022 December 31, 2023, and as a result are able to exercise significant influence over matters subject to stockholder approval; and
- we may not have sufficient cash flow or access to cash necessary to satisfy our obligations under the \$287.5 million aggregate principal amount 1.125% convertible senior notes due 2027, or also referred to as the 2021 Notes, and our current and future indebtedness may restrict our business.

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This report contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements

3

Table of Contents

containing words such as “may,” “believe,” “anticipate,” “expect,” “intend,” “plan,” “project,” “projections,” “business outlook,” “estimate,” or similar expressions constitute forward-looking statements. You should read

3

Table of Contents

these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition or state other “forward-looking” information. These statements relate to our future plans, objectives,

expectations, intentions and financial performance and the assumptions that underlie these statements. They include, but are not limited to, statements about:

- our market opportunity;
- the adoption of RAIN technology and solutions;
- our ability to compete effectively against competitors and competing technologies;
- our market share and product leadership; and
- our business model, strategic plans and product-development product development plans;
- the impact of Covid-19, including macroeconomic conditions on our business, operations and financial condition as well as condition;
- the impact of wafer supply and availability on macroeconomic conditions; our business, operations and financial condition;
- our future financial performance, including our average selling prices, gross margins and the dependency of our future financial performance on macroeconomic conditions;
- the performance of third parties on which we rely for product development, manufacturing, assembly and testing; and
- our relationship with other third parties on which we rely for product distribution, sales, integration and deployment;
- our ability to adequately protect our intellectual property;
- the regulatory environment for our products and services; and
- our leadership in industry and standards-setting bodies.

Our actual results may differ materially from those contained in or implied by any forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this report, including those factors discussed in Part I, Item 1A (Risk Factors).

Considering the significant uncertainties and risks inherent in these forward-looking statements, you should not regard these statements as a representation or warranty by us or anyone else that we will achieve our objectives and plans in any specified time frame, or at all, or as predictions of future events. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of any forward-looking statements. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law.

[Table of Contents](#)

PART I

Item 1. Business

Overview

Our We envision a world in which every item that enterprises manufacture, transport and sell, and that people own, use and recycle, is wirelessly and ubiquitously connected to the cloud. And a world in which the ownership, history and linked information for every one of those items is seamlessly available to enterprises and people. We call our expansive vision is a boundless Boundless Internet of Things, or IoT. We IoT, and we are driving a future in which everyday physical items are wirelessly connected well on our way to digital counterparts, or digital twins, in the cloud, and in which businesses and people access information about an item from its digital twin. realizing it.

Our mission is to connect every thing. We use a type of radio-frequency identification, or RFID technology known as RAIN for the ubiquitous, wireless item-to-cloud connectivity. We sell a suite of products that we and our partner ecosystem use to connect and deliver a platform that powers item-to-cloud item data to enterprises. We have enabled connectivity for more than 95 billion items to date, delivering item visibility and on which solution improving operational efficiencies for retailers, supply chain and logistics, or SC&L providers, innovate IoT whole products, restaurants and food-service providers, airlines, automobile manufacturers, healthcare companies and many more.

Today, we deliver the identity, location and authenticity We are today focused on extending item connectivity from tens of billions to trillions of physical items, and delivering item data not just to enterprises but to people, so they too can derive value from their connected items. We believe our the Boundless IoT we are enabling will, in the not-too-distant future, is extending that delivery to trillions of physical items and enabling give people ubiquitous access to cloud-based digital twins of those items, every item, each storing an the item's ownership, history and links. linked information and helping people explore and learn about the item. We believe that that connectivity will transform the item connectivity that our platform delivers enhances businesses efficiencies and commerce and, ultimately, improve peoples' lives, world.

Impinj Platform

We and our partner ecosystem build item-visibility solutions using products that we design and either sell or license, including silicon RAIN radios; manufacturing, test, encoding and reading systems; and software and cloud services that encapsulate our solutions know-how. We sell two types of silicon integrated circuit, or IC, radios. The first are endpoint ICs that store a serialized number to wirelessly identify an item. Our partners embed endpoint ICs into an item or its packaging. The ICs may also contain a cryptographic key to authenticate the item. The second are reader ICs that our partners use in finished readers to wirelessly discover, inventory and engage the endpoint ICs. Those readers may also protect an item or consumer, for example by authenticating the item as genuine or privatizing the item by rendering the endpoint IC unresponsive without the consumer first providing a password. Our manufacturing, test and encoding systems enable partner products and facilitate enterprise deployments. Our reading systems comprise high-performance finished readers and gateways for autonomous reading solutions. Our software and cloud services focus on solutions enablement.

We sell our products, individually or as a whole platform which offering primarily with or through our partner ecosystem. That ecosystem comprises multiple product families, wirelessly connects individual items original equipment manufacturers, or

OEMs, tag service bureaus, original device manufacturers, or ODMs, systems integrators, or SIs, value-added resellers, or VARs, independent software vendors, or ISVs, and delivers data about other solution partners.

Our silicon radios follow the connected items to business RAIN industry’s air-interface standard for their core functionality. We create partner and consumer applications. We link the enterprise preference for our radios and solutions by adding differentiated features into our products, within and supporting those features across our platform, to deliver solutions capabilities and performance that surpasses mix-and-match solutions built from competitor products.

Table of Contents

We and our partners connect the items via are a miniature radio chip embedded leader in the item or in its packaging, reading and delivering each item’s identity, location and authenticity. To date, we have enabled connectivity to more than 75 billion items, enabling businesses and consumers to derive timely information from those connected items.

Our platform uses RAIN a type of radio-frequency identification, or RFID, technology we pioneered. market. We spearheaded development of developing the RAIN radio air-interface standard, lobbied governments to allocate frequency radio spectrum and cofounded the RAIN Alliance industry alliance that today has more than 150 member companies. Our industry uses free spectrum in 81 countries encompassing roughly 95% of the world’s GDP. We believe RAIN’s capabilities – in particular, endpoint ICs with serialized item identifiers, for individual items, battery-free operation, 30-foot range, not line-of-sight readability, up to 1,000 reads per second, low cost, essentially unlimited life and available cryptographic authentication, all at a cost of pennies per item – position RAIN to be the leading item-to-cloud connectivity technology for the IoT. We believe our success derives from the capabilities and performance of our enterprise solutions, and the visibility those solutions give enterprise to items they manufacture, transport and sell.

RAIN market adoption has historically been slower than anticipated by us we and industry sources. sources have anticipated. For additional more information related to RAIN market adoption, please see the section of this report captioned “Risk Factors.”

Table of Contents

Endpoint ICs

Our endpoint integrated circuit, or IC product family comprises miniature radios-on-a-chip that sell for pennies and yet can wirelessly connect almost any item. Each IC attaches to a host item and includes a number to identify the item. The IC

may also include or enable features such as user data storage, security, authentication, loss prevention, privacy protection and value-added Impinj custom capabilities, all accessible by our platform.

Our original equipment manufacturing, or OEM partners typically attach an endpoint IC to a thin printed or etched antenna on a paper or Mylar PET backing, then cover the composite inlay with a paper face to form a tag. End users More recently, some of our partners have begun embedding the endpoint IC into wire, thread or woven tags. Enterprises attach or embed the tags to onto or into items used in markets including retail, supply chain and logistics, SC&L, healthcare, automotive, sports, industrial and manufacturing, consumer experience, food, datacenter, travel, food, banking and banking. In some more-recent applications, rather than attaching a tag to an item, end users may instead embed the inlay directly into the item, for example by sewing an inlay into a garment's care label. other use cases. Regardless of the method by which our partners attach or embed an endpoint IC onto or into a host an item, we refer to an IC and its host item as an endpoint.

When a consumer purchases a retail an item, a store or supplier will typically procure another item to sell, including another endpoint IC. We believe endpoint ICs are represent the first market for consumable silicon and selling endpoint ICs is are a recurring revenue source for us.

Systems

Our systems product family comprises comprise our reader ICs, readers ICs; manufacturing, test, encoding and gateways reading systems; and software and cloud services. We and our partners engineer solutions that wirelessly provide power to, typically include several of our systems products and communicate bidirectionally with, endpoint ICs, on host items. They also read, write, authenticate and engage the endpoint ICs on often our entire platform. We and they sell those items. Our systems products include software and algorithms that enable our partners solutions to deliver use cases such as retail self-checkout and loss prevention, and warehouse pallet and package tracking, to enterprise end users worldwide.users.

Our reader IC product family comprises multiple products, tiered by performance and functionality, that our reader IC OEM and ODM partners use in their readers. mobile or handheld readers, fixed readers, gateways, appliances and other edge devices. We offer easy-to-use application programming interfaces, or APIs, development environments, sample code, development environments, drivers and libraries to facilitate partner reader development. We leverage our reader and gateway software solutions learnings to enhance continually improve the firmware in our reader ICs. We sell our reader ICs to OEM and original design manufacturing, or ODM, partners that use them in mobile or handheld readers, fixed readers, gateways, RAIN-enabled appliances and other intelligent edge devices. We sell our reader ICs for tens of dollars.

Our reader product family comprises multiple finished products tiered by performance and functionality. Our gateway product family integrates gateways integrate our readers with beamforming antennas to electrically steer a radio beam like a radar, locating and tracking items in one or two dimensions. Our partners can use our readers and gateways to enable end-user solutions. Our readers and gateways are easy to deploy and use, can be powered via power-over-Ethernet, or PoE, and are certified for operation in more than 40 countries. They wirelessly provide power to, and communicate bidirectionally with, endpoint ICs on host items. They also read, write, authenticate and engage the endpoint ICs on those items.

Our readers and gateways include software and algorithms that allow us and our partners to solve enterprise business problems such as retail self-checkout and loss prevention. Our software and algorithms run either entirely on our readers and gateways or partly on them and partly on partner devices. We are currently focused on developing also sell readers and

software and algorithms to enable retail use cases (such as self-checkout and loss prevention), and on supply chain and logistics use cases (such as pallet tracking in dock

Table of Contents

doors and package sortation on conveyors). Our APIs allow partners to transform item data into actionable information, enabling analytics and insights about the items that businesses manufacture, transport and sell. Our APIs also help our partners deliver enterprise-grade systems management and control. encode endpoint ICs. We sell our readers and gateways through distributors, system integrators, or SIs, value-added resellers, or VARs and solution providers. We sell our readers providers for hundreds of dollars and our gateways for to thousands of dollars.

With our acquisition of Voyantic Oy, we now sell test and measurement solutions. Finally, we also offer a cloud service to authenticate items.

Competitive Advantages

We believe we can extend our RAIN market leadership by leveraging our competitive strengths, including:

- Platform. Our platform incorporates enhanced functionalities, including extensions to the RAIN air-interface, that we believe improve solution performance, capabilities, reliability and ease-of-use and allow us to surpass mix-and-match solutions built from competitor components.
- Market Leadership. We believe are the only company with an integrated platform spanning endpoint ICs, reader ICs, readers and gateways, test and measurement solutions and software and cloud services.
- Technology Leadership. Our singular RAIN focus has enabled us to regularly be first-to-market with innovative, high-performing products. Our chief executive officer is a recognized industry thought leader, a prior director of the RAIN Alliance and prior editor of the RAIN radio standard.

Table of Contents

- Partner Ecosystem. Our worldwide partner ecosystem, comprising hundreds of tag and reader ODMs and OEMs, distributors, SIs, VARs and software solution partners gives us market reach, penetration and scale we believe few, if any, of our competitors enjoy.
- Trusted Brand. We believe our industry leadership, name recognition and reputation for innovative, high performing, quality products have significantly contributed to our leading market position.

- **Intellectual Property.** We believe we have the leading RAIN patent portfolio. As of December 31, 2023, our portfolio included 302 issued and allowed U.S. patents, five issued international patents, 16 pending U.S. patent applications and seven pending international patent applications.

Industry Use Cases

The following use cases are representative of **actual** RAIN deployments we serve today.

Retail

Retailers, both traditional **"brick-and-mortar"** **brick-and-mortar** and online, **consume** **apply** billions of RAIN tags each year, **historically** to **obtain real-time data about products they manufacture, transport and sell.** Today, most retail **products with RAIN tags are** apparel and footwear but **retailers are extending RAIN usage today, increasingly,** to retail general merchandise **including toys,** such as home goods, **health and beauty items, tires, toys, sporting goods, automotive parts, consumer electronics auto parts, magazines, stationary, sporting items, cosmetics and even food.** **other items.** Retailers can obtain **the following these** benefits **by** using our platform:

- **In-store Inventory Visibility.** Our platform delivers accurate and timely data about a retailer's product **inventory.** **Accurate** inventory, **data can reduce overstocks, understocks and searching, thereby** allowing retailers to reduce inventory and increase same-store sales by ensuring each store is properly stocked and **by enabling allowing** staff to focus on customers rather than on inventorying or **searching for finding** items.
- **Omnichannel Fulfillment.** The cornerstone of **a** successful omnichannel **operation fulfillment** is **real-time** inventory visibility in stores **warehouses** and **fulfillment centers.** The **warehouses.** Our platform can deliver that visibility **our platform delivers can help or enable retailers ship directly from those stores, warehouses and fulfillment centers as well as allow consumers to buy thereby facilitate online and sales, including online purchasing with pickup in store.** It can also help retailers sell **to any customer** from any retail location, confidently sell to the last item and facilitate seamless returns.
- **Self-checkout and Loss Prevention.** Consumer self-checkout is a clear opportunity for retailers looking to modernize their in-store experience. However, self-checkout requires effective loss prevention. Our platform can enable both – self-checkout via sales terminals that read endpoint ICs on **items item,** and **loss-prevention systems loss prevention** that **scan scans the** RAIN tags for unsold items leaving the store. As our inlay partners focus on embedding RAIN tags directly into **retail** items, we focus on key innovations like our patented Protected Mode that allows a tag to require a PIN for post-point-of-sale readability, enabling loss-prevention **systems solutions** to focus on unsold items while satisfying General Data Protection Regulation, or GDPR, and similar **consumer** privacy requirements.

Supply Chain and Logistics

The supply chain and logistics, or **SC&L industry** includes shipping companies, third-party logistics providers, postal organizations, captive distribution **operations** and other organizations **transporting that transport** products **nationally and internationally.** These **worldwide.** **SC&L** organizations are increasingly demanding real-time **shipment shipping** data to virtualize, analyze and optimize their operations. SC&L companies can obtain these benefits using our platform:

- **Shipment Verification. Verification and Parcel Tracking.** Our platform provides real-time data about items passing

through dock doors to the systems that run shipping and receiving, enabling helping SC&L companies to reduce mistakes, automate processes and drive operational efficiencies.

- *Conveyor Sortation.* Our platform enables high-speed, real-time, not line-of-sight not-line-of-sight reading of packages moving along conveyors, improving automatic sortation accuracy and reducing costly shipping errors.
- *Returnable Transit Item, or RTI, Tracking.* By tagging RTI containers, our platform can reduce RTI loss and ensure SC&L companies have the RTI containers they need.
- *Asset Management.* Our platform enables automated asset check-in/out procedures and location monitoring, reducing loss and improving efficiencies and maintenance-schedule compliance.

Other Industries 7

6

[Table of Contents](#)

Other Industries

These other industries can also obtain benefits using our platform:

- *Aviation.* Luggage tags that incorporate our endpoint ICs allow airlines to give passengers real-time location information for their checked bags as well as reduce lost bags.
- *Automotive.* Car manufacturers use our platform to track and verify automotive parts for vehicle assembly, reducing mistakes and labor costs and improving operations.
- *Aviation.* Luggage tags that incorporate our endpoint ICs help airlines give passengers real-time information about their checked bags as well as reduce lost bags.
- *Banking.* Banks use our endpoint ICs for money bundles and to track information-technology assets.
- *Datacenters.* Datacenters use our platform for asset tracking.
- *Food.* Our reader ICs track syrup cartridges for replenishment in soda fountains. Our endpoint ICs track meat, fish and fresh produce for freshness as well as inventory visibility.
- *Healthcare.* Hospitals use our platform to track assets and manage patient and clinician workflows. Partner products built on our platform include RAIN-enabled medical cabinets and refrigerators.
- *Industrial and Manufacturing.* Industrial companies track components to increase manufacturing productivity and reduce shipping errors. Manufacturers use our platform to track assets and tools, reducing errors and increasing calibration compliance.
- *Linen and Uniform Tracking.* Laundry providers embed washable tags into their linens and uniforms for automated

sortation.

- *Sports.* Marathons and other foot races track runners via our endpoint ICs in race bibs. Golf venues score participants' shots via our endpoint ICs inside golf balls.
- *Food.* Our reader ICs track syrup cartridges for replenishment in soda fountains. Our endpoint ICs track meat, fish and fresh produce for freshness.
- *Datacenters.* Datacenters use our platform for asset tracking. Electronics manufacturers embed our endpoint ICs into electronic devices for processor-secured storage.
- *Travel.* Driver licenses in some states in the United States include our endpoint ICs to speed border crossings. Fueling stations use vehicle windshield tags to enable automatic and cashless fueling.
- *Banking.* Banks use our endpoint ICs for money bundles and to track information-technology assets.
- *Linen and Uniform Tracking.* Laundry providers embed washable tags into their linens and uniforms for automated tracking.

Competitive Advantages

We believe we can extend our leadership of the RAIN market by leveraging our competitive strengths, including:

- *Platform.* Our platform integrates our products and enables enhanced functionalities in ways we believe surpasses mix-and-match solutions built from competitor components, improving overall RAIN system performance, capabilities, reliability and ease-of-use.
- *Market Leadership.* We believe we lead the RAIN market as the only company with an integrated platform spanning endpoint ICs, reader ICs, fixed readers and gateways.
- *Technology Leadership.* Our RAIN focus has enabled us to regularly be first-to-market with innovative, high-performing and high-quality products. Our chief executive officer is a recognized industry thought leader, a director of the RAIN Alliance and previously was an editor for the RAIN radio standard.
- *Partner Ecosystem.* Our worldwide partner ecosystem comprises hundreds of distributors, SIs, VARs, software solution partners and reader, inlay and tag ODMs and OEMs. That ecosystem gives us market reach, penetration and scale we believe few, if any, of our competitors enjoy.
- *Trusted Brand.* We believe our industry leadership, name recognition and reputation for innovative, high-performing and high-quality products have significantly contributed to our leading market position.
- *Intellectual Property.* We believe we have the leading RAIN patent portfolio. As of December 31, 2022, our portfolio included 296 issued and allowed U.S. patents, five issued and allowed international patents, 20 pending U.S. patent applications and 7 pending international patent applications.

Growth Strategies

7

[Table of Contents](#)

To further continue growing our mission of connecting every thing, business and our opportunities, we plan to focus on the following strategic areas:

- **Develop Enterprise Solutions: Focus** We will continue developing solutions to previously unsolved enterprise business problems. As we mature those solutions, we will focus on developing repeatable enterprise solutions repeatability with top-tier partners, enhancing and expanding our product offerings and deepening our platform integration with those partners.
- **Deliver Our Platform: RAIN silicon: Continue** We will continue investing in our platform's products, software and algorithms, use cases, differentiated capabilities and cost reductions.
- **Lead the RAIN silicon opportunity: Invest** in endpoint IC and reader IC performance, differentiated features, cost reduction and platform integration to win endpoint IC opportunities across all verticals markets and geographies.
- **Ubiquitous Reading: Platform preference:** Advance our reader ICs to improve functionality, reduce costs and make Impinj-based partner readers ubiquitous.
- **Cloud Services: Invest** We will continue investing in differentiated product capabilities, cloud services, that leverage differentiated features in our endpoint ICs, such as cryptographic authentication, solutions software and algorithms, and test and measurement solutions to enhance our platform's reach and breadth and enable new use cases and recurring-revenue opportunities.

Sales and Marketing

We have a worldwide sales team with expertise in enterprise solutions, endpoint ICs, reader ICs, readers and gateways, and test and measurement solutions. We also have a primarily sell through our global ecosystem of hundreds of partners. Our sales team enables end-user solutions through, with and alongside those partners fulfilling through the partners primarily as follows:

- **Endpoint ICs:** Directly to inlay and tag OEMs. We typically negotiate pricing with these OEMs annually, with new pricing effective during
- **Solutions:** Directly to a small number of lighthouse enterprises, servicing the first quarter rest of the calendar year, market with and through partners.
- **Reader ICs: ICs:** Through distribution to handheld handheld- and fixed reader fixed-reader OEMs and ODMs.
- **Readers and gateways:** To Through distribution to solutions providers, VARs and SIs through distributors. SIs.
- **Test and measurement solutions:** Directly to inlay and tag OEMs, certification bodies and enterprises.

[Table of Contents](#)

- **Cloud services:** Access-based services.

We aim to engender preference for our platform in all our sales engagements, encouraging our enterprises and partners and end users to use and gain the full benefit of our entire platform. Our business development, product marketing, technical and systems engineers actively engage those partners enterprises and end users. Our solutions-marketing and business-development teams also work with independent software vendor, or ISV, partners to enable end-user create awareness, joint solutions, joint go-to-market selling and sales enablement.

Avery Dennison Corporation, or Avery Dennison, and Arizon RFID Technology (Yangzhou) Co., LTD, LTD., or Arizon, purchase our endpoint ICs for their inlay and tag products. The following table presents total revenue concentration to Avery Dennison and Arizon for the periods presented:

	Year Ended December 31,			Year Ended December 31,		
	2022	2021	2020	2023	2022	2021
Revenue:						
Avery Dennison ⁽¹⁾	28 %	32 %	32 %			
Avery Dennison				33 %	28 %	32 %
Arizon	10	11	10	11	10	11
	38 %	43 %	42 %	44 %	38 %	43 %

(1) Includes revenue concentration related to Smartrac. Avery Dennison acquired Smartrac in March 2020.

Manufacturing

We outsource all most of our product manufacturing to third-party manufacturers third parties that build our products to our specifications. specifications, manufacturing only a small portion of our products, principally some of our test and measurement solutions, ourselves. This capital-efficient operating model scales efficiently with volume, allowing us to focus our resources on accelerating development of developing new products and solutions.

Taiwan Semiconductor Manufacturing Company Limited, or TSMC, fabricates manufactures our endpoint IC wafers primarily in Asia and the United States Taiwan and has been our sole endpoint IC wafer supplier since 2003. We order endpoint IC wafers on a purchase-order basis and do not have a long-term supply agreement with TSMC. We test the wafers primarily in Asia and at our U.S. headquarters, Asia. We use multiple subcontractors to post-process the wafers including Stars Microelectronics (Thailand) Public Company Limited, or Stars, Chipbond Technology Corporation, or Chipbond, and Unisem Group, or Unisem. We generally engage all our endpoint IC subcontractors on a purchase-order basis.

Table of Contents

Tower Semiconductor, or Tower, and TSMC fabricate manufactures our reader IC wafers. Tower fabricates reader IC wafers in the United States and has been our supplier since 2008. TSMC fabricates reader IC wafers in Asia and has been a

reader IC our supplier since 2021. We order our reader IC wafers on a purchase-order basis and do not have a long-term supply agreement with Tower or TSMC. We package and test and package the our reader ICs in Asia. We generally primarily engage all our reader IC subcontractors on a purchase-order basis.

Plexus Corp., or Plexus, manufactures our readers and gateways in Asia and has been our supplier since 2005. We order readers and gateways pursuant to non-exclusive purchase agreements that automatically renew each year, subject to each party's right to terminate on 180 days' notice. We use subcontractors on a purchase-order basis to assemble and test printed circuit boards, to build our reader and gateway enclosures and to test our readers and gateways.

We manufacture our test and measurement solutions in Finland, at Voyantic Oy, which we acquired in April 2023. This acquisition added label design, manufacturing and test systems to our platform offering.

Research and Development

We built our company around on a foundation of technology leadership, innovation and best-in-class products. Throughout our history we have committed, and we plan to continue committing, significant resources to technology, innovation and product and solutions development. We believe we have achieved our leading market position by continuously improving our product performance, features, quality and reliability while reducing costs, and we plan to invest to continue doing so.

In most situations, we strive to lead the market with new products and innovations, but we sometimes adopt a more deliberate approach depending on the market situation. As one example, our nearest endpoint IC competitor migrated from 200mm wafers to 300mm wafers before we did. That migration caused the inlay OEMs to gradually retrofit their inlay manufacturing assembly machines to handle 300mm wafers. In the meantime, we focused on an endpoint IC process-node migration, which we completed in 2020. Our first products in that process node, the Impinj M730 and M750, are were not only on 300mm wafers, but today have had roughly twice as many ICs per wafer as that competitor and entered the market with the inlay OEMs already able to process 300mm wafers. We then introduced our newest endpoint IC

Table of Contents

products, the Impinj M830 and M850, in 2023, with approximately 25% more die per wafer than the M700 family and the inlay OEMs again able to immediately assemble the 300mm wafers.

We have a team of skilled engineers that today conduct all our research and most of our product development internally. As of December 31, 2022 December 31, 2023, we had 205 243 employees in research and development. We regularly review our technology, products and market development opportunities and reallocate our spending and resources accordingly.

Intellectual Property

We protect our technologies by filing patent applications, retaining trade secrets and defending and enforcing our intellectual property rights where appropriate. To date, our intellectual property portfolio includes 296 302 issued and allowed U.S. patents, five issued and allowed international patents, 20 16 pending U.S. patent applications and 7 seven pending international patent applications. The first Of our 293 utility patents, 16 will expire in 2024 and of our 281 utility nine design patents, six, will expire in 2023 and the first of our 15 design patents expire in 2023, 2024. To protect confidential information not otherwise subject to patent protection, we rely on trade secret law and enter into confidentiality agreements with our employees, customers, suppliers and partners.

Because most RAIN products are used in the United States, and because most of our partners, end users and competitors have U.S. operations, we believe U.S. patents hold the most value for our business. Consequently, we have primarily filed U.S. patent applications. Because our portfolio currently comprises mostly U.S. patents, we have limited ability to assert our intellectual property IP rights outside the United States.

Although our patents and trade secrets constitute are valuable assets, we do not view any one of them as material. Instead, we believe the totality of our patent and trade-secret portfolio creates an advantage for our business.

We have entered into licensing, broad-scope cross licensing and other agreements authorizing us to use or to operate within the scope of patents and intellectual property IP owned by third parties. For example, we have licenses to third-party intellectual property that IP we use in our products. As another example, by participating in developing GS1 EPCglobal protocols, such as the RAIN radio protocol, we agreed to license those of our patents necessary to practice those protocols on a royalty-free basis to other GS1 EPCglobal members, subject to reciprocal royalty-free rights from those members. By participating in developing International Organization for Standardization, or ISO, standards, we agreed to grant to all users worldwide a license to those of our patents necessarily infringed by the practice of several ISO standards, including RAIN and non-RAIN, standards, on reasonable and nondiscriminatory terms, here again subject to reciprocity.

9

Table of Contents

We own a number of several trademarks and develop names for our new products and secure trademark protection for them, including domain name registration, in relevant jurisdictions.!

Alliances and Standardization

Our platform connects everyday items using uses the RAIN technology we pioneered. We spearheaded developing the RAIN radio standard, lobbied governments to allocate frequency spectrum and, along with Google, Intel and Smartrac, cofounded the RAIN Alliance. Our chief executive officer A member of our management team is presently an currently a RAIN Alliance Director and was previously the Alliance Chairman. Director. The Alliance is a global organization promoting the universal adoption of RAIN technology and solutions, with more than 150 members as of December 31, 2022 December 31, 2023. Today, the RAIN industry has access to radio spectrum freely available in 81 countries encompassing roughly 95% of the world's GDP. We believe RAIN's core capabilities – serialized identifiers for individual items, battery-free operation, 30-foot

range, not line-of-sight readability, up to 1,000 reads per second, low cost, essentially unlimited life and available cryptographic authentication – position RAIN to be the leading item-to-cloud connectivity technology for the IoT.

We, our enterprise end users, partners and competitors developed the RAIN radio protocol, whose technical name is EPC™ Radio-Frequency Identity Protocols Generation-2 UHF RFID (standardized as ISO/IEC 18000-63 and often known colloquially as Gen2) in 2004, with us as editor. Our community delivered a backward-compatible update in 2013, again with us as editor. Our As of December 31, 2023 our community is currently developing was nearing completion of yet another update, again with us as an editor. Our industry uses the RAIN radio protocol nearly exclusively.

By participating in GS1 EPCglobal, which produced Gen2, and ISO, which ratified 18000-63, as well as in other standards bodies, we agreed to license certain necessary patents as described in the section captioned “Intellectual Property.”

[Table of Contents](#)

Government Regulations

Government regulations require us to certify our readers and gateways in jurisdictions where they operate. For example, we certify our readers and gateways to Federal Communications Commission regulations to operate in the United States and its territories. Our readers and gateways are certified for operation in more than 40 countries worldwide including the United States, Canada, Mexico, China, Japan, South Korea and all of the European Union. The effects of compliance with applicable government regulations are currently not material to our results of operations, capital expenditures or competitive position. However, compliance with changes to existing or new regulations may have material adverse effect on our future results of operations, capital expenditures and competitive position. For more information, see the section of this report captioned “Risk Factors.”

Competition

Each of our competitors competes with some, but not all, of our products. Our primary competition includes:

- *Endpoint ICs:* NXP B.V., or NXP, EM Microelectronic, Kiloway, Quanray, Shanghai Fudan Microelectronics Group, Alibaba and Alien Technology Corporation, or Alien.
- *Reader ICs:* STMicroelectronics N.V., or ST, Phychips Inc, Zhikun Semiconductor Co. Ltd, or Iotelligent, Shanghai Fudan Microelectronics Group and MagicRF.
- *Readers and Gateways:* gateways: Zebra Technologies Corporation, or Zebra.
- *Test and measurement solutions:* CISC Semiconductor GmbH, or CISC.

The market for RAIN, our platform and our products is highly competitive. New entrants can and do come into our market at any time, and we expect competition to increase as the market and end-user adoption grow. The competitive factors that impact our platform and product sales include:

- portfolio, performance, features, lead times, quality, reliability and price;
- development tools, support, ease of use and availability of reference designs;
- development tools and APIs (except in the endpoint IC market);
- integration and certification with end-user enterprise applications; and
- APIs (except in the endpoint IC market);
- company reputation.

Although we believe we compete favorably on the above factors, our future competitiveness will depend on our ability to design, develop and deliver compelling products and enable compelling end-user enterprise solutions.

Table of Contents

Because our product pricing is denominated in U.S. dollars, we occasionally sometimes experience competitive pressures due to prevailing exchange rates. In addition, our competitive position depends on our ability to continue attracting and retaining talent while protecting our intellectual property. IP. For additional information on the risks associated with our business, see “Risk Factors.”

Employees and Culture

As of December 31, 2022, we had 389 employees. Most of our employees are not represented by a labor union. Principals and we believe our employee relations are excellent. Culture

Our corporate culture embodies a set of principles centered around respect, collaboration, accountability, empowerment and thinking big. We believe our principles and the culture that derives from them are essential to the health and success of our business. More information on principles can be found at www.impinj.com/about-us/our-principles.

As of December 31, 2023, we had 475 employees in the Americas, Europe and Asia Pacific. Most of our employees are not represented by a labor union.

Compensation

Table of Contents

We are committed to providing competitive compensation and benefits. In addition to salary, we offer equity awards to all eligible employees because we believe all contribute to, and should share in, our success. We also offer broad benefits packages that we believe provide the time, resources and flexibility to support the well-being of our employees and their families.

Commitment to Diversity, Equity and Inclusion (DEI)

We value our global workforce and the varied backgrounds, viewpoints and experiences they bring. By building and empowering underrepresented populations across our workforce and cultivating an environment where everyone feels a sense of belonging, our DEI efforts are key to how we win. We continue making efforts to educate ourselves, learn from others, identify issues, improve our recruiting practices, engage in respectful and constructive dialogue and advance community initiatives.

All employees complete training courses on diversity and inclusion, bias, and recognizing and preventing harassment and discrimination. We do not tolerate discrimination, harassment or impropriety of any kind. We are an equal-opportunity employer and do not discriminate based on race, religion, color, national origin, sex, gender, gender expression, sexual orientation, age, marital status, veteran status, disability status or any other classification.

Training and Development

We focus on aligning our employees nurturing each employee, rewarding their unique contributions and providing a runway for their career growth. We facilitate personal and professional development by offering a variety of tools and opportunities to those principles support their growth. Offerings range from management training programs for new leaders, technical training focused on RAIN RFID and promoting tuition reimbursement to further develop skills for current and fostering diversity, equity, inclusion, passion and commitment. future positions.

Available Information

We were incorporated in Delaware in April 2000. Our principal executive office is located at 400 Fairview Avenue North, Suite 1200, Seattle, Washington 98109. Our telephone number is (206) 517-5300. Our website is www.impinj.com. Information contained in, or that can be accessed through, our website is not a part of, and is not incorporated into, this report.

Our filings with the Securities and Exchange Commission, or SEC, including our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, as well as amendments to those reports are available on our website at www.investor.impinj.com, free of charge, as soon as reasonably practicable after the electronic filing of those reports with the SEC. The information contained on our website is not a part of this report or any other document we file with the SEC.

Item 1A. Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this report, including the section of this report captioned “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occur, then our business, operating results and financial condition could be materially impacted. This report also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements due to factors that are described below and elsewhere in this report.

Risks Relating to Our Platform, Products and Technologies

We operate in a very competitive market.

Our principal current primary competitors are:

- In endpoint ICs, Endpoint ICs: NXP, EM Microelectronic, Kiloway, Quanray, Shanghai Fudan Microelectronics Group, Alibaba and Alien.
- Reader ICs: Phychips Inc, Shanghai Fudan Microelectronics Group and Alien; MagicRF.

Table of Contents

- Readers and gateways: Zebra.
- in reader ICs, ST, Phychips, Iotelligent Test and MagicRF; and
- in readers and gateways, Zebra. measurement systems: CISC.

These competitors include companies that have much greater financial, operating, research and development, marketing and other resources than us. To gain market share, they could discount their products and accept lower margins, or they could maintain margins by achieving cost savings through better, more efficient designs or production methods. They could devote more resources than we can to product development, promotion, sale and support. They could also bundle other technologies, including those we do not have in our product portfolio, with their RAIN products.

Our partners, including our OEMs, ODMs, distributors, SIs, VARs and solution partners, may choose to compete with us rather than purchase our products, which would not only reduce our customer base but also

Table of Contents

increase competition in the market. Companies in adjacent markets or newly formed companies may decide to enter our market, particularly as RAIN adoption grows. Further, the Chinese government has made development of the Chinese semiconductor industry a priority, potentially increasing competition for us globally while possibly restricting our ability to participate in the Chinese market.

RAIN adoption is concentrated in key industries markets and the extent and pace of RAIN market adoption beyond those industries markets is uncertain.

Our financial performance depends on the pace of end-user RAIN adoption in key industries markets, such as retail apparel, our largest market, retail general merchandise and SC&L. Although RAIN has been adopted to some degree by end users in those industries markets, those end users as well as the industries markets themselves are subject to business cycles, cycles and macroeconomic trends. Continued RAIN adoption by those end users and in those industries markets may be at risk if and when downcycles occur, negative business or economic conditions arise.

Outside those key industries, the The RAIN market opportunity is still developing. RAIN adoption, as well as adoption of our platform and products, depend depends on many factors, including the extent to which end users understand and embrace the benefits that RAIN offers; whether the benefits of RAIN adoption outweigh the cost and time to replace or modify end users' existing systems and processes; and whether RAIN products and applications meet end users' current or anticipated needs.

We have, at times, anticipated and forecasted a pace of end-user adoption that exceeded the actual pace, pace of adoption. We expect continued difficulty forecasting the pace of adoption. As a result, we may be unable to accurately forecast our future operating results including revenue, gross margins, cash flows and profitability, any or all of which could negatively impact our financial performance.

We are expected to must regularly introduce new products and product enhancements on a regular basis, to compete effectively.

We introduce new products and services to advance our business, satisfy increasingly demanding end-user requirements and grow RAIN market adoption. We commit significant resources developing and introducing these new products and services. We also commit significant resources improving the performance and reliability of, and reducing the costs of, our existing products and services.

Whether our new products and services will succeed is uncertain. Our success in developing the technologies, processes or capabilities necessary or desired for new or enhanced products and services, or licensing or otherwise acquiring them from third parties, and our ability to introduce new products and services before our competition, depends on many factors, including:

- our ability to identify new product capabilities or services that end users will be widely adopted, adopt;
- our timely and efficient completion of the design process;
- our timely and efficient implementation of manufacturing, assembly and testing procedures;
- our attainment of appropriate product or service performance levels and product certification, certifications;

- partnering successfully with others to deliver complementary products or services;
- the quality, reliability and selling price of our product or service; and
- the effectiveness of our marketing, sales and service.

13

Table of Contents

When we introduce new products, our success in ramping adoption depends, in part, on us making those products easy to deploy by for our partners and their end users. users to deploy and use. For example, for our new M700-family M800-family endpoint ICs, and E-family reader ICs, we continue are currently significantly supporting our inlay partners to produce high-performing, high-quality products. inlays. Until our partners are able to deploy our products widely, adoption and our operating results could suffer.

Our abilities to deliver platform enterprise solutions at scale are nascent.

We believe we are still at a very early stage in our ability to deliver enterprise solutions. We are developing solutions for retail self-checkout and loss prevention and SC&L package routing that have been, or that we expect to be, deployed by the industry-leading enterprise end users for whom we are developing the solutions. users. However, to fully capitalize on our platform's potential, we must make our current offerings repeatable across multiple

12

Table of Contents

enterprises as well as deliver additional solutions to enterprise needs. We must also develop relationships with top-tier solution partners to gain access to and address challenging new use cases. If we do not succeed in identifying, developing, selling and deploying enterprise solutions, particularly solutions that rely on autonomous reading, with top-tier partners and across a range of industries markets and customers, end users, then our business prospects will suffer.

Delivering solutions that address enterprise needs solutions requires a network of partner products and services that complement our own product offerings and that together address complex the enterprise needs. Convincing enterprises to engage us to solve their business problems – including evaluation, design, deployment, operations and partner services, including leveraging as well as integrating RAIN data into the enterprise's information systems, requires tight coordination among our and our partners' sales, marketing, operations and engineering teams. We, or our partners, may be unable to successfully acquire customers for our enterprise solutions, or successfully address our market opportunity. Although we today have partners who can successfully introduce our platform, or aspects of it, to their customers, their knowledge of our

platform and RAIN in general is still nascent. If we do not build our network of solutions, and partners to deliver those solutions, and broaden our efforts to deliver solutions that leverage our platform in large, complex enterprise opportunities, then our business prospects will suffer.

We rely on endpoint IC sales to generate most of our revenue.

We derive, and expect to continue to derive, most of our product revenue from our endpoint ICs. If demand declines, or if we are unable to procure enough wafers to meet the demand we have, or if we are unable to raise prices to offset cost increases, then our business and operating results will suffer. In addition, the continued adoption of, and demand for, our existing endpoint ICs, as well as for our new endpoint ICs, derives in part from our ability to continually innovate and to demonstrate us demonstrating the benefits of using our endpoint ICs with our reader ICs, readers and gateways, systems. If we fail to establish the those benefits of using our endpoint ICs with our platform, then we may be unsuccessful in countering competitive pressures to lower prices for our endpoint ICs IC price pressures and our business and operating results could be adversely affected.

The average selling prices of our products could fluctuate substantially.

The average selling price, or ASP, of our products has historically decreased with time or to meet end-user demands, to encourage adoption, to address macroeconomic conditions or to respond to market pressure competitive pressure. As demand for older products declines, or as competition from competitors with lower product costs or lower profitability expectations increases, or during times of oversupply, ASPs may decline quickly.

To compete profitably we must continually improve our competition. However, that trend is not constant technology and processes and reduce unit costs in line with lower selling prices. If we are unable to offset ASP reductions with increased sales volumes or reduced product costs, then our revenue and gross margins will suffer.

Though less common, we have also increased prices from time to time. Although we expect further price decreases in the long term, time, especially during times of increasing wafer costs. For example, we raised prices in 2021, 2022 and 2022 2023 to accommodate higher product costs. We may be required to raise prices again if macroeconomic conditions, including inflation, create upward pressure on our product costs. If we are unable to offset ASP reductions with increased sales volumes or reduced product costs, or if we are unable to successfully increase ASPs to offset cost increases, then our revenue and gross margins will suffer.

When demand for older products declines, or during times of increased market inventory, ASPs may decline quickly. To sell our products profitably we must continually improve our technology and processes and reduce costs in line with the lower selling prices. If we and our product suppliers and manufacturers cannot create and implement processes or improve efficiencies sufficient to maintain our margins, then we may be unable to sell our products profitably.

Pricing commitments and other restrictive provisions in our customer agreements could adversely affect our operating results.

In the ordinary course of our business, we enter into agreements containing pricing terms that could, in some instances, adversely affect our operating results and gross margins. For example, some contracts specify future IC, reader or gateway pricing or contain most-favored-customer pricing for certain products. Other agreements contain exclusivity terms that prevent

us from pursuing certain business with other customers during the exclusivity period. Reducing prices or offering favorable terms to one customer could adversely affect our ability to negotiate favorable terms with other customers.

14

Table of Contents

Changes in our product mix could adversely affect our overall gross margin.

We generate most Endpoint IC sales, which constitute and likely will continue to constitute the majority of our product revenue, from endpoint IC sales which have, for the most part, lower gross margins than our systems product sales. Our overall product gross margins are affected by product mix, which can fluctuate based on demand and supply, competitive pressures and end-user needs and demand. A shift in sales mix away from our higher margin products to lower margin products, either within our endpoint IC product portfolio or from our systems business to our endpoint ICs, could negatively affect our gross margins.

Poor product quality could result in significant costs to us and impair our ability to sell our products.

13

Table of Contents

Our products must meet increasingly demanding specifications for quality, reliability and performance. Our products are both highly technical and deployed in large, complex systems in which errors, defects or incompatibilities can be problematic for our partners and end users.

If we are unable to identify or correct errors, defects, incompatibilities or other problems in our products, we could experience:

- loss of customer orders or customers;
- lost or delayed market acceptance (either of our products and solutions or RAIN generally);
- lost or delayed sales;
- loss of market share;
- damage to our brand and reputation;
- impaired ability to attract new customers;
- diversion of development resources;
- increased service and warranty costs;

- replacement costs;
- legal actions by our partners or end users; and
- increased insurance costs.

Moreover, if we encounter product quality issues, then we may be required to incur significant time and costs to diagnose, test and fix the issues, and issues. There can be no assurance that such remediation efforts would be successful. Even if successful, these efforts could further constrain our ability to supply our partners and end users with new products until we have resolved the issues.

End users and partners must design our products into their products and business processes.

Persuading end users or partners to design our products into their business processes or products requires educating them about RAIN's and our products' value. They may use other technologies or products and may not feel the need be receptive to learn about how introducing RAIN or our products can improve into their business processes or products. Even when convinced, they often undertake long pilot programs or qualification processes and qualifications prior to placing orders. These pilot programs or qualification processes and qualifications can be time consuming and expensive, and there is no assurance they will result in an order for our products. If we fail to develop new products that adequately or competitively address end users' or our partners' needs, then we may not receive product orders, which could adversely affect our business, prospects and operating results.

Our visibility into the length of the sales and deployment cycles for our products is limited.

We have limited visibility into end user sales and deployment cycles, and these cycles are often longer than we anticipate. Many factors contribute to our limited visibility, including the time our partners and end users spend evaluating our products, the time educating them on RAIN's benefits and the time integrating our products with end users' systems. The length and uncertain timing of the sales and deployment cycles can lead to delayed product orders. In anticipation of those orders, we may incur substantial costs before the sales cycle is complete and before we receive any customer orders or payments, if we receive them at all.

[Table of Contents](#)

An inability or limited ability of end user systems to exploit RAIN information may adversely affect the market for our products.

A successful end-user deployment requires not only tags and readers or gateways, but RAIN integration with information systems and applications that create business value from the RAIN data. Unless third parties continue developing

and advancing business analytics tools, and end users enhance their information systems to use these tools, RAIN deployments could stall. Our efforts to foster third-party development and deployment of these tools could fail. In addition, our guidance to business-analytics providers for integrating our products with their tools could prove ineffective.

14

Table of Contents

Solution providers and SIs are essential to the RAIN market. They provide deployment know-how to enable end users to successfully deploy RAIN solutions. Integrating our products with end-user information systems could prove more difficult or time consuming than we or they anticipate, which could delay deployments.

Alternative technologies may enable products and services that compete with ours.

Technology developments may affect our business negatively. Breakthroughs in legacy RFID technologies or markets, including those using low frequency or high frequency RFID technology, or in other radio technologies, could adversely affect RAIN market growth and demand for our products. Likewise, new technologies may enable lower-cost ICs than our products. If we are unable to innovate using new or enhanced technologies or are slow to react to changes in existing technologies or in the market, or if we have difficulty competing with advances in new or legacy technologies, then our development of new or enhanced products could be impacted and result in product obsolescence, decreased revenue and reduced market share.

Significant changes in RAIN standards bodies, standards or qualification processes could impede our ability to sell our products and services.

We participate have historically taken a leadership position in developing RAIN industry standards, including with GS1 and ISO, and have designed our products to comply with those standards. We have historically taken a leadership position in standards development. In the future, we could lose that leadership position or position; our influence in standards development could diminish; or we could choose not to participate in certain standards activities.

New or changed industry standards could cause affect us to incur substantial development costs to meet the new or changed standards. negatively. If industry standards diverge from our or the RAIN market's needs, then our products may fail to keep pace with the market or cause end users to delay their deployments. Moreover, the adoption or expected adoption of new or changed standards could slow sales of our existing products before we can introduce new products that meet the new or changed standards. New standards or changes to existing standards could also limit our ability to implement new features in our products. The lost opportunities as well as time and expense to develop new products or change our existing products to comply with new or changed standards could be substantial, and we may not ultimately succeed in developing products that comply with the new or changed standards.

Certain organizations develop requirements for RAIN tags and test tags against those requirements. As one For example, the ARC Program at Auburn University or ARC, develops tag performance and quality requirements for end users that engage them. Some participants in the RAIN market are ARC sponsors, but we are not among them. Some other organizations perform this function as well. ARC or a similar organization could develop specifications that some or all of our endpoint ICs fail to meet. meet or could delay approval of tags incorporating our endpoint ICs, which could negatively impact market acceptance of our products.

Changes in government spectrum regulations or in their enforcement could adversely affect our ability to sell our products.

Government radio regulations require that our readers and gateways be certified for spectral compliance where they are sold or operated. Our readers and gateways are collectively certified for use in more than 40 countries worldwide, including the United States, Canada, Mexico, China, Japan, South Korea and every country in the EU.

If one of spectrum regulations change, or if our reader or gateway products is are found to be noncompliant despite being certified, we could be required to modify field-deployed readers or gateways and could spend significant resources and miss sales opportunities in the process.

Government regulations may change, possibly without notice, requiring us need to redesign our products, to conform with the new regulations or constraining our ability to incorporate new features into our products. Such changes could cause us to incur potentially resulting in significant costs, including costs associated with obsolete inventory. Regulatory changes may also cause us to forego opportunities, to improve adversely affecting our products, potentially delaying our time-to-market. business.

Sales of some of our products could cannibalize revenue from other products.

[Table of Contents](#)

Some of our partners develop products using some of our products that compete with other of our products. For example, some of our OEM partners use our reader ICs to build and sell readers and gateways that compete with our readers and gateways. Similarly, some of our partners use our readers to build and sell gateways that compete with our gateways. If we fail to manage such conflicts successfully, then our business and operating results could be negatively affected.

[Table of Contents](#)

Risks Relating to Our Personnel and Business Operations

We obtain the products we sell through a limited number of third parties with whom we do not have long-term supply contracts.

Our ability to secure cost-effective, quality products in a timely manner could be adversely affected by many factors, including:

- Third-party manufacturing capacity may not be available when we need it, particularly from our foundry partners from whom we procure silicon wafers.
- Efforts to diversify our supplier base may be unsuccessful or may not result in us obtaining the anticipated benefits of such diversification.
- Some products have long lead times, and we place orders for them many months before our anticipated delivery dates to our customers. If we inaccurately forecast customer demand, then we may be unable to meet our customers' delivery requirements or we may accumulate excess inventory, increasing our costs.
- Supply disruptions may affect our ability to meet partner or end user demand, whether in a cost-effective manner or at all, potentially causing those partners or end users to cancel orders, qualify alternative suppliers or purchase from our competitors. Supply disruptions can also distort demand, making it even harder to meet true demand with finished products.

If our suppliers fail to manufacture our products at reasonable prices or with satisfactory quality levels, then our ability to bring those products to market and our reputation could both suffer. If supplier capacity diminishes, whether from equipment failures, closures, bankruptcy, capacity allocation, in response to Covid-19, public health events (such as Covid-19), catastrophic loss of facilities or otherwise, then we could have difficulty fulfilling orders, our revenue could decline and our growth prospects could be impaired. Transitioning our product manufacturing to new providers would take many months and, in the case of ICs, could take years. Any transition would require a requalification by our customers or end users, which could also adversely affect our ability to sell our products as well as our operating results.

Shortages of silicon wafers and components used in our readers and gateways may adversely affect our ability to meet demand for our products and adversely affect our revenue and/or gross margins.

The semiconductor industry has experienced many periods of capacity shortfall and just experienced another due to increased post-Covid demand. In particular, in both 2021 and 2022, we experienced causing tight wafer availability and although our foundry partner has signaled improving higher prices. Although wafer availability improved in 2023, they have also raised prices. The semiconductor industry may continue to experience significant supply/demand imbalances resulting can still occur. Additionally, we expect wafer capacity in continued constraints on wafer availability. the semiconductor nodes we use to be tight for the foreseeable future. We procure wafers on a purchase-order basis, from so our foundry partners; consequently, wafer supply is not contractually guaranteed, and there can be no assurance that we will may not receive adequate wafer supply from our foundry partners in 2023 or in the future. when shortages occur.

Wafer shortfalls limit sales and may cause market-share losses if we are unable to supply enough products or our customers purchase competing products or, alternatively, losses. They may also artificially increase bookings as customers over-order our products, followed by and then cause sales declines in future periods as they those customers consume their accumulated inventory. Additionally, if our suppliers charge us more but we are unable to raise our prices to cover our those higher costs, our gross margins and other financial results could suffer.

As we recover from To guard against wafer shortages, we may invest in inventory to support anticipated business growth, like we did with endpoint IC inventory in 2017, 2020 and 2020. late 2022/early 2023.

To convert the wafers we receive from our foundry partner into saleable ICs, we perform additional steps including testing, thinning, bumping and dicing. If our third-party suppliers are unable to efficiently perform these steps, or if we

experience any capacity constraints with respect to these steps, then we may be unable to satisfy demand for our products, adversely affecting our financial results.

We may be unable to accurately anticipate the scope or nature of business demand, which could cause excess or obsolescent inventory. We maintain inventory to meet customer demand, but high inventory levels can increase

[Table of Contents](#)

expenses or reserves and expose us to a higher risk of product obsolescence when we introduce new products and technologies, all of which could negatively affect our business. For example, in 2022 we had strong demand for our M700 ICs, but due to limited 300mm wafer supply, we transitioned some customers back to our prior-generation 200mm Monza R6 product family. If we are unable to sell the inventory we purchased, or if we must sell it at lower prices, due to excess inventory or obsolescence, then our business will be negatively impacted.

To convert the wafers we receive from our foundry partner into saleable products, we and several third parties perform additional procedures, such as testing, thinning, dicing and bumping the ICs. If we or our partners are unable to efficiently perform these post-processing procedures, or if we experience any capacity constraints with respect to these post-processing procedures, then we may be unable to keep up with demand for our products and our financial results will suffer.

[Table of Contents](#)

We have also experienced shortages and price increases for components we use in our readers and gateways, as well as in packaging and test capacity for our reader ICs, and we may continue to experience such shortages and price increases in the future. Any such shortages or price increases will negatively impact our product availability and costs. If we are unable to procure sufficient components costs and to increase our prices to cover our increased costs, then our financial results will suffer.

We bear inventory risks due to our reliance on partners to sell and distribute our products.

We typically order products from our suppliers based on partner forecasts before we receive purchase orders. However, many of our partners have difficulty accurately forecasting their demand and the timing of that demand. They also sometimes cancel orders or reschedule product shipments, in some cases with little or no advance notice to us. We also sometimes receive soft commitments for large orders which do not materialize. In addition, when we introduce new products, we may initially carry higher inventory or have slower inventory turns depending on market acceptance. We have additional

uncertainty arising from competition and from unanticipated external events, such as macroeconomic trends or events and changes in regulatory standards, all of which can adversely affect demand and consequently our inventory levels, sales and operating results.

Acquisitions could result in operating difficulties, dilution and other harmful consequences.

Covid-19 We regularly evaluate potential strategic transactions, and we may pursue them if complementary to our business. For example, in April 2023 we completed our acquisition of Voyantic Oy, a global provider of RFID (primarily RAIN and NFC) inlay and label design, manufacturing and test systems. Strategic transactions could be material to our financial condition and operating results. We have limited experience executing acquisitions. Integrating an acquired company, business or technology may create unforeseen operating difficulties and expenditures. Acquisition-related risks include:

- difficulties integrating acquired products or lines of business into our strategy and product plans;
- customers switching from us to new suppliers because of the acquisition;
- inability to retain employees from the business we acquire;
- challenges associated with integrating employees from the acquired company into our organization;
- difficulties integrating accounting, management information, human resource, legal and other administrative systems permit effective management of the business we acquire;
- potential requirements for remediating controls, procedures and policies appropriate for a public company in the acquired business that, prior to the acquisition, lacked these controls, procedures and policies;
- potential liability for past or present environmental, hazardous substance or contamination concerns associated with acquired business or its predecessors;
- possible write-offs or impairment charges resulting from the acquisition; and
- unanticipated or unknown liabilities relating to the acquired business.

Foreign acquisitions involve additional risks beyond those above, including related to integrating operations across different cultures and languages, currency risks and the economic, political and regulatory risks associated with other countries. Also, the anticipated benefit of any acquisition, domestic or foreign, may not materialize. Future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, debt incurrence, contingent liabilities or amortization expenses or goodwill write-offs, any of which could harm our financial condition. Future acquisitions may require us to obtain additional equity or debt financing, which may not be available on favorable terms or at all.

