



Investor Presentation

May 1, 2024





Safe Harbor Statement

This presentation and discussion contain forward-looking statements, including our expectations for the future market for our products, revenues, profits, and other results that are forward-looking statements under the SEC's safe harbor provision. These forward-looking statements are based on management's current expectations and are subject to the risks inherent in our business. These risks are described in detail in our Form 10-K annual report and other SEC filings. Our actual events and results may differ materially from our current expectations. We do not assume any obligation to update these forward-looking statements.

Axcelis at a Glance

- Global leader in technology development and manufacturing of ion implant systems and services for the semiconductor industry for 45 years
 - Serving the ~\$2.7B ion implant systems market
 - Based in Beverly, MA with headcount greater than 1700 worldwide
 - Global customer support infrastructure
 - Growing installed base of greater than 3000 tools
 - Strong IP portfolio
- Supplier of record to leading semiconductor CAPEX spenders in all market segments including DRAM, NAND, Foundry, Logic, Power and Image Sensor

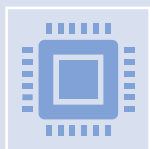


Axcelis Business Thesis



The Implant TAM has more than doubled in the last few years

Mature markets represent greater than 70% of the implant TAM
Electric Vehicle adoption is key to growth in these semiconductor segments
\$50 to \$60 Billion annually in CAPEX is being spent on the mature markets



Axcelis is extremely well positioned to benefit from mature process technology spending

Mature nodes have increasing implant intensity peaking at 28nm
Power devices and image sensors are highly implant intensive devices
High value Purion Product Extensions were designed to optimize Power device and image sensor device manufacturing



Axcelis is the implant leader in the high growth specialty device market segments

Only company with a complete family of implant products
Strong technical differentiation
Long term customer relationships



Q1 2024 Highlights & Summary

- Solid first quarter 2024 financial performance
 - Revenue of \$252.4M and EPS of \$1.57
 - System revenue of \$195.4M
 - CS&I revenue of \$56.9M
 - Gross margin of 46.0%
 - Cash, cash equivalents and short-term investments of \$530.2M
 - Backlog of \$1.1B and Q1 bookings of \$107.1M
- Mature process technology represented 99% of first quarter 2024 shipped system revenue
 - The overall power device segment accounted for 55% of Q1 2024 shipped system revenue
 - *Purion Power Series Silicon Carbide systems accounted for 76% of Q1 2024 of power shipment revenue*
- Revenue levels are expected to increase in the second half of the year.
 - Implementing a number of actions in 2024 designed to improve operational efficiency and reduce cost.



Q1 2024 Financial Results and Outlook (GAAP)