Our business has been and may continue to be adversely affected our business, by public health outbreaks and the magnitude and duration of future Covid-19 effects on our business are uncertain.pandemics.

Since Starting in 2020, Covid-19 has created significant worldwide economic volatility, uncertainty and disruption, and those effects may persist. Our significant continuing Covid-19 presented our business with several risks include: and challenges, included:

- uncertain product demand globally;
- product availability delays and shortages;
- challenges in effectively managing our inventory due to uncertain supply or demand; inventory;
- partner-requested preordering or rescheduling, as a result of supply concerns, possibly distorting channel inventory, either positively or negatively; inventory;
- increased operating and product costs;
- delays in research and development, efforts, which, in turn, could delay delayed new product introductions or and product enhancements; and
- maintaining employee engagement and productivity in a remote or hybrid work environment. productivity.

Although the Covid-19 global health emergency officially ended in 2023, experts caution that Covid-19 remains a public health risk, and other future public health outbreaks or pandemics could pose similar challenges and risks to our business. The extent to which any public health outbreak or pandemic, including Covid-19, will continue impacting could impact future market demand and our business results is unclear. In 2020 and 2021, Covid-19 adversely affected retail, including retail apparel, where RAIN is widely adopted. It also affected other markets that use our products including aviation, sporting events such as footraces, and others.

Our international supply chains remain vulnerable to Covid-19 related disruptions because most our products are manufactured and processed in Asia, which until fairly recently imposed regional lockdowns and which is still experiencing significant negative impacts of Covid-19. Accordingly, risks associated with Covid-19 on our future product supply remain. uncertain.

Changes in global trade policies could have a material adverse effect on us.

Changes in U.S. and foreign laws and policies governing foreign trade, manufacturing, development and investment in the jurisdictions where we currently develop and sell products, and any negative consequences resulting from such changes, could materially affect our business.

The U.S. government has imposed significant tariffs on a variety of items imported from other countries, particularly China. China responded by imposing significant tariffs on a variety of items imported from the United States. These tariffs could materially and adversely affect our ability to compete internationally. Although the United States and China signed a preliminary trade agreement in early 2020, the tariffs remain in place as negotiations between the countries continue. The future of these tariffs, as well as the possibility for new tariffs, remains uncertain. Changes in U.S. and Chinese industrial policy also contribute to uncertainty regarding the global trade environment.

Other causes of uncertainty include the effects of sanctions and other actions taken against Russia because after Russia invaded Ukraine. While we do not today have business with Russian partners or end users, the effect of

Table of Contents

these sanctions on global trade and macroeconomic conditions generally—such as increases in the cost of increasing energy costs and inflation—could nevertheless negatively affect our business.

We are subject to risks inherent in operating abroad and may not be able to successfully maintain or expand our international operations.

In 2022, 2023, we derived 83% 72% of our total revenue from sales outside the United States. We anticipate growing our business, in part, by growing our international operations, which presents a variety of risks, including:

- changes, some unexpected or unanticipated, in regulatory requirements, taxes, trade laws, tariffs, export quotas, custom duties or other trade restrictions;
- lack of established, clear or fairly implemented standards or regulations with which our products must comply;
- greater difficulty in enforcing contracts, judgments and arbitration awards in international courts, and in collecting accounts receivable as well as longer payment and collection periods;
- limited or unfavorable intellectual property protection;
- misappropriation of our intellectual property;
- inflation and fluctuations in foreign currency exchange rates and interest rates;

Table of Contents

- restrictions, or changes thereof, on foreign trade or investment, including currency-exchange controls, including as a result of sanctions against Russia as a result of Russia invading Ukraine; Russia;
- changes in a country's or region's political, regulatory, legal or economic conditions, including, for example, global and regional economic disruptions caused by any future public health outbreaks or pandemics, including a resurgence of Covid-19;
- political, social and economic instability abroad; wars and other armed conflicts; conflicts, such as those in Ukraine and the Gaza Strip; geopolitical tensions, such as those between the United States, China and Taiwan; and terrorist attacks and security concerns in general, including Russia invading Ukraine and China threatening Taiwan; general;
- differing regulations with regard to maintaining operations, products and public information;
- inequities or difficulties obtaining or maintaining export and import licenses;
- differing labor regulations, including where labor laws may be more advantageous to employees than in the United States;

- restrictions on earnings repatriation;
- corrupt or unethical practices in foreign jurisdictions that may subject us to exposure under applicable anti-corruption and anti-bribery laws such as the U.S. Foreign Corrupt Practices Act of 1977, as amended, or FCPA, and the United Kingdom Bribery Act of 2010, or U.K. Bribery Act; and
- regulations, and changes thereof, relating to data privacy, cybersecurity and the unauthorized use of, or access to, commercial and personal information, particularly in Europe.

We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.

We must export and import our products in compliance with U.S. export controls, including the Commerce Department's Export Administration Regulations and economic and trade sanctions established by the Treasury Department's Office of Foreign Assets Controls, as well as similar controls established in the countries in which we do business. For example, the U.S. Commerce Department recently issued strengthened rules regarding semiconductor- and supercomputer-related products and restrictions against sending certain chips and chip-related technology and software to China without an export license. The modifications included an expansion of the products and destinations that require licensing. In addition, after Russia invaded Ukraine, the United States and other countries imposed continue to expand the economic sanctions and export control restrictions imposed against Russia and Belarus as well as against and certain Russian nationals and entities. entities after Russia invaded Ukraine. We must undertake additional diligence efforts to comply with these rules, which may be time-consuming and result in delayed or lost opportunities. We may not always be successful in obtaining necessary export or import licenses, and our failure to obtain required export or import approval for our

18

Table of Contents

products or limitations on our ability to export or sell our products may harm our domestic and international sales and negatively affect our revenue.

The U.S. government has imposed tariffs on a variety of items imported from China. China has responded by imposing tariffs on a variety of items imported from the United States. Such tariffs Tariffs could also have a material impact on our product costs and decrease our ability to sell our products to existing or potential customers as well as harm our ability to compete internationally. For more information, see "Changes in global trade policies could have a material adverse effect on us." Any changes in our product or in export or import regulations or legislation; shift shifts or change changes in enforcement; or change changes in the countries, persons or technologies targeted by these regulations could delay us introducing new products in international markets, decrease use of our products by, or decrease our ability to export or sell our products to, existing or potential customers with international operations, adversely affecting our business and results of operations.

20

Table of Contents

Instability or deterioration in the political, social, business or economic conditions in key production jurisdictions could harm our supply or development of products.

Deterioration in the political, social, business or economic conditions in any jurisdictions in which we have significant suppliers, distributors or end users—including as a result of natural disasters, labor strikes, public health crises, geopolitical events or other developments—could slow or halt product shipments or disrupt our ability to manufacture, test or post-process our products, products, as well as our ability to effectively and timely execute on end user deployments. We outsource our manufacturing and production to suppliers in a small number of Asian jurisdictions including Thailand, Malaysia, Taiwan and China. Some of these jurisdictions have experienced, and may continue experiencing, intermittent or sustained mandatory shutdowns or other yet experience, restrictions related to combat the spread of Covid-19. These jurisdictions have also experienced significant changes in political, social, business or economic conditions in the past and may experience them in the future.

We could be forced to transfer our manufacturing, testing and post-processing activities to more stable, and potentially more costly, regions or find alternative suppliers.

We source a significant portion of our wafers from suppliers in Taiwan, and our supply of wafers and other critical components may be materially and adversely affected by diplomatic, geopolitical and other developments between China and Taiwan. Notably, China has refused to renounce the use of military force against Taiwan, and there can be no assurance that relations between China and Taiwan will not deteriorate further, particularly in light of ongoing tensions between the United States and China. Any such developments could materially and adversely affect our business, financial condition and results of operations.

Our business operations could be disrupted by natural disasters.

In addition to the pandemic risk discussed earlier under “—Covid-19 Our business has been and may continue to be adversely affected our business, by future public health outbreaks and the magnitude and duration of future Covid-19 effects on our business are uncertain, pandemics, including a potential resurgence in COVID-19 cases,” other disasters, whether natural or manmade, could decrease demand for our products, disable our facilities, disrupt operations or cause catastrophic losses. We have facilities in areas with known seismic activity, such as our headquarters in Seattle, Washington. We have facilities in areas with known flooding, such as our office in Shanghai, China. We have a wafer testing and dicing post-processing subcontractor in Thailand, a region with a known, and recent, history of flooding. A loss at any of these or other of our or our suppliers' facilities could disrupt operations, delay production and shipments, reduce revenue and engender potentially large expenses to repair or replace the facility. expenses. We do not carry insurance covering potential losses caused by pandemics, earthquakes, floods or other disasters.

Risks Relating to Our Relationships with Partners and End Users

We rely on a small number of customers for a large share of our revenue.

We sell our endpoint ICs directly to inlay and tag OEMs and ODMs. We sell our reader ICs to OEMs and ODMs and our readers and gateways to solution providers, VARs and SIs, all primarily through distribution. If we fail to retain our endpoint IC, reader IC, reader or gateway partners or distributors or fail to establish relationships with new partners, then our business, financial condition or operating results could be harmed.

In 2022, 2023, sales to tag OEMs Avery Dennison and Arizon accounted for 28% 33% and 10% 11% of our total revenue, respectively. Sales concentration to a small number of OEMs decreases our bargaining power and increases the risk that our pricing or sales could decline based on actions taken by our competitors or our own failure to compete effectively.

Our competitors' relationships with, or acquisitions of, these partners or distributors could interfere with our relationships with them. Any such interference could impair or delay our product sales or increase our cost of sales.

[Table of Contents](#)

We engage directly some with end users to adopt our products in large projects. These users. Their projects, often involving large purchases of our readers and gateways, are often discrete deployments that can result in significant sales for periods of time. They also increase the volatility of our revenue and operating results. If we are unable to replace project-based revenue with new revenue streams, or if end users with large projects change or delay them those projects without giving us with adequate notice, then our sales could decline from period to period and harm our stock price.

[Table of Contents](#)

Our ability to affect or determine end-user demand is limited in part because we sell and fulfill primarily through partners and rarely directly to end users.

End users drive demand for our products but because we sell our products primarily through partners, we are one step removed from those end users and often unable to directly assess and affect their demand. Our partners may choose to prioritize selling our competitors' products over ours, or they may offer products that compete with our products or limit sales of our products. If our partners do not sell enough of our products or if they choose to decrease their inventories of our products, then our sales to those partners and our revenue will decline.

Our partners may not properly forecast end users' demand for our products.

Our partners may purchase more of our products than they need to satisfy end-user demand, increasing their inventory and reducing our future sales to them. Distributors may, subject to time and quality limitations, return products in exchange for

other products. Our reserves estimates for products stocked by our distributors are based primarily on reports provided to us by those distributors, typically monthly. If the inventory and resale information our partners and distributors provide is inaccurate, or if we do not receive it in a timely manner, then we may not have a reliable view of products being sold to end users which could negatively impact our operating results.

Our growth strategy depends in part on the success of strategic relationships with third parties and their continued performance and alignment.

We invest in relationships with solution providers, SIs, VARs and software providers whose product and/or solution offerings complement ours and through which we often fulfill our product sales. Our business will be harmed if we fail to develop and grow these partner relationships. For example, our operating results may suffer if our efforts developing partner relationships increase our costs but do not increase revenue. Partner relationships may also include exclusivity provisions, multiple levels of distribution, discounted pricing or investments in other companies. The cost of developing and maintaining these partner relationships may go unrecovered and our efforts may not generate a corresponding revenue increase.

Occasionally we also engage directly with end-users, often at their request, to help them develop solutions for challenging use cases. Such direct engagements could cause, or could be perceived to cause, conflicts with partners that could harm our partner relationships and our business, results of operations or financial condition.

If we fail to maintain or enhance our brand recognition or reputation on which our business depends, then our business could be harmed.

We believe that building our brand and reputation is key to our relationships with partners and end users and our ability to attract new partners and end users. We also believe that our brand and reputation will be increasingly important as market competition increases. Our success depends on a range of factors, including:

- continuing to deliver high-quality, innovative and defect-free products;
- maintaining high partner and end user end-user satisfaction;
- successfully differentiating our products from those of our competitors; and
- appropriately managing both positive and negative publicity.

Product supply shortages have challenged our ability to meet market needs and we have recently increased prices in response to our suppliers increasing their prices to us. Our inability to supply partners and end users with products they need, and/or our need to increase our prices could result in long-lasting, negative consequences to our relationships with those partners and end users, to RAIN adoption and to our business overall.

Increasing attention to environmental, social and governance matters may cause us to incur additional costs or expose us to additional risks.

Investors, governmental and nongovernmental organizations, partners and end users are increasingly focusing on environmental, social and governance, or ESG, practices. Our ESG practices may not meet their standards, and they as well as advocacy groups may campaign for us to change our business or practices to address their ESG-related concerns. A Our failure, or perceived failure, of us to respond to any such campaigns could harm our business and reputation and negatively impact the market price of our securities. Moreover, with the continued

Table of Contents

evolution of ESG practices and reporting and disclosure requirements, our costs related to those ESG practices and reporting and disclosure requirements could increase, which could negatively affect our operating results.

Table of Contents

Risks Relating to Our Intellectual Property

If we are unable to protect our intellectual property then our business could be adversely affected.

Our success depends in part upon our ability to obtain, maintain and enforce our patents, copyrights, trade secrets, trademarks and other intellectual property rights and prevent third parties from infringing, misappropriating or circumventing those rights. We have historically focused on filing U.S. patent applications, for many reasons, including the fact that **most a significant portion of** RAIN products are used in or imported into the United States. We have only a small number of foreign **patent applications or foreign patents, patents and applications.** We also only have registered trademarks and domain names in select countries where we believe filing for such protection is appropriate. By focusing our intellectual property protection on the United States and a small number of foreign countries, we have **a** limited ability to assert that intellectual property outside the United States, including in some significant foreign markets such as China. **Moreover, the global manufacturing and distribution systems for tags or labels incorporating our endpoint IC products could complicate our efforts to enforce our U.S. patents.**

We cannot guarantee that:

- any of the patents, trademarks, copyrights, trade secrets or other intellectual property rights we presently employ in our business will not lapse or be invalidated, circumvented, challenged or abandoned;
- our intellectual property rights will provide competitive advantages to us;
- our ability to assert our intellectual property rights against potential competitors or to settle current or future disputes will not be limited by our agreements with third parties;
- any of our pending or future patent applications will **be issued issue** or have the coverage we originally sought;
- our intellectual property rights can or will be enforced, particularly in jurisdictions where competition may be intense or where legal protections may be weak;
- we will not lose the ability to assert our intellectual property rights against, or to license our technology to, others and

collect royalties or other payments; or

- we will retain the right to ask for a royalty-bearing license to an industry standard if we fail to file an intellectual property declaration pursuant to the standards process.

Monitoring and addressing unauthorized use of our intellectual property is difficult and costly, and litigation to enforce our intellectual property rights is time consuming, distracting, expensive and uncertain. Our failure to identify unauthorized use of, or otherwise adequately protect our intellectual property could adversely affect our business.

We are and may become continue to be party to intellectual property disputes which could be time consuming and costly to prosecute, defend or settle, result in the loss of significant rights, and adversely affect RAIN adoption or adoption of our products or platform.

We are engaged in several patent infringement lawsuits against certain affiliates of NXP USA, Inc., a Delaware corporation, and certain of its affiliates. Semiconductors N.V. For further information regarding this litigation, please refer to Note 11 12 of our consolidated financial statements included elsewhere in this report. Our litigation with NXP, will increase including any appeals, has contributed, and may continue to contribute, to increased legal expenses, and demands on our expenses, distract management and key employees team's time, and could negatively impact our relationships with partners or end users. While we have obtained favorable jury verdicts in prosecuting our patent infringement claims against NXP in California and Texas and in defending against NXP's patent infringement claims against us in Washington and Texas, post-trial rulings have limited some of the verdicts and all such verdicts remain subject to appeal. Moreover, these verdicts provide no assurance regarding the results of our other ongoing litigation involving NXP. If we are unsuccessful in prosecuting our patent-infringement patent infringement claims against NXP or in defending ourselves against NXP's counterclaims, or to the extent we cannot maintain the validity and enforceability of our patents, then we could see a material adverse effect on our business, results of operations or financial condition.

Patent litigation is complex and uncertain. We may or may not prevail in patent-related proceedings given the complexity and inherent uncertainties in patent litigation. our intellectual property could be weakened. If any pending or future proceedings result in an adverse outcome then we could be required to:

Table of Contents

- cease manufacturing, using or selling the infringing products, processes or technology;
- pay substantial damages for infringement;
- expend significant resources to develop noninfringing products, processes or technology;

Table of Contents

- license technology from the party claiming infringement, which license may not be available on commercially reasonable terms or at all;
- cross-license our technology to a competitor to resolve an infringement claim, which could weaken our ability to compete with that competitor; or
- pay substantial damages to our partners or end users for them to discontinue using, or replace, infringing products with noninfringing non-infringing products.

Even if we do prevail in patent-related proceedings, verdicts and judgments can be modified or even reversed by trial or appellate courts.

Many companies in our industry, as well as nonpracticing entities, hold patents and other intellectual property rights and may pursue, protect and enforce those intellectual property rights. We receive invitations to license patent and other intellectual property rights to technologies that could be important to our business. We also receive assertions against us, our partners and end users claiming we or they infringe patent or other intellectual property rights. If we decline to accept an invitation to license or to refute an asserted claim, then the offering or claiming party may pursue litigation against us.

Intellectual property disputes have adversely affected RAIN adoption in the past. As one example, in 2011, Round Rock Research filed lawsuits against 11 end users, including Walmart and Macy's, for RAIN-related patent infringement. Despite the subsequent availability of an industry-wide license, we believe those lawsuits adversely affected demand for our products from 2011 to 2019. The last of the licensed Round Rock patents expired in 2019. However, we, our partners, suppliers or end users could be involved in similar disputes in the future which could adversely affect our operating results and growth prospects.

Many of our agreements require us to indemnify and defend partners and end users from third-party infringement claims and pay damages in the case of adverse rulings. These damages could be sizable and disproportionate to the business we derive from those partners or end users. Moreover, we may not know whether we are infringing a third party's rights due to the large number of RAIN-related patents or to other systemic factors. For example, patent applications in the United States are maintained in confidence for up to 18 months after filing or, in some instances, for the entire time prior to patent issuance. Consequently, we may not be able to account for such rights until after a patent issues.

Intellectual property policies of industry standards organizations in whose working groups we participate could require us to provide royalty-free licenses of some of our intellectual property.

When participating in GS1, ISO, RAIN and other industry-standards organizations, it is a general policy that those who participate in developing a protocol or standard must license, either royalty-free or under reasonable and nondiscriminatory, or RAND, terms, intellectual property that is necessary to implement all or part of the protocol or standard. The standards body may require that the license be granted to members, as in the case of GS1, or to all parties, as in the case of ISO, that implement the protocol or standard.

As a participant in developing GS1 EPCglobal UHF Gen2, UHF Gen2 V2, tag data standards, low-level reader protocol and other GS1 EPCglobal protocols, we agreed to license to other GS1 EPCglobal members, on a royalty-free basis, those of our patents necessary to practice those protocols, subject to us receiving reciprocal royalty-free rights from the other GS1 EPCglobal member practicing the protocol. As a participant in developing ISO standards, we agreed to license on a RAND basis those of our patents necessary to practice those standards, subject to us receiving a reciprocal RAND license from the other entity practicing the standard.

Although the policies themselves seek to advance protocol or standards development, disputes can arise because it may not be clear whether certain intellectual property is necessary to practice a protocol or standard. Such uncertainty could complicate us asserting our not-necessary patents against others, or to use those patents in our own defense, thereby devaluing our intellectual property. Further, some GS1 EPCglobal members declined to

[Table of Contents](#)

license their intellectual property on royalty-free terms, instead retaining the right to license their technology on RAND terms. These members may choose to assert their intellectual property, in which case we will need to defend ourselves within the confines of the GS1 and ISO intellectual property policies.

We rely on third-party license agreements which, if impaired or terminated, could cause production or shipment delays that could harm our business.

We have license agreements with third parties for patents, software and technology we use in our operations and in our products. For example, we license tools from design-automation software vendors to design our silicon

[Table of Contents](#)

ICs. Third-party licenses for patents, software and other technology important to our business may not continue to be available on commercially reasonable terms or may not be available at all. Loss of any such licenses could cause manufacturing interruptions or delays or reductions in product shipments until we can develop, license, integrate and deploy alternative technologies, if even possible, which could harm our business and operating results.

Our use of open-source software may expose us to additional risks and weaken our intellectual property rights.

Our products, processes and technology sometimes use or incorporate software that is subject to an open-source license. Certain open-source licenses require a user who intends to distribute the open-source software as a component of

the user's software to disclose publicly part or all of the user's source code. In addition, certain open-source software licenses require the user of such software to make derivative works of the open-source software available to others at low or no cost. In addition, open-source Open-source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of their code, opening us to business risks that could materially harm our operating results.

We cannot guarantee that we have incorporated open-source software in a manner that is consistent with our policies and procedures relative to such open-source software, or in a manner that will not subject us to liability.

Risks Relating to Privacy and Cybersecurity

Privacy and security concerns relating to RAIN could damage our reputation and deter current or potential customers from using our products.

Privacy advocates and others have raised and may continue raising concerns about RAIN compromising consumer privacy or facilitating theft. These concerns include unauthorized parties potentially collecting personal information or personal data, tracking consumers, stealing identities or causing other issues relating to privacy or data protection. Any such incident could cause our or our partners' or end users' operations to be disrupted and subject us or them to regulatory investigations or proceedings and claims, demands or litigation; consequently, we could face potential liability and significant costs and expenses to remediate or otherwise respond to the incident. Any failure or perceived failure to comply with any privacy- or security-related laws, regulations or contractual or other obligations to which we are or may be subject may result in regulatory actions, claims or litigation; legal and other costs; substantial time and resources; and fines, penalties or other liabilities. Any actions or concerns about security and privacy may be expensive to defend, cause us to expend substantial time and resources and damage our reputation and operating results or could negatively impact overall RAIN industry development, even if unfounded.

We cannot be sure that any limitation-of-liability provisions in our customer and user agreements with customers, contracts with third-party vendors and service providers or other contracts are enforceable or adequate or would will protect us from any liabilities or damages against claims relating to a security breach or other privacy- or security-related issue.

Government regulations and guidelines and other standards relating to consumer privacy and cybersecurity may adversely impact adoption of our products, require us to make design changes or constrain our ability to implement new and desired product features, and actual or alleged violations of laws relating to privacy or information cyber security may result in claims, proceedings and liability.

Our partners and end users are subject to laws and regulations related to collecting, storing, transmitting and using personal information and personal data, as well as to additional laws and regulations that address privacy and security cybersecurity related to RFID in general. Because RAIN is a type of RFID, we believe these laws and regulations apply to RAIN.

The European Commission, or the EC, has issued guidance to address privacy concerns about RFID. In May 2009, the EC issued a recommendation that retailers in the EU inform their customers when RFID tags are either

[Table of Contents](#)

on or embedded within products. In April 2011 the EC signed a voluntary agreement with private and public entities to develop privacy guidelines for companies using RFID in the EU. Whereas compliance is voluntary, our partners and end users that do business in the EU prefer products that comply with the guidelines. If our products do not comply or enable compliance with the guidelines, then our business may suffer.

[Table of Contents](#)

More generally, the data security and privacy legislative and regulatory landscape in the United States, EU and other jurisdictions continues evolving. Aspects of key privacy laws and regulations—including the California Consumer Privacy Act of 2018, the California Privacy Rights Act, [similar privacy laws enacted in other states](#) and the [EU](#) General Data Protection Regulation—remain unclear as of the date of this report and continue evolving, potentially with far-reaching implications. Laws and regulations relating to privacy, data protection and security; related industry standards and guidelines; and continued evolution of these laws, regulations, standards, guidelines and other actual and asserted obligations, as well as their interpretation and enforcement, may require us to modify our products, practices and policies, which we may not be able to do on commercially reasonable terms or at all, and otherwise could cause us to incur substantial costs and expenses. Any failure or perceived failure by us or any third parties with which we do business to comply with these laws and regulations or other actual or asserted obligations may result in claims or litigation; actions against us by governmental entities; legal and other costs; substantial time and resources and fines, penalties or other liabilities. Any such actions may be expensive to defend, may incur substantial legal and other costs and substantial time and resources and likely would damage our reputation and adversely affect our business, financial condition and results of operations.

Additionally, if we fail to develop products that meet end-user privacy requirements, then end users may choose not to use our products.

Although the Gen2 V2 protocol includes features for addressing consumer privacy and authenticating a tag, and although we have incorporated custom features in our products to further protect consumer privacy, a third party may still breach these features, including as implemented in our products, in which case our reputation could be damaged and our business and prospects could suffer.

A breach of security or other security incident impacting our systems or others used in our business could have an adverse effect on our business.

We face risks of security breaches and incidents from a variety of sources including viruses, ransomware, hacking, malicious code, supply-chain attacks as well as social engineering or other employee or contractor negligence, malfeasance or unintentional acts. Accidental or willful security breaches or incidents, or unauthorized access to our facilities or information

systems, or to others used in our business, could compromise the security of those facilities or information systems and the confidentiality, integrity and availability of confidential, personal or proprietary information. These risks may be heightened in connection with geopolitical tensions and events.

The consequences of loss, unavailability, misuse, corruption or other unauthorized processing of confidential, personal or proprietary information could include, among other things, unfavorable publicity, reputational damage, difficulty marketing or selling our products, customer allegations of breach of contract, loss or theft of intellectual property, claims and litigation, governmental and regulatory investigations and other proceedings and fines, penalties and other damages and liabilities. Any of these consequences could have a material adverse effect on our business, financial condition, reputation and business relationships.

We rely on third-party services to store and process data on our behalf, and on third-party security systems in a variety of applications. Our platform operates in conjunction with, and depends on, third-party products, services and components for security. The cybersecurity threat environment continues to evolve considering the increase in remote work and evolving, especially with heightened activity by state-sponsored actors. If we, our platform, or any of the third parties on which we rely suffers or is believed to have suffered a security breach or incident, vulnerability, error, ransomware or malicious event, then we could face increased costs, claims, liability, reduced revenue and harm to our reputation.

We incur significant costs devote resources to detect and prevent security breaches and other security-related incidents. In the event of an actual or perceived security breach or incident we may need to expend significant resources to mitigate, notify third parties of, and otherwise address the breach or incident, its root cause and take steps to prevent further breaches or incidents. Our insurance may not adequately cover claims relating to an actual or perceived security breach or incident and any breach or incident may increase our insurance costs as well as reduce or eliminate the future availability of such insurance, harming our business and reputation.

[Table of Contents](#)

Risks Relating to Our Financial Position and Capital Needs

We have a history of losses and have only achieved profitability intermittently. We cannot be certain that we will attain or sustain profitability in the future.

We have incurred losses since our inception in 2000. Whereas we were profitable between 2013 and 2015, we had a net loss of \$24.3 million \$43.4 million for the year ended December 31, 2022 December 31, 2023, and an accumulated deficit of \$386.8 million \$430.2 million as of December 31, 2022 December 31, 2023. Our ability to attain or sustain profitability

depends on numerous factors, many of which are out of our control, including continued RAIN industry adoption and us maintaining or growing our market share. Our costs to support operations, product development and business and personnel expansion in sales, engineering and marketing are significant and are likely to increase as we invest to grow the market and our share of it, reduce our costs and improve our operations. If we fail to increase our revenue or manage our expenses, or if our investments in growing the market or our share of it fail, then we may not attain or sustain profitability.

We have a history of significant fluctuations in our quarterly and annual operating results.

Our history shows significant sales volatility and a limited ability to forecast sales. We anticipate that, for the foreseeable future, our visibility to future sales, including volumes and prices, will continue to be limited. That limited visibility may cause fluctuations in our operating results and differences between actual and expected quarterly or annual operating results.

Many factors, some outside our control, may cause or contribute to fluctuations in our quarterly and annual operating results. These fluctuations make financial planning and forecasting difficult. These fluctuations may also cause unanticipated decreases in our available cash, which could negatively affect our business and prospects. Material factors that contribute to fluctuations in our operating results include:

- macroeconomic conditions, including inflation, and recession or economic slowdown, and their impact on our business and that of our suppliers, partners and end users;
- fluctuations or delays in RAIN adoption and deployment by end users;
- changes in the pace or direction of major deployments, whether due to macroeconomic conditions or enterprise-specific events or circumstances, and our, or our partners', ability to win business from these deployments;
- fluctuations in demand for our products or platform, including by tag OEMs and other significant partners and end user: on whom we rely for a substantial portion of our revenue;
- fluctuations in the pricing and availability or supply of our products or key elements or components of those products, especially semiconductor wafers;
- degradations in product quality, whether due to us or our suppliers, including quality claims or product returns;
- delays in new-product introductions and in the maturity of our new-product technologies;
- decreases in selling prices for our products;
- delays in our product-shipment timing, customer or end-user sales or deployment cycles, or work performed under development contracts;
- intellectual property disputes involving us, our partners, end users or other participants in our industry;
- adverse outcomes of litigation or governmental proceedings;
- timing variability in product introductions, enhancements, services and technologies by us and our competitors as well as market acceptance of new or enhanced products, services and technologies;
- unanticipated excess or obsolete inventory as a result of significant demand fluctuations, supply-chain mismanagement, new-product introduction, quality issues or otherwise;
- changes in the amount and timing of our operating costs, including those related to expanding our business, operations and infrastructure;

Table of Contents

- changes in business cycles or seasonal fluctuations that affect the markets in which we sell;
- changes in industry standards or specifications, or changes in government regulations, relating to our products or our platform;

25

Table of Contents

- late, delayed or cancelled payments from our partners or end users; and
- unanticipated impairment of long-lived assets and goodwill.

A substantial portion of our operating expenses are fixed in the short term, and as a result, fluctuations in revenue or unanticipated expenses can have a material and immediate impact on our profitability and negatively affect our operating results, which could cause the price of our common stock to decline.

We may need to raise additional capital, which may not be available on favorable terms or at all.

In the future, we may need to raise additional capital, including pursuant to a shelf registration statement filed statements we may file from time to time with the SEC, potentially diluting our stockholders, restricting our operations or otherwise adversely affecting our business.

Debt financing, if available, may include covenants limiting or restricting our ability to take specific actions such as incurring additional debt, expending capital or declaring dividends, or may impose financial covenants that limit our ability to achieve our business objectives.

Our management has broad discretion in how to invest and spend our cash and cash equivalents and the proceeds from financings, including on capital expenditures, product development, working capital and other general corporate purposes. We may spend our cash and cash equivalents in ways that our stockholders may not agree with or that do not yield favorable returns.

If we need additional capital but cannot raise it on acceptable terms, if at all, then we may not be able to meet our business objectives, financial obligations or both. If we raise additional capital but do not deploy it effectively then our business, financial condition, results of operations and prospects could be harmed and the market price of our common stock could suffer.

Risks Relating to U.S. Federal Income Tax

Our ability to use net operating losses and research and development credits to offset future taxable income and income taxes may be limited.

As of December 31, 2022 December 31, 2023, we had federal U.S. net operating loss carryforwards, or NOLs, of \$249.3 million \$230.5 million and U.S. federal research and development credit carryforwards of \$22.3 million \$30.5 million, which we may use to reduce future taxable income or offset income taxes . taxes. We have established a valuation allowance against the carrying value of these deferred tax assets. The NOL U.S. federal NOLs and U.S. federal research and development credit carryforwards began expiring in 2020.

Under Sections 382 and 383 of the U.S. Internal Revenue Code, or the Code, a corporation that experiences a more-than 50% ownership change by one or more stockholders or groups of stockholders who own at least 5% of a company's stock over a three-year testing period is limited in its ability to use its pre-change NOLs and other tax assets to offset future taxable income or income taxes. If we undergo a future ownership change then our ability to use our NOLs and credit carryforwards could be limited by Sections 382 and 383 of the Code. Our NOLs may also be limited under state law. As a result of these limitations, we may not be able to utilize a material portion of, or possibly any of, the our NOLs and and/or credit carryforwards to offset reduce future taxable income or income taxes.

We could be subject to additional income tax liabilities.

We are subject to income taxes in the United States and certain foreign jurisdictions. During the ordinary course of business, we use significant judgment in evaluating our worldwide income-tax obligations and we conduct many transactions for which the ultimate tax determination is uncertain. Although we believe our tax determinations are proper, the final determination of any tax audits and any possible litigation could be materially different from our historical income-tax provisions and accruals. The results of an audit or litigation could have a material effect on our operating results or cash flows in the period or periods for which that determination is made.

[Table of Contents](#)

Changes in tax laws could have a material adverse effect on our business, cash flow, results of operations or financial conditions.

We are subject to tax laws, regulations and policies of several taxing jurisdictions. Changes in tax laws, as well as other factors, could cause us to experience fluctuations in our tax obligations and effective tax rates and otherwise adversely affect our tax positions and/or and results of our tax liabilities. operations. For example, in August 2022, as part of the Inflation Reduction Act of 2022, the United States enacted a 1% excise tax on stock buybacks and a 15% alternative minimum tax on adjusted financial statement income as part income. Additionally, beginning in 2022, the Code eliminated the right to deduct

research and development expenditures and instead requires taxpayers to capitalize and amortize U.S. and foreign research and development expenditures over five and 15 tax years, respectively. We have accounted for these changes in accordance with our understanding of the Inflation Reduction Act guidance available as of 2022, the date of this filing and as described in more detail in our financial statements.

26

Table of Contents

The U.S. CHIPS and Science Act, enacted August 9, 2022, provides tax credits for semiconductor manufacturing activities within the United States, but because we outsource our semiconductor manufacturing we do not expect to be entitled to these tax credits.

Many countries, as well as organizations such as the Organization for Economic Cooperation and Development, have proposed changes to existing tax laws, including a proposed 15% global minimum tax. Any of these developments or changes in U.S. federal, state or international tax laws or tax rulings could adversely affect our effective tax rate and our operating results. There can be no assurance that our effective tax rates, tax payments or tax credits and incentives will not be adversely affected by these or other developments or changes in law.

Taxing authorities may successfully assert that we should have collected or in the future should collect sales and use, value-added or similar taxes.

We do not collect sales and use, value-added or similar taxes in all jurisdictions in which we have sales, based on our belief that such taxes are either not applicable or an exemption from such taxes applies. Certain jurisdictions may assert that such taxes are applicable, which could result in tax assessments, penalties and interest, and we may be required to collect such taxes in the future, including as a result of a change in law. Such tax assessments, penalties and interest or future requirements may negatively affect our operating results.

Risks Relating to Our Financial Reporting and Disclosure

Any failure to maintain an effective system of disclosure and internal controls over financial reporting, or our ability to produce timely and accurate financial statements, could adversely affect investor confidence in us.

As a public company, we must maintain effective disclosure controls and procedures and internal control over financial reporting. Effective internal controls are necessary for us to provide reliable financial reports and prevent fraud.

Any failure to implement and maintain effective disclosure controls and procedures and internal control over financial reporting, including identifying material weaknesses, could cause investors to lose confidence in the accuracy and completeness of our financial statements and reports, which could adversely affect the market price of our common stock. We could also be subject to sanctions or investigations by The Nasdaq Stock Market, the SEC and other regulatory authorities.

We have incurred, and in the future will incur, high costs associated with being a public company.

We have incurred significant legal, accounting and other costs associated with public-company reporting requirements. We ceased to be an “emerging growth company” on December 31, 2021, and are no longer eligible for the reduced disclosure

requirements and exemptions applicable to “emerging growth companies.” Our loss of this status has required additional management attention and increased our costs, including legal, accounting and investor-relations-related costs. We cannot predict or accurately estimate the additional costs we are likely to incur from being a public company or the timing of these costs.

We have and will continue to incur costs associated with accepted corporate governance requirements, including those of the SEC and The Nasdaq Global Select Market. We expect those governance requirements to lead to ongoing legal and financial costs and make some activities more time consuming and costly. They may also increase the difficulty and expense for us to obtain director and officer liability insurance. Although we monitor developments with respect to those requirements, we cannot predict or accurately estimate the additional costs we are likely to incur or the timing of these costs.

Risks Relating to Owning or Trading Our Securities

The market price of our common stock has been and will likely continue to be volatile, and the value of your investment could decline significantly.

The trading price of our common stock has fluctuated and is likely to continue to fluctuate substantially. The following factors, in addition to general risks and other risks described in this report, may have a material effect on the trading price of our common stock:

27

Table of Contents

- price and volume fluctuations in the overall stock market;
- changes in operating performance, stock market valuations and volatility in the market prices of other technology companies generally, and of those in our industry in particular;

29

Table of Contents

- actual or anticipated quarterly variations in our results of operations or those of our competitors;
- actual or anticipated changes in our growth rate relative to our competitors;
- delays in end-user deployments of RAIN solutions;
- announcements by us or our competitors of acquisitions, new products, significant contracts, commercial relationships or capital commitments;

- supply interruptions, including semiconductor wafer or other product or component shortfalls;
- developments relating to intellectual property rights or in disputes relating to those rights;
- our ability to develop and market new and enhanced products on a timely basis;
- commencement of, or our involvement in, litigation;
- changes in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- unstable political and economic conditions, including instability resulting from wars and other armed conflicts, such as Russia invading Ukraine; those in Ukraine and the Gaza Strip, or geopolitical tensions, such as those between the U.S. China and Taiwan;
- the trading volume of our stock;
- actual or perceived security breaches; breaches or incidents;
- limited public float;
- any future sales of our common stock or other securities;
- financial analysts dropping or reducing their coverage of us; changes in financial estimates by analysts who do cover us or our failure to meet analyst estimates or investor expectations;
- fluctuations in the values of companies that investors perceive to be comparable to us;
- the financial projections we may provide to the public, as well as any changes in those projections or our failure to meet those projections; and
- general economic conditions and slow or negative growth in the markets in which we operate.

Technology stocks like ours have experienced extreme price and volume fluctuations, often unrelated or disproportionate to the company's underlying operating performance. Stock price volatility can cause stockholders to institute securities class-action litigation or stockholder derivative litigation, as occurred to us between 2018 and 2020. If any of our stockholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management, harm our operating results and negatively impact the trading price of our common stock.

Transactions relating to the 2021 Notes may affect our stock's value.

If the 2021 Notes are converted by holders, then we are entitled to deliver cash, stock or any combination of cash or stock, at our election. If we elect to deliver stock, the ownership interests of our existing stockholders will be diluted, and public market sales of stock issued upon a conversion could decrease our stock price. Anticipated future conversions of the 2021 Notes into stock could also decrease our stock price, as could short selling by holders of the 2021 Notes to hedge their positions.

In December 2019, we issued convertible senior notes due December 15, 2026, or the 2019 Notes. When we did so we entered into privately negotiated capped-call transactions with financial counterparties to mitigate the dilutive impact on the Company above a given stock price. We left those capped-call transactions intact after we acquired the remainder of the outstanding 2019 Notes in June 2022. From time to time, the financial counterparties

Table of Contents

to the capped calls may modify their hedge positions by entering into or unwinding various derivative transactions involving our stock or by purchasing or selling our stock or other securities of ours in secondary market transactions prior to the maturity of the capped calls. This activity could cause a decrease in our stock price.

Table of Contents

For more information on the 2019 Notes, the 2021 Notes and the capped-call transactions, see Note 68 of our consolidated financial statements included elsewhere in this report.

Our principal stockholders and management own a significant percentage of our stock and are able to exercise significant influence over matters subject to stockholder approval.

As of December 31, 2022 December 31, 2023, our executive officers, directors and principal stockholders, together with their respective affiliates, beneficially owned approximately 22.0% 55.7% of our stock. As a result, our executive officers, directors and principal stockholders may be able to significantly influence, in their capacity as stockholders, matters requiring approval by our stockholders, including electing directors and approving mergers, acquisitions or other transactions. They may have interests that differ from yours and may vote in a way with which you disagree and which may be adverse to your interests. This ownership concentration could have the effect of delaying or preventing a change in our control or otherwise discouraging a potential acquirer from attempting to obtain control of us, which in turn could have a material adverse effect on our stock price. This ownership concentration could also prevent attempts by our stockholders to replace or remove our board of directors or management.

We may not have sufficient cash flow or access to cash necessary to satisfy our obligations under the 2021 Notes, and our current and future indebtedness may restrict our business.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance any current or future indebtedness, including the 2021 Notes, or to make cash payments in connection with any conversion of the 2021 Notes or upon any fundamental change if holders require us to repurchase their 2021 Notes for cash, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not generate sufficient future cash from operations to service our indebtedness and make necessary capital expenditures. If we are unable to generate sufficient cash flow, then we may be required to pursue other alternatives, such as selling assets, restructuring indebtedness or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to

refinance any of our indebtedness, including the 2021 Notes, will depend on the capital markets and our financial condition at that time. We may not be able to pursue these alternatives on favorable terms or at all, which could result in us defaulting on our debt obligations.

Our existing and future indebtedness could have important consequences to our stockholders and significant effects on our business. For example, it could:

- make it more difficult for us to satisfy our debt obligations, including the 2021 Notes;
- increase our vulnerability to general adverse economic and industry conditions;
- require us to dedicate a substantial portion of our cash flow from operations to payments on our indebtedness, thereby reducing the cash available to run our business;
- limit our flexibility in planning for, or reacting to, changes in our business or in our industry;
- restrict us from exploiting business opportunities;
- place us at a competitive disadvantage compared to our competitors that have less indebtedness; and
- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions, debt service requirements, executing our business strategy or for other purposes.

Anti-takeover provisions in our charter documents and under Delaware or Washington law could prevent, delay or impede an acquisition of us and constrain our stock price.

Provisions of our certificate of incorporation and our bylaws may delay or discourage transactions involving an actual or potential change in our control or **change** in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. These provisions could therefore adversely affect our stock price. Among other things, our certificate of incorporation and bylaws:

Table of Contents

- permit our board of directors to issue up to 5,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution of the board of directors;

Table of Contents

- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes, each of which stands for election once every three years (subject to gradual declassification beginning at the 2021 annual meeting of stockholders, such that our board of directors will be fully declassified beginning at the 2023 annual meeting of stockholders);
- restrict the forum for certain litigation against us to Delaware;
- require that any action taken by our stockholders be effected at a duly called annual or special meeting of stockholders and not by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and also specify requirements as to the form and content of a stockholder's notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any uncontested election of directors to elect all of the directors standing for election, if they should so choose); and
- provide that special meetings of our stockholders may be called only by the chair of the board, our chief executive officer or the board of directors.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which generally prohibits a Delaware corporation from engaging in any of a broad range of business combinations with any “interested” stockholder for a period of three years following the date on which the stockholder became an “interested” stockholder. Likewise, because our principal executive offices are located in Washington, the anti-takeover provisions of the Washington Business Corporation Act may apply to us under certain circumstances now or in the future. These provisions prohibit a “target corporation” from engaging in any of a broad range of business combinations with any stockholder constituting an “acquiring person” for a period of five years following the date on which the stockholder became an “acquiring person.”

Our bylaws include provisions that could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our bylaws provide that, unless we otherwise consent in writing, the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf; any action asserting a breach of fiduciary duty; any action asserting a claim against us arising pursuant to the Delaware General Corporation Law, our certificate of incorporation or our bylaws; or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of forum provision may limit stockholders' ability to bring a claim in a judicial forum favorable for disputes with us or our directors, officers or other employees, which may discourage such lawsuits against us and our directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in our bylaws to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

Item 1B. Unresolved Staff Comments

Not applicable.

Risk Management and Strategy

We have established policies and processes for assessing, identifying and managing material cybersecurity risks, and have integrated these processes into our overall risk-management processes. We have also established policies and processes for managing and responding to material cybersecurity incidents.

We routinely assess material cybersecurity risks, including potential unauthorized occurrences on, or conducted through, our information systems that may compromise the confidentiality, integrity or availability of those systems or information maintained in them. We conduct periodic risk assessments to identify cybersecurity threats, as well as assessments when there is a material change in our business practices that we believe could affect information systems that are vulnerable to cybersecurity threats. These risk assessments include identifying

[Table of Contents](#)

reasonably foreseeable internal and external risks and the potential harm if the risks were to materialize. We conduct these risk assessments directly and also engage third parties to support these processes.

Following these risk assessments, we evaluate how to appropriately implement and maintain reasonable safeguards to mitigate identified risks; reasonably address any identified gaps in existing safeguards; and regularly monitor the effectiveness of our safeguards. We devote significant resources and designate members of our management, including our VP, IT and Facilities, or VP IT, who reports to our Chief Financial Officer, and our Senior Information Security Manager, or Senior ISM, to manage the risk assessment and mitigation process. We also engage third parties to help us design and implement our cybersecurity systems, as well as monitor and test our safeguards. As part of our overall risk management, we collaborate cross-functionally to monitor and test our safeguards and to train our employees on cybersecurity risks and safeguards. We include employees at all levels and departments, and all contractors, in our cybersecurity training programs.

We require appropriate third-party service providers to certify that they can implement and maintain appropriate security measures, consistent with all applicable laws, in connection with their work for us, and to promptly report any suspected breach of their security measures that may affect our company. We oversee and identify risks from cybersecurity threats associated with our use of service providers through an onboarding vendor risk management program, including an inherent risk assessment.

We have not, to date, experienced a cybersecurity incident which was determined to be material, although, like any technology provider, we have experienced incidents in the past. For additional information regarding whether any risks from

cybersecurity threats are reasonably likely to materially affect our company, including our business strategy, results of operations, or financial condition, please refer to Item 1A, “Risk Factors,” in this annual report on Form 10-K, including the risk factors under the heading entitled “Risks Relating to Privacy and Cybersecurity.”

Cybersecurity Governance

One of the key functions of our board of directors is informed oversight of our risk management process, including risks from cybersecurity threats. Our board of directors is responsible for monitoring and assessing our strategic risk exposure, and our executive officers are responsible for day-to-day management of the material risks we face. Our board of directors administers its cybersecurity risk-oversight function as a whole, as well as through the audit committee.

Our VP IT and Senior ISM are responsible for assessing and managing material risks from cybersecurity threats, as well as managing and responding to material cyber incidents if any occur. Our VP IT has a bachelor’s degree in management information systems and more than 25 years experience managing enterprise information-technology systems and resources. Our Senior ISM has an undergraduate degree in management information systems, an MBA and multiple professional cybersecurity certifications, has specialized in cybersecurity for more than a decade and is focused primarily on cybersecurity.

Our VP IT and Senior ISM will provide periodic briefings to the audit committee and to the board of directors about our cybersecurity risks and activities, including cybersecurity incidents and responses, cybersecurity systems testing, third-party activities and related topics. In addition, our policies for managing and responding to cybersecurity incidents include procedures for appropriate escalations to our Chief Compliance Officer and to our audit committee chair.

Item 2. Properties

We have several operating leases for office space, summarized as of December 31, 2022 December 31, 2023 in the table below. We believe that our facilities are adequate for our current needs.

Location	Principal Lease			Purpose	Approximate Square Feet	Principal Lease Expiration Dates
	Purpose	Square Feet	on			
Seattle, Washington	Corporate headquarters	109,000	2026	Corporate headquarters	70,000	2026
Seattle, Washington	Design laboratory	11,000	2024	Design laboratory	29,000	2029

Seattle, Washington	Design laboratory	29,000	2029			
Shanghai, China	General office space	4,000	2023		4,000	2025
Helsinki, Finland	Voyantic office space				7,000	2027

Table of Contents

In addition, we hold a lease for approximately 39,000 square feet of commercial office space in Seattle, Washington that expires in 2023. We have sublet the entirety of this office space through the expiration date. We also lease offices in Thailand, Malaysia, Brazil and Malaysia. San Diego, California. For more information about our lease commitments, please refer to Note 10 11 to our consolidated financial statements included elsewhere in this report.

Item 3. Legal Proceedings

In the normal course of business, we may be named as a party to various legal claims, actions and complaints. We cannot predict whether any resulting liability will have a material adverse effect on our financial position, results of operations, cash flows, market position or stock price.

Patent Litigation

We are engaged in multiple patent lawsuits with subsidiaries of NXP N.V., or NXP, our primary endpoint IC competitor. On June 6, 2019, we filed a patent infringement lawsuit against a competitor, an NXP subsidiary, NXP USA Inc., and on October 4, 2019, NXP USA, Inc. and its parent NXP Semiconductors N.V. Netherlands, B.V., or NXP Netherlands, filed a patent infringement lawsuit against us. Both On May 25, 2021 and August 11, 2023 we and NXP subsequently filed additional lawsuits against each other. The outcome of this patent litigation remains uncertain, and we may file two additional lawsuits against NXP, USA Inc. and/or its parent and NXP Netherlands. Several of these lawsuits have gone to trial and had verdicts rendered, but pending post-trial motions and appeals make the final outcome of our patent dispute with NXP uncertain. We

may still file additional lawsuits against NXP or they may file additional lawsuits against us. For further information on these lawsuits, please refer to Note 11 12 of our consolidated financial statements included elsewhere in this report.

Item 4. Mine Safety Disclosures

Not applicable.

31 34

[Table of Contents](#)

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock has traded on The Nasdaq Global Select Market under the symbol "PI" since July 21, 2016.

Holders of Record

As of February 3, 2023 February 2, 2024, there were 33 holders of record of our common stock. The actual number of holders is greater than the number of holders of record and includes stockholders who are beneficial owners but whose shares are held in street name by brokers and other nominees. The number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Dividends

We have never declared or paid a cash dividend on our common stock. We currently intend to apply our available funds and any future earnings to developing and growing our business. We therefore do not anticipate paying any cash dividends on our common stock for the foreseeable future. In addition, future debt instruments, if any, may materially restrict our ability to pay dividends on our common stock. Any future determination to pay dividends on our common stock will depend at least on our results of operations, financial condition and liquidity requirements, restrictions that may be imposed by applicable law or by contracts and any other factors that our board of directors may consider relevant.

Performance Graph

This performance graph shall not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, (the “Exchange Act”), or the Exchange Act, or incorporated by reference into any filing of Impinj, Inc. under

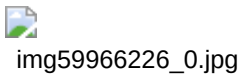
Table of Contents

the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

The following performance graph compares our the cumulative total stockholder return on of our common stock with versus the NASDAQ Composite Index and the Philadelphia Semiconductor Index.

This graph assumes that the investment in our common stock and in each index was \$100 on December 31, 2017, and assumes dividend reinvestment, if any. The stock price performance shown on in the graph below is not indicative of future stock price performance.

Table of Contents



Securities Authorized for Issuance Under Equity Compensation Plans

For more information on securities authorized for issuance under our equity compensation plans, see Note 89 and Note 9 10 of our consolidated financial statements included elsewhere in this report.

Unregistered Sales of Equity Securities

None.

Use of Proceeds

None.

Repurchases

None.

Item 6. [Reserved]

[Table of Contents](#)

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

You should read the following discussion and analysis together with our consolidated financial statements and the related notes to those statements included elsewhere in this report. This discussion contains forward-looking statements that involve risks and uncertainties. As a result of many factors, such as those set forth under "Risk Factors" and elsewhere in this report, our actual results may differ materially from those anticipated in these forward-looking statements.

Overview

Our We envision a world in which every item that enterprises manufacture, transport and sell, and that people own, use and recycle, is wirelessly and ubiquitously connected to the cloud. And a world in which the ownership, history and linked information for every one of those items is seamlessly available to enterprises and people. We call our expansive vision is a boundless Boundless Internet of Things, or IoT. We IoT, and we are driving a future in which everyday physical items are wirelessly connected well on our way to digital counterparts, or digital twins, in the cloud, and in which businesses and people access information about an item from its digital twin. realizing it.

Our mission is to connect every thing. We deliver a platform that powers item-to-cloud connectivity, and on which solution providers innovate IoT whole products.

Today, we deliver the identity, location and authenticity of billions of physical items. We believe our future is extending that delivery to trillions of physical items and enabling ubiquitous access to cloud-based digital twins of those items, each storing an item's ownership, history and links. We believe the item connectivity that our platform will deliver enhances businesses efficiencies and commerce and, ultimately, improve peoples' lives.

Our platform, which comprises multiple product families, wirelessly connects individual items and delivers data about the connected items to business and consumer applications. We link the products within our platform to deliver capabilities and performance that surpasses mix-and-match solutions built from competitor products.

We and our partners connect the items via a miniature radio chip embedded in the item or in its packaging, reading and delivering each item's identity, location and authenticity. To date, we have enabled connectivity to more than 75 billion items, enabling businesses and consumers to derive timely information from those connected items.

Our platform uses RAIN, use a type of radio-frequency identification, or RFID, technology known as RAIN for the ubiquitous, wireless item-to-cloud connectivity. We sell a suite of products that we pioneered. and our partner ecosystem use to connect and deliver item data to enterprises. We spearheaded development of the RAIN radio standard, lobbied

governments to allocate frequency spectrum and cofounded the RAIN Alliance that today has have enabled connectivity for more than 150 member companies. Our industry uses free spectrum in 81 countries encompassing roughly 95% 95 billion items to date, delivering item visibility and improving operational efficiencies for retailers, supply chain and logistics, or SC&L, providers, restaurants and food-service providers, airlines, automobile manufacturers, healthcare companies and many more.

We are today focused on extending item connectivity from tens of the world's GDP. billions to trillions of items, and delivering item data not just to enterprises but to people, so they too can derive value from their connected items. We believe RAIN's capabilities – the Boundless IoT we are enabling will, in particular, the not-too-distant future, give people ubiquitous access to cloud-based digital twins of every item, each storing the item's history and linked information and helping people explore and learn about the item. We believe that that connectivity will transform the world.

We and our partner ecosystem build item-visibility solutions using products that we design and either sell or license, including silicon RAIN radios; manufacturing, test, encoding and reading systems; and software and cloud services. Our platform comprises our products and supporting partner ecosystem. Our products include endpoint ICs that store a serialized number to wirelessly identify an item; reader ICs that our partners use in finished readers to wirelessly discover, inventory and engage endpoint ICs; manufacturing, test and encoding systems that enable partner products and facilitate enterprise deployments; finished readers and gateways for autonomous reading solutions; and software and cloud services for solutions enablement. We sell our products, either individually or as a whole platform offering, primarily with serialized identifiers for individual items, battery-free operation, 30-foot range, not line-of-sight readability, up to 1,000 reads per second, low cost, essentially unlimited life and available cryptographic authentication – position RAIN to be the leading item-to-cloud connectivity technology for the IoT. or through our partner ecosystem.

Factors Affecting Our Performance

Inventory Supply

From time Most of our revenue derives from endpoint ICs that our partners embed into or onto enterprise items and is therefore affected by macroeconomic trends. Further, we sell most of our products, both endpoint ICs and systems, through partners and distributors, limiting our visibility to time, enterprise demand. We work closely with those partners and distributors to gain as accurate a view as possible, however, correctly forecasting demand for our products and identifying market shifts in a timely manner remains a challenge. As a result, we sometimes experience inventory overages or shortages, either due to us misestimating customer or end-user demand; insufficient manufacturing capacity or product availability; market fluctuations; competitive product availability; macroeconomic fluctuations; changes in regulations or tariffs; or for a host of other reasons. These inventory dynamics can impact some or all of our products. High inventory levels shortages. Inventory overages can increase expenses, cause expose us to product obsolescence and/or increase increased reserves and negatively affecting affect our business. Low inventory levels Inventory shortages can cause lengthened long lead times, missed opportunities, market-share loss losses and/or damaged customer relationships, also negatively affecting our business. For example, in

In 2021 and 2022, we experienced IC wafer shortages relative to our needs because of high worldwide demand for foundry capacity. our endpoint ICs increased while worldwide wafer demand also increased, leading to wafer shortfalls for many semiconductor companies, including us. These shortages wafer shortfalls prevented us from fully meeting customer

demand and, in some cases, caused customers to cancel orders, qualify alternative suppliers or purchase from our competitors. In 2023, macroeconomic conditions led to softness in demand and inventory overages.

*In 2020, during the Covid-19 economic downturn, we built endpoint IC inventory. Beginning in fourth-quarter 2020, demand for our endpoint ICs increased dramatically. Worldwide wafer demand also increased dramatically, leading to wafer shortfalls in many industries, including ours. In first-quarter 2021, we consumed the inventory we built in 2020 at a pace that exceeded our first-quarter 2021 supply Product Adoption and post-processing capacity. In the second and third quarters, we moderated our sales and inventory burndown, stretching our IC supply but constraining our ability to fully capitalize on the increasing endpoint IC demand, while we also expanded and*Unit

Growth Rates

34 Enterprises have significantly adopted RAIN in retail apparel, our largest market, and SC&L, but the rate of adoption and unit growth rates have been uneven and unpredictable. From 2010 to 2023, our overall endpoint IC

[Table of Contents](#)

matured our post-processing capacity. Despite that moderation, by end sales volumes increased at a compounded annual growth rate of third-quarter 2021 26%; however, we had mostly consumed our prebuilt inventory and demand for our endpoint ICs continued to exceed our ability to supply.

In 2022, wafer shortfalls in our process nodes continued, preventing us from fully capitalizing on our demand in every quarter of 2022. Although we did receive wafer upsides from our foundry partner that supported sequential increases have experienced declines in endpoint IC revenue each quarter, demand exceeded supply throughout the year. And because many of those upside wafers were 200mm rather than 300mm, we transitioned some customers back from our 300mm M700 family to our prior-generation 200mm Monza R6 product family, despite M700 being our primary market demand. In fourth-quarter 2022, our foundry partner signaled improving wafer supply. Regardless, we anticipate taking until at least second-half 2023 to begin building a sustainable level of endpoint IC finished goods inventory.

Throughout 2022 we were also unable to obtain enough reader components to meet reader market demand. Although component availability is starting to improve, some components remain stubbornly tight, and we expect that tightness to persist at least into first-half 2023. For reader ICs, we previously experienced long packaging lead times for our Indy reader ICs and testing delays for our new E-family reader ICs. The Indy lead times and E-family testing stabilized in second-half 2022.

In 2022 we saw cost increases for our endpoint IC wafers and for all systems products, which caused us to raise prices and potentially negatively impact our market competitiveness. Overall, the supply, packaging and test shortfalls, as well as

cost increases, may decrease sales and cause market-share losses if our partners and end users buy competing products over ours, or choose to not deploy at all, negatively impacting our operating results and prospects.

Investing for Growth

We have invested in, and plan to continue investing in, research and development to enhance and extend our platform, including enhancing existing products, introducing new products and advancing the unique capabilities and features our platform enables. Although we sell our products into many end markets, relying significantly on our partner channel, we are today focusing particular attention on retail self-checkout and loss prevention and SC&L package tracking.

Most of our investments precede any sales benefits from the investments and, in some instances, we may never see any benefit if the market is not receptive to our approach, our product development is late or fails, or for other reasons. We sometimes enter into arrangements with end users, suppliers or partners for them to fund part of our investment, but even in those instances the investment results remain uncertain, and in some cases we may be required to refund the investment if the development is unsuccessful or the market opportunity fails to materialize. In some instances, we delay or cancel investments without or until we obtain such funding. The outcome of an investment is almost always uncertain, and if our results do not meet expectations then our operating results, profitability and stock price may be adversely affected.

While our long-term plan to invest for growth remains unchanged, Covid-19 and a weaker global economy has introduced new uncertainty to our business. We will continue to monitor the impacts of both on our supply chain, market and opportunities and adjust our investment strategy as appropriate.

Market Adoption

Our financial performance depends on the pace and scope of end-user adoption of our products in multiple industries, especially in retail apparel, which is our largest market. Covid-19 had a materially adverse impact on the retail industry, initially by shifting consumer shopping away from physical stores, then causing post-Covid supply shortfalls and retailer over-ordering and, in early 2023, inventory corrections at many retailers. Despite these retail macro trends, for the most part retail demand for our products exceeded our supply throughout 2022. Covid-19 also impacted other markets that use RAIN. For example, aviation, which had proposed widespread luggage tagging, saw delayed adoption. By contrast, SC&L experienced markedly increased shipment volumes which positively impacted adoption. Regardless, for the most part across all these industries, and for most of our products, demand exceeded supply throughout 2022.

Given the uncertainties in our market and product supply, the negative impacts of our insufficient 2022 supply and end user perceptions of the risks associated with insufficient supply, we cannot be certain that RAIN adoption will continue; that we will have appropriate product inventory; that we will not experience future product inventory shortfalls or overages; or that Covid-19 and a weaker global economy will not materially impact our

Table of Contents

business going forward. We also cannot be certain we will be able to maintain or grow our market share for any of our products, whether because of insufficient inventory, Covid-19, competitors copying our products, insufficient wafer or other

product supply, competition generally or for a host of other reasons, many of which are outside our control. during various periods.

Regardless of the uneven pace of retail, SC&L and other industry adoption and growth rates, we believe the underlying, long-term trend is continued RAIN adoption and growth and we intend to continue investing in developing new products. In products and expanding our endpoint IC business, in 2020 we introduced product offerings for the Impinj M700 family, with significant performance advantages over other endpoint ICs on the market. We continue expanding the M700 family, for example with our introduction of the M780 and M781 in November 2022. In our systems business, in 2020 we introduced the Impinj R700 reader and in 2021 our Impinj E-family reader ICs, both of which likewise offer significant performance advantages over other readers and reader ICs on the market and for which we continue expanding the product families. Regardless, market adoption could be impacted by product availability—see the discussion of product availability under “Inventory Supply”.

We sell our products primarily through partners and distributors and therefore have limited visibility to end-user demand. Consequently, we may incorrectly forecast that demand or not identify market shifts in a timely manner, potentially adversely affecting our business. If RAIN market adoption, and adoption of our products specifically, does not meet our expectations, or if we are unable to meet partner or end-user volume or performance expectations, because of the impact of Covid-19, supply-chain disruption, macroeconomic conditions or otherwise, then our operating results and growth prospects will be adversely affected. If we reduce prices to win opportunities, then our gross margins may be negatively affected. In contrast, if our endpoint IC, reader IC, reader or gateway sales exceed expectations, then our revenue and profitability may be positively affected.

Timing and Complexity of End User Deployments

From 2010 to 2022, our endpoint IC sales volumes increased at a compounded annual growth rate of 26%. foreseeable future. However, the pace has been uneven and unpredictable. For example, our endpoint IC unit sales volumes increased significantly in 2016, declined in second-half 2017 and in first-half 2018, returned to growth in second-half 2018 and in 2019 (the latter albeit not at the same pace as in 2016), declined again in second- and third-quarter 2020 due to Covid-19, and recovered in fourth-quarter 2020, in 2021 and in 2022. We expect short-term demand to remain unpredictable in scope and timing. Longer term, we believe our endpoint IC opportunity will continue to grow, but we cannot predict whether historical annual growth rates are indicative of the pace of future growth.

Our systems business, at least for our readers and gateways, is impacted by depends significantly on large-scale deployments at discrete end users. The users, and deployment timing of those causes large deployments causes large yearly variability in our systems revenue. For example, we generated 14% of total 2019 revenue from a gateway deployment at a large North American SC&L provider in connection with a project-based gateway deployment. provider. We did not have comparable new project-based revenue in 2020. As another example, Similarly, in second-quarter 2021, we generated 13% of our quarterly revenue from a project-based gateway deployment for RAIN-based self-checkout and loss prevention at a large European-based Europe-based global retailer. We did not have comparable project-based revenue in 2022 or 2023.

Finally, although we promote our platform as an integrated offering, we sell our products individually, Seasonality and end users often use only certain of our products. For any given end-user solution, whether an end user chooses to deploy our entire platform or only a portion will also affect our operating results.

Average Selling Price

Our product ASPs fluctuate based on competitive pressures and the discounting we offer to win opportunities, but generally decline over time. Historically, we have been able to compensate these ASP declines by reducing the per-unit cost of most of our products, by reducing supplier costs and implementing manufacturing and quality improvements, as well as by introducing newer and lower-cost products, but the timing of these cost reductions and new-product introductions fluctuates and may not materialize in any given quarter or year. In second-half 2021, due to wafer and component supply shortfalls at many of our suppliers, we began experiencing increasing rather than decreasing costs for both endpoint ICs and systems. In 2022, we raised prices to offset the impact of those increased costs. Many of our vendors and subcontractors have signaled future price increases, including our wafer foundry partner. Such increases, if or when they occur, could cause us to pass the higher costs to our customers. If we are unable to successfully increase our prices or if our customers choose competitors' products due to our higher prices, then our product margins, operating results or both may suffer. In the near term, we expect product margins to be volatile based on product mix and the timing of our price changes.

Table of Contents

Seasonality Pricing

We typically renegotiate negotiate pricing with most of our endpoint IC OEMs with an effective date of the first quarter of the calendar year, reducing year. In the past, this negotiation typically resulted in reduced revenue and gross margins in the first quarter compared to prior periods. Historically, the impact tends to decline periods, which then normalized in subsequent quarters as we reduce reduced costs and to the extent we can migrate our partners adjusted product mix by migrating those OEMs and end users to newer, lower-cost products, adjust product mix. products.

Endpoint IC volumes also tend to be historically lower in the fourth quarter than in the third quarter. We did not see these historical trends in 2022 and may not see them in 2023.

System sales tend to be stronger higher in the fourth quarter of the calendar year, and less strong lower in the first quarter. We quarter, we believe this seasonality is due to the availability of residual funding for capital expenditures prior to the end of many end users' fiscal years. Like for our endpoint ICs, we

We did not see these historical seasonal trends in 2022 or 2023 and may not see them in 2023.

While, over the long term, we 2024. Whether and when these trends will return is not clear. We do expect these seasonal trends to continue, continued quarter-to-quarter revenue variability from factors including supply uncertainty, deployment timing, competitor products and supply-chain disruptions can all mask seasonality in any given period. These variabilities, as well as other risks and uncertainties, including but not limited due to the impacts of Covid-19, can cause our actual results to differ significantly from our expectations, as described in greater detail in the sections of this report captioned "—Covid-19" and in Part I, Item 1A (Risk Factors).

Covid-19

We are actively monitoring and mitigating the impacts of Covid-19 in all aspects of our business, including for our employees, suppliers, partners and end users.

In 2021 and 2022, as the worldwide economy began recovering from the downturn caused by Covid-19, demand for all our products increased. Unfortunately, at the same time, we experienced supply constraints and higher costs that limited our ability to fully capitalize on the increased demand, as discussed above.

Given the ongoing uncertainty over Covid-19's epidemiological, economic and operational impacts we cannot reasonably estimate the extent or duration of Covid-19's continuing impact on our business. The extent to which Covid-19 impacts our future results will depend on developments that are inherently unpredictable, including the emergence of new Covid-19 variants and actions we and others take in response to Covid-19.

For more information on Covid-19's impact on our business, please refer to Part I, Item 1A (Risk Factors) of this report. [changing macroeconomic conditions.](#)

Results of Operations

(in thousands, except percentages)	Year Ended December 31,			2022 vs 2021	2021 vs 2020	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change
Revenue	\$ 0	\$ 3	\$ 3	\$ 17	\$ 60	\$ 307,539	\$ 257,800	\$ 190,283	\$ 49,739	\$ 67,517
Gross profit	\$ 4	\$ 4	\$ 0	\$ 30	\$ 14	\$ 151,982	\$ 137,884	\$ 98,954	\$ 14,098	\$ 38,930
Gross margin	5%	0%	9%	5%	1%	49.4%	53.5%	52.0%	(4.1)%	1.5%

	(1	(3	(4								
	9,	7,	7,								
Loss from	4	2	0	17	9,						
operation	7	4	7	,7	82						
s	\$ 9)	\$ 9)	\$ 1)	\$ 70	\$ 2	\$ (43,484)	\$ (19,479)	\$ (37,249)	\$ (24,005)	\$ 17,770	

Year ended December 31, 2023 compared with year ended December 31, 2022

Revenue and gross profit increased, due primarily to higher endpoint IC and systems revenue. The endpoint IC revenue increase was driven primarily by higher shipment volumes partially offset by lower average ASP due to mix, and the systems revenue increase was due to higher shipment volumes. Gross margin decreased due primarily to decreased product margins and, to a lesser extent, higher excess and obsolescence charges and indirect costs. The lower product margins were driven by lower endpoint IC margins due to a smaller revenue contribution from industrial and specialty endpoint ICs as well as mix within those industrial and specialty endpoint ICs. Loss from operations increased due primarily to increased operating expenses partially offset by increased gross profit. The operating expense increase was due primarily to higher research and development, general and administrative costs and amortization of intangibles as a result of us acquiring Vovantic Oy.

Year ended December 31, 2022 compared with year ended December 31, 2021

Revenue and gross profit increased, due primarily to higher endpoint IC and systems revenue. The endpoint IC revenue increase was driven primarily by higher ASP and shipment volumes when compared to the prior year period. volumes. Gross margin increased, due primarily to increased product margins. The increased product margins were driven primarily by an increase in endpoint IC margins due to product mix. Loss from operations decreased, due primarily to increased gross profit offset by increased operating expenses. The operating-expense operating expense increase was due primarily to higher research and development sales and marketing and general and administrative personnel costs; non-settlement-related legal fees; higher stock-based compensation expense; higher infrastructure costs; and higher marketing and advertising costs; offset by lower restructuring expenses. costs.

Year ended December 31, 2021 compared with year ended December 31, 2020 38

Table of Contents

Revenue and gross profit increased, due primarily to higher endpoint IC and systems revenue. Gross margin increased, due primarily to 2020 excess and obsolescence charges as well as 2021 sales of fully reserved inventory and increased product margins. The increased product margins were driven primarily by an increase in endpoint IC margins due to product mix. Loss from operations decreased, due primarily to increased gross profit offset by increased operating expenses. The

increase in operating expenses was due primarily to increased stock-based compensation expense; increased research and development and sales and marketing personnel expenses; and increased non-settlement-related legal fees.

Revenue

(in thousands)	Year Ended December 31,			2022 vs 2021	2021 vs 2020	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change
Endpoint ICs	19	13	10							
System ICs	1,5	9,2	2,3	52,2	36,9					
Systems	\$ 32	\$ 50	\$ 26	\$ 82	\$ 24	\$ 234,426	\$ 191,532	\$ 139,250	\$ 42,894	\$ 52,282
	66,	51,	36,							
	26	03	59	15,2	14,4					
	8	3	7	35	36	73,113	66,268	51,033	6,845	15,235
Total revenue	25	19	13							
Revenue	7,8	0,2	8,9	67,5	51,3					
	\$ 00	\$ 83	\$ 23	\$ 17	\$ 60	\$ 307,539	\$ 257,800	\$ 190,283	\$ 49,739	\$ 67,517

We currently derive substantially all our revenue from sales of endpoint ICs, reader ICs, readers, gateways and gateways, test and measurement solutions. We sell our endpoint ICs and test and measurement solutions primarily to inlay manufacturers; our reader ICs primarily to OEMs and ODMs through distributors; and our readers and gateways to solutions providers, VARs and SIs, also primarily through distributors. We expect endpoint IC sales to represent the majority of our revenue for the foreseeable future.

Year ended December 31, 2023 compared with year ended December 31, 2022

Endpoint IC revenue increased \$42.9 million, due primarily to a \$68.9 million increase from higher shipment volumes offset by a \$26.0 million decrease due to ASP, the latter due primarily to lower revenue contribution from industrial and specialty endpoint ICs as well mix within those industrial and specialty ICs.

Systems revenue increased \$6.8 million. Test and measurement solutions and gateway revenue increased \$8.1 million and \$5.5 million respectively due primarily to increased shipment volume. These increases were offset by a decrease of \$7.8 million in reader revenue as a result of decreased shipment volumes.

Year ended December 31, 2022 compared with year ended December 31, 2021

Endpoint IC revenue increased \$52.3 million, due primarily to a \$35.5 million increase from higher ASPs and a \$16.8 million increase from higher shipment volumes. The ASP increase was due primarily to price increases we implemented to

offset higher product costs as discussed above under “—Factors Affecting Our Performance—Average Selling Price” and well as product mix, the latter from a higher contribution from industrial and specialty ICs.

Systems revenue increased \$15.2 million, due primarily to increases of \$7.6 million in reader IC revenue, \$4.9 million in gateway revenue and \$3.3 million in reader revenue offset by a decrease of \$913,000 \$0.9 million in nonrecurring engineering, or NRE, revenue. The reader IC and gateway revenue increases were due primarily to higher shipment volumes; the reader revenue increase was due primarily to higher ASPs.

For more information, see the sections captioned “—Factors Affecting Our Performance—Inventory Supply” and “Shortages of silicon wafers and components used in our readers and gateways may adversely affect our ability to meet demand for our products and adversely affect our revenue and/or gross margins”.

Year ended December 31, 2021 compared with year ended December 31, 2020

Endpoint IC revenue increased \$36.9 million, due primarily to a \$44.5 million increase in shipment volumes, offset by a \$7.6 million decrease due to lower ASPs. The increase in shipment volumes was due, in part, to 2020 volumes being low, a result of Covid-19 which negatively impacted several markets we sell to, including retail, our largest endpoint IC market, as well as growth in our customers' underlying business. The ASP decrease was due to our annual price negotiations as discussed above under “—Factors Affecting Our Performance—Seasonality” and product mix with a higher contribution from our M700 product line which has a lower ASP, both of which were slightly offset by higher contribution from industrial and specialized products.

Systems revenue increased \$14.4 million, due primarily to increases of \$12.2 million in reader revenue, \$1.4 million in gateway revenue and \$629,000 in NRE revenue. Reader revenue increased primarily due to higher shipment volumes and ASPs, gateway revenue increased primarily due to higher ASPs; and NRE revenue increased due to timing of revenue recognition.

Gross Profit and Gross Margin

(in thousands, except percentages)	Year Ended December 31,			2022 vs 2021	2021 vs 2020
	2022	2021	2020	Change	Change
Cost of revenue	\$ 119,916	\$ 91,329	\$ 73,783	\$ 28,587	\$ 17,546
Gross profit	137,884	98,954	65,140	38,930	33,814
Gross margin	53.5 %	52.0 %	46.9 %	1.5 %	5.1 %

38

Table of Contents

(in thousands, except percentages)	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2023	2022	2021	Change	Change
Cost of revenue	\$ 155,557	\$ 119,916	\$ 91,329	\$ 35,641	\$ 28,587
Gross profit	151,982	137,884	98,954	14,098	38,930
Gross margin	49.4 %	53.5 %	52.0 %	(4.1) %	1.5 %

Cost of revenue includes costs associated with manufacturing our endpoint ICs, reader ICs, readers, gateways and gateways, test and measurement solutions, including direct materials and outsourced manufacturing costs as well as associated overhead costs such as logistics, quality control, planning and procurement. Cost of revenue also includes charges for excess and obsolescence and warranty costs. Our gross margin varies from period to period based on the mix of endpoint IC and systems, systems; underlying product margins driven by changes in mix, ASPs or costs, costs; as well as from inventory excess and obsolescence charges.

Year ended December 31, 2023 compared with year ended December 31, 2022

Gross profit increased \$14.1 million, due primarily to increased endpoint IC and systems revenue. Gross margin decreased, due primarily to decreased product margins and to a lesser extent higher excess and obsolescence charges and indirect costs. The decreased product margins were driven primarily by lower endpoint IC margins due to product mix and a smaller contribution from industrial and specialty endpoint ICs as well as mix within those industrial and specialty endpoint ICs. Excess and obsolescence charges had an immaterial gross margin impact for the years ended December 31, 2023 and 2022.

39

Table of Contents

Year ended December 31, 2022 compared with year ended December 31, 2021

Cost of revenue Gross profit increased \$28.6 million \$38.9 million, due primarily to increased endpoint IC and systems revenue. Gross margin increased, due primarily to increased product margins, with offsetting fluctuations that offset one another related to from reduced sales of fully reserved inventory and higher indirect costs. The product-margin increase was due primarily to higher endpoint IC margins from a higher revenue contribution from industrial and specialty ICs. Sales of fully reserved inventory Excess and obsolescence charges had an immaterial gross margin impact for the year ended December 31, 2022, compared to a favorable gross margin impact of 1.5% due to the sale of fully reserved inventory for the year ended December 31, 2021.

Year ended December 31, 2021 compared with year ended December 31, 2020

Cost of revenue increased \$17.5 million, due primarily to increased endpoint IC and systems revenue. Gross margin increased 5.1%, due to inventory excess and obsolescence charges that had an unfavorable net gross margin impact of 2.2% in 2020, sales of fully reserved inventory that had a positive 1.5% impact in 2021, and increased underlying product margins primarily related to favorable endpoint IC product mix with an increasing mix of M700 and higher contribution from industrial and specialty ICs.

Operating Expenses

Research and Development

(in thousands)	Year Ended			2022	2021					
	December 31,			vs	vs					
				2021	2020					
	202	202	202	Chan	Chan					
	2	1	0	ge	ge					
						Year Ended December 31,			2023 vs 2022	2022 vs 2021
						2023	2022	2021	Change	Change
Research and development	74	64	48							
	,1	,0	,5	10,	15,					
	\$ 06	\$ 58	\$ 90	\$ 048	\$ 468	\$ 88,562	\$ 74,106	\$ 64,058	\$ 14,456	\$ 10,048

Research and development expense comprises primarily personnel expenses (salaries, benefits and other employee related costs) and stock-based compensation expense for our product-development personnel; product development costs which include external consulting and service costs, prototype materials and other new-product development costs; and an allocated portion of infrastructure costs which include occupancy, depreciation and software costs. We expect research and development expense to increase in absolute dollars in future periods as we **continue to** focus on new product development and introductions.

Year ended December 31, 2023 compared with year ended December 31, 2022

Research and development expense increased \$14.5 million, due primarily to increases of \$6.0 million in personnel expenses from higher headcount, \$3.3 million in stock-based compensation expense related primarily to increased outstanding equity grants, \$3.1 million in product development costs, and \$2.0 million in infrastructure costs primarily from increased depreciation and software costs.

Year ended December 31, 2022 compared with year ended December 31, 2021

Research and development expense increased \$10.0 million, due primarily to increases of \$6.6 million in personnel expenses from higher headcount and a change in bonus payment structure from 100% PSUs to 50% cash and 50% PSUs, \$1.9 million in infrastructure costs primarily from increased software costs, and **\$793,000** \$0.8 million in stock-based compensation expense related primarily to increased outstanding equity grants.

Year ended December 31, 2021 compared with year ended December 31, 2020

Research and development expense increased \$15.5 million, due primarily to increases of \$6.9 million in stock-based compensation expense primarily related to PSU grant timing, and to a lesser extent, an increased number of equity grants outstanding. Other major factors driving the increase included \$4.6 million in personnel expenses from higher headcount; \$2.9 million in product-development costs; and \$1.1 million in infrastructure costs from increased software costs.

Sales and Marketing

	Year Ended December 31,	2022 vs 2021	2021 vs 2020
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(in thousands)	2022	2021	2020	Change	Change
Sales and marketing	\$ 37,894	\$ 34,287	\$ 28,663	\$ 3,607	\$ 5,624

39

Table of Contents

(in thousands)	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2023	2022	2021	Change	Change
Sales and marketing	\$ 41,123	\$ 37,894	\$ 34,287	\$ 3,229	\$ 3,607

Sales and marketing expense comprises primarily personnel expenses (salaries, incentive sales compensation, or commission, benefits and other employee-related costs) and stock-based compensation expense for our sales and marketing personnel; travel, advertising and promotional expenses; and an allocated portion of infrastructure costs which include occupancy, depreciation and software costs.

Year ended December 31, 2023 compared with year ended December 31, 2022

Sales and marketing expense increased \$3.2 million, due primarily to increases of \$1.7 million in personnel expenses from higher headcount offset by lower commission expense, \$0.8 million in stock-based compensation expense related primarily to increased outstanding equity grants, and \$0.5 million in travel expenses.

Year ended December 31, 2022 compared with year ended December 31, 2021

Sales and marketing expense increased \$3.6 million, due primarily to increases of \$2.9 million in personnel expenses from higher headcount and the change in bonus payment structure from 100% PSUs to 50% cash and 50% PSUs, and \$554,000 \$0.6 million in marketing and advertising expenses.

Year ended December 31, 2021 compared with year ended December 31, 2020 40

Sales and marketing expense increased \$5.6 million, due primarily to increases Table of \$3.5 million in stock-based compensation expense primarily related to PSU grant timing, and an increased number of equity grants outstanding. Other major factors driving the increase included \$2.2 million in personnel expenses from higher salaries and benefits, and commissions as a result of our increased revenue. Contents

General and Administrative

	2022	2021			
Year Ended	vs	vs			
December 31,	2021	2020	Year Ended December 31,	2023 vs 2022	2022 vs 2021

(in thousands)	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change
General and administrative	45,465	36,137	34,938	9,328	1,179	\$ 60,828	\$ 45,465	\$ 36,137	\$ 15,363	\$ 9,328

General and administrative expense comprises primarily personnel expenses (salaries, benefits and other employee related costs) and stock-based compensation expense for our executive, finance, human resources and information technology personnel; legal, accounting and other professional service fees; travel and insurance expense; and an allocated portion of infrastructure costs which include occupancy, depreciation and software costs.

Year ended December 31, 2023 compared with year ended December 31, 2022

General and administrative expense increased \$15.4 million, due primarily to increases of \$11.0 million in professional services related primarily to non-settlement-related legal fees and transaction expenses for the Voyantic Oy acquisition, \$2.5 million in personnel expenses from higher headcount, \$1.1 million in stock-based compensation expense related primarily to increased outstanding equity grants, and \$0.5 million in infrastructure expenses primarily related to rent and facilities.

Year ended December 31, 2022 compared with year ended December 31, 2021

General and administrative expense increased \$9.3 million, due primarily to a \$4.4 million increase in non-settlement-related legal fees, \$2.3 million in personnel expenses from higher headcount and the change in bonus payment structure from 100% PSUs to 50% cash and 50% PSUs, and \$1.6 million in stock-based compensation expense related primarily to increased outstanding equity grants.

Year ended December 31, 2021 compared with year ended December 31, 2020 Amortization of intangibles

General

(in thousands)	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2023	2022	2021	Change	Change
Amortization of intangibles	\$ 4,953	\$ —	\$ —	\$ 4,953	\$ —

The increase in amortization expense relates to the intangibles acquired as part of our April 3, 2023 acquisition of Voyantic Oy, a global provider of RFID test and administrative expense increased \$1.2 million due primarily to increases of \$3.6 million in stock-based compensation expense primarily related to PSU grant timing, measurement solutions. See note 6 Goodwill and an increased number of equity grants outstanding. Other major factors comprising the increase included \$3.1 million in professional services primarily related to non-settlement related legal fees offset by decreases of \$5.8 million in settlement and related costs incurred in 2020. Intangible Assets, for further details.

Restructuring costs

(in thousands)	Year Ended December 31,					Year Ended December 31,					2023 vs 2022		2022 vs 2021	
	2022		2021		2020		2022		2021		Change		Change	
	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change	Change	Change	Change	Change
Restructuring costs	(102)	1,721	\$—	(1,823)	1,721	\$—	(102)	1,721	102	(1,823)				

On February 2, 2021, we restructured our go-to-market organization to strategically align our global sales, product, partner development and marketing teams. We eliminated approximately seven full-time positions in our go-to-market organization, representing roughly 2% of our workforce. Restructuring charges were immaterial for the year ended December 31, 2022. We incurred restructuring charges of \$1.7 million for employee termination benefits as well as \$50,000 in and other associated legal costs for the year ended December 31, 2021. We substantially completed our Restructuring charges were immaterial for the year ended December 31, 2022 and there were no restructuring by June 30, 2021 charges for the year ended December 31, 2023. For further information on this restructuring, please refer to Note 17 18 to our consolidated financial statements included elsewhere in this report.

Other Income, Net

(in thousands)	Year Ended December 31,			2022 vs 2021		2021 vs 2020	
	2022	2021	2020	Change	Change	Change	Change
Other income, net	\$ 2,517	\$ 25	\$ 650	\$ 2,492	\$ (625)		

40

Table of Contents

(in thousands)	Year Ended December 31,			2023 vs 2022		2022 vs 2021	
	2023	2022	2021	Change	Change	Change	Change
Other income, net	\$ 4,644	\$ 2,517	\$ 25	\$ 2,127	\$ 2,492		

Other income, net, comprises primarily interest income on our short-term investments.

Year ended December 31, 2023 compared with year ended December 31, 2022

Other income, net, increased \$2.1 million, due primarily to higher interest rates on our short-term investments and cash and cash equivalents.

41

Table of Contents

Year ended December 31, 2022 compared with year ended December 31, 2021

Other income, net, increased \$2.5 million, due primarily to higher interest rates on our short and long-term investments.

Year ended December 31, 2021 compared with year ended December 31, 2020

Other income, net decreased \$625,000, due primarily to lower interest rates on our short and long-term investments.

Induced Conversion Expense

(in thousands)	Year Ended December 31,			2022 vs 2021	2021 vs 2020	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	December 31,			vs	vs	December 31,				
	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change
	2	2021	0	ge	ge	2023	2022	2021	Change	Change
Induced conversion expense	2,									
	2	11								
	3	,3		(9,1	11,3					
	\$ 2	\$ 33	\$ —	\$ 01)	\$ 33	\$ —	\$ 2,232	\$ 11,333	\$ (2,232)	\$ (9,101)

In November 2021 and June 2022, we completed a privately negotiated repurchase of \$76.4 million and \$9.85 million \$9.9 million principal amounts, respectively, of the 2019 Notes, (“also referred to as the 2019 Note Repurchase”). Notes Repurchase. We accounted for the 2019 Notes Repurchase transactions as an induced conversion in accordance with Accounting Standards Codification 470-20, *Debt with Conversion and Other Options* (ASC 470-20). We recorded \$11.3 million and \$2.2 million in induced conversion expense in our Consolidated Statements of Operations for the years ended December 31, 2021 and December 31, 2022, respectively. The induced conversion expense represents the fair value of the consideration issued upon conversion in excess of the fair value of the securities issuable under the original terms of the 2019 Notes. For further information, on the 2019 Notes, please refer to Note 78 to our consolidated financial statements included elsewhere in this report.

Interest Expense

(in thousands)	Year Ended December 31,			2022 vs 2021	2021 vs 2020	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	December 31,			vs	vs	December 31,				
	2022	2021	2020	Change	Change	2023	2022	2021	Change	Change
	2	1	0	e	e	2023	2022	2021	Change	Change

on Voyantic Oy acquisition, please refer to Note 6 to our consolidated financial statements included elsewhere in this report.

Year ended December 31, 2022 compared with year ended December 31, 2021

41

Table of Contents

Income tax expense remained comparable to the prior period.

42

Year ended December 31, 2021 compared with year ended December 31, 2020 Table of Contents

Income tax expense remained comparable to the prior period.

Non-GAAP Financial Measures

Our key non-GAAP performance measures include adjusted EBITDA and non-GAAP net income (loss), as defined below. We use adjusted EBITDA and non-GAAP net income (loss) as key measures to understand and evaluate our core operating performance and trends, to prepare and approve our annual budget and to develop short- and long-term operating plans. We believe these measures provide useful information for period-to-period comparisons of our business to allow investors and others to understand and evaluate our operating results in the same manner as our management and board of directors. Our presentation of these non-GAAP financial measures is not meant to be considered in isolation or as a substitute for our financial results prepared in accordance with GAAP, and our non-GAAP measures may be different from similarly termed non-GAAP measures used by other companies.

Adjusted EBITDA

We define adjusted EBITDA as net income (loss) determined in accordance with GAAP, excluding, if applicable for the periods presented, the effects of stock-based compensation; depreciation; depreciation and amortization; restructuring costs; settlement and related costs; induced conversion expense; other income, net; interest expense; loss on debt extinguishment; acquisition-related expense and related purchase accounting adjustments; and income tax benefit (expense). During the year ended December 31, 2023, we revised our definition of adjusted EBITDA to exclude acquisition related-expenses, related purchase-accounting adjustments and amortization of intangibles in connection with our Voyantic Oy acquisition. We have excluded these costs and expenses because we do not believe they reflect our core operations and us excluding them enables more consistent evaluation of our operating performance. This revision to our definition of adjusted EBITDA did not impact adjusted EBITDA for any previously reported periods because there were no items of a similar nature in those prior periods.

The following table presents a reconciliation of net loss to adjusted EBITDA:

(in thousands)	Year Ended			2022	2021					
	December 31,			vs	vs					
				2021	2020					
	202	202	202	Chan	Chan	Year Ended December 31,			2023 vs 2022	2022 vs 2021
	2	1	0	ge	ge	2023	2022	2021	Change	Change
Net loss	(2,430)	(5,126)	(5,992)	26,959	66,333	\$ (43,366)	\$ (24,301)	\$ (51,260)	\$ (19,065)	\$ 26,959
Adjustments:										
Other income, net	(2,517)	(2,500)	(6,492)	49,233	62,505	(4,644)	(2,517)	(25)	(2,127)	(2,492)
Interest expense	4,923	2,550	5,733)	2,373	(2,386)	4,848	4,923	2,550	(75)	2,373
Income tax expense	184	153		31	64	(322)	184	153	(506)	31
Depreciation and amortization	6,044	4,602	7,579	1,442		13,623	6,044	4,602	7,579	1,442
Stock-based compensation	42,443	40,498	25,543	14,823	82,195	47,986	42,443	40,498	5,543	1,945
Restructuring costs	(1,021)	72	(1,823)	82	21	—	(102)	1,721	102	(1,823)
Settlement and related costs	—	(4,600)	5,469)	46,000	81,093)	—	—	(460)	—	460
Induced conversion expense	2,232	11,333		(9,101)	11,333	—	2,232	11,333	(2,232)	(9,101)

Acquisition related expense						3,272	—	—	3,272	—
Purchase accounting adjustments						388	—	—	388	—
Adjusted EBITDA	(1	28	9,	1,	19,	20,				
	,9	11	53	79	64					
	\$ 06	\$ 2	\$ 3)	\$ 4	\$ 5	\$ 21,785	\$ 28,906	\$ 9,112	\$ (7,121)	\$ 19,794

Non-GAAP Net Income (Loss)

We define non-GAAP net income (loss) as net income (loss), excluding, if applicable for the periods presented, the effects of stock-based compensation; depreciation; depreciation and amortization; restructuring costs; settlement and related costs; induced conversion expense; acquisition-related expense and related purchase accounting adjustments; and the corresponding income tax impacts of adjustments to net income (loss).

During the year ended December 31, 2023, we revised our definition of non-GAAP net income (loss) to adjust for acquisition-related expenses, related purchase-accounting adjustments and amortization of debt discount related intangibles in connection with our Voyantic Oy acquisition. The revision to the equity component our definition of our convertible notes; and prepayment penalty on debt extinguishment. non-GAAP net income did not impact non-GAAP net income for any previously reported periods because there were no items of a similar nature in those prior periods.

42 During the year ended December 31, 2023, we further revised our definition of non-GAAP net income (loss) to adjust for income tax effects of adjustments to net income (loss), calculated at the statutory rate for current and historical periods. We have revised the prior period amounts to conform to our current period presentation.

Table of Contents

GAAP requires that certain convertible debt instruments that may be settled in cash on conversion be accounted for as separate liability and equity components in a manner that reflects our non-convertible debt borrowing rate. This accounting results in the debt component being treated as though it was issued at a discount, with the debt discount being amortized as additional non-cash interest expense over the debt instrument term using the effective interest method. As a result, we believe that excluding this non-cash interest expense attributable to the debt discount in calculating our non-GAAP net income (loss) is useful because this interest expense is not indicative of our ongoing operational performance. On January 1, 2021, we

adopted ASU 2020-06 using the modified retrospective transition method, accounting for the 2019 Notes on a whole-instrument basis. Our consolidated financial statements for the year ended December 31, 2021 use the new standard and we no longer record amortization of debt discount.

The following table presents a reconciliation of net loss to non-GAAP net income (loss):

(1) The tax effects of the adjustments are calculated using the statutory rate, taking into consideration the nature of the item and relevant taxing jurisdiction.	(1) The tax effects of the adjustments are calculated using the statutory rate, taking into consideration the nature of the item and relevant taxing jurisdiction.
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As of December 31, 2022 December 31, 2023, we had cash, cash equivalents and short-term investments of \$173.7 million \$113.2 million, comprising cash deposits held at major financial institutions and short-term investments in a variety of securities, including U.S. government securities, treasury bills, corporate notes and bonds, commercial paper asset-backed securities and money market funds. As of December 31, 2022 December 31, 2023, we had working capital of \$232.8 million \$238.8 million.

Historically, we have funded our operations primarily through cash generated from operations and by issuing equity securities, convertible-debt offerings and/or borrowing under our prior senior credit facility. In 2022, 2023, our principal uses of cash were funding operations to capture increases in our market opportunity inventory balance, our acquisition of Voyantic Oy and capital expenditures.

We believe, based on our current operating plan, that our existing cash, cash equivalents and short-term investments will be sufficient to meet our anticipated cash needs for at least the next 12 months. Over the longer term, we plan to continue investing to enhance and extend our platform. If our available funds are insufficient to fund our future activities or execute our strategy, then we may raise additional capital through equity, equity-linked or debt financing, to the extent such funding sources are available. Alternatively, we may need to reduce expenses to manage liquidity; however, any such reductions could adversely impact our business and competitive position.

Sources of Funds

From time to time, we may explore additional financing sources and ways to reduce our cost of capital, including equity, equity-linked and debt financing. In addition, in connection with any future acquisitions, we may pursue additional financing which may be debt, equity or equity-linked financing or a combination thereof. We can provide no assurance that any additional financing will be available to us on acceptable terms.

2019 Notes

In December 2019, we issued the 2019 Notes in an aggregate principal amount of \$86.3 million. The 2019 Notes were a senior unsecured obligation, bearing interest at a fixed rate of 2.00% per year, payable semi-annually in arrears on June 15 and December 15 of each year, beginning on June 15, 2020. The 2019 Notes were convertible into cash, shares of our common stock or a combination thereof, at our election, and matured on December 15, 2026, unless earlier repurchased, redeemed or converted in accordance with the indenture terms.

The net proceeds from the 2019 Notes were approximately \$83.5 million after fees and expenses. We used some of the net proceeds to pay the cost of the capped-call transactions and repay our senior credit facility, and the rest for general corporate purposes.

Table of Contents

In November 2021, we completed a privately negotiated repurchase of \$76.4 million principal amount of the 2019 Notes, accounting for the transaction as an induced conversion in accordance with Accounting Standards Codification 470-20, *Debt*

with Conversion and Other Options (ASC 470-20). We paid approximately \$183.6 million in cash and accrued and unpaid interest thereon in connection with the induced conversion.

In June 2022, we repurchased the remaining \$9.85 million principal amount of the 2019 Notes accounting for the transaction as an induced conversion in accordance with ASC 470-20. We paid approximately \$17.6 million in cash and accrued and unpaid interest thereon in connection with the induced conversion.

For further information on the terms of this debt, please refer to Note 7 to our consolidated financial statements included elsewhere in this report.

2021 Notes

In November 2021, we issued the 2021 Notes in an aggregate principal amount of \$287.5 million. The 2021 Notes are our senior unsecured obligation, bearing interest at a fixed rate of 1.125% per year, payable semi-annually in arrears on May 15 and November 15 of each year, beginning on May 15, 2022. The 2021 Notes are convertible into cash, shares of our common stock or a combination thereof, at our election, and will mature on May 15, 2027 unless earlier repurchased, redeemed or converted in accordance with the indenture terms.

Table of Contents

The net proceeds from the 2021 Notes were approximately \$278.4 million after initial debt issuance costs, fees and expenses. We used approximately \$183.6 million of the net proceeds to repurchase approximately \$76.4 million aggregate principal amount of the 2019 Notes through individual privately negotiated transactions concurrent with the 2021 Notes offering. We used \$17.6 million to repurchase the remaining \$9.85 million aggregate principal of the 2019 Notes through individual privately negotiated transactions in June 2022. Please refer to the section “Repurchase of the Convertible Senior Notes – 2019” as described in Note 78 to our consolidated financial statements included elsewhere in this report. We will use the rest of the net proceeds for general corporate purposes.

For further information on the terms of this debt, please refer to Note 78 to our consolidated financial statements included elsewhere in this report.

Historical Cash Flow Trends

The following table shows a summary of our cash flows for the periods indicated:

(in thousands)	Year Ended December 31,			Year Ended December 31,		
	2022	2021	2020	2023	2022	2021

Net cash provided by (used in) operating activities			(16,87				
	\$ 641	\$ 6,465	\$ 7)	\$ (49,382)	\$ 641	\$ 6,465	
	(102,79	(18,64	(36,28				
Net cash used in investing activities	9)	2)	7)				
Net cash provided by (used in) investing activities				115,808	(102,799)	(18,642)	
Net cash provided by (used in) financing activities		112,44					
	(2,148)	4	9,902	8,736	(2,148)	112,444	

Operating Cash Flows

For the year ended December 31, 2023, we used \$49.4 million of net cash from operating activities. This net cash usage was due primarily to \$68.2 million of working capital usage due primarily to higher inventory and lower accounts payable partially offset by \$18.9 million of net loss adjusted for non-cash items.

For the year ended December 31, 2022, we generated \$641,000 \$0.6 million of net cash from operating activities. These net cash proceeds were due primarily to \$27.8 million of net loss adjusted for non-cash items, partially offset by \$27.2 million of working capital usage due primarily to higher inventory and accounts receivable offset by higher accounts payable.

For the year ended December 31, 2021, we generated \$6.5 million of net cash from operating activities. The net cash proceeds were driven primarily by \$6.2 million of net loss adjusted for non-cash items and \$288,000 of working capital contribution.

For the year ended December 31, 2020, we used \$16.9 million of net cash from operating activities. The net cash usage was driven primarily by \$17.8 million of net loss adjusted for non-cash items, partially offset by \$963,000 \$0.3 million of working capital contribution.

Investing Cash Flows

For the year ended December 31, 2023, we generated \$115.8 million of net cash from investing activities. These net cash proceeds were due primarily to investment maturities of \$144.4 million and sale of investments of \$13.4 million, partially offset by cash paid for the Voyantic Oy acquisition of \$23.4 million and property and equipment purchases of \$18.6 million.

For the year ended December 31, 2022, we used \$102.8 million of net cash from investing activities. This net cash usage was due primarily to investments and equipment purchases of \$205.8 million and \$12.1 million, respectively, partially offset by investment maturities of \$114.8 million.

44

[Table of Contents](#)

For the year ended December 31, 2021, we used \$18.6 million of net cash from investing activities. The net cash usage was driven primarily by investments and equipment purchases of \$84.4 million and \$16.2 million, respectively, partially offset by investment maturities of \$82 million.

Financing Cash Flows

For the year ended **December 31, 2020** December 31, 2023, we used \$36.3 million generated \$8.7 million of net cash from investing financing activities. The These net cash usage was driven primarily by investments proceeds were due to \$8.7 million from stock-option exercises and equipment purchases our employee stock purchase plan, or ESPP.

45

Table of \$82.7 million and \$3.1 million, respectively, partially offset by investment maturities of \$49.5 million. Contents

Financing Cash Flows

For the year ended December 31, 2022, we used \$2.2 million of net cash from financing activities. This net cash usage was due primarily to \$17.6 million to repurchase the remaining \$9.85 million aggregate principal amount of the 2019 Notes described in the section “**Repurchase of the Convertible Senior Notes – 2019**” as described in Note 78 to our consolidated financial statements included elsewhere in this report. Other major factors included \$15.4 million from stock options exercises and our employee stock-purchase plan, or ESPP.

For the year ended December 31, 2021, we generated \$112.4 million of net cash from financing activities. The net cash proceeds were driven primarily by \$278.4 million net proceeds from issuing the 2021 Notes. This amount was offset by \$183.6 million for the cash repurchase of approximately \$76.4 million aggregate principal amount of the 2019 Notes through individual privately negotiated transactions concurrent with the offering of the 2021 Notes described in the section “**Repurchase of the Convertible Senior Notes – 2019**” as described in Note 78 to our consolidated financial statements included elsewhere in this report. Other major factors included \$17.6 million from exercised stock options stock-option exercises and our employee stock purchase plan.

For the year ended December 31, 2020, we generated \$9.9 million of net cash from financing activities. The net cash proceeds were driven primarily by \$10.2 million from exercised stock options and our employee stock purchase plan. ESPP.

Contractual Obligations

The following table reflects a summary of our contractual obligations as of **December 31, 2022** December 31, 2023:

	Payments Due By Period					Payments Due By Period				
					More					More
					Than					Than
	Less	1-3	3-5	Year	5	Less	1-3	3-5	Year	5
Total	1 Year	Years	Years	s		Total	1 Year	Years	Years	5 Years
(in thousands)										

Convertible senior notes ⁽¹⁾	302, \$ 055	3,23 \$ 4	6,4 \$ 69	292, \$ 352	\$ —	\$ 298,820	\$ 3,234	\$ 6,469	\$ 289,117	\$ —
Operating lease obligations										
Operating lease obligations	17,6 64	4,05 9	7,7 72	4,64 2	1,1 91	14,416	4,120	8,330	1,417	549
Sublease income	(123)	(123)	—	—	—					
Net operating lease commitments	17,5 41	3,93 6	7,7 72	4,64 2	1,1 91					
Purchase commitments ⁽²⁾	98,1 82	98,1 82	—	—	—	31,003	30,265	738	—	—
Total	417, \$ 778	105, \$ 352	14, \$ 241	296, \$ 994	1,1 \$ 91	\$ 344,239	\$ 37,619	\$ 15,537	\$ 290,534	\$ 549

⁽¹⁾ The 2021 Notes include \$14.6 million \$11.3 million in interest payments.

⁽²⁾ Purchase commitments comprise primarily noncancelable commitments to purchase \$87.9 million \$21.8 million of inventory as of December 31, 2022 and December 31, 2023, noncancelable software license agreements with vendors and equipment purchases.

Off-Balance-Sheet Arrangements

Since inception, we have not had any relationships with unconsolidated entities, such as entities often referred to as structured finance or special-purpose entities, or financial partnerships that would have been established for the purpose of facilitating off-balance-sheet arrangements or for another contractually narrow or limited purpose.

45

Table of Contents

Critical Accounting Policies and Significant Estimates

Our discussion and analysis of our financial condition and results of operations are based upon on our consolidated financial statements which we have prepared in accordance with GAAP. Our preparation of these consolidated financial statements requires us to make estimates and judgments that affect the reported amounts of assets and liabilities and related disclosure of contingent assets and liabilities, revenue and expenses at the date of the consolidated financial statements. Generally, we base our estimates on historical experience and on various other assumptions, in accordance with GAAP, that we believe to be reasonable under the circumstances. Our actual results may differ from these estimates under other assumptions or conditions.

Critical accounting policies and estimates are those we consider the most important to the portrayal of our financial condition and results of operations because they require our most difficult, subjective or complex judgments, often as a result

of the need to make estimates about the effect of matters that are inherently uncertain. Our critical accounting policies and estimates include those related to:

- revenue recognition;
- inventory;
- income taxes; and
- stock-based compensation.

Table of Contents

Revenue Recognition

We generate revenue primarily from sales of hardware products. We also generate revenue from software, extended warranties, enhanced maintenance, support services and NRE development services, none of which are material.

We recognize revenue when we transfer control of the promised goods or services to our customers, which for hardware sales is generally at the time of product shipment as determined by agreed-upon shipping terms. We measure revenue based on the amount of consideration we expect to be entitled-to in exchange for those goods or services. We expect the period between when we transfer control of promised goods or services and when we receive payment to be one year or less, and that expectation is consistent with our historical experience. As such, we do not adjust our revenue for the effects of a significant financing component. We recognize any variable consideration, which comprises primarily sales incentives, as revenue reduction at the time of revenue recognition. We estimate sales incentives based on our historical experience and current expectations at the time of revenue recognition and update them at the end of each reporting period as additional information becomes available.

Our reader and gateway products are highly dependent on embedded software and cannot function without this embedded software. We account for the hardware and embedded software as a single performance obligation and recognize revenue when control is transferred.

Our customer contracts with multiple performance obligations generally include a combination of hardware products, **standalone software**, extended warranty, enhanced maintenance and support services. For these contracts, we account for individual performance obligations separately if they are distinct. We allocate the transaction price to the separate performance obligations on a relative standalone selling-price basis. In instances where the standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price using one, or a combination of, the adjusted market assessment or expected cost-plus margin. We defer amounts allocated to extended warranty and enhanced maintenance sold with our reader and gateway products and recognize them on a straight-

line basis over the term of the arrangement, which is typically from one to three years. We defer amounts allocated to support services sold with our reader and gateway products and recognize them when we transfer control of the promised services to our customers.

For NRE development agreements that involve significant production, modification or customization of our products, we generally recognize revenue over the performance period using the cost-input method because it best depicts the transfer of services to the customer. We receive payments under these agreements based on a billing schedule. Contract assets relate to our conditional right to consideration for our completed performance under these agreements. We record accounts receivable when the right to consideration becomes unconditional. For the periods presented in this report, our contract assets, deferred revenue and the value of unsatisfied performance obligations for NRE development agreements are not material.

46

Table of Contents

If a customer pays consideration before we transfer a good or service under the contract, then we classify those amounts as contract liabilities, or deferred revenue. We recognize contract liabilities as revenue when we transfer control of the promised goods or services to our customers.

Payment terms typically range from 30 to 120 days. We present revenue net of sales tax in our consolidated statements of operations. We include shipping charges billed to customers in revenue and the related shipping costs in cost of revenue.

Practical Expedients and Exemptions: We expense sales commissions when incurred because we expect the amortization period to be one year or less. We record these costs within sales and marketing expenses. We do not disclose the value of unsatisfied performance obligations for (1) contracts with an original expected length of one year or less and (2) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

47

Table of Contents

Inventory

We state inventories at the lower of cost or estimated net realizable value using the average costing method, which approximates a first-in, first-out method. Inventories comprise raw materials, work-in-process and finished goods. We continuously assess the value of our inventory value and write down its value for estimated excess and obsolete inventory. This evaluation includes an analysis of inventory on hand, current and forecasted demand, product development plans and

market conditions. If future demand or market conditions are less favorable than our projections, or our product development plans change from current expectations, then a write-down of excess or obsolete inventory may be required and **would be is** reflected in cost of goods sold in the period the updated information is known.

Income Taxes

We use the asset and liability approach for accounting, which requires recognizing deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement and tax bases. We measure deferred tax assets and liabilities using enacted tax rates expected to be in effect when the assets and liabilities are recovered or settled. We recognize the effects of a change in tax rates on deferred tax assets and liabilities in the year that of the enactment date. We determine deferred tax assets, including historical net operating losses and deferred tax liabilities, based on temporary differences between the book and tax bases of the assets and liabilities. We believe that it is currently more likely than not that our deferred tax assets will not be realized and, as such, we have recorded a full valuation allowance for these assets. We evaluate the likelihood of our ability to realize deferred tax assets in future periods on a quarterly basis, and if evidence indicates we will be able to realize some or all of our deferred tax assets then we will revise our valuation allowance accordingly.

We use a two-step approach for evaluating uncertain tax positions. First, we evaluate recognition, which requires us to determine if the weight of available evidence indicates that a tax position is more likely than not to be sustained upon audit, including resolution of related appeals or litigation processes. If we consider a tax position more likely than not to be unsustainable, then no benefits of the position are recognized. Second, we measure the uncertain tax position based on the largest amount of benefit which is more likely than not to be realized on effective settlement. This process involves estimating our actual current tax exposure, including assessing the risks associated with tax audits, together with assessing temporary differences resulting from the different treatment of items for tax and financial reporting purposes. If actual results differ from our estimates, then our net operating loss and credit carryforwards could be materially impacted.

Us realizing the benefits of the NOLs and credit carryforwards depends on sufficient taxable income in future years. We have established a valuation allowance against the carrying value of our deferred tax assets, as it is currently more likely than not we will be unable to realize these deferred tax assets. In addition, using NOLs and credits to offset future income subject to taxes may be subject to substantial annual limitations due to the “change in ownership” provisions of the Code and similar state provisions. Events that cause limitations in the amount of NOLs that we may use in any one year include, but are not limited to, a cumulative ownership change of more than 50%, as defined by Code Sections 382 and 383, over a three-year period. Using our NOLs and tax credit carryforwards could be significantly reduced if a cumulative ownership change of more than 50% has occurred in our past or occurs in our future.