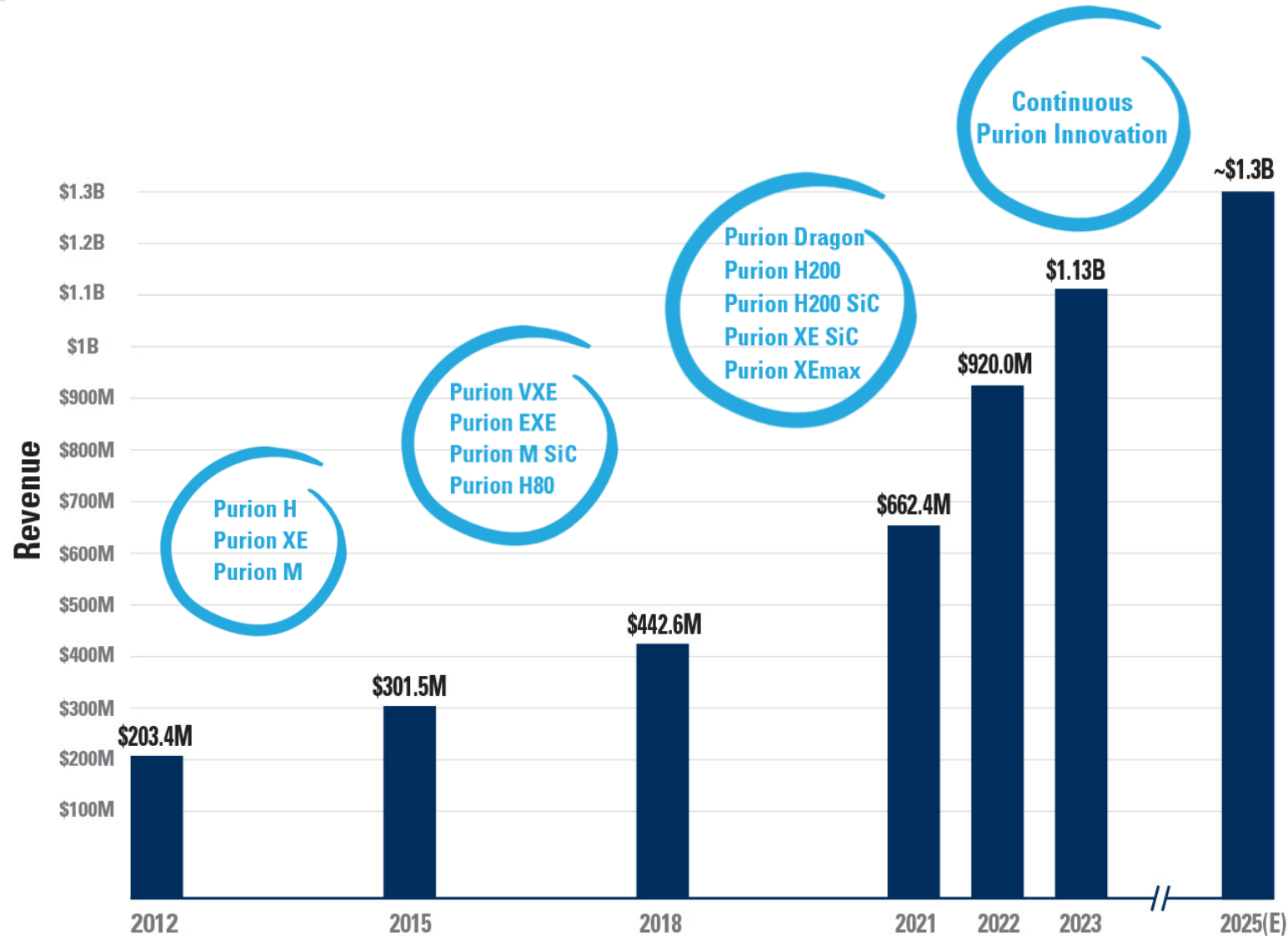
	<u>Q1 2024</u>	<u>Q2 2024 Outlook</u>
Revenue	\$252.4M	~\$245M
Gross Margin	46.0%	~43.5%
Combined R&D and SG&A Expenses	23.6%	~23.5% ²
Operating Profit	\$56.5	~\$47M
Net Income	\$51.6	
EPS	\$1.57 ¹	~\$1.30 ³
Cash, cash equivalents and short-term investments	\$530.2M	
Inventory	\$312.2M	

1. Includes F/X loss of \$0.04 for Q1 2024, net of taxes

2. OPEX as a percentage of sales is expected to decline over the course of 2024 given the higher volumes expected in the second half of the year
Projected Investments in R&D of approximately 9.0% -10.0% of revenue, over the 8.6% invested in 2023

3. Assumes 15% tax rate

Purion Continues to Drive Axcelis Growth



- Strong opportunity in power devices
- Growing implant TAM
- Differentiated product portfolio
- Continuous innovation
- Strong balance sheet
- Strong manufacturing capability
- Strong customer relationships
- Quality focused
- Great employees

Target Business Model (GAAP)

Axcelis revenue grew 23% in 2023 to \$1.13B despite the industry downturn

Revenue	\$442.6M 2018(A)	\$343.0M 2019(A)	\$474.6M 2020(A)	\$662.4M 2021(A)	\$920.0M 2022(A)	\$1.13B 2023(A)	~\$1.3B 2025(E)*
Gross Margin	40.6%	42.0%	41.8%	43.2%	43.7%	43.5%	>45%
Total OPEX	27.0%	35.0%	29.6%	24%	20.6%	19.9%	~19%
Operating Profit	13.5%	7.1%	12.2%	19.2%	23.1%	23.5%	~26%
Free Cash Flow (Cash From Operations – Capex)/Total Revenue	9.5%	(7.5%)	13.2%	21.4%	22.3%	12%	~25%