47

Table of Contents

We do not anticipate that the amount of our existing unrecognized tax benefits will significantly increase or decrease within the next 12 months. Due to **the presence of our** NOLs, in most jurisdictions our tax years remain open for examination by taxing authorities back to **2000. 2004.**

Stock-Based Compensation

We have various equity award plans, ("Plans") or Plans for granting share-based awards to employees, consultants and non-employee directors of the Company. The Plans provide for granting several available forms of stock compensation such as stock option awards, restricted stock units, or RSUs, RSUs with performance conditions, or PSUs, and RSUs with market and service conditions, or MSUs.

48

Table of Contents

We measure stock-based compensation costs for all share-based awards at fair value on the measurement date, which is typically the grant date. We determine the fair value of stock options using the Black-Scholes option-pricing model, which considers, among other things, estimates and assumptions on the expected life of the options, stock price volatility and market value of the Company's common stock. We determine the fair value of RSUs and PSUs based on the closing price of our common stock at grant date. Additionally, for awards with a market condition, we use a Monte Carlo simulation model to estimate grant date fair value, which takes into consideration the range of possible stock price of total stockholder return outcomes.

Recent Accounting Pronouncements

For information on recent accounting pronouncements, please refer to Note 2 in our consolidated financial statements included elsewhere in this report.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to market risks in the ordinary course of our business. Some of these risks are related to fluctuations in interest rates.

Interest Rate Risk

Under our current investment policy, we invest our excess cash in money market funds, U.S. government securities, corporate bonds and notes and commercial paper. Our current investment policy seeks first to preserve principal, second to provide liquidity for our operating and capital needs and third to maximize yield without putting our principal at risk. We do not enter into investments for trading or speculative purposes.

We had cash, cash equivalents and short-term investments of \$173.7 million \$113.2 million and \$193.3 million \$173.7 million as of December 31, 2022 December 31, 2023 and 2021, 2022, respectively. Our investments are exposed to market

risk due to fluctuations in prevailing interest rates, which may reduce the yield on our investments or their fair value. Because most of our investment portfolio is short-term in nature, we do not believe an immediate 10% increase in interest rates would have a material effect on the fair market value of our portfolio, and therefore we do not expect our results of operations or cash flows to be materially affected by a sudden change in market interest rates.

Our convertible notes have fixed interest rates, thus a hypothetical 100 basis point increase in interest rates would not impact interest expense.

Inflation Risk

We do not believe that inflation has had a material effect on our business, financial condition or results of operations. To date, we have been able to substantially offset higher product costs by increasing our product selling prices. If our product costs became subject to significant future inflationary pressures, then we may not be able to fully offset these higher costs through price increases. Our inability or failure to do so could adversely affect our business, financial condition and results of operations.

Foreign Currency Exchange Risk

Our We are subject to risks associated with transactions that are denominated in currencies other than our functional currency and the effects of translating amounts denominated in a foreign subsidiaries are considered extensions currency to the U.S. dollar as a normal part of our reporting process. The functional currency of the U.S. Company. The functional currency majority of our foreign subsidiaries is the U.S. dollar. Accordingly, gains and losses resulting from remeasuring transactions denominated in currencies other than U.S. dollars are included in other income, net, on the our consolidated statements of operations.

Table One of Contents

our European subsidiaries utilizes Euros as their functional currency, which results in a translation adjustment that we include as a component of accumulated other comprehensive income. For any of the periods presented, we did not have material impact from exposure to foreign currency fluctuation. As we grow our operations, our exposure to foreign currency risk will likely become more significant.

Table of Contents

Item 8. Financial Statements and Supplementary Data

	Page
Report of Independent Registered Public Accounting Firm (PCAOB ID: 42)	51
Consolidated Balance Sheets	53 5
	5
Consolidated Statements of Operations	54 5
	6
Consolidated Statements of Comprehensive Loss	55 5
	7
Consolidated Statements of Changes in Stockholders' Equity (Deficit)	56 5
	8
Consolidated Statements of Cash Flows	57 5
	9
Notes to Consolidated Financial Statements	58 6
	0

[Table of Contents](#)

Report of Independent Registered Public Accounting Firm

The To the Stockholders and the Board of Directors and Stockholders
of Impinj, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Impinj, Inc. (the Company) as of December 31, 2022 December 31, 2023 and 2021, 2022, the related consolidated statements of operations, comprehensive loss, changes in stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2022 December 31, 2023, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December

31, 2022 December 31, 2023 and 2021, 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 December 31, 2023, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022 December 31, 2023, based on criteria established in Internal Control — Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 13, 2023 February 12, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the account or disclosures to which it relates.

***Inventory
valuation***

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Descrip
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Matter

The Company's inventory totaled \$46.4 million \$97.2 million as of December 31, 2022 December 31, 2023.

As explained in Note 2 to the financial statements, the Company determines the appropriate value of all inventory in each reporting period. Obsolete inventory or inventory in excess of management's estimated usage requirement is written down to its estimated net realizable value if those amounts are determined to be less than cost.

Auditing management's estimates for excess and obsolete inventory involved subjective auditor judgment because the estimates rely on a number of factors that are affected by market and economic conditions outside the Company's control, including management's assumptions about the product supply, demand, and life cycle.

How
We
Addressed the
Matter
in Our
Audit

We obtained an understanding, evaluated the design, and tested the operating effectiveness of internal controls over the Company's excess and obsolete inventory reserve process. This included management's determination of the assumptions and data underlying the excess and obsolete inventory valuation.

To test the Company's estimates for excess and obsolete inventory, we performed audit procedures that included, among others, testing the accuracy and completeness of the underlying data used in the estimation calculations and evaluating significant assumptions (e.g., forecasted customer demand technological and/or market obsolescence, and possible alternative uses) sales initiatives). We compared the significant assumptions used by management to current industry and economic trends. We assessed whether there were any potential sources of contrary information, including historical forecast accuracy, or history of significant revisions to previously recorded inventory valuation adjustments. adjustments, and current industry and economic trends. We also performed sensitivity analyses over the significant assumptions to evaluate the changes in the excess and obsolete inventory estimates that would result from changes in the underlying assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2020.

Seattle, Washington

February 13, 2023 12, 2024

Impinj, Inc.
Consolidated Balance Sheets
(in thousands, except par value)

	December 31, 2022	December 31, 2021
Assets:		
Current assets:		
Cash and cash equivalents	\$ 19,597	\$ 123,903
Short-term investments	154,148	69,443
Accounts receivable, net of allowances of \$755 and \$1,132 at December 31, 2022 and 2021, respectively	49,996	35,449
Inventory	46,397	21,958
Prepaid expenses and other current assets	5,032	5,049
Total current assets	275,170	255,802
Long-term investments	19,200	14,225
Property and equipment, net	39,027	27,500
Operating lease right-of-use assets	10,490	11,667
Other non-current assets	1,969	2,462
Goodwill	3,881	3,881
Total assets	\$ 349,737	\$ 315,537
Liabilities and stockholders' equity (deficit):		
Current liabilities:		
Accounts payable	\$ 25,024	\$ 11,732
Accrued compensation and employee related benefits	9,048	6,365
Accrued and other current liabilities	2,925	3,072
Current portion of operating lease liabilities	3,122	4,143
Current portion of long-term debt	—	9,633
Current portion of deferred revenue	2,250	558
Total current liabilities	42,369	35,503
Long-term debt, net of current portion	280,244	278,661
Operating lease liabilities, net of current portion	11,066	11,934
Other long-term liabilities	118	279
Deferred revenue, net of current portion	349	236
Total liabilities	334,146	326,613
Commitments and contingencies (Note 11)		

Stockholders' equity (deficit):

Preferred stock, \$0.001 par value — 5,000 shares authorized, no shares issued and outstanding at December 31, 2022 and 2021	—	—
Common stock, \$0.001 par value — 495,000 shares authorized, 26,098 and 24,737 shares issued and outstanding at December 31, 2022 and 2021, respectively	26	25
Additional paid-in capital	403,599	351,422
Accumulated other comprehensive loss	(1,249)	(39)
Accumulated deficit	(386,785)	(362,484)
Total stockholders' equity (deficit)	15,591	(11,076)
Total liabilities and stockholders' equity (deficit)	\$ 349,737	\$ 315,537

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Operations

(in thousands, except per share data)

	Year Ended December 31,		
	2022	2021	2020
Revenue	\$ 257,800	\$ 190,283	\$ 138,923
Cost of revenue	119,916	91,329	73,783
Gross profit	137,884	98,954	65,140
Operating expenses:			
Research and development	74,106	64,058	48,590
Sales and marketing	37,894	34,287	28,663
General and administrative	45,465	36,137	34,958
Restructuring costs	(102)	1,721	—
Total operating expenses	157,363	136,203	112,211
Loss from operations	(19,479)	(37,249)	(47,071)
Other income, net	2,517	25	650
Induced conversion expense	(2,232)	(11,333)	—
Interest expense	(4,923)	(2,550)	(5,413)

Loss before income taxes	(24,117)	(51,107)	(51,834)
Income tax expense	(184)	(153)	(89)
Net loss	<u>\$ (24,301)</u>	<u>\$ (51,260)</u>	<u>\$ (51,923)</u>
Net loss per share — basic and diluted	<u>\$ (0.95)</u>	<u>\$ (2.12)</u>	<u>\$ (2.28)</u>
Weighted-average shares outstanding — basic and diluted	<u>25,539</u>	<u>24,176</u>	<u>22,819</u>

The accompanying notes are an integral part of these consolidated financial statements.

54

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Comprehensive Loss

(in thousands)

	Year Ended December 31,		
	2022	2021	2020
Net loss	\$ (24,301)	\$ (51,260)	\$ (51,923)
Other comprehensive loss, net of tax:			
Unrealized loss on investments	(1,210)	(42)	(31)
Total other comprehensive loss	(1,210)	(42)	(31)
Comprehensive loss	<u>\$ (25,511)</u>	<u>\$ (51,302)</u>	<u>\$ (51,954)</u>

The accompanying notes are an integral part of these consolidated financial statements.

55

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Changes in Stockholders' Equity (Deficit)

(in thousands)

					Accumulated	Total
					Other	Stockholders'
	Common Stock		Paid-in	Accumulated	Comprehensive	Equity
	Shares	Amount	Capital	Deficit	Income (loss)	(Deficit)
Balance at December 31, 2019	22,217	\$ 22	\$ 387,926	\$ (262,743)	\$ 34	\$ 125,239

Issuance of common stock	1,133	1	10,158	—	—	10,159
Stock-based compensation	—	—	25,675	—	—	25,675
Net loss	—	—	—	(51,923)	—	(51,923)
Other comprehensive loss	—	—	—	—	(31)	(31)
Balance at December 31, 2020	23,350	\$ 23	\$ 423,759	\$ (314,666)	\$ 3	\$ 109,119
Cumulative-effect adjustment from adoption of ASU 2020-06	—	—	(32,743)	3,442	—	(29,301)
Issuance of common stock	1,387	2	17,646	—	—	17,648
Stock-based compensation	—	—	40,498	—	—	40,498
Induced conversion on 2019 Notes (Note 7)	—	—	(97,738)	—	—	(97,738)
Net loss	—	—	—	(51,260)	—	(51,260)
Other comprehensive loss	—	—	—	—	(42)	(42)
Balance at December 31, 2021	24,737	\$ 25	\$ 351,422	\$ (362,484)	\$ (39)	\$ (11,076)
Issuance of common stock	1,361	1	15,415	—	—	15,416
Stock-based compensation	—	—	42,443	—	—	42,443
Induced conversion on 2019 Notes (Note 7)	—	—	(5,681)	—	—	(5,681)
Net loss	—	—	—	(24,301)	—	(24,301)
Other comprehensive loss	—	—	—	—	(1,210)	(1,210)
Balance at December 31, 2022	26,098	\$ 26	\$ 403,599	\$ (386,785)	\$ (1,249)	\$ 15,591

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Cash Flows

(in thousands)

	Year Ended December 31,		
	2022	2021	2020
Operating activities:			
Net loss	\$ (24,301)	\$ (51,260)	\$ (51,923)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Depreciation	6,044	4,602	4,504
Stock-based compensation	42,443	40,498	25,675

Accretion of discount or amortization of premium on investments	(233)	896	224
Amortization of debt issuance costs	1,601	568	3,680
Loss on fixed asset disposal	57	—	—
Induced conversion expense related to convertible notes	2,232	11,333	—
Settlement and related costs	—	(460)	—
Changes in operating assets and liabilities:			
Accounts receivable	(14,547)	(10,446)	(1,268)
Inventory	(24,439)	14,371	(2,176)
Prepaid expenses and other assets	852	(770)	(3,081)
Accounts payable	7,371	2,340	3,491
Accrued compensation and employee related benefits	2,683	836	(330)
Accrued and other liabilities	(215)	987	(1,357)
Operating lease right-of-use assets	3,414	2,792	2,740
Operating lease liabilities	(4,126)	(3,528)	(3,380)
Deferred revenue	1,805	(6,294)	6,324
Net cash provided by (used in) operating activities	641	6,465	(16,877)
Investing activities:			
Purchases of investments	(205,749)	(84,412)	(82,735)
Proceeds from maturities of investments	114,750	82,000	49,522
Proceeds from sale of property and equipment	279	—	—
Purchases of property and equipment	(12,079)	(16,230)	(3,074)
Net cash used in investing activities	(102,799)	(18,642)	(36,287)
Financing activities:			
Principal payments on finance lease obligations	—	(2)	(257)
Proceeds from exercise of stock options and employee stock purchase plan	15,416	17,648	10,159
Proceeds from issuance of 2021 Notes, net of issuance costs	—	278,422	—
Payment of 2019 Notes	(17,564)	(183,624)	—
Net cash provided by (used in) financing activities	(2,148)	112,444	9,902
Net increase (decrease) in cash and cash equivalents	(104,306)	100,267	(43,262)
Cash and cash equivalents			
Beginning of period	123,903	23,636	66,898
End of period	\$ 19,597	\$ 123,903	\$ 23,636

Supplemental disclosure of cashflow information:

Cash paid for interest	3,420	1,559	1,720
Purchases of property and equipment not yet paid	6,245	417	1,076
Disposal of fully depreciated property and equipment	199	4,467	308

The accompanying notes are an integral part of these consolidated financial statements.

57

[Table of Contents](#)

IMPINJ, INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Description of Business

Impinj, Inc., a Delaware corporation, is headquartered in Seattle, Washington. The Impinj platform wirelessly connects items and delivers data about the connected items to business and consumer applications enabled by our partner network. Impinj's revenue derives from selling our platform's constituent elements — endpoint ICs, reader ICs, readers, gateways and software — as well as from development, service and license agreements.⁵²

Note 2. Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The accompanying consolidated financial statements include Impinj, Inc. and its wholly owned subsidiaries. We have eliminated intercompany balances and transactions in consolidation. We have reclassified certain amounts on our consolidated balance sheets in prior period to conform to current period presentation. We have prepared these consolidated financial statements in conformity with U.S. generally accepted accounting principles, or GAAP.

Use of Estimates

Preparing financial statements in conformity with GAAP requires management to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and related disclosures as of the date of the financial statements, as well as the reported revenue and expenses during the periods presented. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, sales incentives, percentage completion of development contracts, inventory excess and obsolescence, income taxes and fair value of stock awards. To the extent there

are material differences between our estimates, judgments, or assumptions and actual results, our financial statements will be affected.

Concentrations of Credit Risk

Financial instruments, which potentially subject us to credit-risk concentration, comprise primarily cash equivalents, investments and accounts receivable. We place our cash and cash equivalents and investments with major financial institutions, which management assesses to be of high credit quality, to limit our investment exposure. We extend credit to customers based on our evaluation of the customer’s financial condition and

Table of Contents

generally do not require collateral. The following tables present total revenue and accounts receivable concentration for the indicated periods as of the dates presented:

	Year Ended December 31,		
	2022	2021	2020
Revenue:			
Avery Dennison ⁽¹⁾	28 %	32 %	32 %
Arizon	10	11	10
	38 %	43 %	42 %
(1) Includes revenue concentration related to Smartrac. Avery Dennison acquired Smartrac in March 2020.			
	As of December 31,		
	2022	2021	
Accounts Receivable:			
Avery Dennison ⁽¹⁾	24 %		21 %
Arizon	13		13
Intel	*		13
Blue Star	*		13
	37 %		60 %
* Less than 10%			
(1) Includes accounts receivable concentration related to Smartrac.			

Concentration of Supplier Risk

We outsource the manufacturing and production of our hardware products to a small number of suppliers. We believe other suppliers could provide similar products on comparable terms if needed. However, a supplier change would delay manufacturing and could cause a sales loss, which would adversely affect our operating results.

Cash and Cash Equivalents

Cash includes demand deposits with banks or financial institutions. Cash equivalents include short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present minimal risk of changes in value because of changes in interest rates. Our cash equivalents are solely investments with an original or remaining maturity of three months or less at the date of purchase. We regularly maintain cash amounts exceeding federally insured limits at financial institutions.

Investments

Our investments comprise fixed income securities, including U.S. government securities, corporate notes and bonds, commercial paper and asset-backed securities. The contractual maturities of some of our available-for-sale, or AFS, debt securities exceed a year and are classified as long-term investments on our balance sheet. We carry AFS debt securities at fair value with unrealized gains and losses reported as a component of other comprehensive income (loss). Our investments are subject to a periodic impairment review. We recognize an impairment charge when a decline in fair value of its investments below the cost basis is determined to be other-than-temporary. Factors we consider in determining whether a loss is temporary include the extent and length of time the investment's fair value has been lower than its cost basis, the financial condition and near-term prospects of the investee, our intent to sell the security and whether or not we will be required to sell the security prior to the expected recovery of the investment's amortized cost basis. No such impairment changes were recorded during the years ended December 31, 2022, 2021 and 2020. See Note 3 tables for the cost or amortized cost, gross unrealized gains, gross unrealized losses and total estimated fair value of our financial assets as of December 31, 2022 and 2021.

Table of Contents

Fair Value Measurement

Accounting standards define fair value as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. The standards also establish a fair value hierarchy, which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. There are three levels of inputs that may be used to measure fair value:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Assets and liabilities valued based on observable market data for similar instruments, such as quoted prices for similar assets or liabilities.
- Level 3 — Unobservable inputs that are supported by little or no market activity; instruments valued on the best available data, some of which are internally developed; and considered risk premiums that a market participant would require.

We applied the following methods and assumptions in estimating our fair value measurements:

Cash Equivalents — Cash equivalents comprise highly liquid investments, including money market funds with original or remaining maturities of less than three months at the acquisition date. We record the fair value measurement of these assets based on quoted market prices in active markets.

Investments — Our investments comprise fixed income securities, which include U.S. government securities, corporate notes and bonds, commercial paper, treasury bills and asset-backed securities. We base the fair value measurement of these assets on observable market-based inputs or inputs that are derived principally from, or corroborated by, observable market data by correlation or other means.

Debt — See Note 7 for the carrying amount and estimated fair value of our convertible senior notes due 2027.

Accounts Receivable and Allowances

Accounts receivable comprises amounts billed and currently due from customers, net of allowances for doubtful accounts, sales returns and price exceptions.

The allowance for doubtful accounts is our best estimate of the amount of probable lifetime-expected credit losses in existing accounts receivable and is determined based on our historical collections experience, age of the receivable, knowledge of the customer and the condition of the general economy and industry as a whole. We record changes in our estimate of the allowance for doubtful accounts through bad debt expense and write off the receivable and corresponding allowance when accounts are ultimately determined to be uncollectible. We include bad debt expense in general and administrative expenses. For the periods presented in this report, bad debt expense and the allowance for doubtful account were not material.

We derive most of our accounts receivable from sales to original equipment manufacturers, or OEMs, original design manufacturers, or ODMs, solution providers, and distributors who are large, well-established companies. We do not have customers that represent a significant credit risk based on current economic conditions and past collection experience. Also, we have not had material past-due balances on our accounts receivable as of December 31, 2022 or 2021.

The allowance for sales returns and price exceptions is our best estimate based on our historical experience and currently available evidence. We record changes in our estimate of the allowance for sales returns and price exceptions through revenue, and relieve the allowance when we receive product returns or process claims for price exceptions. The following table summarizes our allowance for sales returns (in thousands):

	Balance at Beginning of Year	Additional Reserve	Applied Sales Return	Balance at End of Year
Allowance for sales returns and price exceptions:				
During year ended December 31, 2022	\$ 947	\$ 1,899	\$ (2,241)	\$ 605
During year ended December 31, 2021	406	2,780	(2,239)	947
During year ended December 31, 2020	1,072	1,109	(1,775)	406

Table of Contents

Inventory

We state inventories at the lower of cost or estimated net realizable value using the average costing method, which approximates a first-in, first-out method. Inventories comprise raw materials, work-in-process and finished goods. We continuously assess the value of our inventory and write down its value for estimated excess and obsolete inventory. This evaluation includes an analysis of inventory on hand, current and forecasted demand, product development plans and market conditions. If future demand or market conditions are less favorable than our projections, or our product development plans change from current expectations, then a write-down of excess or obsolete inventory may be required and would be reflected in cost of goods sold in the period the updated information is known.

Sales of fully reserved inventory had an immaterial impact on our 2022 gross margin and a favorable net impact of 1.5% on our 2021 gross margin. We recorded inventory excess and obsolescence charges which had an unfavorable net impact of 2.2% on our 2020 gross margin. The 2021 favorable net impact was primarily from sales of fully reserved inventory, primarily endpoint ICs and readers included in the excess and obsolescence charge recorded below. During 2020, we recorded excess and obsolescence charges due primarily to reduced demand for older-generation endpoint ICs and EU gateways, which reduced the inventory value of the impacted products to zero. At the time, we expected future demand to be met by our newer generation endpoint ICs and EU gateways. Instead, because of industry-wide wafer shortages and reader supply constraints in 2022 and 2021, we sold a significant portion of the reserved endpoint ICs and gateways in the years ended December 31, 2022 and 2021.

Property and Equipment

We record property and equipment at cost and depreciate it using the straight-line method over the estimated useful lives of the related assets. The useful lives are as follows:

<u>Category</u>	<u>Useful Life</u>
Machinery and equipment	2 to 10 years
Computer equipment and software	3 to 5 years
Furniture and fixtures	3 to 7 years
Equipment acquired under finance leases	3 to 7 years
Leasehold improvements	Shorter of remaining lease term or expected useful life

We charge maintenance and repair costs to expense when incurred. We capitalize major improvements, which extend the useful life of the related asset. Upon disposal of a fixed asset, we record a gain or loss based on the differences between the proceeds received and the net book value of the disposed asset.

Other Assets

Other assets primarily comprise capitalized implementation costs from cloud computing arrangements and security deposits. We capitalize eligible costs associated with cloud computing arrangements over the term of the arrangement, plus reasonably certain renewals, and recognize those costs on a straight-line basis in the same line item in the consolidated

statement of operations as the expense for fees associated with the cloud computing arrangement. Cloud computing arrangement costs, included in prepaid expenses and other current assets, were \$413,000 and \$413,000, and other non-current assets were \$1.8 million and \$2.3 million, as of December 31, 2022 and 2021, respectively. Amortization expense associated with the cloud computing arrangements was \$413,000 for 2022, \$215,000 for 2021 and not material for 2020. We present cash flows related to capitalized implementation costs in cash flows used in operating activities.

Table of Contents

Goodwill

Goodwill is measured as the excess of the cost of acquisition over the sum of the amounts assigned to identifiable tangible and intangible assets acquired less liabilities assumed. We perform an annual impairment assessment of goodwill at the reporting unit level as of September 30, or more frequently if indicators of potential impairment exist. Our annual impairment assessment requires a comparison of the fair value of our reporting unit to the carrying value. If the fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired. If the carrying value of a reporting unit is greater than its fair value, we will recognize an impairment loss in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit. Additionally, we will consider the income tax effect from any tax deductible goodwill on the carrying amount of the reporting unit when measuring the goodwill impairment loss.

Revenue Recognition

We generate revenue primarily from sales of hardware products. We also generate revenue from software, extended warranties, enhanced maintenance, support services, and nonrecurring engineering, or NRE, development services, none of which are material.

We recognize revenue when we transfer control of the promised goods or services to our customers, which for hardware sales is generally at the time of product shipment as determined by agreed-upon shipping terms. We measure revenue based on the amount of consideration we expect to be entitled-to in exchange for those goods or services. We expect the period between when we transfer control of promised goods or services and when we receive payment to be one year or less, and that expectation is consistent with our historical experience. As such, we do not adjust our revenue for the effects of a significant financing component. We recognize any variable consideration, which comprises primarily sales incentives, as revenue reduction at the time of revenue recognition. We estimate sales incentives based on our historical experience and current expectations at the time of revenue recognition and update them at the end of each reporting period as additional information becomes available.

Our reader and gateway products are highly dependent on embedded software and cannot function without this embedded software. We account for the hardware and embedded software as a single performance obligation and recognize revenue when control is transferred.

Our customer contracts with multiple performance obligations generally include a combination of hardware products, standalone software, extended warranty, enhanced maintenance and support services. For these contracts, we account for individual performance obligations separately if they are distinct. We allocate the transaction price to the separate

performance obligations on a relative standalone selling-price basis. In instances where the standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price using one, or a combination of, the adjusted market assessment or expected cost-plus margin. We defer amounts allocated to extended warranty and enhanced maintenance sold with our reader and gateway products and recognize them on a straight-line basis over the term of the arrangement, which is typically from one to three years. We defer amounts allocated to support services sold with our reader and gateway products and recognize them when we transfer control of the promised services to our customers.

For NRE development agreements that involve significant production, modification or customization of our products, we generally recognize revenue over the performance period using the cost-input method because it best depicts the transfer of services to the customer. We receive payments under these agreements based on a billing schedule. Contract assets relate to our conditional right to consideration for our completed performance under these agreements. We record accounts receivable when the right to consideration becomes unconditional. For the periods presented in this report, our contract assets, deferred revenue and the value of unsatisfied performance obligations for NRE development agreements are not material.

If a customer pays consideration before we transfer a good or service under the contract, then we classify those amounts as contract liabilities or deferred revenue. We recognize contract liabilities as revenue when we transfer control of the promised goods or services to our customers.

Payment terms typically range from 30 to 120 days. We present revenue net of sales tax in our consolidated statements of operations. We include shipping charges billed to customers in revenue and the related shipping costs in cost of revenue.

Table of Contents

Practical Expedients and Exemptions: We expense sales commissions when incurred because we expect the amortization period to be one year or less. We record these costs within sales and marketing expenses. We do not disclose the value of unsatisfied performance obligations for (1) contracts with an original expected length of one year or less and (2) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Product Warranties

We provide limited warranty coverage for most products, generally ranging from a period of 90 days to one year from the date of shipment. We record a liability for the estimated cost of these warranties based on historical claims, product failure rates and other factors when we recognize the related revenue. We review these estimates periodically and adjust our warranty reserves when actual experience differs from historical estimates or when other information becomes available. The warranty liability primarily includes the anticipated cost of materials, labor and shipping necessary to repair or replace the product. Accrued warranty costs in 2022, 2021 and 2020 were not material.

Leases

We determine whether an arrangement is or contains a lease at inception. Right-of-use, or ROU, assets represent our right to use an identified asset for the lease term. Lease liabilities represent our obligation to make lease payments arising

from the lease. We recognize operating lease ROU assets and liabilities at commencement date based on the present value of future lease payments over the lease term. We use an incremental borrowing rate in determining the present value of future lease payments because our operating leases do not provide an implicit rate. Our incremental borrowing rate is based on a credit-adjusted risk-free rate, which best approximates a secured rate over a similar term of lease. We recognize lease expense for lease payments on a straight-line basis over the lease term. Our lease agreements may contain variable costs such as common area maintenance, insurance, real estate taxes or other costs. We expense variable lease costs on the consolidated statements of operations as incurred. Our lease agreements generally do not contain any residual value guarantees or restrictive covenants.

We have various noncancellable operating lease agreements for office, warehouse and research and development space in the U.S., China, Thailand, Brazil and Malaysia, with expiration dates from 2023 to 2029. Certain of these arrangements have free or escalating rent payment provisions and optional renewal and termination clauses that we factor into the classification and measurement of the lease when appropriate. These lease agreements typically include lease and non-lease components and are generally accounted for as a single lease component. We consider variable CAM expenses for real estate leases as non-lease components.

We do not record leases with an initial term of 12 months or less on our consolidated balance sheet; we instead recognize lease expense for these leases on a straight-line basis over the lease term.

Research and Development Costs

Research and development expense comprises primarily personnel expenses (salaries, benefits and other employee related costs) and stock-based compensation expense for our product-development personnel; external consulting and service costs; prototype materials; other new-product development costs; and an allocated portion of infrastructure costs which include occupancy, depreciation and software costs.

Foreign Currency

We consider our foreign subsidiaries to be extensions of the U.S. Company. The functional currency of our foreign subsidiaries is the U.S. dollar. We include gains and losses resulting from remeasuring transactions denominated in currencies other than U.S. dollars in other income, net on the consolidated statements of operations.

Table of Contents

Income Taxes

We use the asset and liability approach for accounting, which requires recognizing deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement and tax bases. We measure deferred tax assets and liabilities using enacted tax rates expected to be in effect when the assets and liabilities are recovered or settled. We recognize the effects of a change in tax rates on deferred tax assets and liabilities in the year of the enactment date. We determine deferred tax assets, including historical net operating losses and deferred tax liabilities, based on temporary differences between the book and tax bases of the assets and liabilities. We believe that it is currently more likely

than not that our deferred tax assets will not be realized and, as such, we have recorded a full valuation allowance for these assets. We evaluate the likelihood of our ability to realize deferred tax assets in future periods on a quarterly basis, and if evidence indicates we will be able to realize some or all of our deferred tax assets then we will revise our valuation allowance accordingly.

We use a two-step approach for evaluating uncertain tax positions. First, we evaluate recognition, which requires us to determine if the weight of available evidence indicates that a tax position is more likely than not to be sustained upon audit, including resolution of related appeals or litigation processes. If we consider a tax position more likely than not to be unsustainable, then no benefits of the position are recognized. Second, we measure the uncertain tax position based on the largest amount of benefit which is more likely than not to be realized on effective settlement. This process involves estimating our actual current tax exposure, including assessing the risks associated with tax audits, together with assessing temporary differences resulting from the different treatment of items for tax and financial reporting purposes. If actual results differ from our estimates, then our net operating loss and credit carryforwards could be materially impacted.

Us realizing the benefits of the NOLs and credit carryforwards depends on sufficient taxable income in future years. We have established a valuation allowance against the carrying value of our deferred tax assets, as it is currently more likely than not we will be unable to realize these deferred tax assets. In addition, using NOLs and credits to offset future income subject to taxes may be subject to substantial annual limitations due to the “change in ownership” provisions of the Code and similar state provisions. Events that cause limitations in the amount of NOLs that we may use in any one year include, but are not limited to, a cumulative ownership change of more than 50%, as defined by Code Sections 382 and 383, over a three-year period. Using our NOLs and tax credit carryforwards could be significantly reduced if a cumulative ownership change of more than 50% has occurred in our past or occurs in our future.

Stock-Based Compensation

We have various equity award plans (“Plans”) for granting share-based awards to employees, consultants and non-employee directors of the Company. The Plans provide for granting several available forms of stock compensation such as stock option awards, restricted stock units, or RSUs, RSUs with performance conditions, or PSUs, and RSUs with market and service conditions, or MSUs.

We measure stock-based compensation costs for all share-based awards at fair value on the measurement date, which is typically the grant date. We determine the fair value of stock options using the Black-Scholes option-pricing model, which considers, among other things, estimates and assumptions on the expected life of the options, stock price volatility and market value of the Company's common stock. We determine the fair value of RSUs and PSUs based on the closing price of our common stock at grant date. Additionally, for awards with a market condition, we use a Monte Carlo simulation model to estimate grant date fair value, which takes into consideration the range of possible stock price of total stockholder return outcomes.

Net Loss per Share

We compute net loss per share by dividing net loss by the weighted-average number of shares of common stock outstanding. We have outstanding stock options, RSUs, PSUs, MSUs and an ESPP, each of which we include in our

calculation of diluted net loss per share if their effect would be dilutive. We compute diluted net loss per share by considering all potential dilutive common stock equivalents outstanding for the period.

Table of Contents

We used the treasury stock method for calculating any potential dilutive effect of the conversion of the 2019 Notes on diluted net loss per share for the year ended December 31, 2020. Upon us adopting ASU 2020-06 using the modified retrospective transition method on January 1, 2021, we applied the “if-converted” method for calculating any potential dilutive effect of the conversion of the 2019 and 2021 Notes on diluted net loss per share for the years ended December 31, 2022 and 2021. For more information about the 2019 and 2021 Notes, please refer to Note 7 to our consolidated financial statements.

Recently Adopted Accounting Standards

In August 2020, the FASB issued guidance on debt with conversion and other options, or ASU 2020-06. This guidance eliminates the beneficial and cash-conversion accounting models for convertible instruments and amends the derivative scope exception for contracts in an entity’s own equity. Additionally, this guidance requires the application of the “if-converted” method to calculate the impact of convertible instruments on diluted earnings per share. We adopted ASU 2020-06 on January 1, 2021 using the modified retrospective transition method and accounted for our 2019 Notes on a whole-instrument basis. We recorded a \$29.3 million increase to long-term debt, a \$32.7 million decrease to additional paid-in capital and a \$3.4 million decrease to accumulated deficit on January 1, 2021. Interest expense decreased for the year ended December 31, 2021 compared with the years ended December 31, 2020 and December 31, 2019, respectively, as we no longer separate an equity component of the 2019 Notes and incur amortization of debt discount. We had no changes to net deferred tax liabilities, due to the decrease in deferred tax liability being offset by a corresponding increase in valuation allowance upon adoption.

We present our consolidated financial statements as of and for the year ended December 31, 2021, under ASU 2020-06. We have not adjusted the comparative prior reporting periods and continue to report them in accordance with our historical accounting policy.

Note3. Fair Value Measurements

The following table presents the balances of assets measured at fair value on a recurring basis, by level within the fair value hierarchy, as of the dates presented (in thousands):

	December 31, 2022			December 31, 2021		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash equivalents:						
Money market funds	\$ 14,620	\$ —	\$ 14,620	\$ 113,058	\$ —	\$ 113,058
Total cash equivalents	14,620	—	14,620	113,058	—	113,058
Short-term investments:						
U.S. government agency securities	—	78,621	78,621	—	4,066	4,066

Corporate notes and bonds	—	26,953	26,953	—	36,966	36,966
Commercial paper	—	24,073	24,073	—	16,489	16,489
Treasury bill	—	11,359	11,359	—	4,490	4,490
Yankee bonds	—	1,939	1,939	—	—	—
Agency bonds	—	2,882	2,882	—	—	—
Asset-backed securities	—	8,321	8,321	—	7,432	7,432
Total short-term investments	—	154,148	154,148	—	69,443	69,443
Long-term investments:						
U.S. government agency securities	—	13,462	13,462	—	14,225	14,225
Yankee bonds	—	1,869	1,869	—	—	—
Agency bonds	—	2,983	2,983	—	—	—
Asset-backed securities	—	886	886	—	—	—
Total long-term investments	—	19,200	19,200	—	14,225	14,225
Total	\$ 14,620	\$ 173,348	\$ 187,968	\$ 113,058	\$ 83,668	\$ 196,726

We did not have any Level 3 assets as of December 31, 2022 or 2021. We did not have any liabilities measured at fair value as of December 31, 2022 or 2021. We expect short-term investments to mature within 1 year of the reporting date. We expect long-term investments to mature between 1 and 2 years from the reporting date. See Note 7 for the carrying amount and estimated fair value of our convertible senior notes due 2027.

Table of Contents

The following tables present the cost or amortized cost, gross unrealized gains, gross unrealized losses and total estimated fair value of our financial assets as of the dates presented (in thousands):

Description:	December 31, 2022			
	Cost or	Gross	Gross	Total Estimated
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Money market funds	\$ 14,620	\$ —	\$ —	\$ 14,620
U.S. government agency securities	93,065	—	(982)	92,083
Corporate notes and bonds	27,133	6	(186)	26,953
Yankee bonds	3,815	—	(7)	3,808
Commercial paper	24,073	—	—	24,073
Treasury bill	11,361	2	(4)	11,359
Agency bond	5,863	4	(2)	5,865

Asset-backed securities	9,287	2	(82)	9,207
Total	\$ 189,217	\$ 14	\$ (1,263)	\$ 187,968

Description:	December 31, 2021			
	Cost or	Gross	Gross	Total Estimated
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
Money market funds	\$ 113,058	\$ —	\$ —	\$ 113,058
U.S. government agency securities	18,314	—	(23)	18,291
Corporate notes and bonds	36,975	3	(12)	36,966
Commercial paper	16,489	—	—	16,489
Treasury bill	4,494	—	(4)	4,490
Asset-backed securities	7,435	—	(3)	7,432
Total	\$ 196,765	\$ 3	\$ (42)	\$ 196,726

Marketable securities in a continuous loss position for less than 12 months had an estimated fair value of \$125.6 million and unrealized losses of \$1.2 million as of December 31, 2022. Marketable securities in a continuous loss position for less than 12 months had an estimated fair value of \$61.0 million and unrealized losses of \$42,000 as of December 31, 2021. Marketable securities in a continuous loss position for greater than 12 months had an estimated fair value of \$13.9 million and unrealized losses of \$0.1 million as of December 31, 2022. As of December 31, 2021, there were no marketable securities in a continuous loss position for greater than 12 months.

Unrealized losses from our fixed-income securities are primarily attributable to changes in interest rates and not to lower credit ratings of the issuers. In determining whether an unrealized loss is other-than-temporary, for the periods presented, we determined we do not have plans to sell the securities nor is it more likely than not that we would be required to sell the securities before their anticipated recovery.

Note 4. Inventory

The following table presents the detail of inventories as of the dates presented (in thousands):

	December 31, 2022	December 31, 2021
Raw materials	\$ 14,678	\$ 6,305
Work-in-process	14,525	7,873
Finished goods	17,194	7,780
Total inventory	\$ 46,397	\$ 21,958

[Table of Contents](#)

Note 5. Property and Equipment

The following table presents property and equipment details as of the dates presented (in thousands):

	December 31, 2022	December 31, 2021
Machinery and equipment	\$ 48,420	\$ 32,159
Computer equipment and software	3,308	2,991
Furniture and fixtures	1,303	1,138
Equipment acquired under finance leases	2,895	2,960
Leasehold improvements	10,684	10,513
Total property and equipment, gross	66,610	49,761
Less: Accumulated depreciation	(27,583)	(22,261)
Total property and equipment, net	\$ 39,027	\$ 27,500

Depreciation expense, which includes amortization of finance lease assets, was \$6.0 million, \$4.6 million and \$4.5 million for the years ended December 31, 2022, 2021 and 2020, respectively. We did not acquire any property and equipment under finance leases for the year ended December 31, 2022. The net book value of property and equipment acquired under finance leases was \$0.2 million at December 31, 2021.

[Table of Contents](#)

Note 6. Income Taxes

We are subject to federal and state income taxes in the United States and foreign jurisdictions.

The following table presents U.S. and foreign components of income (loss) before income taxes (in thousands):

	Year Ended December 31,		
	2022	2021	2020
U.S.	\$ (24,508)	\$ (51,488)	\$ (52,343)
Foreign	391	381	509
Loss before income taxes	\$ (24,117)	\$ (51,107)	\$ (51,834)

The following table presents the detail of income tax benefit (expense) for the periods presented (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Current:			
U.S. - Federal	\$ —	\$ —	\$ —

U.S. - State	(68)	(8)	(56)
Foreign	(110)	(137)	(76)
	<u>(178)</u>	<u>(145)</u>	<u>(132)</u>
Deferred:			
U.S. - Federal	5	(7)	32
U.S. - State	(11)	(1)	11
Foreign	—	—	—
	<u>(6)</u>	<u>(8)</u>	<u>43</u>
Total income tax expense	<u>\$ (184)</u>	<u>\$ (153)</u>	<u>\$ (89)</u>

We have not recorded a liability for U.S. income taxes and foreign withholding taxes on the undistributed earnings of foreign subsidiaries as of December 31, 2022 because we intend to permanently reinvest the earnings outside the United States. We expect the amount of the unrecognized deferred tax liability, if incurred, to be immaterial.

The following table presents a reconciliation of the federal statutory rate and our effective tax rate for the periods presented:

	Year Ended December 31,		
	2022	2021	2020
U.S. Statutory Rate	21.0 %	21.0 %	21.0 %
Change in valuation allowance	(54.7)	(33.3)	(23.6)
State taxes (net of federal benefit)	0.4	0.2	(0.4)
Federal research and development credit	16.5	8.5	3.9
Stock-based compensation	16.1	10.2	0.2
Inducement premium	5.0	(4.7)	—
Unrecognized tax benefits	(4.1)	(2.1)	(1.1)
Other, net	(1.0)	(0.1)	(0.2)
Effective income tax rate	<u>(0.8 %)</u>	<u>(0.3 %)</u>	<u>(0.2 %)</u>

We continue to maintain a full valuation allowance against our net deferred tax assets in the U.S. but recognize deferred income tax expense (benefit) due to the change in the indefinite deferred tax liability related to goodwill, which is partially offset by indefinite tax attributes.

Deferred federal, state and foreign income taxes reflect the net tax impact of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and for tax purposes. The following

table presents the significant components of our deferred tax assets and liabilities as of the dates presented (in thousands):

	December 31, 2022	December 31, 2021
Net operating loss carryforwards	\$ 53,157	\$ 58,673
Credit carryforwards	16,868	13,879
Capitalized research and development	17,072	857
Operating lease liabilities	3,011	3,425
Allowances	1,398	859
Deferral of employer taxes	—	111
Deferred revenue	74	50
Stock-based compensation	6,041	6,762
Disallowed interest expense	676	768
Inventory cost capitalization	791	506
Other	—	23
Deferred tax assets	99,088	85,913
Less: Valuation allowance	(95,710)	(82,461)
Net deferred tax assets	3,378	3,452
Deferred tax liability:		
Goodwill	(796)	(744)
Depreciation and amortization	(475)	(336)
Operating lease ROU assets	(2,226)	(2,485)
Deferred tax liabilities	(3,497)	(3,565)
Net deferred tax liability	\$ (119)	\$ (113)

Realizing deferred tax assets depends on us generating future taxable income, the timing and amount of which are uncertain. We have provided a full valuation allowance against the net deferred tax assets as of December 31, 2022 and 2021 because, based on the weight of available evidence, it is more likely than not we will be unable to realize the deferred tax assets.

We have accumulated federal tax losses of approximately \$249.3 million and \$274.7 million, respectively, as of December 31, 2022 and 2021, which are available to reduce future taxable income. The Tax Cuts and Jobs Act, or TCJA, enacted on December 22, 2017 altered the carryforward period for federal net operating losses and as a result, all net operating losses generated in 2018 and forward have an indefinite life. Of the net operating losses reported, we have accumulated \$141.8 million with an indefinite life as of December 31, 2022. We have accumulated state tax losses of approximately \$21.7 million and \$23.3 million as of December 31, 2022 and 2021, respectively. We also have net research and development credit carryforwards of \$22.3 million and \$18.3 million as of December 31, 2022 and 2021, respectively, which are available to reduce future tax liabilities.

The Tax Cuts and Jobs Act contained a provision which requires the capitalization of Section 174 costs incurred in the years beginning on or after Jan. 1, 2022. Section 174 costs are expenditures which represent research and development costs that are incident to the development or improvement of a product, process, formula, invention, computer software or technique. This provision changes the treatment of Section 174 costs such that the expenditures are no longer allowed as an immediate deduction but rather must be capitalized and amortized. We have included the impact of this provision, which results in a deferred tax asset of approximately \$16.7 million as of December 31, 2022.

Our pre-2018 federal tax losses and research and development credit carryforwards began expiring in 2020. Under Sections 382 and 383 of the Internal Revenue Code, if a corporation undergoes an ownership change, then the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes, such as research tax credits, to offset its post-change income or income tax liability may be limited. We have completed a formal IRC Section 382 study through December 31, 2022 and the disclosed attributes reflect the conclusion of that study. However, subsequent ownership changes may affect the limitation in future years.

We are currently not under audit in any tax jurisdiction. Tax years from 2003 through 2022 are currently open for audit by federal and state taxing authorities.

We establish reserves for tax positions based on estimates of whether, and the extent to which, additional taxes will be due. We establish the reserves when we believe that our tax-return positions might be challenged by taxing authorities, despite our belief that our tax return positions are fully supportable.

[Table of Contents](#)

The following table presents the total balance of unrecognized tax benefits as of the dates presented (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Balance at beginning of period	\$ 4,609	\$ 3,519	\$ 3,428
Gross increase to tax positions in prior periods	—	—	(417)
Gross increase to tax positions in current periods	997	1,090	508
Balance at end of period	<u>\$ 5,606</u>	<u>\$ 4,609</u>	<u>\$ 3,519</u>

As of December 31, 2022, we recorded a total amount of unrecognized tax benefit of \$5.6 million as a reduction to the deferred tax asset. If recognized, this tax benefit would have no impact to our effective tax rate because we have a full valuation allowance. We do not anticipate that the amount of existing unrecognized tax benefit will significantly increase or decrease within the next 12 months. We record accrued interest and penalties related to unrecognized tax benefits as income tax expense and their value is zero.

Note 7. Long-term debt

Convertible Senior Notes

The following table presents the outstanding principal amount and carrying value of the Notes as of the dates indicated (in thousands):

	December 31, 2022			December 31, 2021		
	Unamortized			Unamortized		
	Principal	debt	Net Carrying	Principal	d debt	Net Carrying
	Amount	issuance costs	Amount	Amount	issuance costs	Amount
2019 Notes ^{(1) (2)}	\$ —	\$ —	\$ —	\$ 9,850	\$ (217)	\$ 9,633
2021 Notes	287,500	(7,256)	280,244	287,500	(8,839)	278,661
Total Debt	287,500	(7,256)	280,244	297,350	(9,056)	288,294
Short-term Debt	—	—	—	9,850	(217)	9,633
Long-term Debt	\$ 287,500	\$ (7,256)	\$ 280,244	\$ 287,500	\$ (8,839)	\$ 278,661

(1) In November 2021, we completed a privately negotiated repurchase of \$76.4 million principal amount of the 2019 Notes which we accounted for as an induced conversion in accordance with Accounting Standards Codification 470-20, Debt with Conversion and Other Options (ASC 470-20). As a result of this transaction, we recorded unamortized debt issuance costs of \$1.8 million in additional paid-in capital for the year ended December 31, 2021. Please refer to section "Repurchase of the Convertible Senior Notes – 2019".

(2) In June 2022, we completed a repurchase of \$9.85 million of the remaining principal amount of the 2019 Notes which we accounted for as an induced conversion in accordance with Accounting Standards Codification 470-20, Debt with Conversion and Other Options (ASC 470-20). As a result of this transaction, we recorded unamortized debt issuance costs of \$199,000 in additional paid-in capital for the year ended December 31, 2022. Please refer to section "Repurchase of the Convertible Senior Notes – 2019".

In December 2019, we issued \$86.3 million aggregate principal amount of the 2019 Notes and in November 2021, we issued \$287.5 million aggregate principal amount of the 2021 Notes (collectively, the Notes).

Further details of the Notes are as follows:

Issuance	Maturity Date	Interest Rate	First Interest Payment Date	Effective Interest Rate	Semi-Annual Interest Payment Dates	Initial Conversion Rate per \$1,000 Principal	Initial Conversion Price	Number of Shares (in millions) ⁽¹⁾
2019 Notes	December 15, 2026	2%	June 15, 2020	2.47%	June 15; December 15	28.9415	\$ 34.55	N/A
2021 Notes	May 15, 2027	1.125%	May 15, 2022	1.72%	May 15; November 15	9.0061	\$ 111.04	2.6

(1) We repurchased the 2019 Notes in November 2021 (\$76.4 million) and June 2022 (\$9.85 million).

The Notes are senior unsecured obligations, do not contain any financial covenants and are governed by indentures (the Indentures). The total net proceeds from the 2019 and 2021 Notes, after deducting initial debt issuance costs, fees and expenses, were \$83.5 million and \$278.4 million, respectively. We used a portion of the 2019 Notes proceeds to pay the cost of the capped call transactions described in the section "**Capped Calls**" and to repay our senior credit facility in 2019. We used approximately \$183.6 million of the 2021 Notes net proceeds, excluding accrued interest, to repurchase approximately

\$76.4 million aggregate principal amount of the 2019 Notes through individual privately negotiated transactions concurrent with us offering the 2021 Notes. We used

Table of Contents

approximately \$17.6 million, excluding accrued interest, to repurchase the remaining \$9.85 million aggregate principal amount of the 2019 Notes in June 2022. Please refer to the section “**Repurchase of the Convertible Senior Notes - 2019**” for further details of both transactions. We will use the remainder of the net proceeds from the 2021 Notes for general corporate purposes.

Terms of the 2021 Notes

The Notes holders may convert their respective Notes at their option at any time prior to the close of business on the business day immediately preceding the respective conversion dates under the following circumstances:

- during any fiscal quarter commencing after the fiscal quarter ending on March 31, 2022 for the 2021 Notes (and only during such fiscal quarter), if the last reported sale price of our common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding fiscal quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
- during the five business day period after any five consecutive trading day period in which the trading price per \$1,000 principal amount of the Notes for each trading day was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;
- prior to the close of business on the second scheduled trading day immediately preceding the redemption date if we call the Notes for redemption; or
- upon the occurrence of specified corporate events, as described in the indenture.

None of the circumstances described in the paragraphs above were met during fiscal year 2022.

Regardless of the foregoing circumstances, holders may convert all or any portion of the Notes, in increments of \$1,000 principal amount, on or after February 15, 2027, until the close of business on the second scheduled trading day immediately preceding the maturity date.

We may redeem all or a portion of the Notes for cash, at our option, on or after November 20, 2024, if the last reported sale price of our common stock has been at least 130% of the conversion price at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period at a redemption price equal to 100% of the principal amount of the Notes being redeemed, plus any accrued and unpaid interest to, but excluding, the redemption date.

Notes holders who convert their Notes in connection with certain corporate events that constitute a make-whole fundamental change (as defined in the indenture) are, under certain circumstances, entitled to an increase in the conversion rate. Additionally in the event of a corporate event constituting a fundamental change (as defined in the indenture), Notes holders may require us to repurchase all or a portion of their Notes at a repurchase price equal to 100% of the principal amount of the Notes being repurchased, plus any accrued and unpaid interest to, but excluding, the repurchase date.

Accounting for the Notes

Prior to January 1, 2021, we separated the 2019 Notes into liability and equity components.

We determined the fair value of the liability component to be \$52.5 million calculated as the present value of future cash flows discounted at the borrowing rate for a similar nonconvertible debt instrument based on the expected term. We determined the borrowing rate to be 9.90% based on the market rates for nonconvertible debt instruments issued by other companies with publicly available credit ratings considered to be comparable to us. We recognized the excess of the principal amount of the 2019 Notes over the initial carrying amount of the liability component as a debt discount of \$33.8 million and amortized it to interest expense over the expected term of the 2019 Notes using the effective interest rate method. We recorded the equity component of \$33.8 million as additional paid-in capital, calculated as the difference between the total proceeds of \$86.3 million and the initial carrying amount of the liability component.

We allocated the 2019 Notes total issuance costs of \$2.8 million between liability and equity in the same proportion as the allocation of our total proceeds to liability and equity components. We amortized the issuance costs attributable to the liability component of \$1.7 million to interest expense over the respective term of the 2019

71

Table of Contents

Notes using the effective interest rate method. We netted the issuance costs attributable to the equity component of \$1.1 million against the respective equity component in additional paid-in capital.

Effective January 1, 2021, we early adopted ASU 2020-06 using the modified retrospective approach. As a result, we accounted for the 2019 Notes as a single liability measured at amortized cost, as no other embedded features require bifurcation and recognition as derivatives. Upon adoption, we recorded a \$29.3 million increase to long-term debt, a \$32.7 million decrease to additional paid-in capital and a \$3.4 million decrease to accumulated deficit. We had no changes to net deferred tax liabilities with a decrease in deferred tax liability offset by a corresponding increase in valuation allowance upon adoption.

We accounted for the 2021 Notes issuance as a single liability measured at its amortized cost, as no other embedded features require bifurcation and recognition as derivatives. We presented the 2021 Notes total issuance costs of \$9.1 million as a direct deduction from the face amount of the 2021 Notes. We amortized the issuance costs to interest expense over the respective term of the 2021 Notes using the effective interest rate method.

Interest expense related to the Notes was as follows (in thousands):

	Year Ended December 31, 2022			Year Ended December 31, 2021			Year Ended December 31, 2020	
	2019	2021	Total	2019	2021	Total	2019	Total
	Notes	Notes		Notes	Notes		Notes	
Amortization of debt discount	\$ -	\$ -	\$ -	\$ —	\$ —	\$ —	\$ 3,566	\$ 3,566
Amortization of debt issuance costs	19	1,583	1,602	329	239	568	115	115

Cash interest expense	87	3,234	3,321	1,488	494	1,982	1,732	1,732
Total interest expense	\$ 106	\$ 4,817	\$ 4,923	\$ 1,817	\$ 733	\$ 2,550	\$ 5,413	\$ 5,413

Accrued interest related to the 2019 Notes as of December 31, 2021 was not material. Accrued interest related to the 2021 Notes as of December 31, 2022 and 2021 was \$404,000 and \$494,000, respectively. We record accrued interest in accrued liabilities in our consolidated balance sheet.

Our estimated fair value of the 2021 Notes was \$347.4 million and \$314.3 million as of December 31, 2022 and 2021, respectively, which we determined through consideration of quoted market prices. Our estimated fair value of the 2019 Notes was \$26.2 million as of December 31, 2021, which we determined through consideration of quoted market prices. The fair value for both Notes is classified as Level 2, as defined in Note 2.