* The model is not a forecast of results but is intended to be indicative of the annual results Axcelis may achieve based on our strategic objectives

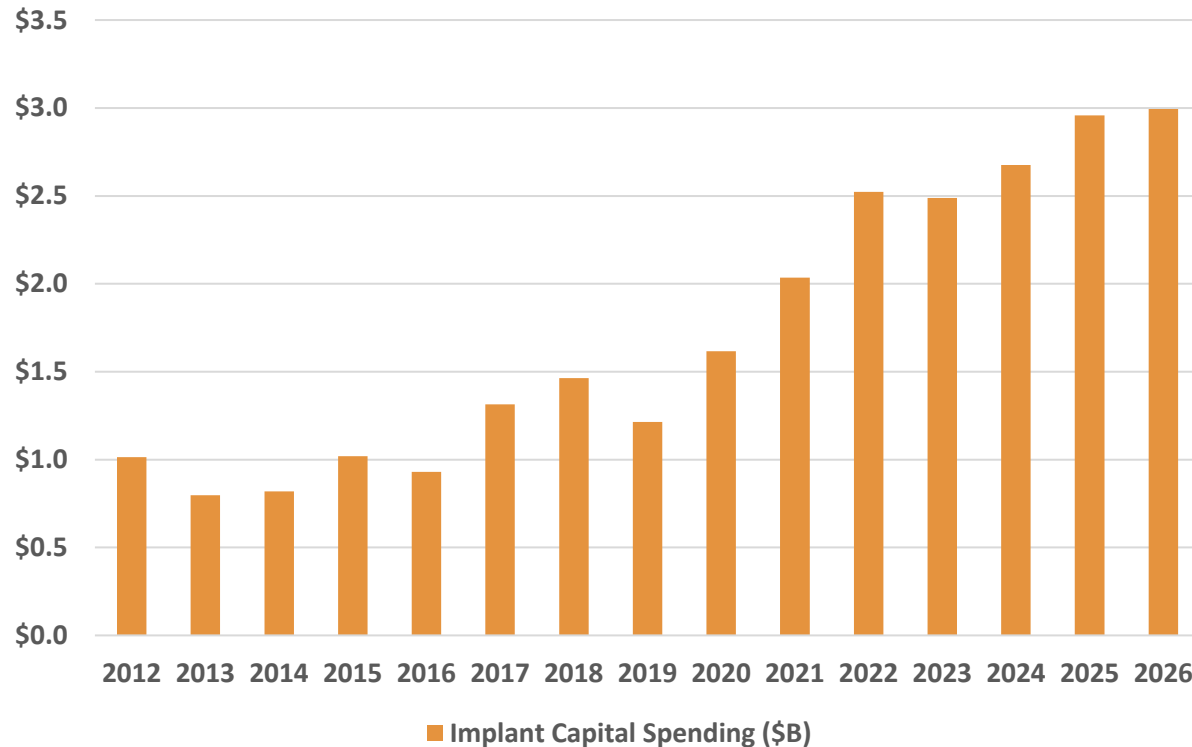
Fundamentals Supporting Axcelis Growth Remains Strong

Fundamental growth drivers for long-term cycle

- Electrification of the automotive industry with ADAS (Driver Assist) – “Computer on Wheels”
 - Power devices, image sensors and mature devices
- Communications - 5G, phones, Internet of Things
 - Mature devices, NAND, DRAM
- Artificial intelligence, Large Language Models (ChatGPT), Data analytics and visualization, Metaverse
 - Advanced logic, DRAM, NAND, advanced packaging
- Geographical fab expansions over next several years driven by de-globalization and government incentives

Ion Implant TAM has More Than Doubled and Continues to Grow

Ion Implant Annual TAM Estimates (\$B)



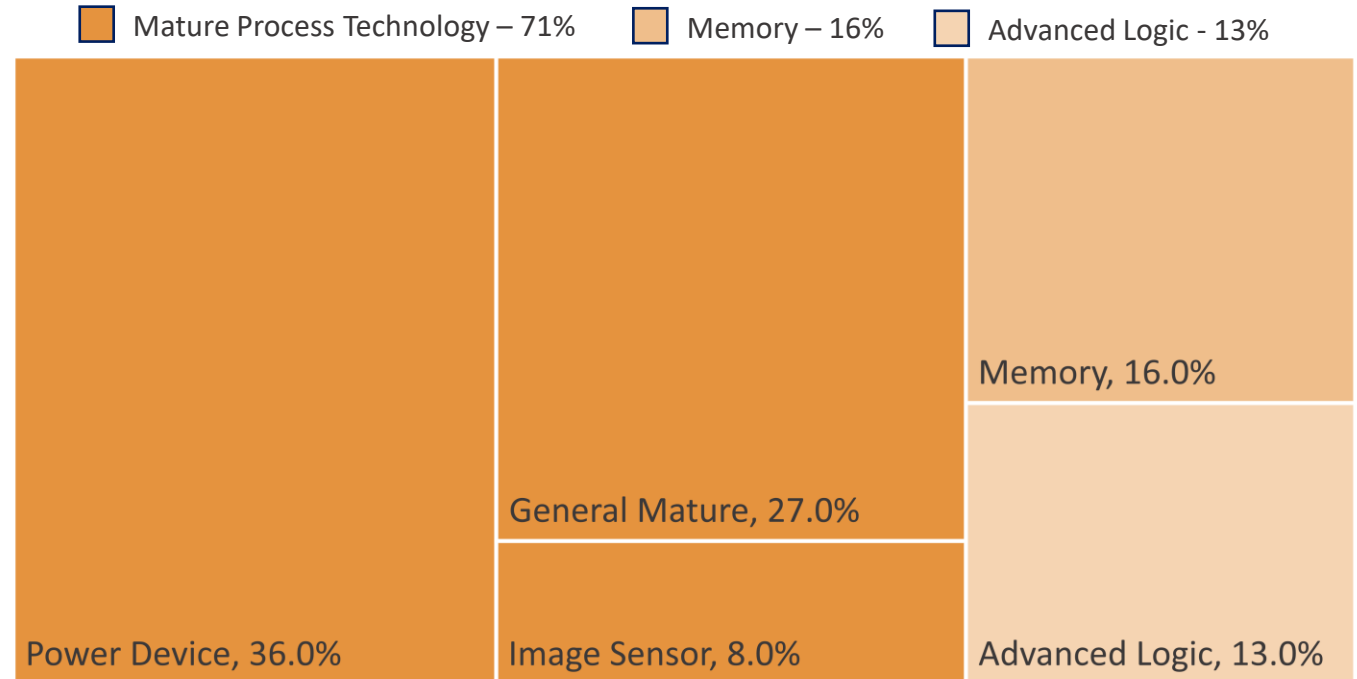
* Data Source: Gartner (July 2022) through 2021, Axcelis TAM Forecast 2022-2026

- Strong TAM growth driven by
 - Increased overall wafer starts across all segments
 - Rapid growth of implant capital intensive mature nodes and specialty devices (implant \$/wafer start)
 - Power and image sensor
 - High value Purion product extensions required by specialty markets
 - Purion Power and Image Sensor Series
- Mature Process Technology (MPT) market segments account for approximately 70% of the implant TAM
- 2025/2026 TAM increase based on recovery of memory, CIS and general mature market segments

Ion Implant TAM Segment Breakdown

- The mature process technology segment accounts for approximately 70% of the ion implant TAM
 - Mature process technology is growing based on increases in wafer starts, high implant capital intensity, and higher value implanters for specialty devices
 - Memory expected to remain consistent on a CAPEX basis driven by new wafer start activity to support bit growth demand
 - Advanced logic has increased based on accelerating wafer start growth
- Implant TAM for SiC devices is expected to grow within the power device segment, driven by end market growth, device performance enhancements, and fab optimization efforts