Capped Calls

In connection with issuing the 2019 Notes, we entered into privately negotiated capped-call transactions with certain financial counterparties. The capped-call transactions are generally designed to reduce the potential dilution to our common stock upon any conversion or settlement of the 2019 Notes, or to offset any cash payments we are required to make in excess of the principal amount upon conversion of the 2019 Notes, as the case may be, with the reduction or offset subject to a cap based on the cap price. If, however, the market price per share of our common stock exceeds the cap price of the capped-call transactions, then our stock would experience some dilution and/or the capped call would not fully offset the potential cash payments, in each case, to the extent then-market price per share of our common stock exceeds the cap price. The initial cap price of the capped call transactions is \$54.20 per share, which represents a 100% premium over the last reported sale price of our common stock of \$27.10 per share on December 11, 2019 subject to certain adjustments under the terms of the capped call transactions. The capped call transactions expire over 40 consecutive scheduled trading days ending on December 11, 2026.

The capped call transactions meet the criteria for classification in equity, are not accounted for as derivatives and are not remeasured each reporting period. We paid \$10.1 million for the capped-call transactions, which we recorded as a reduction to additional paid-in-capital within shareholders' equity.

Table of Contents

Repurchase of the Convertible Senior Notes – 2019

In November 2021 and June 2022, we completed a privately negotiated induced conversion of \$76.4 million and \$9.85 million principal amount, respectively of the 2019 Notes. We accounted for the 2019 Notes Repurchase transactions as induced conversions in accordance with Accounting Standards Codification 470-20, Debt with Conversion and Other Options (ASC 470-20). In connection with the induced conversions, we paid approximately \$183.6 million in cash in November 2021 and \$17.6 million in cash in June 2022, and also paid accrued and unpaid interest thereon. As a result of the induced conversion, we recorded \$11.3 million in November 2021 and \$2.2 million in June 2022 in induced conversion expense which is included in the Consolidated Statements of Operations. The induced conversion expense represents the fair value of the consideration issued upon conversion in excess of the fair value of the securities issuable under the original terms of the 2019

Notes. We accounted for the remaining cash consideration under the original terms of the 2019 Notes under the general conversion accounting guidance, where the difference between the carrying amount of the 2019 Notes retired, including unamortized debt issuance costs of \$1.8 million in November 2021 and \$199,000 in June 2022, and the cash consideration paid, was recorded in additional paid-in capital.

Note 8. Stockholders' Equity

Preferred Stock

Our board of directors has the authority to fix the designations, powers, preferences and rights and the qualifications, limitations or restrictions thereof, of any wholly unissued series of preferred stock, and to increase or decrease the number of shares in any series of preferred stock, subject to limitations prescribed by law and by our certificate of incorporation. We had no preferred stock issued and outstanding as of December 31, 2022 or 2021.

Common Stock

As of December 31, 2022, we had authorized 495,000,000 shares of voting \$0.001 par value common stock. Each holder of the common stock is entitled to one vote per common share. At its discretion, the board of directors may declare dividends on shares of common stock, subject to the prior rights of our preferred stockholders, if any. Upon liquidation or dissolution, holders of common stock will receive distributions only after preferred stock preferences have been satisfied.

Note 9. Stock-Based Awards

Stock-Based Compensation Expense

The following table presents the detail of stock-based compensation expense amounts included in our consolidated statements of operations for the periods presented (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Cost of revenue	\$ 1,522	\$ 1,869	\$ 1,015
Research and development expense	17,961	17,170	10,314
Sales and marketing expense	9,447	9,496	5,981
General and administrative expense	13,513	11,963	8,365
Total stock-based compensation expense	\$ 42,443	\$ 40,498	\$ 25,675

2016 Equity Incentive Plan

In June 2016, our board of directors adopted and our stockholders approved our 2016 Equity Incentive Plan, or the 2016 Plan, which became effective in July 2016 at which time the 2010 Equity Incentive Plan, or the 2010 Plan, was terminated. Our 2000 Stock Plan was terminated in March 2010. The number of shares of common stock reserved for issuance under the 2016 Plan may increase on January 1 of each year, beginning on January 1, 2017 and ending on and including January 1, 2026, by the lesser of (1) 1,825,000 shares; (2) 5% of the total number of shares of common stock outstanding on December

31 of the preceding calendar year; and (3) a lesser number of shares determined by our board of directors. The 2016 Plan provides for granting incentive or non-qualified stock options, restricted stock, restricted stock units, stock appreciation rights and performance shares or performance units to employees, non-employee directors and consultants.

Table of Contents

All options granted under the 2000 Stock Plan, the 2010 Plan and the 2016 Plan have a maximum 10-year term and generally vest and become exercisable over four years of continued employment or service as defined in each option agreement. We generally grant stock options with exercise prices that equal the fair value of the common stock on the date of grant. As allowed under the 2016 Plan, there are a few exceptions to this vesting schedule, which permit vesting at different rates or based on achieving performance targets. We use newly issued shares to satisfy option exercises. At December 31, 2022, we had approximately 2.0 million shares of common stock available for future grants.

Stock Options

The following table summarizes option award activity for the year ended December 31, 2022 (in thousands, except per share data and years):

	Number of Underlying Shares	Weighted-Average Exercise Price Per Share	Weighted- Average Remaining Contractual Life (Years)	Total Intrinsic Value
Outstanding at December 31, 2021	2,288	\$ 24.53	6.65	\$ 146,827
Granted	—	—		
Exercised	(550)	22.56		
Forfeited or expired	(26)	29.07		
Outstanding at December 31, 2022	1,712	25.09	5.92	143,996
Vested and exercisable at December 31, 2022	1,466	\$ 24.38	5.70	\$ 124,287

We estimate the fair value of options granted at the date of grant using the Black-Scholes option-pricing model with the following assumptions for the periods presented:

	Year Ended December 31,		
	2022	2021	2020
Risk-free interest rate	N/A	0.8% - 1.2%	0.3% - 1.7%
Expected dividends yield	N/A	None	None
Expected volatility	N/A	71.2% - 72.4%	64.3% - 70.3%
Weighted-average expected term	N/A	6.08	6.08
Weighted-average fair value of options granted	N/A	\$ 36.94	\$ 16.56

We determined that it was not practicable to calculate the volatility of our share price because we do not have an extensive public trading history for shares of our common stock. Therefore, we estimated our volatility based on a combination of our historical volatility since becoming a publicly traded company and reported market value data for a group of publicly traded entities that we believe are relatively comparable after considering their size, stage of lifecycle, profitability, growth, risk and return on investment.

To determine the expected term, we generally apply and have historically applied the simplified approach in which the expected term of an award is presumed to be the mid-point between the vesting date and the expiration date of the options as we do not have sufficient historical exercise data to provide a reasonable basis for an estimate of expected term.

The total intrinsic value of options exercised during 2022, 2021 and 2020 was \$31.9 million, \$33.7 million and \$10.2 million, respectively. The total grant date fair value of options vested was \$7.0 million, \$12.8 million and \$11.7 million during 2022, 2021 and 2020, respectively.

As of December 31, 2022, our total unrecognized stock-based compensation cost related to unvested stock options was \$4.2 million, which we will recognize over the weighted-average remaining requisite service period of 1.2 years.

[Table of Contents](#)

Restricted Stock Units

The following table summarizes activity for restricted stock units, or RSUs, RSUs with performance conditions, or PSUs, and RSUs with market and service conditions, or MSUs, for the year ended December 31, 2022 (in thousands, except per share data):

	Number of Underlying Shares			Weighted-Average Grant Date Fair Value		
	RSUs	MSUs	PSUs	RSUs	MSUs	PSUs
Outstanding at December 31,						
2021	1,165	84	268	\$ 45.45	\$ 77.01	\$ 54.67
Granted	737	57	77	65.81	81.22	64.07
Vested	(478)	—	(269)	44.20	—	54.70
Forfeited	(114)	(31)	(2)	50.43	72.81	64.98
Outstanding at December 31,						
2022	1,310	110	74	\$ 56.92	\$ 80.40	\$ 64.03

MSUs: We granted a total of 57,000 and 83,750 shares of MSUs to certain executives in 2022 and 2021, respectively. The MSUs are eligible to vest based on our total stockholder return ("TSR") relative to the TSR of the constituents comprising the S&P Semiconductor Select Industry Index over two measurement periods as noted below.

For the 2022 MSUs: Half of the MSUs are eligible to vest based on our relative TSR during the period from January 1, 2022 through December 31, 2023, and half are eligible to vest based on our relative TSR during the period from January 1, 2022 through December 31, 2024.

For the 2021 MSUs: Half of the MSUs are eligible to vest based on our relative TSR during the period from January 1, 2021 through December 31, 2022, and half are eligible to vest based on our relative TSR during the period from January 1, 2021 through December 31, 2023.

We use a Monte Carlo simulation in estimating the MSU fair value at grant date and recognize compensation cost over the implied service period. We estimated the aggregate grant-date fair value of the 2022 and 2021 MSUs to be \$4.2 million and \$6.4 million, respectively using the Monte Carlo simulation valuation method. We recorded \$2.8 million and \$2.0 million of stock-based compensation expense related to the MSUs during 2022 and 2021, respectively. As of December 31, 2022, our total unrecognized stock-based compensation cost related to unvested MSUs was \$4.0 million, which we will recognize over the weighted-average period of 1.1 years.

PSUs: Since 2019, we have granted PSUs under our annual bonus program to our senior executives and other bonus-eligible employees. The number of annual PSUs that ultimately vest depends on us attaining certain financial metrics for the fiscal year as well as on the employee's continued employment through the vesting date. The compensation committee and board of directors certified achievement of the financial metric for PSUs granted in 2021, vesting 268,000 shares in first-quarter 2022. Based upon attainment of the financial metric for 2022, we expect approximately 57,028 shares to vest in first-quarter 2023.

We record compensation expense for each period based on our estimate of the most probable number of PSUs that will vest, and we recognize the expense over the related service period. The stock-based compensation expense we recognized for PSUs was \$6.7 million and \$13 million for the years ended December 31, 2022 and 2021, respectively.

The total fair market value of RSUs vested was \$32.9 million during 2022 and \$18.2 million and \$5.0 million, respectively, during 2021 and 2020. The total fair value of PSUs vested was \$18.9 million during 2022 and \$15.4 million and \$7.5 million, respectively, during 2021 and 2020. We record the grant-date fair value of the outstanding RSUs as stock-based compensation expense over the vesting period. As of December 31, 2022, there was \$63.3 million of total unrecognized compensation cost related to unvested RSUs, which we expect to recognize over a weighted average period of 2.6 years. As of December 31, 2022, there was \$0.6 million of total unrecognized compensation cost related to PSUs, which we expect to recognize in less than one year.

Employee Stock Purchase Plan

Effective July 2016, we adopted the 2016 Employee Stock Purchase Plan, or the ESPP, allowing eligible employees to authorize payroll deductions of up to 15% of their eligible compensation. An ESPP participant may purchase a maximum of 4,000 shares, or a lesser number as determined by the IRS rules, each six-month period.

Table of Contents

The offering periods generally start on the first trading day on or after February 20 and August 20 of each year. Participants in an offering period are granted the right to purchase common shares at a price per share that is 85% of the lesser of the fair market value of the shares on (1) the first day of the offering period or (2) the end of the purchase period. The number of shares reserved for the ESPP may increase each year, beginning on January 1, 2017 and continuing through and including

January 1, 2036, by the lesser of: (1) 1% of the total number of shares of common stock outstanding on the first day of each year; (2) 365,411 shares of common stock; and (3) an amount determined by our board of directors.

As of December 31, 2022, the total unrecognized stock-based compensation from the ESPP was \$0.2 million, which we will recognize on a straight-line basis over the weighted-average remaining service period of less than one year.

We estimate the fair value of the ESPP grant at the start of the offering period using the Black-Scholes option-pricing model with the following assumptions for the periods presented:

	Year Ended December 31,		
	2022	2021	2020
Risk-free interest rate	0.7% - 3.2%	0.0% - 0.1%	0.1% - 1.6%
Expected term	0.5 Years	0.5 Years	0.5 Years
Expected volatility	71.9% - 76.3%	61.0% - 65.8%	46.9% - 91.0%

Note 10. Leases

The following table presents the components of lease expense in our consolidated statements of operations for the periods presented (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Operating lease costs ^(a)			
Single lease costs	\$ 4,299	\$ 4,154	\$ 4,121
Variable lease costs	2,159	1,910	1,738
Sublease income ^(b)	(1,976)	(1,900)	(1,902)
Total operating lease costs	\$ 4,482	\$ 4,164	\$ 3,957

(a) Includes short-term lease costs, which are immaterial.

(b) Sublease income is related to unused office space that we sublet as part of the fiscal 2018 restructuring where we continue to have the primary obligations.

The following table presents supplemental cash flow information related to operating leases for the periods presented (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows used	\$ 5,097	\$ 4,895	4755
Lease liabilities arising from remeasurement of right-of-use assets			
Operating leases	\$ —	\$ 698	\$ —
Lease liabilities arising from obtaining ROU assets			
Operating leases	\$ 2,237	\$ —	\$ —

The following table presents weighted-average remaining lease term and weighted-average discount rate related to operating leases as of:

	2022	2021
Weighted-average remaining lease term (years)	4.3	4.4
Weighted-average discount rate	6.9 %	6.7 %

76

[Table of Contents](#)

The following table presents future lease payments under operating leases as of December 31, 2022 (in thousands):

	Operating Leases		
	Lease Payments	Sublease Income	Net
2023	\$ 4,059	\$ (123)	\$ 3,936
2024	3,853	—	3,853
2025	3,919	—	3,919
2026	4,019	—	4,019
2027	623	—	623
Thereafter	1,191	—	1,191
Total lease payments	\$ 17,664	\$ (123)	\$ 17,541
Less: Imputed interest	(3,476)		
Present value of lease liabilities	14,188		
Less: Current portion of lease liabilities	3,122		
Lease liabilities, net of current portion	\$ 11,066		

Note 11. Commitments and Contingencies

Indemnification

In the normal course of business, we may enter into agreements that require us to indemnify either customers or suppliers for certain risks. Although we cannot estimate our maximum exposure under these agreements, to date indemnification claims have not had a material impact on our consolidated results of operations or financial condition.

Litigation

From time to time, we are subject to legal proceedings or claims in the ordinary course of business. We accrue a liability when management believes it is both probable that we have incurred a liability and we can reasonably estimate the amount of loss. For the year ended December 31, 2021, we recorded \$0.5 million in recovery costs related to settling the shareholder derivative action described below. For the year ended December 31, 2020, we recorded \$5.4 million of our paid settlement of a federal securities class action to general and administrative expenses. As of December 31, 2022 and 2021, we did not have

accrued contingency liabilities. The following is a description of our significant legal proceedings. Although we believe that resolving these claims, individually or in aggregate, will not have a material adverse impact on our financial statements, these matters are subject to inherent uncertainties.

Shareholder Derivative Actions

On October 26, 2018, two shareholder derivative actions were filed in the U.S. District Court for the District of Delaware against our chief executive officer, former chief operating officer, former chief financial officer and certain of our directors. We were a nominal defendant. On November 8, 2018, a third shareholder derivative action was filed in this same court against the same defendants. Captioned *Weiss v. Diorio, et al.*, *Fotouhi v. Diorio, et al.*, and *De la Fuente v. Diorio, et al.*, the derivative complaints, purportedly brought on behalf of us, were premised on many of the allegations asserted in since-settled federal and state securities class actions and alleged that the defendants breached their fiduciary duties to us and allegedly made false or misleading statements and omissions of material fact in violation of Section 14(a) of the Securities Exchange Act regarding our business and operations. The derivative actions included claims for, among other things, unspecified damages in favor of us, corporate actions to purportedly improve our corporate governance and an award of costs and expenses to the derivative plaintiffs, including attorneys' fees. On January 28, 2019, the Delaware federal court entered a stipulated order that stayed these derivative actions until resolution of the pending federal securities class actions.

Table of Contents

On July 10, 2020, following a private settlement mediation, the parties executed a stipulation of settlement to settle and resolve the claims in the consolidated derivative action. The settlement required us to implement certain corporate governance changes and to pay up to \$900,000 to plaintiffs' counsel for attorneys' fees and expenses. Our insurers agreed to contribute up to \$900,000 to plaintiffs' counsel for the attorneys' fees and expenses. On August 5, 2020, at the court's request, the parties filed supplemental briefings in respect of their joint motion for preliminary settlement approval. On February 26, 2021, the court entered an order preliminarily approving the settlement. On May 11, 2021, the court held a final approval hearing. On November 22, 2021, the Court issued an opinion and final order approving the settlement resolving the consolidated derivative actions and awarding plaintiffs' counsel less than half of the \$900,000 attorneys' fees and expenses noted above. The approximately \$0.5 million in savings from the contemplated final settlement of the derivative action was remitted by the insurer to us because we contributed \$5.4 million towards the federal securities class action due to exhaustion of our applicable insurance covering both the federal securities class action and the consolidated shareholder derivative actions.

Patent Infringement Claims and Counterclaims

Imjinj Patent Infringement Claims Against NXP in California

On June 6, 2019, we filed a patent infringement lawsuit against NXP USA, Inc., a Delaware corporation and subsidiary of NXP Semiconductors N.V., or NXP, in the U.S. District Court for the Northern District of California, or the Court. Our original complaint alleged that certain NXP endpoint ICs infringe 26 of our U.S. patents. At the order of the Court, we filed an amended complaint limited to eight of the original 26 patents. We subsequently elected to go forward with asserting infringement of six of those eight patents. We are seeking, among other things, past damages, including lost profits; no less

than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorneys' fees and costs. We are also seeking an injunction against NXP making, selling, using, offering for sale or importing UCODE 8 and UCODE 9 ICs. NXP responded to our complaint on September 30, 2019 citing numerous defenses including denying infringement and claiming our asserted patents are invalid.

In February 2020, NXP filed petitions for *inter partes* review, or IPRs, with the Patent Trial and Appeal Board for the U.S. Patent and Trademark Office, or PTAB, against 12 of the originally asserted 26 patents, including the six patents asserted in the amended complaint. In August and September of 2020, the PTAB declined to institute review of four of the six asserted patents. On October 27, 2020, we filed a second amended complaint removing without prejudice the two of the six patents against which the PTAB instituted IPRs, leaving four patents in suit.

On September 24, 2020, the Court lifted a stay on two of the four patents in suit, and on July 23, 2021, the Court held a claim construction hearing for eight disputed claim terms in those two patents. On September 16, 2021, the Court issued a claim construction rejecting NXP's positions and adopting most of Impinj's positions relating to those disputed claim terms.

On September 3, 2021, the Court lifted the stay on the other two of the four patents in suit and scheduled a claim construction hearing for those two patents on March 4, 2022, issuing a claim construction order on those patents on March 21, 2022. Discovery has now closed and the parties have both filed various motions for summary judgment. Trial is scheduled for June 5, 2023.

NXP Patent Infringement Claims Against Impinj in Washington

On October 4, 2019, NXP USA, Inc. and NXP filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware. The complaint alleged that certain of our products infringe eight U.S. patents owned by NXP or NXP USA, Inc. The plaintiffs are seeking, among other things, past damages adequate to compensate them for our alleged infringement of each of the patents-in-suit and reasonable attorneys' fees and costs. They are also seeking an injunction against us, enjoining continuing acts of infringement of the patents-in-suit. We have denied we are infringing any of the patents and we have asserted both that our wafer supplier is licensed under four of them and that all eight are invalid. On September 23, 2020, the District of Delaware granted Impinj's motion to transfer the case to the U.S. District Court for the Western District of Washington in Seattle.

On December 11, 2020, we moved to stay the case with respect to six of the eight patents in suit pending final resolution of IPR petitions we filed with the PTAB. On February 12, 2021, the Court granted our motion to stay the case as to these six patents. The PTAB instituted IPRs on two of the six challenged patents but denied them on the other four. The Court subsequently removed the stay on the four against which IPRs were not instituted.

[Table of Contents](#)

On March 9, 2021, we moved for summary judgment of noninfringement on the four patents to which we assert a license exists, including two patents that were not subject to a stay. On July 28, 2021, the Court deferred ruling on our motion for summary judgment pending further discovery. On September 17, 2021, the Court struck all scheduled dates for the case pending reassignment to a new judge. After the case was reassigned, the Court addressed both claim construction and our

motion for summary judgment, issuing a claim construction order and granting our motion for summary judgment on the license defense on November 4, 2022. The case is now limited to three patents. Discovery has closed and both parties are currently briefing summary judgment and related motions. Trial is scheduled for April 10, 2023.

Impinj Patent Infringement Claims Against NXP in Texas

On May 25, 2021, we filed a new patent infringement lawsuit against NXP USA in the United States District Court for the Western District of Texas (Waco), asserting that NXP has infringed nine of our patents, including seven that we originally asserted in the Northern California case. The Court later granted our motion to amend to add two new NXP entities as defendants—NXP Semiconductor Netherlands B.V. and NXP B.V. Those defendants have moved to dismiss for lack of personal jurisdiction.

We are seeking among other things, past damages, including lost profits; no less than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorney's fees and costs. We are also seeking an injunction against NXP making, selling, using, offering for sale or importing its UCODE 7, 8 and 9 endpoint ICs.

On July 26, 2021, NXP filed an answer to our complaint and counterclaimed that we infringe nine patents, one of which NXP owns and eight of which NXP recently licensed from a third party. NXP has denied infringement, asserted our patents are invalid and asserted that some are unenforceable and/or subject to a license under our commitments to license "necessary" patents to certain standards.

A claim construction hearing was held on February 10, 2022 and fact discovery is scheduled to close on February 3, 2023. The Patent Office has instituted reexamination proceedings on five of the nine patents asserted by NXP and has issued a final office action rejecting all asserted claims on one of those patents. Trial is scheduled for September 25, 2023.

NXP Patent Infringement Claims Against Impinj in China

On December 7, 2020, Impinj Radio Frequency Technology (Shanghai) Co., Ltd., or Impinj Shanghai, was served with patent infringement lawsuits filed in the Intellectual Property Court in Shanghai, China, or Shanghai Intellectual Property Court, in which NXP B.V. asserted that certain of our products infringe three Chinese patents owned by NXP B.V., that closely correspond to three of the eight U.S. patents NXP asserted in the U.S. District Court described above. The plaintiffs are seeking, among other things, past damages and reasonable attorneys' fees and costs. They are also seeking an injunction against us, enjoining continuing acts of infringement of the patents-in-suit. Impinj Shanghai objected to the jurisdiction of the Shanghai Intellectual Property Court and filed a motion to stay the proceedings. The jurisdictional challenge was rejected by the Shanghai court in March 2021; a subsequent appeal filed by Impinj Shanghai was denied before the IP Tribunal of the Supreme People's Court in third-quarter 2021. Impinj, Inc. was formally served in July 2021, officially adding Impinj, Inc. to the suit.

On December 22, 2022, Impinj Shanghai filed invalidity requests against all three Chinese patents before the China National Intellectual Property Administration, or CNIPA. In July 2021, the CNIPA issued decisions upholding the validity of all three Chinese patents. In October 2021, Impinj Shanghai filed for judicial review of all the CNIPA decisions by the Beijing Intellectual Property Court, which has docketed its review for all three patents but has not yet set hearing dates. The Court has set a trial date of May 22, 2022 for all three patents. In December 2022, the Beijing Intellectual Property Court issued the first-instance administrative judgment, upholding the invalidity decision for one of the three Chinese patents. On January 11,

2023, Impinj Shanghai filed a subsequent appeal to the IP Tribunal of the Supreme People's Court, which is pending. For the remaining two Chinese patent cases, the Beijing Intellectual Property Court has not yet set the trial date.

In May 2022, the Shanghai court held a hearing for all three patents, but the panel did not address the merits of any case in the hearing. In November 2022, we filed with the Shanghai court motions to dismiss two patent cases to which we assert a license defense (parallel to our arguments in Washington). Decisions on the motions are pending.

[Table of Contents](#)

Obligations with Third-Party Manufacturers

We manufacture products with third-party manufacturers. We are committed to purchase \$87.9 million of inventory as of December 31, 2022.

Note 12. Deferred Revenue

Deferred revenue, comprising individually immaterial amounts for extended warranties, enhanced product maintenance and advance payments on NRE services contracts, represents contracted revenue that we have not yet recognized.

The following table presents the changes in deferred revenue for the indicated periods (in thousands):

	Year Ended December 31,	
	2022	2021
Balance at beginning of period	\$ 794	\$ 7,088
Deferral of revenue	3,143	981
Recognition of deferred revenue	(1,338)	(7,275)
Balance at end of period	\$ 2,599	\$ 794

During 2022, we recognized \$0.4 million revenue which we included in deferred revenue as of December 31, 2021.

During 2021, we recognized \$6.7 million revenue which we included in deferred revenue as of December 31, 2020.

Note 13. Segment Reporting

We have one reportable and operating segment: the development and sale of our products and services. We identified our reportable segment based on how our chief operating decision-maker manages our business, makes operating decisions and evaluates our operating performance. Our chief executive officer acts as the chief operating decision-maker and reviews financial and operational information on an entity-wide basis. We have one business activity and there are no segment managers who are held accountable for operations, operating results or plans for levels or components. Accordingly, we have determined that we have a single reporting segment and operating unit structure.

Information by Revenue Categories

Our chief executive officer reviews information about our revenue categories, endpoint ICs and systems, the latter defined as reader ICs, readers, gateways and software. The following table presents our revenue categories for the indicated

periods (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Endpoint ICs	\$ 191,532	\$ 139,250	\$ 102,326
Systems	66,268	51,033	36,597
Total revenue	\$ 257,800	\$ 190,283	\$ 138,923

Information by Geography

The following table summarizes our long-lived assets, comprising property and equipment, less accumulated depreciation (in thousands):

	December 31, 2022	December 31, 2021
United States	\$ 10,551	\$ 9,493
Malaysia	12,817	10,227
Taiwan	12,620	7,330
Others	3,039	450
Total	\$ 39,027	\$ 27,500

Table of Contents

Our geographic revenue in the following table are based on the location of the VARs, inlay manufacturers, reader OEMs, distributors or end users who purchased products and services directly from us. For sales to our resellers and distributors, their location may be different from the locations of the ultimate end users. The following table presents our sales by geography for the indicated periods (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Americas	\$ 57,129	\$ 38,021	\$ 30,962
Asia Pacific	168,249	133,152	98,483
Europe, Middle East and Africa	32,422	19,110	9,478
Total revenue	\$ 257,800	\$ 190,283	\$ 138,923

Total revenue in the United States, which is included in the Americas, was \$43.0 million, \$32.6 million and \$27.6 million for the years ended December 31, 2022, 2021 and 2020, respectively. Total revenue in China (and Hong Kong), which is included in Asia Pacific, was \$109.6 million, \$98.8 million and \$79.3 million for the years ended December 31, 2022, 2021 and 2020, respectively. Total revenue in Malaysia, which is included in Asia Pacific, was \$41.0 and \$23.6 million for the years ended December 31, 2022 and 2021, respectively. The Malaysia revenue was less than 10% of revenue for the year ended December 31, 2020. No sales to countries other than the United States, China and Malaysia accounted for more than 10% of revenue for the years ended December 31, 2022, 2021 and 2020.

Note 14. Net Loss per Share

For the periods presented, the following table provides a reconciliation of the numerator and denominator used in computing basic and diluted net loss per share (in thousands, except for per-share amounts):

	Year Ended December 31,		
	2022	2021	2020
Numerator:			
Net loss	\$ (24,301)	\$ (51,260)	\$ (51,923)
Denominator:			
Weighted-average shares outstanding — basic and diluted	25,539	24,176	22,819
Net loss per share — basic and diluted	\$ (0.95)	\$ (2.12)	\$ (2.28)

The following table presents the outstanding shares of our common stock equivalents excluded from the computation of diluted net loss per share as of the dates presented because their effect would have been antidilutive (in thousands):

	Year Ended December 31,		
	2022	2021	2020
Stock options	1,712	2,288	3,061
RSUs, MSUs and PSUs	1,494	1,517	1,087
Employee stock purchase plan shares	26	42	73
2019 Notes	—	285	—
2021 Notes	2,589	2,589	—

We used the treasury stock method for calculating any potential dilutive effect of the conversion of the 2019 Notes on diluted net loss per share for the year ended December 31, 2020. Upon us adopting ASU 2020-06 using the modified retrospective transition method on January 1, 2021, we applied the “if-converted” method for calculating any potential dilutive effect of the conversion of the 2019 and 2021 Notes on diluted net loss per share for the year ended December 31, 2021.

[Table of Contents](#)

Note 15. Related-Party Transactions

We have been party to a consulting agreement with a limited liability company owned by Cathal Phelan, a member of our board of directors, pursuant to which Mr. Phelan provided advisory and consulting services to us. The original term of the consulting agreement was May 2020 through December 2020. As mutually agreed by Mr. Phelan and us, we subsequently extended the term by 12 months to December 2021. In 2021 and 2022, again as mutually agreed by Mr. Phelan and us, we further extended the term in 12-month increments to December 2022 and 2023, respectively. We recognized and paid \$509,000 and \$499,000 in consulting fees to the limited liability company owned by Mr. Phelan for the years ended December 31, 2022 and 2021, respectively. Additionally, we granted 60,000 shares of stock options to Mr. Phelan on September 21, 2020 in connection with these consulting services, with 1/24th of the shares subject to the option vesting on October 21, 2020

and 1/24th of the shares subject to the option vesting on each month thereafter, subject to Mr. Phelan remaining a service provider. As part of the consulting agreement extension in 2022, we granted 8,000 RSUs to Mr. Phelan on October 1, 2022 with 1/4th of the RSUs vesting on January 1, April 1, July 1 and October 1, 2023, subject to Mr. Phelan remaining a service provider. On January 1, 2023, Mr. Phelan joined our company as Chief Innovation Officer and ceased to provide us with consulting services. Mr. Phelan remains on our board of directors.

Note 16. Retirement Plans

In 2001, we adopted a salary deferral 401(k) plan for our employees. The plan allows employees to contribute a percentage of their pretax earnings annually, subject to limitations imposed by the Internal Revenue Service, as well as a matching contribution, subject to certain limitations. We contributed \$1,435,000 and \$585,000 as matching contributions the years ended December 31, 2022 and 2021, respectively.

Note 17. Restructuring

On February 2, 2021, we restructured our go-to-market organization to strategically align our global sales, product, partner development and marketing teams. As part of the restructuring, we eliminated approximately seven full-time positions within our go-to-market organization, representing roughly 2% of our workforce. Restructuring charges were immaterial for the year ended December 31, 2022. We incurred restructuring charges of \$1.7 million for employee termination benefits as well as \$50,000 in other associated costs for legal expenses for the year ended December 31, 2021. We substantially completed our restructuring by June 30, 2021.

A summary of accrued restructuring costs as of December 31, 2022, is shown in the table below (in thousands):

	Employee	Other Associated	
	Termination Benefits	Costs	Total
Restructuring costs incurred in 2021	\$ 1,671	\$ 50	\$ 1,721
Cash payments in 2021	(1,080)	(50)	(1,130)
Cash payments in 2022	(489)	—	(489)
Restructuring costs adjustments in 2022	(102)	—	(102)
Accrued restructuring costs as of December 31, 2022	\$ —	\$ —	\$ —

[Table of Contents](#)

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, including our chief executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2022. Disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is (1) recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (2) accumulated and communicated to management, including its principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based on the evaluation of our disclosure controls and procedures, our chief executive officer and principal financial officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of December 31, 2022.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined under Rule 13a-15(f) and 15d-15(f) under the Exchange Act. We evaluated the effectiveness of our internal control over financial reporting based on the framework in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on our evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

The effectiveness of our internal control over financial reporting as of December 31, 2022 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report included herein.

Changes in Internal Control over Financial Reporting

There were no changes that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the three months ended December 31, 2022.

Limitations on Controls

Our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving the desired control objectives. Our management recognizes that any control system, no matter how well designed and operated, is based upon certain judgments and assumptions and cannot provide absolute assurance that its objectives will be met. Similarly, an evaluation of controls cannot provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected.

Table of Contents

Report of Independent Registered Public Accounting Firm

The To the Stockholders and the Board of Directors and Stockholders
of Impinj, Inc Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Impinj, Inc.'s internal control over financial reporting as of **December 31, 2022** **December 31, 2023**, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Impinj, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of **December 31, 2022** **December 31, 2023**, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of **December 31, 2022** **December 31, 2023** and **2021**, **2022**, the related consolidated statements of operations, comprehensive loss, changes in stockholders' equity (deficit) and cash flows for each of the three years in the period ended **December 31, 2022** **December 31, 2023**, and the related notes and our report dated **February 13, 2023** **February 12, 2024** expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the

company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

8453

Table of Contents

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Seattle, Washington

February 13, 2023 12, 2024

8554

Table of Contents

Impinj, Inc.

Consolidated Balance Sheets

(in thousands, except par value)

	December 31, 2023	December 31, 2022
Assets:		
Current assets:		
Cash and cash equivalents	\$ 94,793	\$ 19,597
Short-term investments	18,440	154,148

Accounts receivable, net of allowances of \$827 and \$755 at December 31, 2023 and 2022, respectively	54,919	49,996
Inventory	97,172	46,397
Prepaid expenses and other current assets	4,372	5,032
Total current assets	269,696	275,170
Long-term investments	—	19,200
Property and equipment, net	44,891	39,027
Intangible assets, net	13,913	—
Operating lease right-of-use assets	9,735	10,490
Other non-current assets	1,478	1,969
Goodwill	19,696	3,881
Total assets	\$ 359,409	\$ 349,737
Liabilities and stockholders' equity:		
Current liabilities:		
Accounts payable	\$ 8,661	\$ 25,024
Accrued compensation and employee related benefits	8,519	9,048
Accrued and other current liabilities	8,614	2,925
Current portion of operating lease liabilities	3,373	3,122
Current portion of deferred revenue	1,713	2,250
Total current liabilities	30,880	42,369
Long-term debt	281,855	280,244
Operating lease liabilities, net of current portion	9,360	11,066
Deferred tax liabilities, net	2,911	118
Deferred revenue, net of current portion	272	349
Total liabilities	325,278	334,146
Commitments and contingencies (Note 12)		
Stockholders' equity:		
Preferred stock, \$0.001 par value — 5,000 shares authorized, no shares issued and outstanding at December 31, 2023 and 2022	—	—
Common stock, \$0.001 par value — 495,000 shares authorized, 27,166 and 26,098 shares issued and outstanding at December 31, 2023 and 2022, respectively	27	26
Additional paid-in capital	463,900	403,599
Accumulated other comprehensive income (loss)	355	(1,249)

Accumulated deficit	(430,151)	(386,785)
Total stockholders' equity	34,131	15,591
Total liabilities and stockholders' equity	\$ 359,409	\$ 349,737

The accompanying notes are an integral part of these consolidated financial statements.

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Operations

(in thousands, except per share data)

	Year Ended December 31,		
	2023	2022	2021
Revenue	\$ 307,539	\$ 257,800	\$ 190,283
Cost of revenue	155,557	119,916	91,329
Gross profit	151,982	137,884	98,954
Operating expenses:			
Research and development	88,562	74,106	64,058
Sales and marketing	41,123	37,894	34,287
General and administrative	60,828	45,465	36,137
Amortization of intangibles	4,953	—	—
Restructuring costs	—	(102)	1,721
Total operating expenses	195,466	157,363	136,203
Loss from operations	(43,484)	(19,479)	(37,249)
Other income, net	4,644	2,517	25
Induced conversion expense	—	(2,232)	(11,333)
Interest expense	(4,848)	(4,923)	(2,550)
Loss before income taxes	(43,688)	(24,117)	(51,107)
Income tax benefit (expense)	322	(184)	(153)

Net loss	\$ (43,366)	\$ (24,301)	\$ (51,260)
Net loss per share — basic and diluted	\$ (1.62)	\$ (0.95)	\$ (2.12)
Weighted-average shares outstanding — basic and diluted	26,752	25,539	24,176

The accompanying notes are an integral part of these consolidated financial statements.

56

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Comprehensive Loss

(in thousands)

	Year Ended December 31,		
	2023	2022	2021
Net loss	\$ (43,366)	\$ (24,301)	\$ (51,260)
Other comprehensive income (loss), net of tax:			
Unrealized loss on investments	1,198	(1,210)	(42)
Foreign currency translation adjustment	406	—	—
Total other comprehensive income (loss)	1,604	(1,210)	(42)
Comprehensive loss	\$ (41,762)	\$ (25,511)	\$ (51,302)

The accompanying notes are an integral part of these consolidated financial statements.

57

[Table of Contents](#)

Impinj, Inc.

Consolidated Statements of Changes in Stockholders' Equity (Deficit)

(in thousands)

	Common Stock		Additional		Accumulated	Other	Total
	Shares	Amount	Paid-in	Accumulated	Comprehensive	Income (loss)	Stockholders'
			Capital	Deficit			Equity
							(Deficit)
Balance at December 31, 2020	23,350	\$ 23	\$ 423,759	\$ (314,666)	\$ 3		\$ 109,119
Cumulative-effect adjustment from							
adoption of ASU 2020-06	—	—	(32,743)	3,442	—		(29,301)
Issuance of common stock	1,387	2	17,646	—	—		17,648
Stock-based compensation	—	—	40,498	—	—		40,498
Induced conversion on 2019 Notes (Note							
8)	—	—	(97,738)	—	—		(97,738)
Net loss	—	—	—	(51,260)	—		(51,260)
Other comprehensive loss	—	—	—	—	(42)		(42)
Balance at December 31, 2021	24,737	\$ 25	\$ 351,422	\$ (362,484)	\$ (39)		\$ (11,076)
Issuance of common stock	1,361	1	15,415	—	—		15,416
Stock-based compensation	—	—	42,443	—	—		42,443
Induced conversion on 2019 Notes (Note							
8)	—	—	(5,681)	—	—		(5,681)
Net loss	—	—	—	(24,301)	—		(24,301)
Other comprehensive loss	—	—	—	—	(1,210)		(1,210)
Balance at December 31, 2022	26,098	\$ 26	\$ 403,599	\$ (386,785)	\$ (1,249)		\$ 15,591
Issuance of common stock	1,041	1	8,736	—	—		8,737
Stock-based compensation	—	—	47,986	—	—		47,986
Net loss	—	—	—	(43,366)	—		(43,366)
Equity issuance for Voyantic acquisition							
(Note 6)	27	—	3,579	—	—		3,579
Other comprehensive loss	—	—	—	—	1,604		1,604
Balance at December 31, 2023	27,166	\$ 27	\$ 463,900	\$ (430,151)	\$ 355		\$ 34,131

The accompanying notes are an integral part of these consolidated financial statements.

Impinj, Inc.
Consolidated Statements of Cash Flows

(in thousands)

	Year Ended December 31,		
	2023	2022	2021
Operating activities:			
Net loss	\$ (43,366)	\$ (24,301)	\$ (51,260)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Depreciation and amortization	13,623	6,044	4,602
Stock-based compensation	47,986	42,443	40,498
Accretion of discount or amortization of premium on investments	(1,637)	(233)	896
Amortization of debt issuance costs	1,611	1,601	568
Loss on fixed asset disposal	—	57	—
Induced conversion expense related to convertible notes	—	2,232	11,333
Settlement and related costs	—	—	(460)
Deferred tax expense	(931)	—	—
Revaluation of acquisition-related contingent consideration liability	1,570	—	—
Changes in operating assets and liabilities, net of amounts acquired:			
Accounts receivable	(3,713)	(14,547)	(10,446)
Inventory	(49,577)	(24,439)	14,371
Prepaid expenses and other assets	1,625	852	(770)
Accounts payable	(12,303)	7,371	2,340
Accrued compensation and employee related benefits	(1,119)	2,683	836
Accrued and other liabilities	(591)	(215)	987
Operating lease right-of-use assets	2,607	3,414	2,792
Operating lease liabilities	(3,308)	(4,126)	(3,528)
Deferred revenue	(1,859)	1,805	(6,294)
Net cash provided by (used in) operating activities	(49,382)	641	6,465
Investing activities:			
Purchases of investments	—	(205,749)	(84,412)
Proceeds from sales of investments	13,372	—	—
Proceeds from maturities of investments	144,401	114,750	82,000

Proceeds from sale of property and equipment	234	279	—
Purchases of intangible assets	(250)	—	—
Purchases of property and equipment	(18,592)	(12,079)	(16,230)
Business acquisitions, net of cash acquired	(23,357)	—	—
Net cash provided by (used in) investing activities	115,808	(102,799)	(18,642)
Financing activities:			
Principal payments on finance lease obligations	—	—	(2)
Proceeds from exercise of stock options and employee stock purchase plan	8,736	15,416	17,648
Proceeds from issuance of 2021 Notes, net of issuance costs	—	—	278,422
Payment of 2019 Notes	—	(17,564)	(183,624)
Net cash provided by (used in) financing activities	8,736	(2,148)	112,444
Effect of exchange rate changes on cash and cash equivalents	34	—	—
Net increase (decrease) in cash and cash equivalents	75,196	(104,306)	100,267
Cash and cash equivalents			
Beginning of period	19,597	123,903	23,636
End of period	\$ 94,793	\$ 19,597	\$ 123,903
Supplemental disclosure of cashflow information:			
Cash paid for interest	3,234	3,420	1,559
Purchases of property and equipment not yet paid	1,417	6,245	417
Operating lease liabilities arising from obtaining ROU assets	979	—	—
Lease liabilities arising from remeasurement of ROU assets	159	—	—
26,396 shares of common stock issued for Voyantic Oy acquisition	3,579	—	—
Acquisition-related contingent consideration liability	6,172	—	—
Disposal of fully depreciated property and equipment	3,855	199	4,467

The accompanying notes are an integral part of these consolidated financial statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Description of Business

Impinj, Inc., a Delaware corporation, is headquartered in Seattle, Washington. The Impinj platform wirelessly connects items and delivers data about the connected items to business and consumer applications. Impinj generates revenue from enterprise solutions that use our platform's constituent elements — endpoint ICs, reader ICs, readers, gateways, and test and measurement solutions — as well as from development, service and license agreements.

Note 2. Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The accompanying consolidated financial statements include Impinj, Inc. and its wholly owned subsidiaries. We have eliminated intercompany balances and transactions in consolidation. We have prepared these consolidated financial statements in conformity with U.S. generally accepted accounting principles, or GAAP.

All numbers in the consolidated financial statements are rounded to the nearest thousand, except for per share data, and numbers in the notes to the consolidated financial statements are rounded to the nearest million.

Use of Estimates

Preparing financial statements in conformity with GAAP requires management to make certain estimates, judgments and assumptions that affect the reported amounts of assets and liabilities and related disclosures as of the date of the financial statements, as well as the reported revenue and expenses during the periods presented. We evaluate our estimates on an ongoing basis, including those related to revenue recognition, sales incentives, the fair value of asset acquired, liabilities assumed, contingent consideration in business combinations, inventory excess and obsolescence, income taxes and fair value of stock awards. To the extent there are material differences between our estimates, judgments or assumptions and actual results, our financial statements will be affected.

Concentrations of Credit Risk

Financial instruments, which potentially subject us to credit-risk concentration, comprise primarily cash equivalents, investments and accounts receivable. We place our cash and cash equivalents and investments with major financial institutions, which management assesses to be of high credit quality, to limit our investment exposure. We extend credit to customers based on our evaluation of the customer's financial condition and generally do not require collateral. The following tables present total revenue and accounts receivable concentration for the indicated periods as of the dates presented:

	Year Ended December 31,		
	2023	2022	2021
Revenue:			
Avery Dennison	33 %	28 %	32 %
Arizon	11	10	11
	44 %	38 %	43 %
As of December 31,			

	2023	2022
Accounts Receivable:		
Avery Dennison	39 %	24 %
Arizon	11	13
	50 %	37 %

[Table of Contents](#)

Concentration of Supplier Risk

We outsource the manufacturing and production of our hardware products to a small number of suppliers. We believe other suppliers could provide similar products on comparable terms if needed. However, a supplier change could delay manufacturing and cause a sales loss, which would adversely affect our operating results.

Cash and Cash Equivalents

Cash includes demand deposits with banks or financial institutions. Cash equivalents include short-term, highly liquid investments that are both readily convertible to known amounts of cash and so near their maturity that they present minimal risk of changes in value with changes in interest rates. Our cash equivalents are solely investments with an original or remaining maturity of three months or less at the date of purchase. We regularly maintain cash amounts exceeding federally insured limits at financial institutions.

Investments

Our investments comprise fixed income securities, including U.S. government securities, corporate notes and bonds, commercial paper and asset-backed securities. The contractual maturities of some of our available-for-sale, or AFS, debt securities exceed a year and are classified as long-term investments on our balance sheet. We carry AFS debt securities at fair value with unrealized gains and losses reported as a component of other comprehensive income (loss). Our investments are subject to a periodic impairment review. We recognize an impairment charge when a decline in fair value of an investment below the cost basis is determined to be other-than-temporary. Factors we consider in determining whether a loss is temporary include the extent and length of time the investment's fair value has been lower than its cost basis, the financial condition and near-term prospects of the investee, our intent to sell the security and whether or not we will be required to sell the security prior to the expected recovery of the investment's amortized cost basis. No such impairment changes were recorded during the years ended December 31, 2023, 2022 and 2021. See Note 3 tables for the cost or amortized cost, gross

unrealized gains, gross unrealized losses and total estimated fair value of our financial assets as of December 31, 2023 and 2022.

Fair Value Measurement

Accounting standards define fair value as the price that would be received to sell an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. The standards also establish a fair value hierarchy, which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. There are three levels of inputs that may be used to measure fair value:

- Level 1 — Quoted prices in active markets for identical assets or liabilities.
- Level 2 — Assets and liabilities valued based on observable market data for similar instruments, such as quoted price for similar assets or liabilities.
- Level 3 — Unobservable inputs that are supported by little or no market activity; instruments valued based on the available data, some of which are internally developed, and considers risk premiums that a market participant would require.

We do not have any financial assets or liabilities in Level 3 as of December 31, 2022 or at December 31, 2023, except for the liability for the earnout consideration related to the Voyantic Oy acquisition. We have classified this liability as such because we determined the fair value using significant unobservable inputs. See Note 3: Fair Value Measurements and Note 6: Goodwill and Intangible Assets.

We applied the following methods and assumptions in estimating our fair value measurements:

Cash Equivalents — Cash equivalents comprise highly liquid investments, including money market funds with original maturities of less than three months at the acquisition date. We record the fair value measurement of these assets based on quoted market prices in active markets.

Table of Contents

Investments — Our investments comprise fixed income securities, which include U.S. government agency securities, corporate notes and bonds, commercial paper, treasury bills and asset-backed securities. The fair value measurement of these assets is based on observable market-based inputs or inputs that are derived principally from, or corroborated by, observable market data by correlation or other means.

Long-term Debt — See Note 8 for the carrying amount and estimated fair value of the Notes.

Accounts Receivable and Allowances

Accounts receivable comprises amounts billed and currently due from customers, net of allowances for doubtful accounts, sales returns and price exceptions.

The allowance for doubtful accounts is our best estimate of the amount of probable lifetime-expected credit losses in existing accounts receivable and is determined based on our historical collections experience, age of the receivable, knowledge of the customer and the condition of the general economy and industry as a whole. We record changes in our estimate of the allowance for doubtful accounts through bad debt expense and write off the receivable and corresponding allowance when accounts are ultimately determined to be uncollectible. We include bad debt expense in general and administrative expenses. For the periods presented in this report, bad debt expense and the allowance for doubtful accounts were not material.

We derive most of our accounts receivable from sales to original equipment manufacturers, or OEMs, original design manufacturers, ODMs, solution providers, and distributors who are large, well-established companies. We do not have customers that represent a significant credit risk based on current economic conditions and past collection experience. Also, we have not had material past-due balances on our accounts receivable as of December 31, 2023 or 2022.

The allowance for sales returns and price exceptions is our best estimate based on our historical experience and currently available evidence. We record changes in our estimate of the allowance for sales returns and price exceptions through revenue, and relieve the allowance when we receive product returns or process claims for price exceptions. The following table summarizes our allowance for sales returns (in thousands):

	Balance at Beginning of Year	Additional Reserve	Applied Sales Return	Balance at End of Year
Allowance for sales returns and price exceptions:				
During year ended December 31, 2023	\$ 605	\$ 2,912	\$ (2,840)	\$ 677
During year ended December 31, 2022	947	1,899	(2,241)	605
During year ended December 31, 2021	406	2,780	(2,239)	947

Inventory

We state inventories at the lower of cost or estimated net realizable value using the average costing method, which approximates a first-in, first-out method. Inventories comprise raw materials, work-in-process and finished goods. We continuously assess our inventory value and write down its value for estimated excess and obsolete inventory. This evaluation includes an analysis of inventory on hand, current and forecasted demand, product development plans and market conditions. If future demand or market conditions are less favorable than our projections, or our product development plans change from current expectations, then a write-down of excess or obsolete inventory may be required and is reflected in cost of goods sold in the period the updated information is known.

[Table of Contents](#)

Excess and obsolescence charges had an immaterial impact on our 2023 and 2022 gross margin. Sales of fully reserved inventory had a favorable net impact of 1.5% on our 2021 gross margin. The 2021 favorable net impact was primarily from sales of fully reserved inventory, primarily endpoint ICs and readers included in the excess and obsolescence charge recorded in 2020. Because of industry-wide wafer shortages and reader supply constraints in 2021 and 2020, we sold a significant portion of the reserved endpoint ICs and gateways in the year ended December 31, 2021.

Property and Equipment

We record property and equipment at cost and depreciate it using the straight-line method over the estimated useful lives of the related assets. The useful lives are as follows:

<u>Category</u>	<u>Useful Life</u>
Machinery and equipment	1 to 10 years
Computer equipment and software	3 to 5 years
Furniture and fixtures	3 to 7 years
Equipment acquired under finance leases	3 to 7 years
Leasehold improvements	Shorter of remaining lease term or expected useful life

We charge maintenance and repair costs to expense when incurred. We capitalize major improvements, which extend the useful life of the related asset. Upon disposal of a fixed asset, we record a gain or loss based on the differences between the proceeds received and the net book value of the disposed asset.

Other Assets

Other assets comprise primarily capitalized implementation costs from cloud computing arrangements and security deposits. We capitalize eligible costs associated with cloud computing arrangements over the term of the arrangement, plus reasonably certain renewals, and recognize those costs on a straight-line basis in the same line item in the consolidated statement of operations as the expense for fees associated with the cloud computing arrangement. Cloud computing arrangement costs, included in prepaid expenses and other current assets, were \$0.4 million and \$0.4 million, and other non-current assets were \$1.4 million and \$1.8 million, as of December 31, 2023 and 2022, respectively. Amortization expense associated with the cloud computing arrangements was \$0.5 million for 2023, \$0.4 million for 2022, and \$0.2 million for 2021. We present cash flows related to capitalized implementation costs in cash flows used in operating activities.

Business combinations and intangible assets including goodwill

We account for business combinations using the acquisition method which involves allocating the purchase price paid to assets acquired and liabilities assumed at their acquisition-date fair values. The excess of the fair value of purchase consideration over the fair value of the identifiable assets and liabilities is recorded as goodwill. While we use our best estimates and assumptions to accurately estimate the fair value of assets acquired, liabilities assumed and the contingent consideration liability, our estimates are inherently uncertain. These estimates include, but are not limited to, estimates of future revenue, revenue growth rates, discount rates, underlying product or technology life cycles and expenses necessary to support the acquired technology, and estimated sales cycle for customer relationships. During the measurement period, which may be up to one year from the acquisition date, we may record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill.

We review assumptions related to the fair value of the contingent consideration each reporting period until the contingency is satisfied. We recognize the change in fair value of the contingent consideration liability in "General and administrative" expense on the consolidated statements of operations for the period in which the fair value changes.

We assess the impairment of goodwill on an annual basis, during the fourth quarter, or otherwise when events or changes in circumstances indicate that goodwill may be impaired.

We amortize identifiable intangible assets with finite lives over their useful lives on a straight-line basis.

[Table of Contents](#)

We expense acquisition-related costs, including advisory, legal, accounting, valuation and other similar costs in the periods in which the costs are incurred.

Revenue Recognition

We generate revenue primarily from sales of hardware products. We also generate revenue from software, extended warranties, enhanced maintenance, support services, and nonrecurring engineering, or NRE, development services, none of which are material.

We recognize revenue when we transfer control of the promised goods or services to our customers, which for hardware sales is generally at the time of product shipment as determined by agreed-upon shipping terms. We measure revenue based on the amount of consideration we expect to be entitled-to in exchange for those goods or services. We expect the period between when we transfer control of promised goods or services and when we receive payment to be one year or less, and that expectation is consistent with our historical experience. As such, we do not adjust our revenue for the effects of a

significant financing component. We recognize any variable consideration, which comprises primarily sales incentives, as revenue reduction at the time of revenue recognition. We estimate sales incentives based on our historical experience and current expectations at the time of revenue recognition and update them at the end of each reporting period as additional information becomes available.

Our reader and gateway products are highly dependent on embedded software and cannot function without this embedded software. We account for the hardware and embedded software as a single performance obligation and recognize revenue when control is transferred.

Our customer contracts with multiple performance obligations generally include a combination of hardware products, extended warranty, enhanced maintenance and support services. For these contracts, we account for individual performance obligations separately if they are distinct. We allocate the transaction price to the separate performance obligations on a relative standalone selling-price basis. In instances where the standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price using one, or a combination of, the adjusted market assessment or expected cost-plus margin. We defer amounts allocated to extended warranty and enhanced maintenance sold with our reader and gateway products and recognize them on a straight-line basis over the term of the arrangement, which is typically from one to three years. We defer amounts allocated to support services sold with our reader and gateway products and recognize them when we transfer control of the promised services to our customers.

For NRE development agreements that involve significant production, modification or customization of our products, we generally recognize revenue over the performance period using the cost-input method because it best depicts the transfer of services to the customer. We receive payments under these agreements based on a billing schedule. Contract assets relate to our conditional right to consideration for our completed performance under these agreements. We record accounts receivable when the right to consideration becomes unconditional. For the periods presented in this report, our contract assets, deferred revenue and the value of unsatisfied performance obligations for NRE development agreements are not material.

If a customer pays consideration before we transfer a good or service under the contract, then we classify those amounts as contract liabilities or deferred revenue. We recognize contract liabilities as revenue when we transfer control of the promised goods or services to our customers.

Payment terms typically range from 30 to 120 days. We present revenue net of sales tax in our consolidated statements of operations. We include shipping charges billed to customers in revenue and the related shipping costs in cost of revenue.