Approximate Ion Implant TAM - Segment Breakdown*



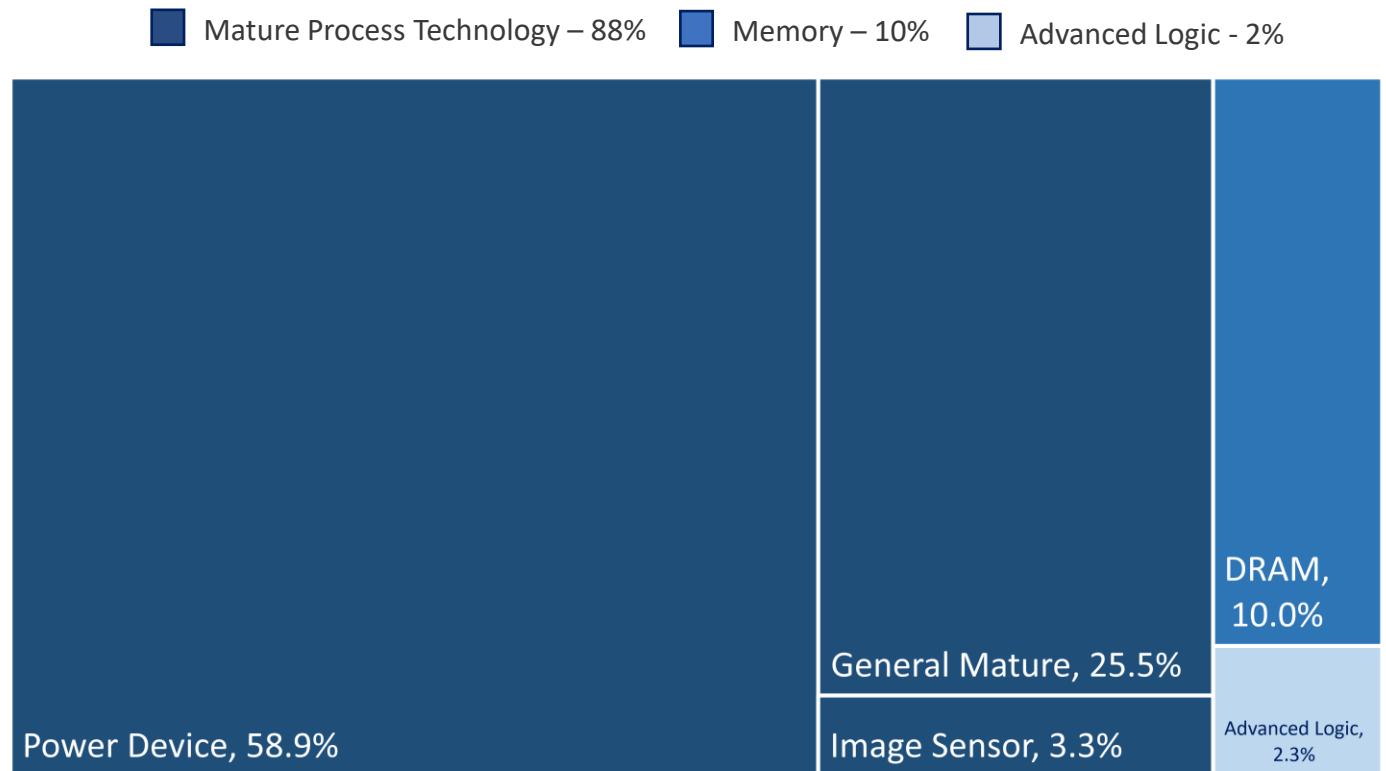
* Axcelis Internal Estimates for 2024 - 2026 (Annual numbers will vary based on customer activity and projects)

Mature Process Technology Segment is Driving Ion Implant TAM Growth

Axcelis Strong Systems Growth Driven by Targeted Market Segments

- The mature process technology segment remained strong in 2023, accounting for 88% of Axcelis shipped system revenue
- The mature process technology segment is expected to make up approximately 90% of Axcelis shipped system revenue in 2024
- Overall power devices are expected to account for ~60% of shipped system revenue in 2024
 - SiC power devices expected to account for ~50% of shipped systems revenue in 2024
- Memory expected to make up less than 10% of Axcelis shipped system revenue in 2024