Practical Expedients and Exemptions: We expense sales commissions when incurred because we expect the amortization period to be one year or less. We record these costs within sales and marketing expenses. We do not disclose the value of unsatisfied performance obligations for (1) contracts with an original expected length of one year or less and (2) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Product Warranties

We provide limited warranty coverage for most products, generally ranging from a period of 90 days to one year from the date of shipment. We record a liability for the estimated cost of these warranties based on historical

Table of Contents

claims, product failure rates and other factors when we recognize the related revenue. We review these estimates periodically and adjust our warranty reserves when actual experience differs from historical estimates or when other information becomes available. The warranty liability primarily includes the anticipated cost of materials, labor and shipping necessary to repair or replace the product. Accrued warranty costs in 2023, 2022 and 2021 were not material.

Leases

We determine, at inception, whether an arrangement is or contains a lease. Right-of-use, or ROU, assets represent our right to use an identified asset for the lease term. Lease liabilities represent our obligation to make lease payments arising from the lease. We recognize operating lease ROU assets and liabilities at commencement date based on the present value of future lease payments over the lease term. We use an incremental borrowing rate in determining the present value of future lease payments because our operating leases do not provide an implicit rate. Our incremental borrowing rate is based on a credit-adjusted risk-free rate, which best approximates a secured rate over a similar term of lease. We recognize lease expense for lease payments on a straight-line basis over the lease term. Our lease agreements may contain variable costs such as common area maintenance, insurance, real estate taxes or other costs. We expense variable lease costs on the consolidated statements of operations as incurred. Our lease agreements generally do not contain any residual value guarantees or restrictive covenants.

We have various noncancellable operating lease agreements for office, warehouse and research and development space in the U.S., China, Thailand, Brazil, Malaysia and Finland, with expiration dates from 2024 to 2029. Certain of these arrangements have free or escalating rent payment provisions and optional renewal and termination clauses that we factor into the classification and measurement of the lease when appropriate. These lease agreements typically include lease and non-lease components and are generally accounted for as a single lease component. We consider variable CAM expenses for real estate leases as non-lease components.

We do not record leases with an initial term of 12 months or less on our consolidated balance sheet; we instead recognize lease expense for these leases on a straight-line basis over the lease term.

Research and Development Costs

Research and development expense comprises primarily personnel expenses (salaries, benefits and other employee related costs) and stock-based compensation expense for our product-development personnel; external consulting and service costs; prototype materials; other new-product development costs; and an allocated portion of infrastructure costs which include occupancy, depreciation and software costs.

Foreign Currency

We translate the assets and liabilities of our non-U.S. dollar functional currency subsidiary into U.S. dollars using exchange rates in effect at the end of each period. Revenue and expenses for this subsidiary are translated using rates that approximate those in effect during the period. We recognize gains and losses from these translations as a component of accumulated other comprehensive income (loss) in stockholders' equity. Our subsidiaries that use the U.S. dollar as their functional currency remeasure monetary assets and liabilities at exchange rates in effect at the end of each period, and non-monetary assets and liabilities at historical rates. We have included the gains or losses from foreign currency remeasurement in earnings.

Income Taxes

We use the asset and liability approach for accounting, which requires recognizing deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement and tax bases. We measure deferred tax assets and liabilities using enacted tax rates expected to be in effect when the assets and liabilities are recovered or settled. We recognize the effects of a change in tax rates on deferred tax assets and liabilities in the year of the enactment date. We determine deferred tax assets, including historical net operating losses and deferred tax liabilities, based on temporary differences between the book and tax bases of the assets and liabilities. We believe that it is currently more likely than not that our deferred tax assets will not be realized and, as such, we have recorded a full valuation allowance for these assets. We evaluate the likelihood of our ability to realize deferred tax assets in future periods on a quarterly basis, and if evidence indicates we will be able to realize some or all of our deferred tax assets then we will revise our valuation allowance accordingly.

Table of Contents

We use a two-step approach for evaluating uncertain tax positions. First, we evaluate recognition, which requires us to determine if the weight of available evidence indicates that a tax position is more likely than not to be sustained upon audit, including resolution of related appeals or litigation processes. If we consider a tax position more likely than not to be unsustainable, then no benefits of the position are recognized. Second, we measure the uncertain tax position based on the largest amount of benefit which is more likely than not to be realized on effective settlement. This process involves estimating our actual current tax exposure, including assessing the risks associated with tax audits, together with assessing temporary differences resulting from the different treatment of items for tax and financial reporting purposes. If actual results differ from our estimates, then our net operating loss and credit carryforwards could be materially impacted.

Us realizing the benefits of the NOLs and credit carryforwards depends on sufficient taxable income in future years. We have established a valuation allowance against the carrying value of our deferred tax assets, as it is currently more likely than not we will be unable to realize these deferred tax assets. In addition, using NOLs and credits to offset future income subject to taxes may be subject to substantial annual limitations due to the “change in ownership” provisions of the Code and similar state provisions. Events that cause limitations in the amount of NOLs that we may use in any one year include, but are not limited to, a cumulative ownership change of more than 50%, as defined by Code Sections 382 and 383, over a three-year period. Using our NOLs and tax credit carryforwards could be significantly reduced if a cumulative ownership change of more than 50% has occurred in our past or occurs in our future.

Stock-Based Compensation

We have various equity award plans, or Plans for granting share-based awards to employees, consultants and non-employee Company directors. The Plans provide for granting several available forms of stock compensation such as stock option awards, restricted stock units, or RSUs, RSUs with performance conditions, or PSUs, and RSUs with market and service conditions, or MSUs and an employee stock purchase plan, or ESPP.

We measure stock-based compensation costs for all share-based awards at fair value on the measurement date, which is typically the grant date. We determine the fair value of stock options using the Black-Scholes option-pricing model, which considers, among other things, estimates and assumptions on the expected life of the options, stock price volatility and market value of the Company’s common stock. We determine the fair value of RSUs and PSUs based on the closing price of our common stock at grant date. Additionally, for awards with a market condition, we use a Monte Carlo simulation model to estimate grant date fair value, which takes into consideration the range of possible stock price of total stockholder return outcomes.

Net Loss per Share

We compute net loss per share by dividing net loss by the weighted-average number of shares of common stock outstanding. We have outstanding stock options, RSUs, PSUs, MSUs and an ESPP, each of which we include in our calculation of diluted net loss per share if their effect would be dilutive. We compute diluted net loss per share by considering all potential dilutive common stock equivalents outstanding for the period.

Upon us adopting Accounting Standard Update, or ASU, 2020-06 using the modified retrospective transition method on January 1, 2021, we applied the “if-converted” method for calculating any potential dilutive effect of the conversion of the 2019 and 2021 Notes on diluted net loss per share for the years ended December 31, 2023 and 2022. For more information about the 2019 and 2021 Notes, please refer to Note 8 to our consolidated financial statements.

[Table of Contents](#)

Recently Adopted Accounting Standards

In August 2020, the Financial Statement Accounting Board, or FASB, issued guidance on debt with conversion and other options, or ASU 2020-06. This guidance eliminated the beneficial and cash-conversion accounting models for convertible instruments and amends the derivative scope exception for contracts in an entity's own equity. Additionally, this guidance requires the application of the "if-converted" method to calculate the impact of convertible instruments on diluted earnings per share. We adopted ASU 2020-06 on January 1, 2021 using the modified retrospective transition method and accounted for our 2019 Notes on a whole-instrument basis. We recorded a \$29.3 million increase to long-term debt, a \$32.7 million decrease to additional paid-in capital and a \$3.4 million decrease to accumulated deficit on January 1, 2021. Interest expense decreased for the year ended December 31, 2021 compared with the years ended December 31, 2020 and December 31, 2019, respectively, as we no longer separate an equity component of the 2019 Notes and incur amortization of debt discount. We had no changes to net deferred tax liabilities, due to the decrease in deferred tax liability being offset by a corresponding increase in valuation allowance upon adoption.

We present our consolidated financial statements as of and for the year ended December 31, 2021, under ASU 2020-06. We have not adjusted the comparative prior reporting periods and continue to report them in accordance with our historical accounting policy.

Recently Issued Accounting Standards Not Yet Adopted

In November 2023, the FASB released ASU 2023-07, Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures, which amends reportable segment requirements, primarily through enhanced disclosures about significant segment expenses, including for public entities that have a single reportable segment. The standard is effective for fiscal years beginning after December 31, 2023 and interim periods within fiscal years beginning after December 31, 2024. We are currently evaluating any impact of this standard on our financial statement disclosures.

In December 2023, the FASB released ASU 2023-09, Income Taxes (Topic 740): Improvements to Income Tax Disclosures, which amends income tax disclosure requirements to enhance the transparency and decision usefulness for users of the financial statements. The standard is effective for fiscal years beginning after December 31, 2024. We are currently evaluating any impact of this standard on our financial statement disclosures.

[Table of Contents](#)

Note3. Fair Value Measurements

The following table presents the balances of assets measured at fair value on a recurring basis, by level within the fair value hierarchy, as of the dates presented (in thousands):

	December 31, 2023				December 31, 2022			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Cash equivalents:								
Money market funds	\$ 78,661	\$ —	\$ —	\$ 78,661	\$ 14,620	\$ —	\$ —	\$ 14,620
Total cash equivalents	78,661	—	—	78,661	14,620	—	—	14,620
Short-term investments:								
U.S. government agency securities	—	11,893	—	11,893	—	78,621	—	78,621
Corporate notes and bonds	—	—	—	—	—	26,953	—	26,953
Commercial paper	—	—	—	—	—	24,073	—	24,073
Treasury bill	—	—	—	—	—	11,359	—	11,359
Yankee bonds	—	1,951	—	1,951	—	1,939	—	1,939
Agency bonds	—	2,994	—	2,994	—	2,882	—	2,882
Asset-backed securities	—	1,602	—	1,602	—	8,321	—	8,321
Total short-term investments	—	18,440	—	18,440	—	8	—	8
Long-term investments:								
U.S. government agency securities	—	—	—	—	—	13,462	—	13,462
Yankee bonds	—	—	—	—	—	1,869	—	1,869
Agency bonds	—	—	—	—	—	2,983	—	2,983
Asset-backed securities	—	—	—	—	—	886	—	886
Total long-term investments	—	—	—	—	—	19,200	—	19,200
Total	\$ 78,661	\$ 18,440	\$ —	\$ 97,101	\$ 14,620	\$ 8	\$ —	\$ 8
Acquisition related contingent consideration liability	—	—	6,180	6,180	—	—	—	—
Total liabilities at fair value	\$ —	\$ —	\$ 6,180	\$ 6,180	\$ —	\$ —	\$ —	\$ —

The following table presents additional information about liabilities measured at fair value for which the Company utilizes Level 3 inputs to determine fair value as of December 31, 2023:

	Year Ended December
	31,
	2023
Balance as of January 1	\$ —
Addition of contingent consideration liability due to acquisition	4,602
Change in fair value of contingent consideration liability due to remeasurement	1,578
Balance as of December 31	\$ 6,180

We recorded the contingent consideration related to the Voyantic Oy acquisition at its fair value using unobservable inputs and used the Monte Carlo simulation option pricing framework, incorporating contractual terms and assumptions regarding financial forecasts, discount rates and volatility of forecasted revenue and gross margins. A decrease in estimated revenues and gross margins or an increase in the discount rate would decrease the fair value of the contingent consideration liability. The estimated revenues and gross margins are not interrelated inputs. The development and determination of the unobservable inputs for Level 3 fair value measurements and fair value calculations is management's responsibility with the assistance of a third-party valuation specialist. During the year ended December 31, 2023, we remeasured the fair value of the contingent consideration liability based on updated inputs related to actual performance results and recorded an additional expense of \$1.6 million in general and administrative expense on the consolidated statement of operations. As of December 31, 2023, the contingent consideration liability of \$6.2 million is included in "Accrued expenses and other current liabilities" on the consolidated balance sheet.

Table of Contents

We did not have any Level 3 assets nor did we measure any liabilities at fair value as of December 31, 2022.

We expect short-term investments to mature within 1 year of the reporting date. We expect long-term investments to mature between 1 and 2 years from the reporting date. See Note 8 for the carrying amount and estimated fair value of our convertible senior notes due 2027.

The following tables present the cost or amortized cost, gross unrealized gains, gross unrealized losses and total estimated fair value of our financial assets as of the dates presented (in thousands):

December 31, 2022

December 31, 2023					
Description:	Cost or	Gross	Gross	Total Estimated	
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	
Money market funds	\$ 78,661	\$ —	\$ —	\$ 78,661	
U.S. government agency securities	11,932	—	(39)	11,893	
Corporate notes and bonds	—	—	—	—	
Yankee bonds	1,956	—	(5)	1,951	
Commercial paper	—	—	—	—	
Treasury bill	—	—	—	—	
Agency bond	2,998	—	(4)	2,994	
Asset-backed securities	1,604	—	(2)	1,602	
Total	\$ 97,151	\$ —	\$ (50)	\$ 97,101	

December 31, 2022					
Description:	Cost or	Gross	Gross	Total Estimated	
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value	
Money market funds	\$ 14,620	\$ —	\$ —	\$ 14,620	
U.S. government agency securities	93,065	—	(982)	92,083	
Corporate notes and bonds	27,133	6	(186)	26,953	
Yankee bonds	3,815	—	(7)	3,808	
Commercial paper	24,073	—	—	24,073	
Treasury bill	11,361	2	(4)	11,359	
Agency bond	5,863	4	(2)	5,865	
Asset-backed securities	9,287	2	(82)	9,207	
Total	\$ 189,217	\$ 14	\$ (1,263)	\$ 187,968	

Marketable securities in a continuous loss position for less than 12 months had an estimated fair value of \$10.2 million and unrealized losses of \$0.02 million as of December 31, 2023. Marketable securities in a continuous loss position for less than 12 months had an estimated fair value of \$125.6 million and unrealized losses of \$1.2 million as of December 31, 2022. Marketable securities in a continuous loss position for greater than 12 months had an estimated fair value of \$8.2 million and unrealized losses of \$0.03 million as of December 31, 2023. Marketable securities in a continuous loss position for greater than 12 months had an estimated fair value of \$13.9 million and unrealized losses of \$0.1 million as of December 31, 2022.

Unrealized losses from our fixed-income securities are primarily attributable to changes in interest rates and not to lower credit ratings of the issuers. In determining whether an unrealized loss is other-than-temporary, for the

[Table of Contents](#)

periods presented, we determined we do not have plans to sell the securities nor is it more likely than not that we would be required to sell the securities before their anticipated recovery.

Note 4. Inventory

The following table presents the detail of inventories as of the dates presented (in thousands):

	December 31, 2023	December 31, 2022
Raw materials	\$ 21,773	\$ 14,678
Work-in-process	42,217	14,525
Finished goods	33,182	17,194
Total inventory	<u>\$ 97,172</u>	<u>\$ 46,397</u>

Note 5. Property and Equipment

The following table presents property and equipment details as of the dates presented (in thousands):

	December 31, 2023	December 31, 2022
Machinery and equipment	\$ 57,511	\$ 48,420
Computer equipment and software	3,012	3,308
Furniture and fixtures	1,333	1,303
Equipment acquired under finance leases	1,728	2,895
Leasehold improvements	12,966	10,684
Total property and equipment, gross	<u>76,550</u>	<u>66,610</u>
Less: Accumulated depreciation	<u>(31,659)</u>	<u>(27,583)</u>
Total property and equipment, net	<u>\$ 44,891</u>	<u>\$ 39,027</u>

Depreciation expense, which includes amortization of finance lease assets, was \$8.7 million, \$6.0 million and \$4.6 million for the years ended December 31, 2023, 2022 and 2021, respectively. We did not acquire any property and equipment under finance leases for the years ended December 31, 2023 or 2022.

Note 6. Goodwill and Intangible Assets

On April 3, 2023, we acquired all of the outstanding equity of Voyantic Oy for an aggregate purchase price of \$32.7 million. Our acquisition of Voyantic Oy adds label design, manufacturing and testing to our systems offerings, to advance the quality, reliability and readability of partner inlays. The consideration comprised (i) \$3.6 million in shares of our common stock valued using the market price on the date of the acquisition, (ii) \$4.6 million in deferred payments contingent upon revenue and gross margin performance over a one-year period from the acquisition date, and (iii) the remainder in cash paid at closing.

We recorded the assets acquired and liabilities assumed at their estimated fair values as of the acquisition date. We recorded the excess of the purchase price over the assets acquired and liabilities assumed as goodwill. The fair value of net assets acquired, goodwill, intangible assets and deferred tax liability were \$2.4 million, \$15.6 million \$18.4 million and \$3.7 million, respectively. The goodwill amount represents synergies we expect to realize from the business combination and assembled workforce. We allocated the goodwill to our one reporting unit and reportable segment. The acquired goodwill and intangible assets were not deductible for tax purposes.

The transaction-related costs for the acquisition were \$1.7 million for the year ended December 31, 2023. In addition we revalued the contingent consideration subsequent to the acquisition date and recorded an additional \$1.6 million. See Note 3. Fair Value Measures for additional information on the contingent consideration.

[Table of Contents](#)

Transaction expenses and contingent consideration expense are included in general and administrative expense in the consolidated statements of operations.

This acquisition did not have a material impact on our reported revenue or net loss amounts for any period presented; therefore, we have not presented historical and pro forma disclosures.

The following table presents goodwill as of December 31, 2023 (in thousands):

	Year Ended December 31,	
	2023	2022
Balance at beginning of period	\$ 3,881	\$ 3,881
Additions from acquisition	15,590	—
Foreign currency translation adjustment	225	—

Total	\$	19,696	\$	3,881
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As of December 31, 2023, intangible assets comprised of the following (in thousands):

	Estimated Useful Life in Years	Gross Carrying Amount	Accumulated Amortization	Net
Definite-lived intangible assets:				
Backlog	0.25	\$ 773	\$ (773)	\$ —
Customer Relationships	1	3,698	(2,773)	925
Developed Technology	7.25	13,024	(1,348)	11,676
Patent	3	250	(38)	212
Tradenname	8	1,214	(114)	1,100
Total definite-lived intangible assets ⁽¹⁾		18,959	(5,046)	13,913

(1) Foreign intangible asset carrying amounts are affected by foreign currency translation

We amortize identifiable intangible assets with finite lives over their useful lives on a straight-line basis. The weighted-average life of our intangible assets is approximately six years. Amortization expense of intangible assets was \$5.0 million for the year ended December 31, 2023.

We did not have an intangible asset balance for the year ending December 31, 2022.

As of December 31, 2023, the estimated intangible asset amortization expense for the next five years and thereafter is as follows:

	Estimated Amortization (in thousands)
2024	2,956
2025	2,032
2026	1,993
2027	1,948
2028	1,948
Thereafter	3,036
Total	\$ 13,913

Note 7. Income Taxes

Table of Contents

We are subject to federal and state income taxes in the United States and foreign jurisdictions.

The following table presents U.S. and foreign components of income (loss) before income taxes (in thousands):

	Year Ended December 31,		
	2023	2022	2021
U.S.	\$ (40,349)	\$ (24,508)	\$ (51,488)
Foreign	(3,339)	391	381
Loss before income taxes	<u>\$ (43,688)</u>	<u>\$ (24,117)</u>	<u>\$ (51,107)</u>

The following table presents the detail of income tax benefit (expense) for the periods presented (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Current:			
U.S. - Federal	\$ —	\$ —	\$ —
U.S. - State	(163)	(68)	(8)
Foreign	(446)	(110)	(137)
	<u>(609)</u>	<u>(178)</u>	<u>(145)</u>
Deferred:			
U.S. - Federal	(53)	5	(7)
U.S. - State	—	(11)	(1)
Foreign	984	—	—
	<u>931</u>	<u>(6)</u>	<u>(8)</u>
Total income tax expense	<u>\$ 322</u>	<u>\$ (184)</u>	<u>\$ (153)</u>

We have not recorded a liability for U.S. income taxes and foreign withholding taxes on the undistributed earnings of foreign subsidiaries as of December 31, 2023 because we intend to permanently reinvest the earnings outside the United States. We expect the amount of the unrecognized deferred tax liability, if incurred, to be immaterial.

The following table presents a reconciliation of the federal statutory rate and our effective tax rate for the periods presented:

	Year Ended December 31,		
	2023	2022	2021
U.S. Statutory Rate	21.0 %	21.0 %	21.0 %
Change in valuation allowance	(42.0)	(54.7)	(33.3)

State taxes (net of federal benefit)	0.1	0.4	0.2
Federal research and development credit	18.6	16.5	8.5
Stock-based compensation	10.4	16.1	10.2
Inducement premium	—	5.0	(4.7)
Unrecognized tax benefits	(4.7)	(4.1)	(2.1)
Other, net	(2.8)	(1.0)	(0.1)
Effective income tax rate	0.7 %	(0.8 %)	(0.3 %)

We continue to maintain a full valuation allowance against our net deferred tax assets in the U.S. but recognize deferred income tax expense (benefit) due to the change in the indefinite deferred tax liability related to goodwill, which is partially offset by indefinite tax attributes.

Deferred federal, state and foreign income taxes reflect the net tax impact of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and for tax purposes. The following

[Table of Contents](#)

table presents the significant components of our deferred tax assets and liabilities as of the dates presented (in thousands):

	December 31, 2023	December 31, 2022
Net operating loss carryforwards	\$ 49,228	\$ 53,157
Credit carryforwards	22,971	16,868
Capitalized research and development	32,988	17,072
Operating lease liabilities	2,569	3,011
Allowances	1,624	1,398
Deferred revenue	48	74
Stock-based compensation	6,351	6,041
Disallowed interest expense	—	676
Inventory cost capitalization	1,433	791
Deferred tax assets	117,211	99,088
Less: Valuation allowance	(114,040)	(95,710)

Net deferred tax assets	3,171	3,378
Deferred tax liability:		
Goodwill	(823)	(796)
Depreciation and amortization	(3,326)	(475)
Operating lease ROU assets	(1,933)	(2,226)
Deferred tax liabilities	(6,082)	(3,497)
Net deferred tax liability	\$ (2,911)	\$ (119)

Realizing deferred tax assets depends on us generating future taxable income, the timing and amount of which are uncertain. We have provided a full valuation allowance against the net deferred tax assets as of December 31, 2023 and 2022 because, based on the weight of available evidence, it is more likely than not we will be unable to realize the deferred tax assets.

We acquired Voyantic Oy, a Finnish company on April 3, 2023. As a result of the transaction, we recorded a \$3.7 million deferred tax liability associated with intangibles, with an offset to goodwill.

We have accumulated federal tax losses of approximately \$230.5 million and \$249.3 million, respectively, as of December 31, 2023 and 2022, which are available to reduce future taxable income. The Tax Cuts and Jobs Act, or TCJA, enacted on December 22, 2017 altered the carryforward period for federal net operating losses and as a result, all net operating losses generated in 2018 and forward have an indefinite life. Of the net operating losses reported, we have accumulated \$141.9 million with an indefinite life as of December 31, 2023. We have accumulated state tax losses of approximately \$21.3 million and \$21.7 million as of December 31, 2023 and 2022, respectively. We also have net research and development credit carryforwards of \$30.5 million and \$22.3 million as of December 31, 2023 and 2022, respectively, which are available to reduce future tax liabilities.

The Tax Cuts and Jobs Act contained a provision which requires the capitalization of Section 174 costs incurred in the years beginning on or after Jan. 1, 2022. Section 174 costs are expenditures which represent research and development costs that are incident to the development or improvement of a product, process, formula, invention, computer software or technique. This provision changes the treatment of Section 174 costs such that the expenditures are no longer allowed as an immediate deduction but rather must be capitalized and amortized. We have included the impact of this provision, which results in a deferred tax asset of approximately \$32.9 million as of December 31, 2023.

The pre-2018 federal and state tax losses and federal research and development credit carryforwards began expiring in 2020. Under Sections 382 and 383 of the Internal Revenue Code, if a corporation undergoes an ownership change, the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes, such as research tax credits, to offset its post-change income or income tax liability may be limited. We have completed a formal IRC Section 382 study through December 31, 2023 and the attributes disclosed in this footnote reflect the conclusion of that study. However, subsequent ownership changes may affect the limitation in future years.

We are currently not under audit in any tax jurisdiction. Tax years from 2004 through 2023 are currently open for audit by federal and state taxing authorities.

[Table of Contents](#)

We establish reserves for tax positions based on estimates of whether, and the extent to which, additional taxes will be due. We establish the reserves when we believe that our tax-return positions might be challenged by taxing authorities, despite our belief that our tax return positions are fully supportable.

The following table presents the total balance of unrecognized tax benefits as of the dates presented (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Balance at beginning of period	\$ 5,606	\$ 4,609	\$ 3,519
Gross increase to tax positions in current periods	2,034	997	1,090
Balance at end of period	\$ 7,640	\$ 5,606	\$ 4,609

As of December 31, 2023, we recorded a total amount of unrecognized tax benefit of \$7.6 million as a reduction to the deferred tax asset. If recognized, this tax benefit would have no impact to our effective tax rate because we have a full valuation allowance. We do not anticipate that the amount of existing unrecognized tax benefit will significantly increase or decrease within the next 12 months. We record accrued interest and penalties related to unrecognized tax benefits as income tax expense and their value is zero.

Note 8. Long-term debt

In December 2019, we issued \$86.3 million aggregate principal amount of the 2019 Notes and in November 2021, we issued \$287.5 million aggregate principal amount of convertible promissory notes due May 15, 2027, referred to as the 2021 Notes (collectively, the Notes). The 2019 Notes were repurchased in 2021 and 2022. See further information on the 2019 Note Repurchase under "Repurchase of the Convertible Senior Notes - 2019" section below.

The following table presents the outstanding principal amount and carrying value of the 2021 Notes as of the dates indicated (in thousands):

	December 31, 2023			December 31, 2022		
	Principal Amount	Unamortized debt issuance costs	Net Carrying Amount	Principal Amount	Unamortized debt issuance costs	Net Carrying Amount
2021 Notes	287,500	(5,645)	281,855	287,500	(7,256)	280,244

Further details of the 2021 Notes are as follows:

Issuance	Maturity Date	Interest Rate	First Interest Payment Date	Effective Interest Rate	Semi-Annual Interest Payment Dates	Initial Conversion Rate per \$1,000 Principal	Initial Conversion on Price	Number of Shares (in millions) ⁽¹⁾
2021 Notes	May 15, 2027	1.125%	May 15, 2022	1.72%	May 15; November 15	9.0061	\$ 111.04	2.6

The 2021 Notes are senior unsecured obligations, do not contain any financial covenants and are governed by indentures (the Indentures). The total net proceeds from the 2021 Notes, after deducting initial debt issuance costs, fees and expenses, was \$278.4 million. We used approximately \$183.6 million of the 2021 Notes net proceeds, excluding accrued interest, to repurchase approximately \$76.4 million aggregate principal amount of the 2019 Notes through individual privately negotiated transactions concurrent with us offering the 2021 Notes. We used approximately \$17.6 million, excluding accrued interest, to repurchase the remaining \$9.9 million aggregate principal amount of the 2019 Notes in June 2022. We will use the remainder of the net proceeds from the 2021 Notes for general corporate purposes.

[Table of Contents](#)

Terms of the 2021 Notes

The holders of the 2021 Notes may convert their respective 2021 Notes at their option at any time prior to the close of business on the business day immediately preceding the respective conversion dates under the following circumstances:

- during any fiscal quarter commencing after the fiscal quarter ending on March 31, 2022 (and only during such fiscal quarter), if the last reported sale price of our common stock, for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on, and including, the last trading day of the immediately preceding fiscal quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
- during the five business day period after any five consecutive trading day period in which the trading price per \$1,000 principal amount of the 2021 Notes for each trading day was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;
- prior to the close of business on the second scheduled trading day immediately preceding the redemption date if we call the 2021 Notes for redemption; or
- upon the occurrence of specified corporate events, as described in the indenture.

None of the circumstances described in the above paragraphs were met during fiscal year 2023.

Regardless of the foregoing circumstances, holders may convert all or any portion of the 2021 Notes, in increments of \$1,000 principal amount, on or after February 15, 2027, until the close of business on the second scheduled trading day immediately preceding the maturity date.

We may redeem all or a portion of the 2021 Notes for cash, at our option, on or after November 20, 2024, if the last reported sale price of our common stock has been at least 130% of the conversion price at least 20 trading days (whether or not consecutive) during any 30 consecutive trading day period at a redemption price equal to 100% of the principal amount of the 2021 Notes being redeemed, plus any accrued and unpaid interest to, but excluding, the redemption date.

Holders who convert their 2021 Notes in connection with certain corporate events that constitute a make-whole fundamental change (as defined in the indenture) are, under certain circumstances, entitled to an increase in the conversion rate. Additionally in the event of a corporate event constituting a fundamental change (as defined in the indenture), holders of the 2021 Notes may require us to repurchase all or a portion of their 2021 Notes at a repurchase price equal to 100% of the principal amount of the 2021 Notes being repurchased, plus any accrued and unpaid interest to, but excluding, the repurchase date.

Accounting for the Notes

Prior to January 1, 2021, we separated the 2019 Notes into liability and equity components.

We determined the fair value of the liability component to be \$52.5 million calculated as the present value of future cash flows discounted at the borrowing rate for a similar nonconvertible debt instrument based on the expected term. We determined the borrowing rate to be 9.90% based on the market rates for nonconvertible debt instruments issued by other companies with publicly available credit ratings considered to be comparable to us. We recognized the excess of the principal amount of the 2019 Notes over the initial carrying amount of the liability component as a debt discount of \$33.8 million and amortized it to interest expense over the expected term of the 2019 Notes using the effective interest rate method. We recorded the equity component of \$33.8 million as additional paid-in capital, calculated as the difference between the total proceeds of \$86.3 million and the initial carrying amount of the liability component.

We allocated the 2019 Notes total issuance costs of \$2.8 million between liability and equity in the same proportion as the allocation of our total proceeds to liability and equity components. We amortized the issuance costs attributable to the liability component of \$1.7 million to interest expense over the respective term of the 2019 Notes using the effective interest rate method. We netted the issuance costs attributable to the equity component of \$1.1 million against the respective equity component in additional paid-in capital.

Effective January 1, 2021, we early adopted ASU 2020-06 using the modified retrospective approach. As a result, we accounted for the 2019 Notes as a single liability measured at amortized cost, as no other embedded

Table of Contents

features require bifurcation and recognition as derivatives. Upon adoption, we recorded a \$29.3 million increase to long-term debt, a \$32.7 million decrease to additional paid-in capital and a \$3.4 million decrease to accumulated deficit. We had no changes to net deferred tax liabilities with a decrease in deferred tax liability offset by a corresponding increase in valuation allowance upon adoption.

We accounted for the 2021 Notes issuance as a single liability measured at its amortized cost, as no other embedded features require bifurcation and recognition as derivatives. We presented the 2021 Notes total issuance costs of \$9.1 million as a direct deduction from the face amount of the 2021 Notes. We amortized the issuance costs to interest expense over the respective term of the 2021 Notes using the effective interest rate method.

Interest expense related to the Notes was as follows (in thousands):

	Year Ended December						
	31, 2023	Year Ended December 31, 2022			Year Ended December 31, 2021		
	2021	2019	2021	Total	2019	2021	Total
	Notes	Notes	Notes		Notes	Notes	
Amortization of debt issuance costs	1,612	19	1,583	1,602	329	239	568
Cash interest expense	3,236	87	3,234	3,321	1,488	494	1,982
Total interest expense	\$ 4,848	\$ 106	\$ 4,817	\$ 4,923	\$ 1,817	\$ 733	\$ 2,550

Accrued interest related to the 2021 Notes as of December 31, 2023 and 2022 was \$0.4 million and \$0.4 million, respectively. We record accrued interest in accrued liabilities in our consolidated balance sheet.

Our estimated fair value of the 2021 Notes was \$314.0 million and \$347.4 million as of December 31, 2023 and 2022, respectively, which we determined through consideration of quoted market prices. The fair value for the 2021 Notes is classified as Level 2, as defined in Note 2.

Capped Calls

In connection with the issuance of the 2019 Notes, we entered into privately negotiated capped-call transactions with certain financial counterparties. The capped call transactions are generally designed to reduce the potential dilution to our common stock upon any conversion or settlement of the 2019 Notes, or to offset any cash payments we are required to make in excess of the principal amount upon conversion of the 2019 Notes, as the case may be, with the reduction or offset subject to a cap based on the cap price. If, however, the market price per share of our common stock exceeds the cap price of the capped-call transactions, then our stock would experience some dilution and/or the capped call would not fully offset the potential cash payments, in each case, to the extent then-market price per share of our common stock exceeds the cap price. The capped call remains outstanding even though we have repurchased the 2019 Notes, to reduce the potential dilution of the

2021 Notes. The initial cap price of the capped call transactions is \$54.20 per share, subject to certain adjustments under the terms of the capped call transactions. The capped call transactions expire over 40 consecutive scheduled trading days ending on

Table of Contents

December 11, 2026. The capped call transactions meet the criteria for classification in equity, are not accounted for as derivatives and are not remeasured each reporting period.

Repurchase of the Convertible Senior Notes – 2019

In November 2021 and June 2022, we completed a privately negotiated induced conversion of \$76.4 million and \$9.9 million principal amount, respectively of the 2019 Notes. We accounted for the 2019 Notes Repurchase transactions as induced conversions in accordance with Accounting Standards Codification 470-20, Debt with Conversion and Other Options (ASC 470-20). In connection with the induced conversions, we paid approximately \$183.6 million in cash in November 2021 and \$17.6 million in cash in June 2022, and also paid accrued and unpaid interest thereon. As a result of the induced conversion, we recorded \$11.3 million in November 2021 and \$2.2 million in June 2022 in induced conversion expense which is included in the Consolidated Statements of Operations. The induced conversion expense represents the fair value of the consideration issued upon conversion in excess of the fair value of the securities issuable under the original terms of the 2019 Notes. We accounted for the remaining cash consideration under the original terms of the 2019 Notes under the general conversion accounting guidance, where the difference between the carrying amount of the 2019 Notes retired, including unamortized debt issuance costs of \$1.8 million in November 2021 and \$0.2 million in June 2022, and the cash consideration paid, was recorded in additional paid-in capital.

Note 9. Stockholders' Equity

Preferred Stock

Our board of directors has the authority to fix the designations, powers, preferences and rights and the qualifications, limitations or restrictions thereof, of any wholly unissued series of preferred stock, and to increase or decrease the number of shares in any series of preferred stock, subject to limitations prescribed by law and by our certificate of incorporation. We had no preferred stock issued and outstanding as of December 31, 2023 or 2022.

Common Stock

As of December 31, 2023, we had authorized 495,000,000 shares of voting \$0.001 par value common stock. Each holder of the common stock is entitled to one vote per common share. At its discretion, the board of directors may declare dividends on shares of common stock, subject to the prior rights of our preferred stockholders, if any. Upon liquidation or dissolution, holders of common stock will receive distributions only after preferred stock preferences have been satisfied.

Note 10. Stock-Based Awards

Stock-Based Compensation Expense

The following table presents the detail of stock-based compensation expense amounts included in our consolidated statements of operations for the periods presented (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Cost of revenue	\$ 1,869	\$ 1,522	\$ 1,869
Research and development expense	21,307	17,961	17,170
Sales and marketing expense	10,240	9,447	9,496
General and administrative expense	14,570	13,513	11,963
Total stock-based compensation expense	<u>\$ 47,986</u>	<u>\$ 42,443</u>	<u>\$ 40,498</u>

2016 Equity Incentive Plan

In June 2016, our board of directors adopted and our stockholders approved our 2016 Equity Incentive Plan, or the 2016 Plan, which became effective in July 2016 at which time the 2010 Equity Incentive Plan, or the 2010 Plan, was terminated. The number of shares of common stock reserved for issuance under the 2016 Plan may increase on January 1 of each year, beginning on January 1, 2017 and ending on and including January 1, 2026, by the lesser of (1) 1,825,000 shares; (2) 5% of the total number of shares of common stock outstanding on December 31 of the preceding calendar year; and (3) a lesser number of shares determined by our board of directors. The 2016

Table of Contents

Plan provides for granting incentive or non-qualified stock options, restricted stock, restricted stock units, stock appreciation rights and performance shares or performance units to employees, non-employee directors and consultants.

All options granted under the 2010 Plan and the 2016 Plan have a maximum 10-year term and generally vest and become exercisable over four years of continued employment or service as defined in each option agreement. We generally

grant stock options with exercise prices that equal the fair value of the common stock on the date of grant. As allowed under the 2016 Plan, there are a few exceptions to this vesting schedule, which permit vesting at different rates or based on achieving performance targets. We use newly issued shares to satisfy option exercises. As of December 31, 2023, we had approximately 2.8 million shares of common stock available for future grants.

Stock Options

We did not issue stock options in fiscal year 2023 or fiscal year 2022. The following table summarizes option award activity for the year ended December 31, 2023 (in thousands, except per share data and years):

	Number of Underlying Shares	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Life (Years)	Total Intrinsic Value
Outstanding at December 31, 2022	1,712	\$ 25.09	5.92	\$ 143,996
Granted	—	—		
Exercised	(243)	22.72		
Forfeited or expired	(3)	27.72		
Outstanding at December 31, 2023	1,466	25.48	4.97	94,650
Vested and exercisable at December 31, 2023	1,408	\$ 25.35	4.91	\$ 91,089

We estimate the fair value of options granted at the date of grant using the Black-Scholes option-pricing model with the following assumptions for the periods presented:

	Year Ended December 31,		
	2023	2022	2021
Risk-free interest rate	N/A	N/A	0.8% - 1.2%
Expected dividends yield	N/A	N/A	None
Expected volatility	N/A	N/A	71.2% - 72.4%
Weighted-average expected term	N/A	N/A	6.08
Weighted-average fair value of options granted	N/A	N/A	\$ 36.94

In 2021, we determined that it was not practicable to calculate the volatility of our share price because we do not have an extensive public trading history for shares of our common stock. Therefore, we estimated our volatility based on a combination of our historical volatility since becoming a publicly traded company and reported market value data for a group of publicly traded entities that we believe are relatively comparable after considering their size, stage of lifecycle, profitability, growth, risk and return on investment.

In 2021, to determine the expected term, we applied the simplified approach in which the expected term of an award is presumed to be the midpoint between the vesting date and the expiration date of the options as we did not have sufficient historical exercise data to provide a reasonable basis for an estimate of expected term.

The total intrinsic value of options exercised during 2023, 2022 and 2021 was \$19.1 million, \$31.9 million and \$33.7 million, respectively. The total grant date fair value of options vested was \$3.3 million, \$7.0 million and \$12.8 million during 2023, 2022 and 2021, respectively.

As of December 31, 2023, our total unrecognized stock-based compensation cost related to unvested stock options was \$0.9 million, which we will recognize over the weighted-average remaining requisite service period of 0.5 years.

[Table of Contents](#)

Restricted Stock Units

The following table summarizes activity for restricted stock units, or RSUs, PSUs, and MSUs for the year ended December 31, 2023 (in thousands, except per share data):

	Number of Underlying Shares			Weighted-Average Grant Date Fair Value		
	RSUs	MSUs	PSUs	RSUs	MSUs	PSUs
Outstanding at December 31,						
2022	1,310	110	74	\$ 56.92	\$ 80.40	\$ 64.03
Granted	441	126	—	119.12	145.51	—
Vested	(633)	(58)	(57)	52.92	39.15	64.03
Forfeited	(40)	(4)	(17)	71.49	185.49	64.03
Outstanding at December 31,						
2023	1,078	174	—	\$ 84.18	\$ 138.77	\$ —

We record stock-based compensation expense for RSUs and MSUs on a straight-line basis over the requisite service period, which is generally the vesting period. We record stock-based compensation for PSUs based on the probability of achieving the performance criteria defined in the PSU agreements. Forfeitures are recognized as they occur.

We granted PSUs under our annual bonus program to our senior executives and other bonus-eligible employees. The number of annual PSUs that ultimately vest depends on us attaining certain financial metrics for the fiscal year as well as on the employee's continued employment through the vesting date. In fiscal year 2022, we transitioned to a bonus plan that was half cash and half PSUs. In fiscal year 2023, we transitioned to an all cash bonus plan.

The following table summarizes information related to granted and vested RSUs, PSUs, and MSUs (in thousands, except per share data):

Year Ended December 31,

	2023	2022	2021
RSU weighted-average grant date fair value	\$ 119.12	\$ 65.81	\$ 56.40
MSU weighted-average grant date fair value	145.51	81.22	77.01
PSU weighted-average grant date fair value	\$ —	\$ 64.07	\$ 54.67
Fair market value of RSUs vested	\$ 64,417	\$ 32,871	\$ 18,228
Fair market value of MSUs vested	7,219	—	—
Fair market value of PSUs vested	\$ 7,261	\$ 18,873	\$ 15,384

As of December 31, 2023, our total unrecognized stock-based compensation cost related to unvested MSUs was \$13.7 million, which we will recognize over the weighted-average period of 1.3 years. As of December 31, 2023, there was \$78.4 million of total unrecognized compensation cost related to unvested RSUs, which we expect to recognize over a weighted-average period of 2.4 years.

Employee Stock Purchase Plan

Effective July 2016, we adopted the 2016 Employee Stock Purchase Plan, or the ESPP, allowing eligible employees to authorize payroll deductions of up to 15% of their eligible compensation. An ESPP participant may purchase a maximum of 4,000 shares, or a lesser number as determined by the IRS rules, each six-month period. The offering periods generally start on the first trading day on or after February 20 and August 20 of each year. Participants in an offering period are granted the right to purchase common shares at a price per share that is 85% of the lesser of the fair market value of the shares on (1) the first day of the offering period or (2) the end of the purchase period. The number of shares reserved for the ESPP may increase each year, beginning on January 1, 2017 and continuing through and including January 1, 2036, by the lesser of: (1) 1% of the total number of shares of common stock outstanding on the first day of each year; (2) 365,411 shares of common stock; and (3) an amount determined by our board of directors.

As of December 31, 2023, the total unrecognized stock-based compensation from the ESPP was \$0.3 million, which we will recognize on a straight-line basis over the weighted-average remaining service period of less than one year.

Table of Contents

We estimate the fair value of the ESPP grant at the start of the offering period using the Black-Scholes option-pricing model with the following assumptions for the periods presented:

Year Ended December 31,

	2023	2022	2021
Risk-free interest rate	5.1% - 5.6%	0.7% - 3.2%	0.0% - 0.1%
Expected term	0.5 Years	0.5 Years	0.5 Years
Expected volatility		71.9% -	
	64.7% - 85.9%	76.3%	61.0% - 65.8%

Note 11. Leases

The following table presents the components of lease expense in our consolidated statements of operations for the periods presented (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Operating lease costs ⁽¹⁾			
Single lease costs	\$ 3,486	\$ 4,299	\$ 4,154
Variable lease costs	1,280	2,159	1,910
Sublease income ⁽²⁾	(165)	(1,976)	(1,900)
Total operating lease costs	<u>\$ 4,601</u>	<u>\$ 4,482</u>	<u>\$ 4,164</u>

(1) Includes short-term lease costs, which are immaterial.

(2) Sublease income is related to unused office space that we sublet as part of the fiscal 2018 restructuring where we continue to have the primary obligations.

The following table presents supplemental cash flow information related to operating leases for the periods presented (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows used	\$ 4,233	\$ 5,097	\$ 4,895
Lease liabilities arising from remeasurement of right-of-use assets			
Operating leases	\$ 159	\$ —	\$ 698
Lease liabilities arising from obtaining ROU assets			
Operating leases	\$ 1,690	\$ 2,237	\$ —

The following table presents weighted-average remaining lease term and weighted-average discount rate related to operating leases as of:

	2023	2022
Weighted-average remaining lease term (years)	3.7	4.3
Weighted-average discount rate	6.9%	6.9%

Table of Contents

The following table presents future lease payments under operating leases as of December 31, 2023 (in thousands):

	Operating Leases	
	Lease Payments	
2024	\$	4,120
2025		4,129
2026		4,201
2027		775
2028		642
Thereafter		549
Total lease payments	\$	14,416
Less: Imputed interest		(1,683)
Present value of lease liabilities		12,733
Less: Current portion of lease liabilities		3,373
Lease liabilities, net of current portion	\$	9,360

Note 12. Commitments and Contingencies

Indemnification

In the normal course of business, we may enter into agreements that require us to indemnify either customers or suppliers for certain risks. Although we cannot estimate our maximum exposure under these agreements, to date indemnification claims have not had a material impact on our consolidated results of operations or financial condition.

Litigation

From time to time, we are subject to various legal proceedings or claims that arise in the ordinary course of business. We accrue a liability when management believes that it is both probable that we have incurred a liability and we can reasonably estimate the amount of loss. As of December 31, 2023 and 2022, we did not have accrued contingency liabilities. The following is a description of our significant legal proceedings. Although we believe that resolving these claims, individually or in aggregate, will not have a material adverse impact on our financial statements, these matters are subject to inherent uncertainties.

Patent Infringement Claims and Counterclaims

Impinj Patent Infringement Claims Against NXP in California

On June 6, 2019, we filed a patent infringement lawsuit against NXP USA, Inc., a Delaware corporation and subsidiary of NXP Semiconductors N.V., or NXP, in the U.S. District Court for the Northern District of California, or the Court. Our original complaint alleged that certain NXP endpoint ICs infringe 26 of our U.S. patents. At the order of the Court, we filed an amended complaint limited to eight of the original 26 patents. We subsequently elected to go forward with asserting infringement of six of those eight patents. We sought, among other things, past damages, including lost profits; no less than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorneys' fees and costs. We also sought an injunction against NXP making, selling, using, offering for sale or importing UCODE 8 and UCODE 9 ICs. NXP responded to our complaint on September 30, 2019, citing numerous defenses including denying infringement and claiming our asserted patents are invalid.

After various pre-trial motions, the Court narrowed the case to two patents—U.S. patent nos. 9,633,302, or the '302 patent and 8,115,597, or the '597 patent. Before trial, the Court granted summary judgment of infringement on the '302 patent. The Court oversaw a jury trial on those two patents beginning on July 5, 2023, and concluding on July 13, 2023. The issues on the '302 patent were validity, damages and willful infringement. The issues on the '597 patent were infringement, validity, damages and willful infringement.

On July 14, 2023, the jury returned a verdict in our favor finding that: (1) the asserted independent claims of the '302 patent had not been proven invalid, but two of the asserted dependent claims had been proven invalid; (2)

Table of Contents

NXP's infringement of the asserted claims of the '302 patent was willful; (3) none of the asserted claims of the '597 patent were proven to be invalid; and (4) NXP infringed the asserted claims of the '597 patent. The jury awarded lost profits on a portion of NXP's infringing sales, and for NXP's remaining infringing sales, awarded royalties for each patent. This resulted in an award of approximately \$18.2 million and \$18.4 million in damages for infringement of the '302 patent and the '597 patent respectively. Impinj cannot receive lost profits more than once for the same sales so the awards are largely overlapping.

On September 28, 2023, the Court granted NXP's post-trial motion for a new trial on the validity of the '302 patent based on the jury's inconsistent verdicts on the validity of independent and dependent claims for that patent. The Court also ruled that the damages awarded by the jury for both patents should be reduced by certain sales made to a distributor outside the United States. The Court directed the parties to meet and confer on the appropriate reduction of damages, and on October

20, 2023, the parties stipulated that the damages award for the infringement of the '597 patent alone should be \$13.1 million. We recognize contingent gains in our financial statements upon resolution of all contingencies related to the award.

On October 3, 2023, the Court denied our motion for a permanent injunction. Having granted a new trial on the validity of the '302 patent, the denial was based only on the '597 patent. We have appealed the denial of the injunction to the Federal Circuit. We also moved for imposition of an ongoing royalty for infringement of the '597 patent. The Court indicated it would grant such an ongoing royalty but the amount would be decided after the re-trial on the '302 patent.

NXP Patent Infringement Claims Against Impinj in Washington

On October 4, 2019, NXP USA, Inc. and NXP filed a patent infringement lawsuit against us in the U.S. District Court for the District of Delaware. The complaint alleged that certain of our products infringe eight U.S. patents owned by NXP or NXP USA, Inc. The plaintiffs sought, among other things, past damages adequate to compensate them for our alleged infringement of each of the patents-in-suit and reasonable attorneys' fees and costs. They also sought an injunction against us. We denied we are infringing any of the patents and asserted both that our wafer supplier is licensed under four of them and that all eight are invalid. On September 23, 2020, the District of Delaware granted Impinj's motion to transfer the case to the U.S. District Court for the Western District of Washington in Seattle.

On December 11, 2020, we moved to stay the case with respect to six of the eight patents in suit pending final resolution of IPR petitions we filed with the PTAB. On February 12, 2021, the Court granted our motion to stay the case as to these six patents. The PTAB instituted IPRs on two of the six challenged patents but denied them on the other four. The Court subsequently removed the stay on the four against which IPRs were not instituted. The Court ultimately narrowed the case to seven patents.

Following the close of fact discovery, the parties each moved for summary judgment on various issues. The Court ultimately granted summary judgment of noninfringement to us on six of the seven patents, and the final patent went to a jury trial beginning on June 5, 2023. The jury found that we did not infringe the patent and a final judgment was entered in our favor. NXP has appealed the judgment. We moved for attorneys' fees on July 12, 2023 but that motion was denied on August 31, 2023.

Impinj Patent Infringement Claims Against NXP in Texas

On May 25, 2021, we filed a new patent infringement lawsuit against NXP USA in the United States District Court for the Western District of Texas (Waco), asserting that NXP has infringed nine of our patents, including seven that we originally asserted in the Northern California case. We also later added NXP Semiconductor Netherlands B.V. as a defendant.

We are seeking, among other things, past damages, including lost profits; no less than a reasonable royalty; enhanced damages for willful infringement; and reasonable attorney's fees and costs. We are also seeking an injunction against NXP making, selling, using, offering for sale or importing its UCODE 7, 8 and 9 endpoint ICs.

On July 26, 2021, NXP filed an answer to our complaint and counterclaimed that we infringe nine patents, one of which NXP owns and eight of which NXP recently licensed from a third party. NXP denied infringement, asserted our patents are invalid and asserted that some are unenforceable and/or subject to a license under our commitments to license "necessary" patents to certain standards.

22

Table of Contents

The Patent Office has instituted reexamination proceedings on five of the nine patents asserted by NXP and has issued a final office action rejecting all asserted claims on three of those patents but allowing the claims on another.

A claim construction hearing was held on February 10, 2022. The Court held that the case would proceed with three trials, with each side selecting three patents for each trial. The parties originally selected three patents each for the first trial scheduled to begin on October 30, 2023. A Magistrate Judge decided various summary judgment and other pre-trial motions on October 12, 2023. The Magistrate Judge denied most motions but did grant NXP's motion to prevent Impinj from seeking damages based on induced infringement for sales made outside the United States. NXP subsequently dropped one of their patents for the first trial, leaving two NXP patents for the trial. On November 9, 2023, the jury returned a verdict finding that Impinj did not infringe either of the two NXP patents and that NXP infringed all three Impinj patents. The jury rejected NXP's other defenses and awarded Impinj approximately \$2 million based on a total royalty of 3.26% on the infringing products. Impinj has moved for entry of final judgment and imposition of an ongoing royalty but the briefing on that motion is not complete. The second and third trials in this case have not been scheduled.

Second Impinj Patent Infringement Claims Against NXP in Texas

On August 11, 2023, we filed a patent infringement case against NXP Semiconductor Netherlands B.V. in the United States District Court for the Western District of Texas, asserting the '302 and '597 patents that were found to be infringed by NXP USA, Inc. in the California case above. NXP has moved to dismiss the case and that motion is pending.

NXP Patent Infringement Claims Against Impinj in China

On December 7, 2020, Impinj Radio Frequency Technology (Shanghai) Co., Ltd., or Impinj Shanghai, was served with patent infringement lawsuits filed in the Intellectual Property Court in Shanghai, China, or Shanghai Intellectual Property Court, in which NXP B.V. asserted that certain of our products infringe three Chinese patents owned by NXP B.V. These patents corresponded to three of the eight U.S. patents NXP asserted in the U.S. District Court in Washington. On September 13, 2023, NXP filed petitions with the Shanghai court to withdraw all three cases without prejudice. The Shanghai court granted NXP's petitions on September 27, 2023. With the withdrawal of all three lawsuits by NXP, all civil actions initiated by NXP against Impinj in China were concluded. However, proceedings continue at the Beijing Intellectual Property Court as to the validity of the patents that NXP previously asserted.

Obligations with Third-Party Manufacturers

We manufacture products with third-party manufacturers. We are committed to purchase \$21.8 million of inventory as of December 31, 2023.

Note 13. Deferred Revenue

Deferred revenue, comprising individually immaterial amounts for extended warranties, enhanced product maintenance and advance payments on NRE services contracts, represents contracted revenue that we have not yet recognized.

The following table presents the changes in deferred revenue for the indicated periods (in thousands):

	Year Ended December 31,	
	2023	2022
Balance at beginning of period	\$ 2,599	\$ 794
Balance from acquisition	1,233	—
Deferral of revenue	2,920	3,143
Recognition of deferred revenue	(4,767)	(1,338)
Balance at end of period	\$ 1,985	\$ 2,599

Table of Contents

During 2023, we recognized \$2.2 million revenue which we included in deferred revenue as of December 31, 2022. During 2022, we recognized \$0.4 million revenue which we included in deferred revenue as of December 31, 2021.

Note 14. Segment Reporting

We have one reportable and operating segment: the development and sale of our products and services. We identified our reportable segment based on how our chief operating decision-maker manages our business, makes operating decisions and evaluates our operating performance. Our chief executive officer acts as the chief operating decision-maker and reviews financial and operational information on an entity-wide basis. We have one business activity and there are no segment managers who are held accountable for operations, operating results or plans for levels or components. Accordingly, we have determined that we have a single reporting segment and operating unit structure.