2023 Market Segment Shipped System Revenue

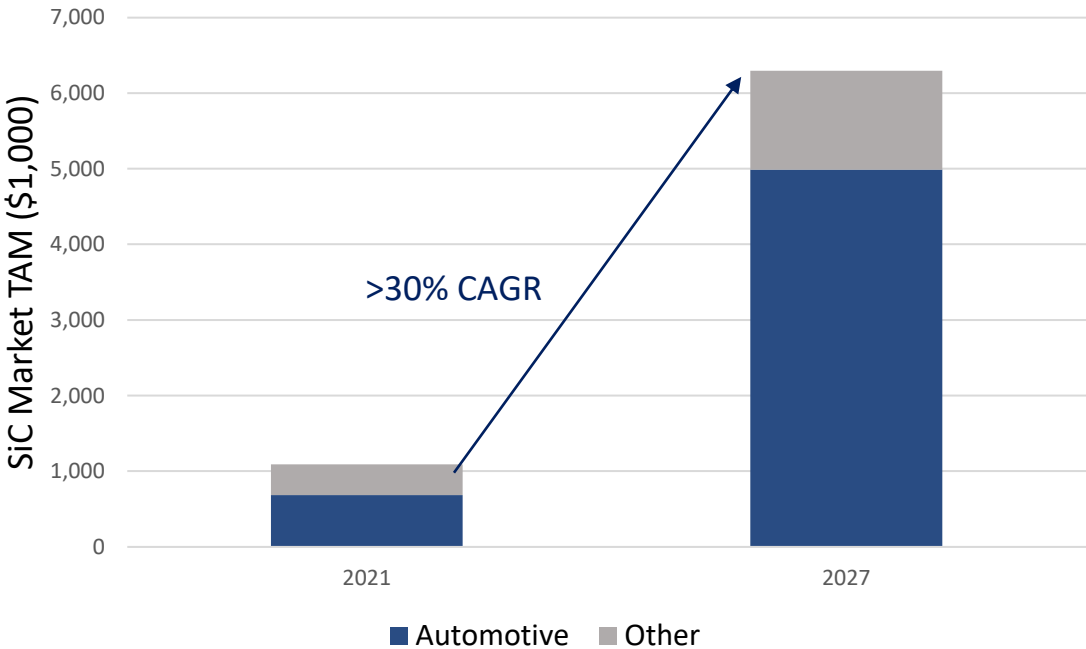


Targeted Purion product investments have paid off handsomely

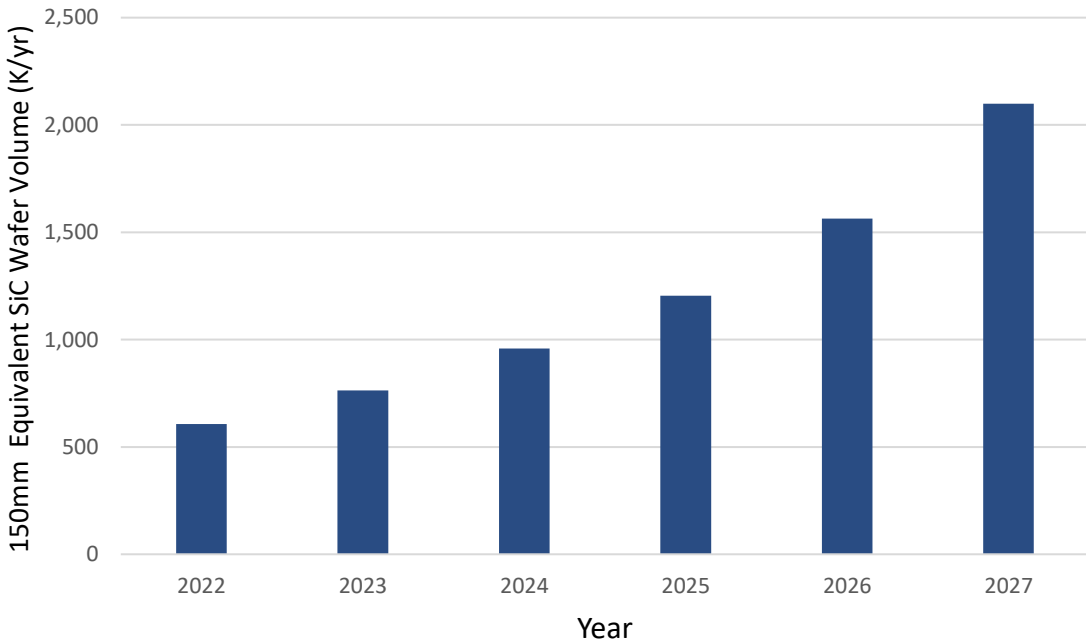


SiC Device Market Growing at Greater than 30% CAGR Driven by the Electrification of the Automotive Industry