Information by Revenue Categories

Our chief executive officer reviews information about our revenue categories, endpoint ICs and systems, the latter defined as reader ICs, readers, gateways, test and measurement systems and software. The following table presents our revenue categories for the indicated periods (in thousands):

	Year Ended December 31,		
	2023	2022	2021

Endpoint ICs	\$	234,426	\$	191,532	\$	139,250
Systems		73,113		66,268		51,033
Total revenue	\$	307,539	\$	257,800	\$	190,283

Information by Geography

The following table summarizes our long-lived assets, comprising property and equipment, less accumulated depreciation (in thousands):

	December 31, 2023	December 31, 2022
United States	\$ 14,110	\$ 10,551
Malaysia	11,749	12,817
Taiwan	13,396	12,620
Others	5,636	3,039
Total	\$ 44,891	\$ 39,027

Our geographic revenue in the following table is based on the location of the VARs, inlay manufacturers, reader OEMs, distributors or end users who purchased products and services directly from us. For sales to our resellers and distributors, their location may be different from the locations of the ultimate end users. The following table presents our sales by geography for the indicated periods (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Americas	\$ 96,418	\$ 57,129	\$ 38,021
Asia Pacific	176,409	168,249	133,152
Europe, Middle East and Africa	34,712	32,422	19,110
Total revenue	\$ 307,539	\$ 257,800	\$ 190,283

Total revenue in the United States, which is included in the Americas, was \$86.2 million, \$43.0 million and \$32.6 million for the years ended December 31, 2023, 2022 and 2021, respectively. Total revenue in China (and Hong Kong), which is included in Asia Pacific, was \$128.3 million, \$109.6 million and \$98.8 million for the years ended December 31, 2023, 2022 and 2021, respectively. While total revenue in Malaysia, which is included in Asia Pacific, was less than 10% of revenue for the year ended December 31, 2023, it was \$41.0 and \$23.6 million for the years ended December 31, 2022 and 2021, respectively. No sales to countries other than the United States, China and Malaysia accounted for more than 10% of revenue for the years ended December 31, 2023, 2022 and 2021.

[Table of Contents](#)

Note 15. Net Loss per Share

For the periods presented, the following table provides a reconciliation of the numerator and denominator used in computing basic and diluted net loss per share (in thousands, except for per-share amounts):

	Year Ended December 31,		
	2023	2022	2021
Numerator:			
Net loss	\$ (43,366)	\$ (24,301)	\$ (51,260)
Denominator:			
Weighted-average shares outstanding — basic and diluted	26,752	25,539	24,176
Net loss per share — basic and diluted	\$ (1.62)	\$ (0.95)	\$ (2.12)

The following table presents the outstanding shares of our common stock equivalents excluded from the computation of diluted net loss per share as of the dates presented because their effect would have been antidilutive (in thousands):

	Year Ended December 31,		
	2023	2022	2021
Stock options	1,466	1,712	2,288
RSUs, MSUs and PSUs	1,252	1,494	1,517
Employee stock purchase plan shares	51	26	42
2019 Notes	—	—	285
2021 Notes	2,589	2,589	2,589

Note 16. Related-Party Transactions

We have been party to a consulting agreement with a limited liability company owned by Cathal Phelan, a member of our board of directors, pursuant to which Mr. Phelan provided advisory and consulting services to us. We recognized and paid \$0.5 million in consulting fees to the limited liability company owned by Mr. Phelan for the years ended December 31, 2022 and 2021. No consulting fees were recognized and paid in the year ended December 31, 2023. Additionally, we granted 60,000 shares of stock options to Mr. Phelan on September 21, 2020 in connection with these consulting services, with 1/24th of the shares subject to the option vesting on October 21, 2020 and 1/24th of the shares subject to the option vesting on each month thereafter, subject to Mr. Phelan remaining a service provider. Further, in connection with these consulting services, we granted 8,000 RSUs to Mr. Phelan on October 1, 2022 with 1/4th of the RSUs vesting on January 1, April 1, July 1 and October 1, 2023, subject to Mr. Phelan remaining a service provider. On January 1, 2023, Mr. Phelan joined our company as Chief Innovation Officer and ceased to provide us with consulting services. Mr. Phelan remains on our board of directors as a non-independent director.

On June 23, 2023, we acquired a patent from a related party in which a member of our board of directors holds an executive leadership position. The patent pertains to our endpoint IC products and the acquisition price was \$0.3 million. The patent expires on July 17, 2026 and does not have renewal rights. This patent is included in our intangible assets on our consolidated balance sheet as of December 31, 2023.

Note 17. Retirement Plans

In 2001, we adopted a salary deferral 401(k) plan for our employees. The plan allows employees to contribute a percentage of their pretax earnings annually, subject to limitations imposed by the Internal Revenue Service, and allows a matching contribution, subject to certain limitations. We contributed \$1.8 million and \$1.4 million as matching contributions for the years ended December 31, 2023 and 2022, respectively.

Note 18. Restructuring

Table of Contents

On February 2, 2021, we restructured our go-to-market organization to strategically align our global sales, product, partner development and marketing teams. As part of the restructuring, we eliminated approximately seven full-time positions within our go-to-market organization, representing roughly 2% of our workforce. We incurred restructuring charges of \$1.7 million for employee termination benefits and other associated costs for legal expenses for the year ended December 31, 2021. Restructuring charges were immaterial for the year ended December 31, 2022 and there were no restructuring charges for the year ended December 31, 2023.

Note 19. Subsequent Events

On February 7, 2024, we initiated a strategic restructuring to align financial, business and research and development objectives for long-term growth, including a reduction-in-force affecting approximately 10% of our employees. We expect the reduction-in-force charges, comprising primarily severance benefits, to be in the range of \$1.7 million to \$2.0 million to be recognized in the first and second fiscal quarters of 2024, when the activities comprising the plan are expected to be substantially completed.

[Table of Contents](#)

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, including our chief executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2023. Disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is (1) recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and (2) accumulated and communicated to management, including its principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. Based on the evaluation of our disclosure controls and procedures, our chief executive officer and principal financial officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of December 31, 2023.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined under Rule 13a-15(f) and 15d-15(f) under the Exchange Act. We evaluated the effectiveness of our internal control over financial reporting based on the framework in Internal Control – Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on our evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2023.

The effectiveness of our internal control over financial reporting as of December 31, 2023 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their report included herein.

Changes in Internal Control over Financial Reporting

There were no changes that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the three months ended December 31, 2023.

Limitations on Controls

Our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of achieving the desired control objectives. Our management recognizes that any control system, no matter how well designed and operated, is based upon certain judgments and assumptions and cannot provide absolute assurance that

its objectives will be met. Similarly, an evaluation of controls cannot provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, have been detected.

Item 9B. Other Information

Securities Trading Plans of Directors and Executive Officers

During our last fiscal quarter, no director or officer, as defined in Rule 16a-1(f), adopted or terminated a “Rule 10b5-1 trading arrangement” or a “non-Rule 10b5-1 trading arrangement,” each as defined in Item 408 of Regulation S-K, except as follows:

87

Table of Contents

Name and Title	Character of Trading Arrangement ⁽¹⁾	Date Adopted	Date Terminated	Duration ⁽²⁾	Aggregate Number of Shares of Common Stock to be Purchased or Sold Pursuant to Trading Arrangement
Chris Diorio, Chief Executive Officer and Vice Chair	Rule 10b5-1 Trading Arrangement	November 6, 2023	-	August 14, 2024	Up to 20,000
Jeff Dossett, Chief Revenue Officer	Rule 10b5-1 Trading Arrangement	October 28, 2022	October 27, 2023	February 9, 2024	Up to 45,500
	Rule 10b5-1 Trading Arrangement	December 13, 2023	-	September 16, 2024	Up to 12,000
Hussein Mecklai, Chief Operating Officer	Rule 10b5-1 Trading Arrangement	March 9, 2023	October 27, 2023	June 5, 2024	Up to 30,319

(1) Except as indicated by footnote, each trading arrangement marked as a “Rule 10b5-1 Trading Arrangement” is intended to satisfy the affirmative defense of Rule 10b5-1(c), as amended (the “Rule”).

None. (2) Except as indicated by footnote, each trading arrangement permits transactions through and including the earlier of (a) the execution or expiration of all trades specified under the trading arrangement or (b) the date listed in the table. Each trading arrangement marked as a “Rule 10b5-1 Trading Arrangement” only permits transactions upon expiration of the applicable mandatory cooling-off period under the Rule.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

None.

86 88

[Table of Contents](#)

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item is incorporated by reference to our definitive proxy statement relating to the 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the SEC within 120 days after the end of the 2022 2023 fiscal year.

We have adopted a Code of Ethics that applies to our Chief Executive Officer, Chief Financial Officer, principal accounting officer and controller and persons performing similar functions. The Code of Ethics is posted on our website at <http://corporate-governance.impinj.com>. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of the Code of Ethics by posting the information on our website at the address specified above.

Item 11. Executive Compensation

The information required by this item is incorporated by reference to our definitive proxy statement relating to the 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the SEC within 120 days after the end of the 2022 2023 fiscal year.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is incorporated by reference to our definitive proxy statement relating to the 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the SEC within 120 days after the end of the 2022 2023 fiscal year.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is incorporated by reference to our definitive proxy statement relating to the 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the SEC within 120 days after the end of the 2022 2023 fiscal year.

Item 14. Principal Accounting Accountant Fees and Services

The information required by this item is incorporated by reference to our definitive proxy statement relating to the 2023 2024 annual meeting of stockholders. The definitive proxy statement will be filed with the SEC within 120 days after the end of the 2022 2023 fiscal year.

8789

[Table of Contents](#)

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) Financial Statements

We have filed the financial statements listed in the Index to Consolidated Financial Statements as a part of this report.

(a)(2) Financial Statement Schedules

All financial statement schedules have been omitted because they are not applicable, not material or the required information is presented in the financial statements or the notes thereto.

(a)(3) Exhibits

The list of exhibits included in the Exhibit Index to this report is incorporated herein by reference.

INCO RPO RATI ON BY REFE REN CE	INCORPORATION BY REFERENCE
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N	DESCRIPTION	Form	Date	Number
U				
M				
B				
E				
R				
3	Amended and Restated Certificate of Incorporation of Impinj, Inc., as filed with the Secretary of State of the State of Delaware on June 10, 2020	8-K	6/12/2020	3.1
1	Restated Certificate of Incorporation of Impinj, Inc., as filed with the Secretary of State of the State of Delaware on June 10, 2020			

3	Amended and Restated Bylaws of Impinj, Inc., adopted as of February 23, 2023	8	8	3	8-K	2/28/2023	3.1
2	Restated Bylaws of Impinj, Inc., adopted as of August 10, 2022	K	1	1			
4	Description of Impinj, Inc.'s Common Stock						
4	Specimen Common Stock Certificate of the registrant	S	7	4	S-1/A	7/11/2016	4.1
2	Common Stock Certificate of the registrant	1	1	1			

4	Amende	S	6	4	Amended and Restated Investors' Rights Agreement, dated July 13, 2012,	S-1	6/2/2016	4.2
.	d and	-	/	.	by and among the registrant and the investors and founders named therein			
3	Restate	1	2	2				
	d		/					
	Investor		2					
	s' Rights		0					
	Agreem		1					
	ent,		6					
	dated							
	July 13,							
	2012, by							
	and							
	among							
	the							
	registran							
	t and the							
	investor							
	s and							
	founders							
	named							
	therein							
4	Indentur	8	1	4	Indenture, dated as of November 5, 2021, between Impinj, Inc., and U.S.	8-K	11/5/2021	4.6
.	e, dated	-	1	.	Bank National Association, as trustee			
4	as of	K	/	6				
	Novemb		5					
	er 5,		/					
	2021,		2					
	between		0					
	Impinj,		2					
	Inc., and		1					
	U.S.							
	Bank							
	National							
	Associat							
	ion, as							
	trustee							

4	Form of	8	1	4	Form of 1.125% Convertible Senior Notes due 2027 (included in Exhibit 4.4)	8-K	11/5/2021	4.6
.	1.125%	-	1	.				
5	Converti	K	/	6				
	ble		5					
	Senior		/					
	Notes		2					
	due		0					
	2027		2					
	(include		1					
	d in							
	Exhibit							
	4.4).							
1	Form of	S	7	1	Form of Director and Executive Officer Indemnification Agreement	S-1/A	7/11/2016	10.1
0	Director	-	/	0				
.	and	1	1	.				
1	Executiv	/	1	1				
+	e Officer	A	/					
	Indemnif		2					
	ication		0					
	Agreem		1					
	ent		6					
1	2000	S	6	1	2000 Stock Plan, as amended	S-1	6/2/2016	10.2
0	Stock	-	/	0				
.	Plan, as	1	2	.				
2	amende	/	2					
+	d		2					
			0					
			1					
			6					

1	Form of	S 6 1	Form of Notice of Stock Option Grant and Stock Option Agreement	S-1	6/2/2016	10.3
0	Notice of	- / 0	permitting early exercise under the 2000 Stock Plan			
.	Stock	1 2 .				
3	Option	/ 3				
+	Grant	2				
	and	0				
	Stock	1				
	Option	6				
	Agreem					
	ent					
	permittin					
	g early					
	exercise					
	under					
	the 2000					
	Stock					
	Plan					
1	2010	S 6 1	2010 Equity Incentive Plan, as amended	S-1	6/2/2016	10.4
0	Equity	- / 0				
.	Incentiv	1 2 .				
4	e Plan,	/ 4				
+	as	2				
	amende	0				
	d	1				
		6				

1	Form of	S 6 1	Form of Notice of Stock Option Grant and Stock Option Agreement under	S-1	6/2/2016	10.5
0	Notice of	- / 0	the 2010 Equity Incentive Plan			
.	Stock	1 2 .				
5	Option	/ 5				
+	Grant	2				
	and	0				
	Stock	1				
	Option	6				
	Agreement					
	ent					
	under					
	the 2010					
	Equity					
	Incentiv					
	e Plan					

Table of Contents

10.6+	Form of Notice of Stock Option Grant and Stock Option Agreement permitting early exercise under the 2010 Equity Incentive Plan	S-1	6/2/2016	10.6
10.7+	2016 Equity Incentive Plan	S-1/A	7/11/2016	10.7
10.8+	Form of Notice of Stock Option Grant and Stock Option Agreement under the 2016 Equity Incentive Plan	S-1/A	7/11/2016	10.8
10.9+	2016 Employee Stock Purchase Plan	S-1/A	7/11/2016	10.9

10.10+	<u>Amended and Restated Diorio Employment Agreement, dated December 19, 2008, between the registrant and Chris Diorio, Ph.D.</u>	S-1	6/2/2016	10.12
10.11+	<u>First Amendment to Diorio Employment Agreement, dated February 20, 2009, between the registrant and Chris Diorio, Ph.D.</u>	S-1	6/2/2016	10.13
10.12+	<u>Offer Letter, dated January 6, 2020, between the registrant and Cary Baker</u>	10-K	3/2/2020	10.14
10.13	<u>Office Lease, dated December 10, 2014, by and between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21
10.14A	<u>First Amendment to Lease, dated July 31, 2015, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21A
10.14B	<u>Second Amendment to Lease, dated March 4, 2016, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21B
10.14C	<u>Third Amendment to Lease, dated March 28, 2016, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21C
10.15	<u>Office Lease, dated November 17, 2004, between the registrant and Bedford Property Investors, Inc., as amended by the First Amendment to Lease, dated July 21, 2006, by and between the registrant and Fremont Lake Union Center LLC and the Second Amendment to Lease, dated December 11, 2009, by and between the registrant and Fremont Lake Union Center LLC</u>	S-1	6/2/2016	10.22
10.16†	<u>License Agreement, dated July 3, 2008, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.1
10.17†	<u>Purchase Agreement—Services Phase 2, dated December 23, 2009, by and between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.2

10.18†	<u>Amendment No. 1 to Purchase Agreement—Services Phase 2, dated March 26, 2010, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.3
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91

10.6+	<u>Form of Notice of Stock Option Grant and Stock Option Agreement permitting early exercise under the 2010 Equity Incentive Plan</u>	S-1	6/2/2016	10.6
10.7+	<u>2016 Equity Incentive Plan</u>	S-1/A	7/11/2016	10.7
10.8+	<u>Form of Notice of Stock Option Grant and Stock Option Agreement under the 2016 Equity Incentive Plan</u>	S-1/A	7/11/2016	10.8
10.9+	<u>2016 Employee Stock Purchase Plan</u>	S-1/A	7/11/2016	10.9
10.10+	<u>Amended and Restated Diorio Employment Agreement, dated December 19, 2008, between the registrant and Chris Diorio, Ph.D.</u>	S-1	6/2/2016	10.12
10.11+	<u>First Amendment to Diorio Employment Agreement, dated February 20, 2009, between the registrant and Chris Diorio, Ph.D.</u>	S-1	6/2/2016	10.13
10.12+	<u>Offer Letter, dated January 6, 2020, between the registrant and Cary Baker</u>	10-K	3/2/2020	10.14
10.13	<u>Office Lease, dated December 10, 2014, by and between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21
10.14A	<u>First Amendment to Lease, dated July 31, 2015, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21A
10.14B	<u>Second Amendment to Lease, dated March 4, 2016, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21B

10.14C	<u>Third Amendment to Lease, dated March 28, 2016, between the registrant and 400 Fairview LLC</u>	S-1	6/2/2016	10.21C
10.15	<u>Office Lease, dated November 17, 2004, between the registrant and Bedford Property Investors, Inc., as amended by the First Amendment to Lease, dated July 21, 2006, by and between the registrant and Fremont Lake Union Center LLC and the Second Amendment to Lease, dated December 11, 2009, by and between the registrant and Fremont Lake Union Center LLC</u>	S-1	6/2/2016	10.22
10.16†	<u>License Agreement, dated July 3, 2008, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.1
10.17†	<u>Purchase Agreement—Services Phase 2, dated December 23, 2009, by and between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.2
10.18†	<u>Amendment No. 1 to Purchase Agreement—Services Phase 2, dated March 26, 2010, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.3

[Table of Contents](#)

10.19†	<u>Amendment No. 2 to Purchase Agreement—Services Phase 2, dated April 20, 2011, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.4
10.20†	<u>Amendment No. 3 to Purchase Agreement—Services Phase 2, dated November 15, 2011, between the registrant and Intel Corporation</u>	10-Q	10/28/2020	10.5

10.21†	Amendment No. 4 to Purchase Agreement—Services Phase 2, dated April 25, 2013, between the registrant and Intel Corporation	10-Q	10/28/2020	10.6
10.22†	Amendment No. 5 to Purchase Agreement—Services Phase 2, dated June 12, 2013, between the registrant and Intel Corporation	10-Q	10/28/2020	10.7
10.23+	Form of Notice of Restricted Stock Unit Grant and Restricted Stock Unit Agreement under the 2016 Equity Incentive Plan	10-Q	8/14/2017	10.1
10.24	Letter Agreement, dated as of June 20, 2018, among Impinj, Inc., Sylebra HK Company Limited, Sylebra Capital Management and Daniel P. Gibson	8-K	6/26/2018	10.1
10.25+	Executive Employment Agreement, dated April 28, 2017, between the registrant and Jeff Dossett	10-K	2/28/2020	10.32
10.26	Form of Capped Call Transaction Confirmation	8-K	12/16/2019	10.1
10.27+	Impinj, Inc. Amended and Restated Outside Director Compensation Policy, as amended May 26, 2022	10-Q	7/27/2022	10.1
10.28+	Executive Employment Agreement, dated November 13, 2018 between the registrant and Hussein Mecklai			
10.29+ ††	Executive Employment and Arbitration Agreement dated December 29, 2022 between the registrant and Cathal Phelan			
21.1	Subsidiaries of the registrant	S-1	6/2/2016	21.1
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm			
24.1	Powers of Attorney (contained on signature page)			
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended			

31.2 [Certification of Principal Financial Officer Required Under Rule 13a-14\(a\) and 15d-14\(a\) of the Securities Exchange Act of 1934, as amended](#)

92

10.19†	Amendment No. 2 to Purchase Agreement—Services Phase 2, dated April 20, 2011, between the registrant and Intel Corporation	10-Q	10/28/2020	10.4
10.20†	Amendment No. 3 to Purchase Agreement—Services Phase 2, dated November 15, 2011, between the registrant and Intel Corporation	10-Q	10/28/2020	10.5
10.21†	Amendment No. 4 to Purchase Agreement—Services Phase 2, dated April 25, 2013, between the registrant and Intel Corporation	10-Q	10/28/2020	10.6
10.22†	Amendment No. 5 to Purchase Agreement—Services Phase 2, dated June 12, 2013, between the registrant and Intel Corporation	10-Q	10/28/2020	10.7
10.23+	Form of Notice of Restricted Stock Unit Grant and Restricted Stock Unit Agreement under the 2016 Equity Incentive Plan	10-Q	8/14/2017	10.1
10.24	Letter Agreement, dated as of June 20, 2018, among Impinj, Inc., Sylebra HK Company Limited, Sylebra Capital Management and Daniel P. Gibson	8-K	6/26/2018	10.1
10.25+	Executive Employment Agreement, dated April 28, 2017, between the registrant and Jeff Dossett	10-K	2/28/2020	10.32
10.26	Form of Capped Call Transaction Confirmation	8-K	12/16/2019	10.1
10.27+	Impinj, Inc. Amended and Restated Outside Director Compensation Policy, as amended May 26, 2022	10-Q	7/27/2022	10.1
10.28+	Executive Employment Agreement, dated November 13, 2018 between the registrant and Hussein Mecklai			

10.29+ ††	Executive Employment and Abridgement Agreement dated December 29, 2022 between the registrant and Cathal Phelan			
21.1	Subsidiaries of the registrant	S-1	6/2/2016	21.1
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm			
24.1	Powers of Attorney (contained on signature page)			
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended			
31.2	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended			

Table of Contents

32.1*	Certification of Principal Executive Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.
32.2*	Certification of Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.
97.1	Impinj, Inc. Amended and Restated Compensation Recovery Policy
101.INS	Inline XBRL Instance Document

101.SCH	Inline XBRL Taxonomy Extension Schema with embedded Linkbase Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document Documents
104	Inline XBRL for the cover page of this Annual Report on Form 10-K, included in the Exhibit 101 Inline XBRL Document Set.
+	Indicates management contract or compensatory plan, contract or arrangement.
*	The certifications attached as Exhibits 32.1 and 32.2 that accompany this Annual Report on Form 10-K are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-K, irrespective of any general incorporation language contained in such filing.
†	Certain portions of this exhibit have been omitted because they are not material and would likely cause competitive harm to the registrant if disclosed.
††	Certain portions of this exhibit have been omitted because they are not material and are of the type that the registrant treats as private or confidential.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Impinj, Inc.

Date: February 13, 2023 February 12, 2024

By: /s/ Cary Baker

Cary Baker

Chief Financial Officer (Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Chris Diorio, Ph.D. and Cary Baker, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file, any and all documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their and his or her substitute or substitutes, may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant in the capacities and in the capacities and on the dates indicated.

Name	Title	Date
<hr/> <div>/s/Chris Diorio</div> <hr/> Chris Diorio, Ph.D.	Chief Executive Officer and Vice Chair <i>(Principal Executive Officer)</i>	February 13, 2023 12, 2024
<hr/> <div>/s/ Cary Baker</div> <hr/> Cary Baker	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	February 13, 2023 12, 2024
<hr/> <div>/s/ Steve Sanghi</div> <hr/> Steve Sanghi	Chair	February 13, 2023 12, 2024
<hr/> <div>/s/ Gregory Sessler</div> <hr/>	Director	February 13, 2023

Gregory Sessler

February

/s/ Daniel Gibson

Director

13,2023 12, 2024

Daniel Gibson

February

/s/ Umesh Padval

Director

13,2023 12, 2024

Umesh Padval

February

/s/ Cathal Phelan

Director

13,2023 12, 2024

Cathal Phelan

February

/s/ Meera Rao

Director

13,2023 12, 2024

Meera Rao

/s/ Miron Washington

Director

February 12, 2024

Miron Washington

92 94

Exhibit 4.1

IMPINJ, INC.

DESCRIPTION OF COMMON STOCK

The common stock of Impinj, Inc. is listed on the Nasdaq Global Select Market under the symbol “PI.” All outstanding shares of common stock are validly issued, fully paid, and nonassessable.

The following description of the terms of our common stock is not complete and is qualified in its entirety by reference to our certificate of incorporation, as amended from time to time, and our bylaws, as amended from time

to time, both of which are exhibits to our Annual Reports on Form 10-K.

Our authorized capital stock consists of 495,000,000 shares of common stock, par value \$0.001 per share, and 5,000,000 shares of preferred stock, par value \$0.001 per share.

Common Stock

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors.

The holders of a majority of the stock issued and outstanding and entitled to vote, present in person or represented by proxy, shall constitute a quorum for the transaction of business at all meetings of the stockholders.

Our certificate of incorporation and bylaws do not provide for cumulative voting rights. Consequently, holders of a majority or, in certain circumstances, a plurality of the shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election. In an uncontested election, a director nominee will be elected to the Board only if the votes cast for such nominee's election exceed the votes cast against such nominee's election. In a contested election, or otherwise where the number of director nominees exceeds the number of directors to be elected, directors shall be elected by a plurality of the votes cast.

With respect to matters other than the election of directors, at any meeting of the stockholders at which a quorum is present or represented, the affirmative vote of a majority of the voting power of the shares present in person or represented by proxy at such meeting and entitled to vote on the subject matter shall be the act of the stockholders, except as otherwise required by law.

Dividends

Subject to preferences that may be applicable to any then-outstanding preferred stock, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then-outstanding shares of preferred stock.

Rights and Preferences

Holders of our common stock have no preemptive, conversion, subscription or other rights, and there are no redemption or sinking fund provisions applicable to the common stock. The rights, preferences and privileges of the holders of our common stock are subject to and may be adversely affected by, the rights of the holders of shares of any series of preferred stock that we may designate in the future.

Preferred Stock

Our board of directors has the authority, without further action by the stockholders, to issue up to 5,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, redemption rights, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of common stock. The issuance of preferred stock could adversely affect the voting power of holders of our common stock and the likelihood that such holders will receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing change in our control or other corporate action. We have no present plan to issue any shares of preferred stock.

Anti-Takeover Provisions of Delaware and Washington Law and Our Certificate of Incorporation and Bylaws

Delaware Law

We are subject to Section 203 of the General Corporation Law of the State of Delaware. Section 203 generally prohibits a publicly held Delaware corporation from engaging in a “business combination” with any “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares outstanding (1) shares owned by persons who are directors and also officers and (2) shares owned

by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or

- on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder

Section 203 defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;

Exhibit 4.1

- any sale, transfer, pledge or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Washington Business Corporation Act

The laws of Washington, where our principal executive offices are located, impose restrictions on certain transactions between certain foreign corporations and significant stockholders. In particular, the Washington Business Corporation Act, or the WBCA, prohibits a “target corporation,” with certain exceptions, from engaging in certain “significant business transactions” with a person or group of persons that beneficially owns 10% or more of the voting power of the target corporation, which is referred to as an “acquiring person,” for a period of five years

after such acquisition, unless the transaction or acquisition of shares is approved by a majority of the members of the target corporation's board of directors prior to the time of acquisition. Such prohibited transactions may include, among other things:

- any merger or consolidation with, disposition of assets to, or issuance or redemption of stock to or from, the acquiring person;
- any termination of 5% or more of the employees of the target corporation as a result of the acquiring person's acquisition of 10% or more of the shares; and
- allowing the acquiring person to receive any disproportionate benefit as a stockholder.

After the five-year period, a significant business transaction may take place as long as it complies with certain fair price provisions of the statute or is approved at an annual or special meeting of stockholders.

We will be considered a "target corporation" so long as our principal executive office is located in Washington and (1) a majority of our employees are residents of the state of Washington or we employ more than one thousand residents of the state of Washington; (2) a majority of our tangible assets, measured by market value, are located in the state of Washington or we have more than \$50 million worth of tangible assets located in the state of Washington; and (3) any one of the following: (a) more than 10% of our stockholders of record are resident in the state of Washington; (b) more than 10% of our shares are owned of record by state residents; or (c) 1,000 or more of our stockholders of record are resident in the state.

If we meet the definition of a target corporation, the WBCA may have the effect of delaying, deferring or preventing a change of control.

Exhibit 4.1

Certificate of Incorporation and Bylaws

Provisions of our certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our certificate of incorporation and bylaws:

- permit our board of directors to issue up to 5,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in our control;
- provide that the authorized number of directors may be changed only by resolution of the board of directors, subject to the rights of any holders of preferred stock;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes, each of which stands for election once every three years (subject to gradual declassification beginning at the 2021 annual meeting of stockholders, such that our board of directors will be fully declassified beginning at the 2023 annual meeting of stockholders);
- provide that a director may only be removed from the board of directors by the stockholders for cause for so long as the board of directors remains classified;
- restrict the forum for certain litigation against us to Delaware;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner, and also meet specific requirements as to the form and content of a stockholder's notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any uncontested election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the board of directors, the chairman of the board of directors, our chief executive officer or president (in the absence of a chief executive officer);
- provide that stockholders will be permitted to amend certain provisions of our bylaws only upon receiving least two-thirds of the votes entitled to be cast by holders of all outstanding shares then entitled to vote generally in the election of directors, voting together as a single class; and

- provide that, unless we otherwise consent in writing, a state or federal court located within the State of Delaware shall be the sole and exclusive forum for (1) any derivative action or proceeding brought on behalf of the company; (2) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to the company or our stockholders; (3) any action asserting a claim against the company arising pursuant to any provision of the General Corporation Law of the State of Delaware; or (4) any action asserting a claim against the company governed by the internal affairs doctrine.

The amendment of any of these provisions requires approval by the holders of at least two-thirds of our outstanding common stock, voting as a single class.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC. The transfer agent and registrar's address is 6201 15th Avenue, Brooklyn, New York 11219.

IMPINJ, INC.

EXECUTIVE EMPLOYMENT AGREEMENT

This Executive Employment Agreement (the “**Agreement**”) is entered into as of November 13, 2018 (the “**Effective Date**”) by and between Hussein Mecklai (“**Executive**”) and Impinj, Inc., a Delaware corporation (the “**Company**”), and sets forth the terms and conditions with respect to Executive's employment with the Company during the Employment Term (as defined below).

NOW THEREFORE, in consideration of the mutual covenants contained herein, the Company and Executive agree as follows:

AGREEMENT

1. **Duties and Scope of Employment.**

- a. **Position and Duties.** Executive will serve as Executive Vice President, Engineering of the Company and will report to the Company's Chief Executive Officer. The duties and responsibilities of Executive shall include the duties and responsibilities for Executive's corporate office and position as set forth in Company's bylaws from time to time in effect and such other duties and responsibilities as Company's Chief Executive Officer may from time to time reasonably assign to Executive, in all cases to be consistent with Executive's corporate office and position. The period of Executive's employment under this Agreement is referred to herein as the "**Employment Term.**"
- b. **Obligations.** During the Employment Term, Executive will perform his duties faithfully and to the best of his ability and will devote his full business efforts and time to the Company. For the duration of the Employment Term, Executive agrees not to actively engage in any other employment, occupation or consulting activity for any direct or indirect remuneration without the prior approval of the Board of Directors or its authorized committee (in either case, the "**Board**"). Executive will not render commercial or professional services of any nature to any person or organization, whether or not for compensation, without the prior written consent of the Board. Notwithstanding the foregoing, nothing in this Agreement will prevent Executive from accepting speaking or presentation engagements in exchange for honoraria or from serving on boards of charitable organizations, provided that such activities do not materially interfere with Executive's obligations to the Company as described above.

2. **At-Will Employment.** The parties agree that Executive's employment with the Company will be "**at-will**" employment and may be terminated at any time with or without cause or notice. Executive understands and agrees that neither his job performance nor promotions, commendations, bonuses or the like from the Company give rise to or in any way serve as the basis for modification, amendment, or extension, by implication or otherwise, of his employment with the Company. However, as

described in this Agreement, Executive may be entitled to severance benefits depending on the circumstances of Executive's termination of employment with the Company.

3. **Start Date**. Executive will commence employment on December 4, 2018 (the "**Start Date**").

4. **Compensation**.

- a. **Base Salary**. During the Employment Term, the Company will pay Executive an annual salary of \$330,000 as compensation for his services (the "**Base Salary**"). The Base Salary will be paid periodically in accordance with the Company's normal payroll practices, and will be subject to the usual, required withholding. Executive's salary will be subject to review, and adjustments may be made based upon the Company's normal performance review practices.
- b. **Performance Bonus**. Executive shall be eligible to receive additional annual bonus compensation according to certain milestones and company performance metrics to be established by the Company and otherwise applicable to the Company's executive team (the "**Performance Bonus**"). Performance Bonus compensation shall target seventy-five percent (75%) of Base Salary at one hundred percent (100%) achievement of the established milestones and performance metrics, and otherwise will be subject to the Company's annual Executive Bonus Plan. Performance Bonus compensation may be lower than seventy-five percent (75%) of Base Salary if the performance targets are not met. The Company shall pay any actual Performance Bonus in no event later than March 15 of the calendar year following the calendar year to which the bonus is earned. Executive must be employed on the payment date to be eligible to receive his Performance Bonus. Executive's target Performance Bonus will be subject to review, and adjustments may be made based upon the Company's normal performance review practices. The Company reserves the right to modify and/or interpret all of its incentive compensation plans, including the Executive Bonus Plan, at any time.

Notwithstanding the above, at least 100% of the 2019 **Performance Bonus** for Executive will be paid out in the first quarter of 2020.

c. **Equity**.

- i. Subject to approval by the Board or its authorized designee, Executive will be granted an option to purchase 150,000 shares of Company common stock under the Company's 2016 Equity Incentive Plan (the "**2016 Plan**") at an exercise price equal to the fair market value of the shares on the date of grant as determined under the 2016 Plan. The option will vest as follows: 1/4th of the total number of shares shall vest on the one-year anniversary of the Start Date, and 1/48th of the

total number of shares shall vest each month thereafter (on the same day of the month as the Start Date), in each case, so long as Executive remains a Service Provider (as

2

defined in the 2016 Plan), so that all shares subject to the option shall have vested after 48 months following the Start Date.

- ii. The option will be subject to the terms of the 2016 Plan and the standard Stock Option Agreement (except as contemplated by this Agreement) (the “**Stock Agreements**”), and further subject to applicable federal and state securities laws.
- d. **Employee Benefits**. During the Employment Term, Executive will be entitled to participate in the employee benefit plans currently and hereafter maintained by the Company of general applicability to other senior executives of the Company, including, without limitation, the Company’s group medical, dental, vision, life insurance, and disability plans. The Company reserves the right to cancel or change the benefit plans and programs it offers to its employees at any time.
- e. **Paid Time Off**. During the Employment Term, Executive will be entitled to paid time off under the Company’s Open Paid-Time Off (PTO) policy, which provides for mutually and reasonably agreed upon paid time off and is subject to change at the discretion of the Company.
- f. **Relocation**. You are expected to work out of our Seattle, WA office following commencement of your new position. In connection with this, the Company will make arrangements and pay the following moving expenses up to and not to exceed \$25,000 to include:
 - i. Professional movers to pack and move your household goods to Seattle, unpack and for up to 30 days.
 - ii. Relocation of up to 2 automobiles or motorcycles not to exceed 2 vehicles.

- iii. Reimbursement of reasonable, approved travel expenses to Seattle as well as incidentals, approved, out-of-pocket relocation expenses for you and your immediate family.

Balances remaining after the above expenses will not be applied to any other aspect of relocation or compensation. Relocation expenses will be reported as taxable income to you in the year received if required by applicable tax law; however, please keep in mind that a reimbursement for relocation expenses will only be made to the extent that you remain an employee of the Company on the date such reimbursement occurs. In addition, in the event that your employment is involuntarily terminated with the Company before the end of the first year of employment, you agree to repay the Company the relocation expenses on a prorated basis. If your termination is voluntary, you agree to repay 100% of the relocation expenses. Payments will be made by personal check or other negotiable instrument.

3

- g. **Temporary Housing.** In association with the relocation, Company will provide up to 9 months of temporary housing in one of our corporate apartments, or equivalent housing.

5. **Severance.**

- a. **Termination for other than Cause, Death or Disability or Resignation for Good Reason Apart from Change of Control.** If, after six (6) months following Executive's Start Date but prior to a Change of Control, or after twelve (12) months following a Change of Control, (1) the Company terminates Executive's employment with the Company other than for Cause, death or Disability, or (2) Executive resigns from his employment with the Company for Good Reason, then, subject to Section 6, Executive will be entitled to:
 - i. continuing payments of severance pay at a rate equal to his Base Salary, as then in effect, for six (6) months from the date of such termination in accordance with the Company's normal payroll policies and subject to the usual, required withholding,
 - ii. reimbursement of Executive's expenses in continuing group health insurance coverage for himself and his eligible covered dependents under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), for up to six (6) months, provided

Executive makes a timely election for and continues to be eligible for such continued coverage; provided, however, that if the Company determines in its sole discretion that it cannot make the COBRA reimbursements without potentially violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), the Company will in lieu thereof provide to Executive a taxable monthly payment in an amount equal to the monthly COBRA premium that Executive would be required to pay to continue Executive's group health coverage in effect on the date of Executive's termination of employment (which amount will be based on the premium for the first month of COBRA coverage), which payments will be made regardless of whether Executive elects COBRA continuation coverage and will commence on the month following Executive's termination of employment and will end on the earlier of (x) the date upon which Executive obtains other employment or (y) the date the Company has paid an amount equal to six (6) months' payments, and

- iii. such portion of that year's Performance Bonus, if applicable, as Executive shall have earned (if any) as of the date of such termination, as determined in good faith by the Board, which amount shall be subject to the usual, required withholding.
- iv. Accelerated vesting of 25% of then unvested portion of outstanding equity awards and extension of exercise period for up to one year following termination.

- b. **Termination for other than Cause, Death or Disability or Resignation for Good Reason Following a Change of Control.** If within twelve (12) months following a Change of Control (1) the Company terminates Executive's employment with the Company other than for Cause, death or Disability, or (2) Executive resigns from his employment with the Company for Good Reason, then, subject to Section 6, Executive will be entitled to:
 - i. continuing payments of severance pay at a rate equal to his Base Salary rate, as then in effect, for six (6) months from the date of such termination in accordance with the Company's normal payroll policies and subject to the usual, required withholding,
 - ii. reimbursement of Executive's expenses in continuing group health insurance coverage

himself and his eligible covered dependents under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), for up to six (6) months, provided Executive makes a timely election for and continues to be eligible for such continued coverage; provided, however, that if the Company determines in its sole discretion that it cannot make the COBRA reimbursements without potentially violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), the Company will in lieu thereof provide to Executive a taxable monthly payment in an amount equal to the monthly COBRA premium that Executive would be required to pay to continue Executive's group health coverage in effect on the date of Executive's termination of employment (which amount will be based on the premium for the first month of COBRA coverage), which payments will be made regardless of whether Executive elects COBRA continuation coverage and will commence on the month following Executive's termination of employment and will end on the earlier of (x) the date upon which Executive obtains other employment or (y) the date the Company has paid an amount equal to six (6) months' payments,

- iii. such portion of that year's Performance Bonus, if applicable, as Executive shall have earned (if any) as of the date of such termination, which amount shall be subject to the usual, required withholding, and
- iv. 100% vesting of outstanding equity awards and extension of exercise period for up to (1) year following termination.

c. **Termination for Cause, Death or Disability; Resignation without Good Reason.** If Executive's employment with the Company terminates voluntarily by Executive (except upon resignation for Good Reason), for Cause by the Company or due to Executive's death or Disability, then

- i. all vesting will terminate immediately with respect to Executive's outstanding Company equity awards, and

- ii. all payments of compensation by the Company to Executive hereunder will terminate

immediately (except as to amounts already earned, including such portion of that year's Performance Bonus as Executive shall have earned (if any) as of the date of such termination, as determined in good faith by the Board).

6. **Conditions to Receipt of Severance; No Duty to Mitigate.**

- a. **Separation Agreement and Release of Claims.** The continued payment of salary set forth in Section 5(a) shall be contingent upon Executive signing and not revoking the Company's standard release of claims agreement upon termination and provided that such release becomes effective no later than 120 days following the termination date or such earlier date required by the release agreement (such deadline, the "**Release Deadline**"). If the release does not become effective by the Release Deadline, Executive will forfeit any rights to severance or benefits under this Agreement. In no event will severance payments or benefits be paid or provided until the release actually becomes effective. In the event the termination occurs at a time during the calendar year where the release could become effective in the calendar year following the calendar year in which Executive's termination occurs, then any severance payments or benefits under this Agreement that would be considered Payments (as defined in Section 6(d)) will be paid on the first payroll date to occur during the calendar year following the calendar year in which such termination occurs, or, if later,
- i. the Release Deadline,
 - ii. such time as required by the payment schedule applicable to each payment or benefit set forth in Section 5, or
 - iii. such time as required by Section 6(d)(ii).
- b. **Noncompete.** Executive acknowledges that the nature of the Company's business is such that if Executive were to become employed by, or substantially involved in, the business of a competitor of the Company following the termination of Executive's employment with the Company, it would be very difficult for Executive not to rely on or use the Company's trade secrets and confidential information. Thus, to avoid the inevitable disclosure of the Company's trade secrets and confidential information and other protectible interests, Executive agrees and acknowledges that Executive's right to receive the severance payments set forth in Section 5(a) (to the extent Executive is otherwise entitled to such payments) will be conditioned upon Executive not directly or indirectly engaging in (whether as an employee, consultant, agent, proprietor, principal, partner, stockholder, corporate officer, director or otherwise), nor having any ownership interest in or participating in the financing, operation, management or control of, any person, firm, corporation or business that competes with Company (or any parent or subsidiary of the

Company) or is a customer of the Company (or any parent or subsidiary of the Company) provided,

6

however, that that nothing in this Section 6(b) will prevent Executive from owning as a passive investment less than 1% of the outstanding shares of the capital stock of a publicly-held corporation if such shares are actively traded on a national stock exchange or similar market or medium. Upon any breach of this section, all severance payments and post-termination benefits pursuant to Section 5 will immediately cease and Executive will be able to exercise his vested stock options to acquire Company common stock through the longer of:

- i. thirty (30) days following the commencement of such competition, and
 - ii. such period of time as originally set forth in his option agreement (without taking into account the one-year extended post-termination exercise period set forth in Section 5) to exercise any stock options or other similar rights to acquire Company common stock.
- c. **Non-Solicitation.** The receipt of any severance benefits pursuant to this Agreement will be subject to Executive not violating the provisions of Section 9. In the event Executive breaches the provisions of Section 9, all continuing payments and benefits to which Executive may otherwise be entitled pursuant to Section 5 will immediately cease and Executive will have the longer of
- i. thirty (30) days following the commencement of such competition, and
 - ii. such period of time as originally set forth in his award agreement to exercise any stock options or other similar rights to acquire Company common stock.
- d. **Section 409A.**
- i. Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits payable upon separation that is payable to Executive, if any, pursuant to this Agreement, when considered together with any other severance payments or

separation benefits that are considered deferred compensation (together, the “**Payments**”) under Section 409A will be payable until Executive has a “separation from service” within the meaning of Section 409A.

- ii. Notwithstanding anything to the contrary in this Agreement, if Executive is a “specified employee” within the meaning of Section 409A at the time of Executive’s termination of employment, then, if required, the Payments, which are otherwise due to Executive or within the six (6) month period following Executive’s termination will accrue, to the extent required, during such six (6) month period and will become payable in a lump sum payment on the date six (6) months and one (1) day following the date of Executive’s termination of employment or the date of Executive’s death, if earlier. All subsequent Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit.

7

- iii. Any amounts paid under this Agreement that satisfy the requirements of the “short-term deferral” rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Payments for purposes of clause (i) above.
- iv. Each payment and benefit payable under the Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.
- v. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit (as defined below) will not constitute a Payment for purposes of clause (i) above.
- vi. The foregoing provisions are intended to be exempt from or comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition

any additional tax or income recognition prior to actual payment to Executive under Section 409A.

- e. **No Duty to Mitigate.** Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any earnings that Executive may receive from any other source reduce any such payment.
- f. **Section 280G.** In the event that the payments under this Agreement or otherwise payable to you constitute “parachute payments” within the meaning of Section 280G of the Code and (ii) but for this Section 6(f), would be subject to the excise tax imposed by Section 4999 of the Code, then Executive’s benefits hereunder shall be payable either:
 - i. in full or
 - ii. as to such lesser amount which would result in no portion of such severance benefits subject to excise tax under Section 4999 of the Code, whichever of the foregoing amount taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by Executive on an after-tax basis, of the greatest amount of benefits hereunder, notwithstanding that all or some portion of such benefits may be taxable under Section 4999 of the Code.

Unless the Company and Executive agree in writing, any determination required under this Section 6(f) shall be made in writing by the public accountants

8

designated by the Company. If the amount of the aggregate payments or property transferred to Executive must be reduced under this Section 6(f), then the reduction in payments and/or benefits shall occur in the following order: (1) reduction of cash payments, if any; (2) cancellation of accelerated vesting of equity awards, if any; and (3) reduction of other benefits, if any, paid to Executive.

7. **Definitions.**

- a. **Cause**. For purposes of this Agreement, “**Cause**” is defined as, in the Company’s reasoned discretion:
- i. Executive’s conviction of a felony or gross misdemeanor, or the Company’s belief Executive has done so;
 - ii. Executive’s commission of any act of fraud or dishonesty with respect to the Company;
 - iii. Executive’s intentional misconduct that has a materially adverse effect upon the Company’s business;
 - iv. Executive’s breach of any of Executive’s fiduciary obligations as an officer of the Company or of any contractual obligation that Executive has to the Company, in either case where the breach has a materially adverse effect on the Company’s business;
 - v. Executive’s willful misconduct or gross negligence in performance of Executive’s duties hereunder, including Executive’s refusal to comply in any material respect with the legal directives of the Board so long as such directives are not inconsistent with Executive’s position and duties, or
 - vi. Executive’s death or Disability.

However, prior to any termination of Executive’s employment for Cause defined in clauses (iii), (iv) or (v) above, the Company shall give written notice to Executive of the actions or omissions deemed to constitute the Cause event, and if it is possible to cure the specified default, Executive shall have a period of not less than thirty (30) days in which to cure the specified default in Executive’s performance.

- b. **Change of Control**. For purposes of this Agreement, “**Change of Control**” of the Company shall have the same meaning as given it in the 2016 Plan.
- c. **Code**. For purposes of this Agreement, “**Code**” means the Internal Revenue Code of 1986, as amended.
- d. **Disability**. For purposes of this Agreement, “**Disability**” means Executive’s inability to engage in any substantial gainful activity by reason of any medically

determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than three months, or such longer period as may be required under applicable law. Executive shall not be considered disabled unless Executive furnishes proof in such form or manner, and at such times, as the Company may require.

- e. **Good Reason**. For the purposes of this Agreement, “**Good Reason**” means Executive’s resignation that is effective within two (2) years following the occurrence of any Company cure period (discussed below) one or more of the following events without Executive’s consent:
- i. a material reduction of Executive’s Base Salary (for purposes of this Agreement, the reduction of Base Salary by less than 10% from Executive’s then present Base Salary not be considered a material reduction), provided that an across-the-board reduction in salary level of all other senior executives by the same percentage amount as part of a general salary level reduction shall not constitute such a material reduction;
 - ii. the assignment to Executive of any duties, or the reduction of Executive’s duties, either which results in a material diminution in Executive’s authority, duties or responsibilities; the Company in effect immediately prior to such assignment or reduction, or the removal of Executive from such position and responsibilities, unless Executive is provided with comparable authority, duties or responsibilities; provided that a reassignment following a Change of Control to a position that is substantially similar to the position held prior to Change of Control in terms of job duties, responsibilities and requirements shall not constitute a material reduction in job responsibilities; or
 - iii. a material change in the geographic location at which Executive must perform service for purposes of this Agreement, the relocation of Executive to a facility or a location less than 50 miles from Executive’s then-present location shall not be considered a material change in geographic location).

Executive will not resign for “Good Reason” without first providing the Company with written notice of the acts or omissions constituting the grounds for “Good Reason” within 90 days of the initial existence of the grounds for “Good Reason” and a reasonable cure period of not less than 30 days following the date of such notice.

- f. **Section 409A Limit**. For purposes of this Agreement, “**Section 409A Limit**” means the lesser of two times:

- i. Executive's annualized compensation based upon the annual rate of pay paid to Exec during Executive's taxable year preceding Executive's

10

taxable year of Executive's termination of employment as determined under Treasury Regulation 1.409A-1(b)(9)(iii)(A)(i) and any Internal Revenue Service guidance issued with respect thereto; or

- ii. the maximum amount that may be taken into account under a qualified plan pursuant Section 401(a)(17) of the Code for the year in which Executive's employment is termin
8. **Confidential Information**. Executive agrees to maintain his obligations under the Company's standard Proprietary Information and Inventions Agreement, attached hereto as **Exhibit A**, dated on even date herewith (the "**Proprietary Information Agreement**").
9. **Non-Solicitation**. Until the date one year after the termination of Executive's employment with the Company for any reason, Executive agrees not, either directly or indirectly, to solicit, induce, attempt to hire, recruit, encourage, take away, hire any employee of the Company (or any parent or subsidiary of the Company) or cause an employee to leave his employment either for Executive or for any other entity or person. The hiring of an individual violates this paragraph regardless of who initiated contact. Executive represents that he (a) is familiar with the foregoing covenant not to solicit, and (b) is fully aware of his obligations hereunder, including, without limitation, the reasonableness of the length of time, scope and geographic coverage of these covenants.
10. **Assignment**. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "**successor**" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and

distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.

11. **Notices.** All notices, requests, demands and other communications called for hereunder will be in writing and will be deemed given (a) on the date of delivery if delivered personally, (b) 1 day after being sent by a well-established commercial overnight service, or (c) four (4) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing:

If to the Company: Impinj, Inc.
400 Fairview Ave. N., Suite 1200
Seattle, Washington 98104
Attn: General Counsel

If to Executive: at the last residential address known by the Company.

11

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12. **Severability.** In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.
13. **Arbitration.** In consideration of Executive's employment with the Company, its promise to arbitrate all employment-related disputes and his receipt of the compensation, pay raises and other benefits paid to his by the Company, at present and in the future, Executive agrees that any and all controversies, claims, or disputes with anyone (including the Company and any employee, officer, director, shareholder or benefit plan of the Company in their capacity as such or otherwise) arising out of, relating to, or resulting from Executive's employment with the Company or the termination of Executive's employment with the Company, including any breach of this Agreement, will be subject to binding arbitration under the National Rules for the Resolution of Employment Disputes, supplemented by the Washington Code of Civil Procedure (the "**Rules**") and pursuant to Washington law, except as permitted by law. Disputes which Executive agrees to arbitrate, and thereby agrees to waive any right to a trial by jury, include any statutory claims

under state or federal law, including, but not limited to, claims under Title VII of the Civil Rights Act of 1964, the Americans with Disabilities Act of 1990, the Age Discrimination in Employment Act of 1967, the Older Workers Benefit Protection Act, the Worker Adjustment and Retraining Notification Act, the Family and Medical Leave Act, the Washington Law Against Discrimination, claims of harassment, discrimination or wrongful termination and any statutory claims. Executive further understands that this Agreement to arbitrate also applies to any disputes that the Company may have with his.

- a. **Procedure.** Executive agrees that any arbitration will take place in Seattle, Washington and be administered by the American Arbitration Association (“**AAA**”) and that the neutral arbitrator will be selected in a manner consistent with its National Rules for the Resolution of Employment Disputes. Executive agrees that the arbitrator will have the power to decide any motions brought by any party to the arbitration, including motions for summary judgment and/or adjudication and motions to dismiss and demurrers, prior to any arbitration hearing. Executive also agrees that the arbitrator will have the power to award any remedies, including attorneys’ fees and costs, available under applicable law. Executive understands that the Company will pay for any administrative or hearing fees charged by the arbitrator or AAA except that Executive will pay the first \$125.00 of any filing fees associated with any arbitration Executive initiates. Executive agrees that the arbitrator will administer and conduct any arbitration in a manner consistent with the Rules and that to the extent that the AAA’s National Rules for the Resolution of Employment Disputes conflict with the Rules, the Rules will take precedence. Executive agrees that the decision of the arbitrator will be in writing.
- b. **Remedy.** Except as provided by this Agreement, applicable law, and by the Rules, including any provisional relief offered therein, arbitration will be the sole, exclusive and final remedy for any dispute between Executive and the Company. Accordingly, except as provided for by the Rules, applicable law, and this

Agreement, neither Executive nor the Company will be permitted to pursue court action regarding claims that are subject to arbitration. Notwithstanding, the arbitrator will not have the authority to

disregard or refuse to enforce any lawful Company policy, and the arbitrator will not order or require the Company to adopt a policy not otherwise required by law which the Company has not adopted.

- c. **Administrative Relief.** Executive understands that this Agreement does not prohibit him from pursuing an administrative claim with a local, state or federal administrative body such as the Department of Fair Employment and Housing, the Equal Employment Opportunity Commission or the workers' compensation board. This Agreement does, however, preclude Executive from pursuing court action regarding any such claim, except as permitted by law.
 - d. **Voluntary Nature of Agreement.** Executive acknowledges and agrees that Executive is executing this Agreement voluntarily and without any duress or undue influence by the Company or anyone else. Executive further acknowledges and agrees that Executive has carefully read this Agreement and that Executive has asked any questions needed for Executive to understand the terms, consequences and binding effect of this Agreement and fully understands it, including that Executive *is waiving Executive's right to a jury trial*. Finally, Executive agrees that Executive has been provided an opportunity to seek the advice of an attorney of Executive's choice before signing this Agreement.
14. **Integration.** This Agreement, together with any Company equity plans and equity agreements, the Stock Agreements, and the Proprietary Information Agreement, represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. This Agreement may be modified only by agreement of the parties by a written instrument executed by the parties that is designated as an amendment to this Agreement.
15. **Waiver of Breach.** The waiver of a breach of any term or provision of this Agreement, which must be in writing, will not operate as or be construed to be a waiver of any other previous or subsequent breach of this Agreement.
16. **Headings.** All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.
17. **Tax Withholding.** All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.
18. **Governing Law.** This Agreement will be governed by the laws of the State of Washington except for its conflict of laws' provisions. Venue for any dispute will be Seattle, Washington.
19. **Acknowledgment.** Executive acknowledges that he has had the opportunity to discuss this matter with and obtain advice from his private attorney, has had sufficient time to, and has

carefully read and fully understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

13

20. **Counterparts.** This Agreement may be executed in counterparts, and each counterpart will have the same force and effect as an original and will constitute an effective, binding agreement on the part of each of the undersigned.

[The space below intentionally left blank.]

14

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by their duly authorized officers, as of the day and year first above written.

Impinj, Inc.

Hussein Mecklai

/s/ Chris Diorio

/s/ Hussein Mecklai

By: Chris Diorio

By: Hussein Mecklai

Chief Executive Officer

Executive

Exhibit A

Proprietary Information and Inventions Agreement Impinj, Inc.

In exchange for my becoming employed by Impinj, Inc. or any of its current or future subsidiaries, affiliates, successors, or assigns (collectively, the “**Company**”), and for any cash and equity compensation for my services, I hereby agree as follows:

1. **Confidentiality Obligation**. I understand and agree that all Proprietary Information (as defined in Section 6 shall be the sole property of the Company and its assignees, including all trade secrets, patents, copyrights and other rights in connection therewith. I hereby assign to the Company any rights I may acquire in such Proprietary Information. I will hold in confidence and not directly or indirectly use or disclose, both during my employment by or consulting relationship with the Company and for a period of five (5) years after its termination (irrespective of the reason for such termination), any Proprietary Information I obtain or create during the period of my employment or consulting relationship, whether or not during working hours, except to the extent authorized by the Company, until such Proprietary Information becomes generally known. I agree not to make copies of such Proprietary Information except as authorized by the Company. Upon termination of my employment or consulting relationship or upon an earlier request by the Company, I will return or deliver to the Company all tangible forms of such Proprietary Information in my possession or control, including but not limited to drawings, specifications, documents, records, devices, models or any other material and copies or reproductions thereof. This agreement and my obligations under it are independent of my continued service with the Company and I promise to keep all Confidential Information secret after the termination, for any reason, of my employment from the Company.
2. **Ownership of Physical Property**. All documents, apparatus, equipment and other physical

property in any form, whether or not pertaining to Proprietary Information, furnished to me by the Company or produced by me or others in connection with my employment or consulting relationship shall be and remain the sole property of the Company. I shall return to the Company all such documents, materials and property as and when requested by the Company, except only (i) my personal copies of records relating to my compensation; (ii) if applicable, my personal copies of any materials evidencing shares of the Company's capital stock purchased by me and options to purchase shares of the Company's capital stock granted to me; (iii) my copy of this Agreement and (iv) my personal property and personal documents I bring with me to the Company and any personal correspondence and personal materials that I accumulate and keep at my office during my employment (my "Personal Documents"). Even if the Company does not so request, I shall return all such documents, materials and property upon termination of my employment or consulting relationship, and, except for my Personal Documents, I will not take with me any such documents, material or property or any reproduction thereof upon such termination. In the event of the termination of the Relationship, I agree to sign and deliver the "**Termination Certification**" attached hereto

1

as **Exhibit A-2**; however, my failure to sign and deliver the Termination Certificate shall in no way diminish my continuing obligations under this Agreement.

3. **Assignment of Inventions.**

- a. Without further compensation, I hereby agree to promptly disclose to the Company, all Inventions (as defined below) which I may solely or jointly develop or reduce to practice during the period of my employment or consulting relationship with the Company which (i) pertain to any line of business activity of the Company, (ii) are aided by the use of time, material or facilities of the Company, whether or not during working hours or (iii) relate to any of my work during the period of my employment or consulting relationship with the Company, whether or not during normal working hours ("Company Inventions"). During the term of my employment or consultancy, all Company Inventions that I conceive, reduce to practice, develop or have developed (in whole or in part, either alone or jointly with others) shall be the sole property of the Company and its assignees to the maximum extent permitted by law (and to the fullest extent permitted by law).

be deemed “works made for hire”), and the Company and its assignees shall be the sole owner of all patents, copyrights, trademarks, trade secrets and other rights in connection therewith. I hereby assign to the Company any rights that I may have or acquire in such Company Inventions.

- b. I attach hereto as **Exhibit A**, a complete list of all Inventions, if any, made by me prior to my employment or consulting relationship with the Company that are relevant to the Company's business, and I represent and warrant that such list is complete. If no such list is attached to this Agreement, I represent that I have no such Inventions at the time of signing this Agreement. If in the course of my employment or consultancy (as the case may be) with the Company, I use or incorporate into a product or process an Invention not covered by Section 4(a) of this Agreement in which I have an interest, the Company is hereby granted a nonexclusive, fully paid-up, royalty-free, perpetual, worldwide license of my interest to use and sublicense such Invention without restriction of any kind.

NOTICE REQUIRED BY REVISED CODE OF WASHINGTON 49.44.140:

Any assignment of Inventions required by this Agreement does not apply to an Invention for which no equipment, supplies, facility or trade secret information of the Company was used and which was developed entirely on the employee's own time, unless (a) the Invention relates (i) directly to the business of the Company or (ii) to the Company's actual or demonstrably anticipated research or development or (b) the Invention results from any work performed by the employee for the Company.

4. **Further Assistance; Power of Attorney.** I agree to perform, during and after my employment or consulting relationship, all acts deemed necessary or desirable by the Company to permit and assist it, at its expense, in obtaining and enforcing the full benefits, enjoyment, rights and title throughout the world in the Inventions assigned to the Company as set forth in Section 4 above. Such acts may include, but are not limited to, execution of documents and assistance or cooperation in legal proceedings. I hereby

irrevocably designate the Company and its duly authorized officers and agents as my agent and attorney-in fact, to execute and file on my behalf any such applications and to do all other lawful acts to

further the prosecution and issuance of patents, copyright and mask work registrations related to such Inventions. This power of attorney shall not be affected by my subsequent incapacity.

5. **Inventions**. As used in this Agreement, the term “**Inventions**” means discoveries, developments, concepts, designs, ideas, know-how, improvements, inventions, trade secrets and/or original works of authorship, whether or not patentable, copyrightable or otherwise legally protectable. This includes, but is not limited to, any new product, machine, article of manufacture, biological material, method, procedure, process, technique, use, equipment, device, apparatus, system, compound, formulation, composition of matter, design or configuration of any kind, or any improvement thereon.
6. **Proprietary Information**. As used in this Agreement, the term “**Proprietary Information**” means information or physical material not generally known or available outside the Company or information or physical material entrusted to the Company by third parties. This includes, but is not limited to, Inventions, confidential knowledge, copyrights, product ideas, techniques, processes, formulas, object codes, mask works and/or any other information of any type relating to documentation, laboratory notebooks, data, schematics, algorithms, flow charts, mechanisms, research, manufacture, improvements, assembly, installation, marketing, forecasts, sales, pricing, customers, the salaries, duties, qualifications, performance levels and terms of compensation of other employees, and cost or other financial data concerning any of the foregoing for the Company and its operations. Proprietary Information may be contained in material such as drawings, samples, procedures, specifications, reports, studies, customer or supplier lists, budgets, cost or price lists, compilations or computer programs, or may be in the nature of unwritten knowledge or know-how.
7. **Protected Activity Not Prohibited**. I agree that nothing in this Agreement limits or prohibits me from filing a charge or complaint with, or otherwise communicating or cooperating with or participating in any investigation or proceeding that may be conducted by, any federal, state or local government agency or commission, including the Securities and Exchange Commission, the Equal Employment Opportunity Commission, the Occupational Safety and Health Administration, and the National Labor Relations Board (“**Government Agencies**”), including disclosing documents or other information as permitted by law, without giving notice to, or receiving authorization from, the Company. Notwithstanding, in making any such disclosures or communications, I agree to take all reasonable precautions to prevent any unauthorized use or disclosure of any information that may constitute Proprietary Information to any parties other than the Government Agencies. I further understand that I am not permitted to disclose the Company’s attorney-client privileged communications or attorney work product. In addition, I hereby acknowledge that the Company has provided me with notice in compliance with the Defend Trade Secrets Act of 2016 regarding immunity from liability for limited disclosures of trade secrets. The full text of the notice is attached in **Exhibit A-3**.

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8. **No Conflicts.** I represent that my performance of all the terms of this Agreement as an employee of or consultant to the Company does not and will not breach any agreement to keep in confidence proprietary information, knowledge or data acquired by me in confidence or in trust prior to my becoming an employee or consultant of the Company, and I will not disclose to the Company, or induce the Company to use, any confidential or proprietary information or material belonging to any previous employer or others. I agree not to enter into any written or oral agreement that conflicts with the provisions of this Agreement.
9. **No Interference.** I certify that, to the best of my information and belief, I am not a party to any other agreement that will interfere with my full compliance with this Agreement.
10. **Effects of Agreement.** This Agreement (a) shall survive for a period of five (5) years beyond the termination of my employment by or consulting relationship with the Company, (b) inures to the benefit of successors and assigns of the Company and (c) is binding upon my heirs and legal representatives.
11. **Injunctive Relief.** I acknowledge that violation of this Agreement by me may cause irreparable injury to the Company, and I agree that the Company will be entitled to seek extraordinary relief in court, including, but not limited to, temporary restraining orders, preliminary injunctions and permanent injunctions without the necessity of posting a bond or other security and without prejudice to any other rights and remedies that the Company may have for a breach of this Agreement.
12. **Miscellaneous.** This Agreement supersedes any oral, written or other communications or agreements concerning the subject matter of this Agreement, and may be amended or waived only by a written instrument signed by me and the Chief Executive Officer of the Company. This Agreement shall be governed by the laws of the State of Washington applicable to contracts entered into and performed entirely within the State of Washington, without giving effect to principles of conflict of laws. If any provision of this Agreement is held to be unenforceable under applicable law, then such provision shall be excluded from this Agreement only to the extent

unenforceable, and the remainder of such provision and of this Agreement shall be enforceable in accordance with its terms.

13. **Acknowledgment**. I certify and acknowledge that I have carefully read all of the provisions of this Agreement and that I understand and will fully and faithfully comply with such provisions.

Impinj, Inc.

Hussein Mecklai

/s/ Chris Diorio

/s/ Hussein Mecklai

4

Exhibit A-1

Impinj, Inc.

400 Fairview Ave. N., Suite 1200

Seattle, WA 98104

1. The following is a complete list of all Inventions relevant to the subject matter of my employment by the Company that have been made or conceived or first reduced to practice by me, alone or jointly with others or which have become known to me prior to my employment by the Company. I represent that such list is complete.

None

2. I propose to bring to my employment or consultancy the following materials and documents of a former employer:

☒ No material or documents.

See below:

None

Hussein Mecklai

By: /s/ Hussein Mecklai

Dated: 11/11/2018

5

Exhibit A-2 Termination Certification

This is to certify that I do not have in my possession, nor have I failed to return, any devices, records, data, notes, reports, proposals, lists, correspondence, specifications, drawings, blueprints, sketches, laboratory notebooks, flow charts, materials, equipment, other documents or property, or copies or reproductions of any aforementioned items belonging to Impinj, Inc., its subsidiaries, affiliates, successors or assigns (together the “**Company**”).

I further certify that I have complied with all the terms of the Company’s Proprietary Information and Invention Assignment Agreement signed by me, including the reporting of any inventions and original works of authorship (as defined therein), conceived or made by me (solely or jointly with others) covered by that agreement.

I further agree that, in compliance with the Proprietary Information and Invention Assignment Agreement, I will preserve as confidential all trade secrets, confidential knowledge, data or other proprietary information relating to products, processes, know-how, designs, formulas, developmental or experimental work, computer programs, data bases, other original works of authorship, customer lists, business plans, financial information or other subject matter pertaining to any business of the Company or any of its employees, clients, consultants or licensees.

I further agree that for one (1) year from the date of this Certificate, I shall not either directly or indirectly solicit, induce, recruit or encourage any of the Company's employees or consultants to terminate their relationship with the Company, or attempt to solicit, induce, recruit, encourage or take away employees or consultants of the Company, either for myself or for any other person or entity. Further, I shall not at any time use any Confidential Information of the Company to negatively influence any of the Company's clients or customers from purchasing Company products or services or to solicit or influence or attempt to influence any client, customer or other person either directly or indirectly, to direct his or its purchase of products and/or services to any person, firm, corporation, institution or other entity in competition with the business of the Company.

By: [To be signed at termination]

Dated:

6

Exhibit A-3

Section 7 of the Defend Trade Secrets Act of 2016

“ . . . An individual shall not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret that—(A) is made—(i) in confidence to a Federal, State, or local government official, either directly or indirectly, or to an attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. . . . An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to the attorney of the individual and use the trade secret information in the court proceeding, if the individual—(A) files any document containing the trade secret under seal; and (B) does not disclose the trade secret, except pursuant to court order.”

7

Certain portions of this exhibit have been redacted pursuant to Item 601(b)(10) of Regulation S-K and, where applicable, have been marked with "[***]" to indicate where redactions have been made. The marked information has been redacted because it is both (i) not material and (ii) of the type that the registrant treats as private or confidential.

Exhibit 10.29

IMPINJ, INC.

EXECUTIVE EMPLOYMENT AND ARBITRATION AGREEMENT

This Executive Employment Agreement (the “**Agreement**”) is entered into as of December 29, 2022 (the “**Effective Date**”) by and between Cathal Phelan (“**Executive**”) and Impinj, Inc., a Delaware corporation (the “**Company**”), and sets forth the terms and conditions with respect to Executive’s employment with the Company during the Employment Term (as defined below).

NOW THEREFORE, in consideration of the mutual covenants contained herein, the Company and Executive agree as follows:

AGREEMENT

1. Duties and Scope of Employment.

- a. **Position and Duties.** Executive will serve as Chief Innovation Officer of the Company and will report to the Company’s Chief Executive Officer. The duties and responsibilities of Executive shall include the duties and responsibilities for Executive’s corporate office and position as set forth in Company’s bylaws from time to time in effect and such other duties and responsibilities as Company’s Chief Executive Officer may from time to time reasonably assign to Executive, in all cases to be consistent with Executive’s corporate office and position. The period of Executive’s employment under this Agreement is referred to herein as the “**Employment Term.**”
- b. **Obligations.** During the Employment Term, Executive will perform his duties faithfully and to the best of his ability and will devote his full business efforts and time to the Company. For the duration of the Employment Term, Executive agrees not to actively engage in any other employment, occupation or consulting activity for any direct or indirect remuneration without the Company’s prior approval. Executive will not render commercial or professional services of any nature to any person or organization, whether or not for compensation, without the prior written consent of Impinj’s General Counsel/Chief Compliance Officer on the Company’s behalf.

Executive's approved outside professional and board commitments as of the Effective Date are described in **Exhibit B**. Notwithstanding the foregoing, nothing in this Agreement will prevent Executive from accepting speaking or presentation engagements in exchange for honoraria or from serving on boards of charitable organizations, provided that such activities do not materially interfere with Executive's obligations to the Company as described above.

2. **At-Will Employment.** The parties agree that Executive's employment with the Company will be "at- will" employment and may be terminated at any time with or without cause or notice. Executive understands and agrees that neither his job performance nor promotions, commendations, bonuses or the like from the Company give rise to or in any way serve as the basis for modification, amendment, or extension, by implication or otherwise, of his employment with the Company. However, as described in this Agreement, Executive may be entitled to severance benefits depending on the circumstances of Executive's termination of employment with the Company.
3. **Announcement and Start Dates.** Executive will commence employment on January 1, 2023 (the "Start Date").
4. **Compensation.**
 - a. **Base Salary.** During the Employment Term, the Company will pay Executive an annual salary of

1

\$360,000 as compensation for his services (the "**Base Salary**"). The Base Salary will be paid periodically in accordance with the Company's normal payroll practices, and will be subject to the usual, required withholding. Executive's salary will be subject to review, and adjustments

may be made based upon the Company's normal performance review practices.

- b. **Performance Bonus.** Executive shall be eligible to receive additional annual bonus compensation according to certain milestones and company performance metrics to be established by the Company and otherwise applicable to the Company's executive team (the "**Performance Bonus**").
 - i. Performance Bonus compensation shall target sixty-five percent (65%) of Base Salary at one hundred percent (100%) achievement of the established milestones and performance metrics, and otherwise will be subject to the Company's annual Executive Bonus Plan. Performance Bonus achievement may be lower than sixty-five percent (65%) of Base Salary

if the performance targets are not met. Subject to the approval of the Board of Directors or its authorized committee (in either case, the “**Board**”), performance Bonus achievement may be higher than sixty-five percent (65%) of Base Salary if the performance targets are exceeded. The terms of the Executive Bonus Plan are typically structured and approved annually by the Board and may be satisfied in cash or in equity in the Company at the Board’s discretion.

- ii. The Company shall pay any actual Performance Bonus after attainment is determined by the Board in conjunction with the Company’s fourth quarter and year-end earnings announcement following the calendar year to which the bonus is earned. Since Employee retention and ongoing customer service are key purposes of the bonus, Executive must be employed on the payment date to earn and receive his Performance Bonus. Executive’s target Performance Bonus will be subject to review, and adjustments may be made based upon the Company’s normal performance review practices. The Company reserves the right to modify and/or interpret all of its incentive compensation plans, including the Executive Bonus Plan, at any time.

c. **Equity.**

- i. Subject to approval by the Board, Executive will be granted 22,000 restricted stock units (the “**RSUs**”) of Company common stock under the Company’s 2016 Plan. The RSUs will vest as follows: One fourth of the RSUs will vest on the one-year anniversary of your RSU grant date, and thereafter 1/16 of the total number of RSUs will vest every three months thereafter (on the same day of the month as your grant date) so long as Executive remains a Service Provider (as defined in the 2016 Plan), so that all the RSUs shall have vested after 48 months following the RSU grant date. The award RSUs will be subject to the terms of the Plan and the applicable award agreement between you and the Company evidencing the applicable grant (collectively, the “**Equity Documents**”), and further subject to applicable federal and state securities laws.
- ii. Executive shall be eligible for the Company’s long-term incentive plan, whose amounts and conditions are typically decided and implemented by the Board in its sole discretion annually.
- iii. Executive shall retain his existing consulting and board equity grants upon employment, subject to the terms and conditions of those existing grants.

- d. **Employee Benefits.** During the Employment Term, Executive will be entitled to participate in the employee benefit plans currently and hereafter maintained by the Company of general

applicability to other senior executives of the Company, including, without limitation, the Company's group medical, dental, vision, life insurance, and disability plans. The Company reserves the right to cancel or change the benefit plans and programs it offers to its employees at any time.

e. **Paid Time Off.** During the Employment Term, Executive will be entitled to paid time off under

the Company's Open Paid-Time Off (PTO) policy, which provides for mutually and reasonably agreed upon paid time off and is subject to change at the discretion of the Company.

f. **Travel Expenses.** During the Employment Term, Executive will perform services while resident in California. The Company will reimburse reasonable travel expenses (in compliance with the Company's then applicable policies) incurred for Executive to periodically travel to the Company's offices in Seattle, Washington.

5. **Severance.**

a. **Termination for other than Cause, Death or Disability or Resignation for Good Reason Apart from Change of Control.** If, after ninety (90) days following Executive's Start Date but prior to a Change of Control, or after twelve (12) months following a Change of Control, (1) the Company terminates Executive's employment with the Company other than for Cause, death or Disability, or (2) Executive resigns from his employment with the Company for Good Reason, then, subject to Section 6, Executive will be entitled to:

- i. continuing payments of severance pay at a rate equal to his Base Salary, as then in effect, for six (6) months from the date of such termination in accordance with the Company's normal payroll policies and subject to the usual, required withholding,
- ii. reimbursement of Executive's expenses in continuing group health insurance coverage for himself and his eligible covered dependents under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), for up to six (6) months, provided Executive makes a timely election for and continues to be eligible for such continued coverage; provided, however, that if the Company determines in its sole discretion that it cannot make the COBRA reimbursements without potentially violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), the Company will in lieu thereof provide to Executive a taxable monthly payment in an amount equal to the monthly COBRA premium that Executive would be required to pay to continue Executive's group health coverage in effect on the date of Executive's termination of employment (which amount will be based on the premium for the first month of COBRA coverage), which payments will be made regardless of whether Executive elects COBRA continuation coverage and will commence on the month following Executive's termination of employment and will end on the earlier of (x) the date upon which Executive obtains other employment or (y) the date the Company has paid an amount equal to six (6) payments, and
- iii. such prorated portion of that year's Performance Bonus, if applicable, based on days worked as a percentage of the calendar year, as Executive may have earned (if any) as of the date of such

termination, as determined in good faith by the Board, which amount shall be subject to the usual, required withholding.

- iv. Accelerated vesting of 25% of then unvested portion of outstanding equity awards and extension of exercise period for up to one year following termination.

- b. **Termination for other than Cause, Death or Disability or Resignation for Good Reason Following a Change of Control.** If within twelve (12) months following a Change of Control (1) the Company terminates Executive's employment with the Company other than for Cause,

3

death or Disability, or (2) Executive resigns from his employment with the Company for Good Reason, then, subject to Section 6, Executive will be entitled to:

- i. continuing payments of severance pay at a rate equal to his Base Salary rate, as then in effect, for six (6) months from the date of such termination in accordance with the Company's normal payroll policies and subject to the usual, required withholding,
- ii. reimbursement of Executive's expenses in continuing group health insurance coverage for

himself and his eligible covered dependents under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), for up to six (6) months, provided Executive makes a timely election for and continues to be eligible for such continued coverage; provided, however, that if the Company determines in its sole discretion that it cannot make the COBRA reimbursements without potentially violating applicable law (including, without limitation, Section 2716 of the Public Health Service Act), the Company will in lieu thereof provide to Executive a taxable monthly payment in an amount equal to the monthly COBRA premium that Executive would be required to pay to continue Executive's group health coverage in effect on the date of Executive's termination of employment (which amount will be based on the premium for the first month of COBRA coverage), which payments will be made regardless of whether Executive elects COBRA

continuation coverage and will commence on the month following Executive's termination of employment and will end on the earlier of (x) the date upon which Executive obtains other employment or (y) the date the Company has paid an amount equal to six (6) payments,

- iii. such portion of that year's Performance Bonus, if applicable, as Executive shall have earned (if any)

as of the date of such termination, which amount shall be subject to the usual, required withholding, and

- iv. accelerated vesting of all outstanding Company equity awards as to 100% of the then unvested portion of any such Company equity award.

c. **Termination for Cause, Death or Disability; Resignation without Good Reason.** If

Executive's employment with the Company terminates voluntarily by Executive (except upon resignation for Good Reason), for Cause by the Company or due to Executive's death or Disability, then:

- i. all vesting will terminate immediately with respect to Executive's outstanding Company equity awards, and
- ii. all payments of compensation by the Company to Executive hereunder will terminate immediately (except as to amounts already earned, including such portion of that year's Performance Bonus as Executive shall have earned (if any) as of the date of such termination, as determined in good faith by the Board).

6. **Conditions to Receipt of Severance; No Duty to Mitigate.**

- a. **Separation Agreement and Release of Claims.** The continued payment of salary set forth in Section 5(a) or (b) shall be contingent upon Executive signing and not revoking a release of claims agreement in a form reasonably acceptable to the Company upon termination and provided that such release becomes effective no later than 120 days following the termination date or such earlier date required by the release agreement (such deadline, the "**Release Deadline**"). If the release does not become effective by the Release Deadline, Executive will forfeit any rights to severance or benefits under this Agreement. In no event will severance payments or benefits be paid or provided until the release actually becomes effective. In the

event the termination occurs at a time during the calendar year where the release could become effective in the calendar year following the calendar year in which Executive's termination occurs, then any severance payments or benefits under this Agreement that would be considered Payments (as defined in Section 6(d)) will be paid on the first payroll date to occur during the calendar year following the calendar year in which such termination occurs, or, if later,

- i. the Release Deadline,

- ii. such time as required by the payment schedule applicable to each payment or benefit as set forth in Section 5, or
 - iii. such time as required by Section 6(d)(ii).
- b. **Section 409A.**
- i. Notwithstanding anything to the contrary in this Agreement, no severance pay or benefits payable upon separation that is payable to Executive, if any, pursuant to this Agreement, when considered together with any other severance payments or separation benefits that are considered deferred compensation (together, the “**Payments**”) under Section 409A will be payable until Executive has a “separation from service” within the meaning of Section 409A.
 - ii. Notwithstanding anything to the contrary in this Agreement, if Executive is a “specified employee” within the meaning of Section 409A at the time of Executive’s termination of employment, then, if required, the Payments, which are otherwise due to Executive on or within the six (6) month period following Executive’s termination will accrue, to the extent required, during such six (6) month period and will become payable in a lump sum payment on the date six (6) months and one (1) day following the date of Executive’s termination of employment or the date of Executive’s death, if earlier. All subsequent Payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit.
 - iii. Any amounts paid under this Agreement that satisfy the requirements of the “short- term deferral” rule set forth in Section 1.409A-1(b)(4) of the Treasury Regulations will not constitute Payments for purposes of clause (i) above.
 - iv. Each payment and benefit payable under the Agreement is intended to constitute a separate payment for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations.
 - v. Any amount paid under this Agreement that qualifies as a payment made as a result of an involuntary separation from service pursuant to Section 1.409A-1(b)(9)(iii) of the Treasury Regulations that does not exceed the Section 409A Limit (as defined below) will not constitute a Payment for purposes of clause (i) above.
 - vi. The foregoing provisions are intended to be exempt from or comply with the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply. The Company and Executive agree to work together in good faith to consider amendments to this Agreement and to take such reasonable actions which are necessary, appropriate or desirable to avoid imposition of any additional tax or income recognition prior to actual payment to Executive under Section 409A.
- c. **No Duty to Mitigate.** Executive will not be required to mitigate the amount of any payment contemplated by this Agreement, nor will any earnings that Executive may receive from any

other source reduce any such payment.

- d. **Section 280G.** In the event that the payments under this Agreement or otherwise payable to you constitute “**parachute payments**” within the meaning of Section 280G of the Code and (ii) but for this Section 6(f), would be subject to the excise tax imposed by Section 4999 of the Code, then Executive’s benefits hereunder shall be payable either:
- i. in full or
 - ii. as to such lesser amount which would result in no portion of such severance benefits being subject to excise tax under Section 4999 of the Code, whichever of the foregoing amounts, taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, results in the receipt by Executive on an after-tax basis, of the greatest amount of benefits hereunder, notwithstanding that all or some portion of such

benefits may be taxable under Section 4999 of the Code.

Unless the Company and Executive agree in writing, any determination required under this Section 6(f) shall be made in writing by the public accountants designated by the Company. If the amount of the aggregate payments or property transferred to Executive must be reduced under this Section 6(f), then the reduction in payments and/or benefits shall occur in the following order: (1) reduction of cash payments, if any; (2) cancellation of accelerated vesting of equity awards, if any; and (3) reduction of other benefits, if any, paid to Executive.

7. **Definitions.**

- a. **Cause.** For purposes of this Agreement, “**Cause**” is defined as, in the Company’s reasoned discretion:
- i. Executive’s conviction of a felony or gross misdemeanor, or the Company’s belief that Executive has committed such an offense;
 - ii. Executive’s commission of any material act of fraud or dishonesty with respect to the Company;
 - iii. Executive’s intentional misconduct that has a materially adverse effect upon the Company’s business;
 - iv. Executive’s breach of any of Executive’s fiduciary obligations as an officer of the Company or of any contractual obligation that Executive has to the Company, in either case where the breach has a

materially adverse effect on the Company's business;

- v. Executive's willful misconduct or gross negligence in performance of Executive's duties hereunder, including Executive's refusal to comply in any material respect with the legal directives of the Board so long as such directives are not inconsistent with Executive's position and duties, or
- vi. Executive's death or Disability.

However, prior to any termination of Executive's employment for Cause defined in clauses (iii), (iv) or (v) above, the Company shall give written notice to Executive of the actions or omissions deemed to constitute the Cause event, and if it is reasonably susceptible to cure the specified default, Executive shall have a period of not less than thirty (30) days in which to cure the specified default in

Executive's performance.

- b. **Change of Control**. For purposes of this Agreement, "**Change of Control**" of the Company shall have the same meaning as given it in the 2016 Plan.
- c. **Code**. For purposes of this Agreement, "**Code**" means the Internal Revenue Code of 1986, as

6

amended.

- d. **Disability**. For purposes of this Agreement, "**Disability**" means Executive's inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than three months, or such longer period as may be required under applicable law. Executive shall not be considered disabled unless Executive furnishes proof in such form or manner, and at such times, as the Company may require.
- e. **Good Reason**. For the purposes of this Agreement, "**Good Reason**" means Executive's resignation that is effective within ninety (90) days following the notice and cure period (discussed below) of the occurrence of any of the following events without Executive's consent:
 - i. a material reduction of Executive's Base Salary (for purposes of this Agreement, the

reduction of Base Salary by less than 10% from Executive's then present Base Salary shall not be considered a material reduction), provided that an across-the-board reduction in the salary level of all other senior executives by the same percentage amount as part of a general salary level reduction shall not constitute such a material reduction;

- ii. the assignment to Executive of any duties, or the reduction of Executive's duties, either of which results in a material diminution in Executive's authority, duties or responsibilities with the Company in effect immediately prior to such assignment or reduction, or the removal of Executive from such position and responsibilities, unless Executive is provided with comparable authority, duties or responsibilities; provided that, neither a mere change in title alone nor reassignment following a Change of Control to a position that is substantially similar to the position held prior to the Change of Control in terms of job duties, responsibilities and requirements shall constitute a material reduction in job responsibilities; or
- iii. a material change in the geographic location at which Executive must perform services (for purposes of this Agreement, the relocation of Executive to a facility or a location less than 50 miles from Executive's then-present location shall not be considered a material change in geographic location).

Executive will not resign for "Good Reason" without first providing the Company with written notice of the acts or omissions constituting the grounds for "Good Reason" within ninety (90) days of the initial existence of the grounds for "Good Reason" and a reasonable cure period of not less than thirty (30) days following the date of such notice.

- f. **Section 409A Limit.** For purposes of this Agreement, "Section 409A Limit" means the lesser of two times:
 - i. Executive's annualized compensation based upon the annual rate of pay paid to Executive during Executive's taxable year preceding Executive's taxable year of Executive's termination of employment as determined under Treasury Regulation 1.409A-1(b)(9)(iii)(A)(i) and any Internal Revenue Service guidance issued with respect thereto; or
 - ii. the maximum amount that may be taken into account under a qualified plan pursuant to Section 401(a)(17) of the Code for the year in which Executive's employment is terminated.
- 8. **Confidential Information.** Executive agrees to maintain his obligations under the Company's standard Proprietary Information and Inventions Agreement, attached hereto as **Exhibit A**, dated on even date herewith (the "**Proprietary Information Agreement**").

9. **Assignment**. This Agreement will be binding upon and inure to the benefit of (a) the heirs, executors and legal representatives of Executive upon Executive's death and (b) any successor of the Company. Any such successor of the Company will be deemed substituted for the Company under the terms of this Agreement for all purposes. For this purpose, "**successor**" means any person, firm, corporation or other business entity which at any time, whether by purchase, merger or otherwise, directly or indirectly acquires all or substantially all of the assets or business of the Company. None of the rights of Executive to receive any form of compensation payable pursuant to this Agreement may be assigned or transferred except by will or the laws of descent and distribution. Any other attempted assignment, transfer, conveyance or other disposition of Executive's right to compensation or other benefits will be null and void.
10. **Notices**. All notices, requests, demands and other communications called for hereunder will be in writing and will be deemed given (a) on the date of delivery if delivered personally, (b) one (1) day after being sent by a well-established commercial overnight service, or (c) four (4) days after being mailed by registered or certified mail, return receipt requested, prepaid and addressed to the parties or their successors at the following addresses, or at such other addresses as the parties may later designate in writing:

If to the Company: Impinj, Inc.

400 Fairview Ave. N., Suite 1200

Seattle, Washington 98104 Attn:

General Counsel

If to Executive: at the last residential address known by the Company.

11. **Severability**. In the event that any provision hereof becomes or is declared by a court of competent jurisdiction to be illegal, unenforceable or void, this Agreement will continue in full force and effect without said provision.
12. **Arbitration**. In consideration of Executive's employment with the Company, its promise to arbitrate all employment-related disputes and his receipt of the compensation, pay raises and other benefits paid to him by the Company, at present and in the future, Executive agrees that, to the maximum extent allowable under the Federal Arbitration Act, under which this provision shall be interpreted, any and all controversies, claims, or disputes with anyone (including the Company and any employee, officer, director, shareholder or benefit plan of the Company in their capacity as such or otherwise) arising out of, relating to, or resulting from Executive's employment with the Company or the termination of Executive's employment with the Company, including any breach of this Agreement, will be subject to binding arbitration under the American Arbitration Association National Rules for the Resolution of Employment Disputes ¹, supplemented by the California Code of Civil Procedure (the "**Rules**") and pursuant to California law, except as permitted by law. Disputes which Executive agrees to arbitrate, and thereby agrees to waive any right to a trial by jury, include any statutory claims under state or federal law, including, but not limited to, claims under Title VII of the Civil Rights Act of 1964, the Americans with

Disabilities Act of 1990, the Age Discrimination in Employment Act of 1967, the Older Workers Benefit Protection Act, the Worker Adjustment and Retraining Notification Act, the Family and Medical Leave Act, the, the California Government Code, claims of harassment, discrimination or wrongful termination and any statutory claims. Executive further understands that this Agreement to arbitrate also applies to any disputes that the Company may have with his.

- a. **Procedure**. Executive agrees that any arbitration will take place in Los Angeles, California and be administered by the American Arbitration Association (“**AAA**”) and that the neutral arbitrator will be selected in a manner consistent with its National Rules for the Resolution of Employment Disputes. Executive agrees that the arbitrator will have the power to decide any motions brought by any party to the arbitration, including motions for summary judgment and/or adjudication and

8

motions to dismiss and demurrers, prior to any arbitration hearing. Executive also agrees that the arbitrator will have the power to award any remedies, including attorneys’ fees and costs, available under applicable law. Executive understands that the Company will pay for any administrative or hearing fees charged by the arbitrator or AAA except that Executive will pay the first \$125.00 of any filing fees associated with any arbitration Executive initiates. Executive agrees that the arbitrator will administer and conduct any arbitration in a manner consistent with the Rules and that to the extent that the AAA’s National Rules for the Resolution of Employment Disputes conflict with the Rules, the Rules will take precedence. Executive agrees that the decision of the arbitrator will be in writing.

- b. **Remedy**. Except as provided by this Agreement, applicable law, and by the Rules, including any provisional relief offered therein, arbitration will be the sole, exclusive and final remedy for any dispute between Executive and the Company. Accordingly, except as provided for by the Rules, applicable law, and this Agreement, neither Executive nor the Company will be permitted to pursue court action regarding claims that are subject to arbitration. Notwithstanding, the arbitrator will not have the authority to disregard or refuse to enforce any lawful Company policy, and the

¹<https://www.adr.org/sites/default/files/National%20Rules%20for%20the%20Resolution%20of%20Employment%20Disputes%20Jan%2001%2C%202004.pdf>

arbitrator will not order or require the Company to adopt a policy not otherwise required by law which the Company has not adopted.

- c. **Administrative Relief**. Executive understands that this Agreement does not prohibit him from pursuing an administrative claim with a local, state or federal administrative body such as the Department of Fair Employment and Housing, the Equal Employment Opportunity Commission or the workers' compensation board. This Agreement does, however, preclude Executive from pursuing court action regarding any such claim, except as permitted by law.
- d. **Voluntary Nature of Agreement**. Executive acknowledges and agrees that Executive is executing this Agreement voluntarily and without any duress or undue influence by the Company or anyone else. Executive further acknowledges and agrees that Executive has carefully read this Agreement and that Executive has asked any questions needed for Executive to understand the terms, consequences and binding effect of this Agreement and fully understands it, including that Executive *is waiving Executive's right to a jury trial*. Finally, Executive agrees that Executive has been provided an opportunity to seek the advice of an attorney of Executive's choice before signing this Agreement.
13. **Integration**. This Agreement, together with any Company equity plans and equity agreements, the Stock Agreements, and the Proprietary Information Agreement, represents the entire agreement and understanding between the parties as to the subject matter herein and supersedes all prior or contemporaneous agreements whether written or oral. This Agreement may be modified only by agreement of the parties by a written instrument executed by the parties that is designated as an amendment to this Agreement.
14. **Waiver of Breach**. The waiver of a breach of any term or provision of this Agreement, which must be in writing, will not operate as or be construed to be a waiver of any other previous or subsequent breach of this Agreement.
15. **Headings**. All captions and section headings used in this Agreement are for convenient reference only and do not form a part of this Agreement.
16. **Tax Withholding**. All payments made pursuant to this Agreement will be subject to withholding of applicable taxes.

17. **Governing Law**. This Agreement will be governed by the laws of the State of California except for its conflict of laws' provisions. Venue for any dispute will be Los Angeles, California
18. **Acknowledgment**. Executive acknowledges that he has had the opportunity to discuss this matter with and obtain advice from his private attorney, has had sufficient time to, and has carefully read and fully

understands all the provisions of this Agreement, and is knowingly and voluntarily entering into this Agreement.

19. **Counterparts.** This Agreement may be executed in counterparts, and each counterpart will have the same force and effect as an original and will constitute an effective, binding agreement on the part of each of the undersigned.

[The space below intentionally left blank.]

10

IN WITNESS WHEREOF, each of the parties has executed this Agreement, in the case of the Company by their duly authorized officers, as of the day and year first above written.

Impinj, Inc. Cathal Phelan

/s/ Chris Diorio

By:

Chief Executive Officer

/s/ Cathal Phelan

By:

Executive

11

Exhibit A

Proprietary Information and Inventions Agreement Impinj, Inc.

12

Exhibit B

Approved Outside Professional and Board Commitments

Entity	Description of Entity	Description of Commitment	Approved Duration*
***	Electronic Design Automation solutions/software company	Technical Advisory board member. 1 hour per week or less.	For so long as the entity is not a Company competitor and the time commitment remains as described.
***	Battery technology company	Technical Advisory board member and coach to CEO/CTO. 1 hour per week or less.	For so long as the entity is not a Company competitor and the time commitment remains as described.
***	Semiconductor packaging technology company	Advisor/coach to CTO. 1 hour per week or less.	For so long as the entity is not a Company competitor and the time commitment remains as described.

***	Fingerprint optical technology company	Advisor to CEO. 1 hour per month.	For so long as the entity is not a Company competitor and the time commitment remains as described.
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*Executive will report to the Company's CEO or its General Counsel/Chief Compliance Officer, any material changes to the business or Executive's time commitment to each entity listed on this Exhibit B (each, and "Approved Entity"). The Company reserves the right to modify the approved duration for Executive's commitment to any Approved Entity, for any reason, provided it provides Executive with a reasonable time to terminate his engagement with the Approved Entity.

SUBSIDIARIES OF IMPINJ, INC.

<u>Name of Subsidiary</u>	<u>State or other Jurisdiction of Incorporation</u>
Impinj Internation Ltd.	Cayman Islands
Impinj RFID Technology (Shanghai) Co., Ltd.	China
Impinj UK Limited	United Kingdom
PI Operations (Thailand) Co. Ltd.	Thailand
Impinj Malaysia SDN. BHD.	Malaysia
Impinj Brazil Limitada	Brazil

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement (Form S-3 No. 333-268140) of Impinj, Inc.;
- (2) Registration Statement (Form S-8 No. 333-269733) pertaining to the 2016 Equity Incentive and 2016 Employee Stock Purchase Plan of Impinj, Inc.;
- (2)(3) Registration Statement (Form S-8 No. 333-236832) pertaining to the 2016 Equity Incentive and 2016 Employee Stock Purchase Plan of Impinj, Inc.;
- (3)(4) Registration Statement (Form S-8 No. 333-229947) pertaining to the 2016 Equity Incentive and 2016 Employee Stock Purchase Plan of Impinj, Inc.;
- (4)(5) Registration Statement (Form S-8 No. 333-224842) pertaining to the 2016 Equity Incentive and 2016 Employee Stock Purchase Plan of Impinj, Inc.;
- (5)(6) Registration Statement (Form S-8 No. 333-216620) pertaining to the 2016 Equity Incentive and 2016 Employee Stock Purchase Plan of Impinj, Inc.;
- (6)(7) Registration Statement (Form S-8 No. 333-212620) pertaining to the 2016 Equity Incentive 2016 Employee Stock Purchase Plan, 2010 Equity Incentive Plan and 2000 Stock Plan of Impinj, Inc.;
- (7)(8) Registration Statement (Form S-8 No. 333-253214) pertaining to the 2016 Equity Incentive 2016 Employee Stock Purchase Plan, 2010 Equity Incentive Plan and 2000 Stock Plan of Impinj, Inc.;
- (8)(9) Registration Statement (Form S-8 No. 333-262715) pertaining to the 2016 Equity Incentive 2016 Employee Stock Purchase Plan of Impinj, Inc.

of our reports dated February 13, 2023 February 12, 2024, with respect to the consolidated financial statements of Impinj, Inc. and the effectiveness of internal control over financial reporting of Impinj, Inc. included in this Annual Report (Form 10-K) of Impinj, Inc. for the year ended December 31, 2022 December 31, 2023.

/s/ Ernst & Young LLP

Seattle, Washington

February 13, 2023 February 12, 2024

Exhibit 31.1

CERTIFICATIONS

I, Chris Diorio, Ph.D., certify that:

1. I have reviewed this Annual Report on Form 10-K of Impinj, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in a material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

- (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
- (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 13, 2023 February 12, 2024

/s/ Chris Diorio

Chris Diorio, Ph.D.

Chief Executive Officer

(Principal Executive Officer)

Exhibit 31.2

CERTIFICATIONS

I, Cary Baker, certify that:

1. I have reviewed this Annual Report on Form 10-K of Impinj, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in a material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 13, 2023 February 12, 2024

/s/ Cary Baker

Cary Baker

Chief Financial Officer

(principal financial and accounting officer)

Exhibit 32.1

IMPINJ, INC.
CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Impinj, Inc. (the "Company") on Form 10-K for the year ended December 31, 2022 December 31, 2023, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Chris Diorio, Ph.D., Chief Executive Officer (*Principal Executive Officer*) of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Chris Diorio

Chris Diorio, Ph.D.

Chief Executive Officer

(Principal Executive Officer)

February 13, 2023 12, 2024

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Report to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Report), irrespective of any general incorporation language contained in such filing.

Exhibit 32.2

IMPINJ, INC.
CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Impinj, Inc. (the “Company”) on Form 10-K for the year ended **December 31, 2022** **December 31, 2023**, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Cary Baker, Chief Financial Officer (*Principal Financial Officer*) of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934;
and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Cary Baker

Cary Baker

Chief Financial Officer

(Principal Financial and Accounting Officer)

February **13, 2023** **12, 2024**

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

This certification accompanies the Report to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Impinj, Inc. under the Securities Act of 1933, as

amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Report), irrespective of any general incorporation language contained in such filing.

Impinj, Inc.

AMENDED AND RESTATED COMPENSATION RECOVERY POLICY

As initially adopted on February 23, 2023 and as amended August 9, 2023

Impinj, Inc. (the “**Company**”) is committed to strong corporate governance. As part of this commitment, the Company’s Board of Directors (the “**Board**”) has adopted this Amended and Restated Compensation Recovery Policy (the “**Policy**”), which Policy supersedes in full the original Compensation Recovery Policy adopted by the Compensation Committee of the Board (the “**Committee**”) on February 23, 2023. The Policy is intended to further the Company’s pay-for-performance philosophy and to comply with applicable law by providing for the reasonably prompt recovery of certain executive compensation in the event of an Accounting Restatement. Capitalized terms used in the Policy are defined below, and the definitions have substantive impact on its application so reviewing them carefully is important to your understanding.

The Policy, which was approved as set forth above, is intended to comply with Section 10D of the Securities Exchange Act of 1934 (the “**Exchange Act**”), with Exchange Act Rule 10D-1 and with the listing standards of the national securities exchange (the “**Exchange**”) on which the securities of the Company are listed. The Policy will be interpreted in a manner that is consistent with the requirements of Section 10D of the Exchange Act, Exchange Act Rule 10D-1 and with the listing standards of the Exchange, including any interpretive guidance provided by the Exchange.

In summary, the Policy provides rules related to the reasonably prompt recovery of certain incentive-based compensation received by Executive Officers. The application of the Policy to Executive Officers is not discretionary, except to the limited extent provided below, and applies without regard to whether an Executive Officer was at fault.

Persons Covered by the Policy

The Policy is binding and enforceable against all Executive Officers. “**Executive Officer**” means each individual who is or was ever designated as an “officer” by the Board in accordance with Exchange Act Rule 16a-1(f). Each Executive Officer will be required to sign and return to the Company an acknowledgement that such

Executive Officer will be bound by the terms and comply with the Policy. The failure to obtain such acknowledgement will have no impact on the applicability or enforceability of the Policy.

Administration of the Policy

The Committee has full delegated authority to administer the Policy. The Committee is authorized to interpret and construe the Policy and to make all determinations necessary, appropriate, or advisable for the administration of the Policy. In addition, if determined in the discretion of the Board, the Policy may be administered by the independent members of the Board or another committee of the Board made up of independent members of the Board, in which case all references to the Committee will be deemed to refer to the independent members of the Board or the other Board committee. All determinations of the Committee will be final and binding and will be given the maximum deference permitted by law.

Events Requiring Application of the Policy

If the Company is required to prepare an accounting restatement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including any required accounting restatement to correct an error in previously issued financial statements that is material to the previously issued financial statements, or that would result in a material misstatement if the error were corrected in the current period

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or left uncorrected in the current period (an “**Accounting Restatement**”), then the Committee must determine what compensation, if any, must be recovered.

Compensation Covered by the Policy

The Policy applies to certain **Incentive-Based Compensation** (certain terms used in this Section are defined below) that is **Received** on or after October 2, 2023 (the “**Effective Date**”), during the **Covered Period** while the Company has a class of securities listed on a national securities exchange. Such Incentive-Based Compensation is considered “**Clawback Eligible Incentive-Based Compensation**” if the Incentive-Based Compensation is Received by a person after such person became an Executive Officer and the person served as an Executive Officer at any time during the performance period for the Incentive-Based Compensation. The Incentive-Based Compensation that must be recovered is the amount of Clawback Eligible Incentive-Based Compensation that exceeds the amount of Clawback Eligible Incentive-Based Compensation that otherwise would

have been Received had such Clawback Eligible Incentive-Based Compensation been determined based on the restated amounts (such compensation, as computed without regard to any taxes paid, the “**Excess Compensation**,” is referred to in the listings standards as “erroneously awarded incentive-based compensation”).

To determine the amount of Excess Compensation for Incentive-Based Compensation based on stock price or total shareholder return, where it is not subject to mathematical recalculation directly from the information in an Accounting Restatement, the amount must be based on a reasonable estimate of the effect of the Accounting Restatement on the stock price or total shareholder return upon which the Incentive-Based Compensation was Received and the Company must maintain documentation of the determination of that reasonable estimate and provide such documentation to the Exchange.

“**Incentive-Based Compensation**” means any compensation that is granted, earned, or vested based wholly or in part upon the attainment of a Financial Reporting Measure. For the avoidance of doubt, no compensation that is potentially subject to recovery under the Policy will be earned until the Company’s right to recover under the Policy has lapsed. The following items of compensation are not Incentive-Based Compensation under the Policy: salaries, bonuses paid solely at the discretion of the Compensation Committee or Board that are not paid from a bonus pool that is determined by satisfying a Financial Reporting Measure, bonuses paid solely upon satisfying one or more subjective standards and/or completion of a specified employment period, non-equity incentive plan awards earned solely upon satisfying one or more strategic measures or operational measures, and equity awards for which the grant is not contingent upon achieving any Financial Reporting Measure performance goal and vesting is contingent solely upon completion of a specified employment period (e.g., time-based vesting equity awards) and/or attaining one or more non-Financial Reporting Measures.

“**Financial Reporting Measures**” are measures that are determined and presented in accordance with the accounting principles used in preparing the Company’s financial statements, and any measures that are derived wholly or in part from such measures. Stock price and total shareholder return are also Financial Reporting Measures. A Financial Reporting Measure need not be presented within the financial statements or included in a filing with the Securities and Exchange Commission.

Incentive-Based Compensation is “**Received**” under the Policy in the Company’s fiscal period during which the Financial Reporting Measure specified in the Incentive-Based Compensation award is attained, even if the payment, vesting, settlement or grant of the Incentive-Based Compensation occurs after the end of that period. For the avoidance of doubt, the Policy does not apply to Incentive-Based Compensation for which the Financial Reporting Measure is attained prior to the Effective Date.

“**Covered Period**” means the three completed fiscal years immediately preceding the Accounting Restatement Determination Date. In addition, Covered Period can include certain transition periods resulting from a change in the Company’s fiscal year. The Company’s obligation to recover Excess Compensation is not dependent on if or when the restated financial statements are filed.

“Accounting Restatement Determination Date” means the earliest to occur of: (a) the date the Board, a committee of the Board, or one or more of the officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare an Accounting Restatement; and (b) the date a court, regulator, or other legally authorized body directs the Company to prepare an Accounting Restatement.

Repayment of Excess Compensation

The Company must recover such Excess Compensation reasonably promptly and Executive Officers are required to repay Excess Compensation to the Company. Subject to applicable law, the Company may recover such Excess Compensation by requiring the Executive Officer to repay such amount to the Company by direct payment to the Company or such other means or combination of means as the Committee determines to be appropriate (these determinations do not need to be identical as to each Executive Officer). These means may include:

- (a) requiring reimbursement of cash Incentive-Based Compensation previously paid;
- (b) seeking recovery of any gain realized on the vesting, exercise, settlement, sale, transfer, or disposition of any equity-based awards;
- (c) offsetting the amount to be recovered from any unpaid or future compensation to be paid by the Company or any affiliate of the Company to the Executive Officer;
- (d) cancelling outstanding vested or unvested equity awards; and/or
- (e) taking any other remedial and recovery action permitted by law, as determined by the Committee.

The repayment of Excess Compensation must be made by an Executive Officer notwithstanding any Executive Officer's belief (whether legitimate or non-legitimate) that the Excess Compensation had been previously earned under applicable law and therefore is not subject to clawback.

In addition to its rights to recovery under the Policy, the Company or any affiliate of the Company may take any legal actions it determines appropriate to enforce an Executive Officer's obligations to the Company or to discipline an Executive Officer, including (without limitation) termination of employment, institution of civil proceedings, reporting of misconduct to appropriate governmental authorities, reduction of future compensation opportunities or change in role. The decision to take any actions described in the preceding sentence will not be

subject to the approval of the Committee and can be made by the Board, any committee of the Board, or any duly authorized officer of the Company or of any applicable affiliate of the Company.

Limited Exceptions to the Policy

The Company must recover the Excess Compensation in accordance with the Policy except to the limited extent that the conditions set forth below are met, and the Committee determines that recovery of the Excess Compensation would be impracticable:

- (a) The direct expense paid to a third party to assist in enforcing the Policy would exceed the amount recovered. Before reaching this conclusion, the Company must make a reasonable attempt to recover such Excess Compensation, document such reasonable attempt(s) to recover, and provide documentation to the Exchange; or
- (b) Recovery would likely cause an otherwise tax-qualified retirement plan, under which benefits are available to employees of the Company, to fail to meet the legal requirements as such.

-3-

Other Important Information in the Policy

The Policy is in addition to the requirements of Section 304 of the Sarbanes-Oxley Act of 2002 that are applicable to the Company's Chief Executive Officer and Chief Financial Officer, as well as any other applicable laws, regulatory requirements, rules, or pursuant to the terms of any existing Company policy or agreement providing for the recovery of compensation. For the avoidance of doubt, any Incentive Compensation (as defined in the Prior Policy) paid to Executive Officers prior to the Effective Date shall continue to be subject to the terms of the Prior Policy.

Notwithstanding the terms of any of the Company's organizational documents (including, but not limited to, the Company's bylaws), any corporate policy or any contract (including, but not limited to, any indemnification agreement), neither the Company nor any affiliate of the Company will indemnify or provide advancement for any Executive Officer against any loss of Excess Compensation. Neither the Company nor any affiliate of the Company will pay for or reimburse insurance premiums for an insurance policy that covers potential recovery obligations. In the event the Company is required to recover Excess Compensation from an Executive Officer who is no longer an employee pursuant to the Policy, the Company will be entitled to seek such recovery in order to

comply with applicable law, regardless of the terms of any release of claims or separation agreement such individual may have signed.

The Committee or Board may review and modify the Policy from time to time.

If any provision of the Policy or the application of any such provision to any Executive Officer is adjudicated to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions of the Policy or the application of such provision to another Executive Officer, and the invalid, illegal or unenforceable provisions will be deemed amended to the minimum extent necessary to render any such provision or application enforceable.

The Policy will terminate and no longer be enforceable when the Company ceases to be a listed issuer within the meaning of Section 10D of the Exchange Act.

-4-

ACKNOWLEDGEMENT

- I acknowledge that I have received and read the Amended and Restated Compensation Recovery Policy (the “Policy”) of Impinj, Inc. (the “Company”).
- I understand and acknowledge that the Policy applies to me, and all of my beneficiaries, heirs, executors, administrators or other legal representatives and that the Company’s right to recovery in order to comply with applicable law will apply, regardless of the terms of any release of claims or separation agreement I have signed or will sign in the future.
- I agree to be bound by and to comply with the Policy and understand that determinations of the Committee (such term is used in the Policy) will be final and binding and will be given the maximum deference permitted by applicable law.
- I understand and agree that my current indemnification rights, whether in an individual agreement or the Company’s organizational documents, exclude the right to be indemnified for amounts required to be recovered under the Policy.
- I understand that my failure to comply in all respects with the Policy is a basis for termination of my employment with the Company and any affiliate of the Company as well as any other appropriate discipline.
- I understand that neither the Policy, nor the application of the Policy to me, gives rise to a resignation for any reason (or similar concept) by me under any applicable employment agreement or arrangement.

- I acknowledge that if I have questions concerning the meaning or application of the Policy, it is my responsibility to seek guidance from the General Counsel and Chief Compliance Officer or my own personal advisors.
- I acknowledge that neither this Acknowledgement nor the Policy is meant to constitute an employment contract.

Please review, sign and return this form to the Company.

Executive

(print name)

(signature)

(date)

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