SiC Device Market Growth Dominated by Automotive

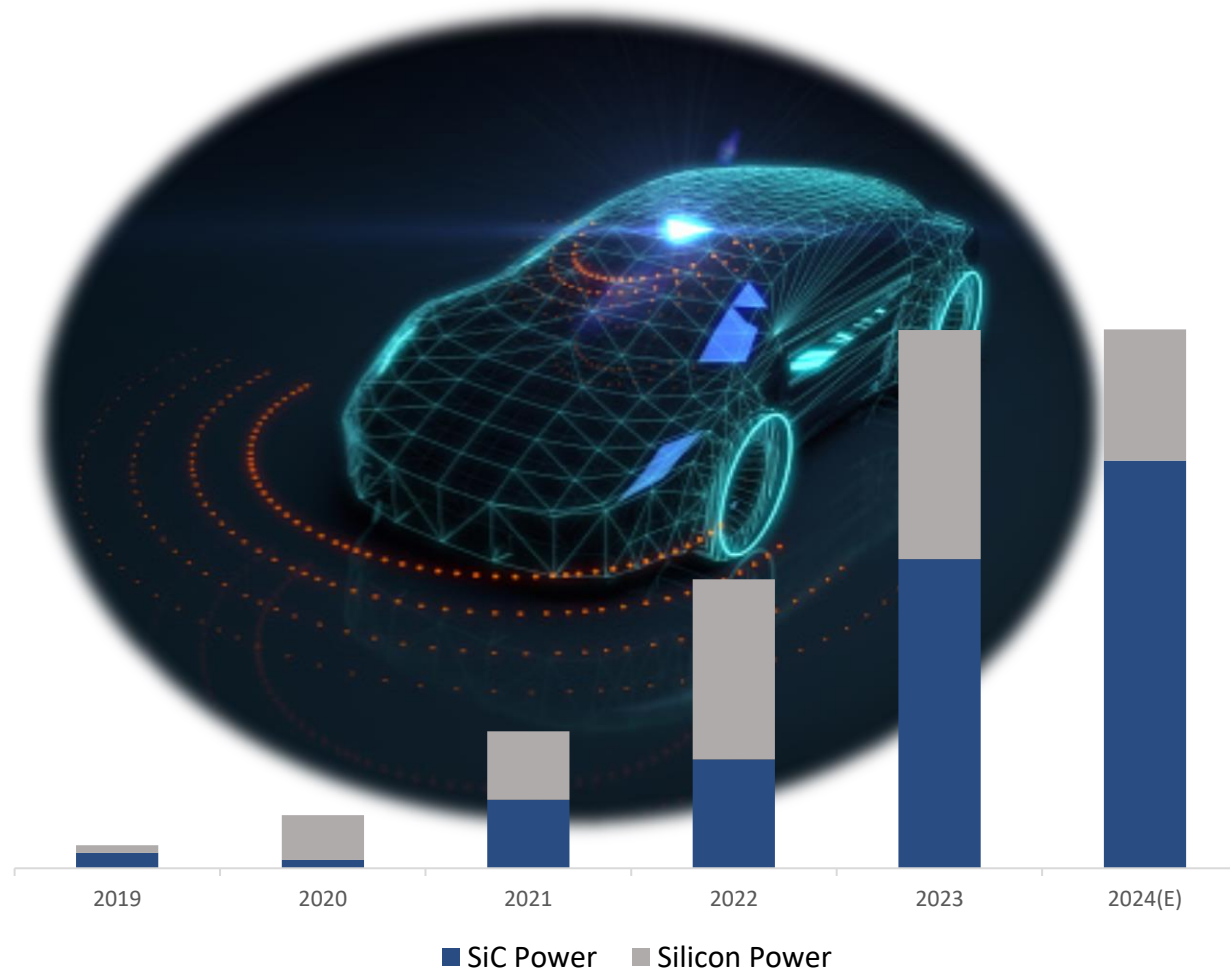


SiC Wafer Starts Projected to Double Every 3 Years



Axcelis Power Device Revenue Growth*

SiC Growth Accelerates Fueled by Automotive

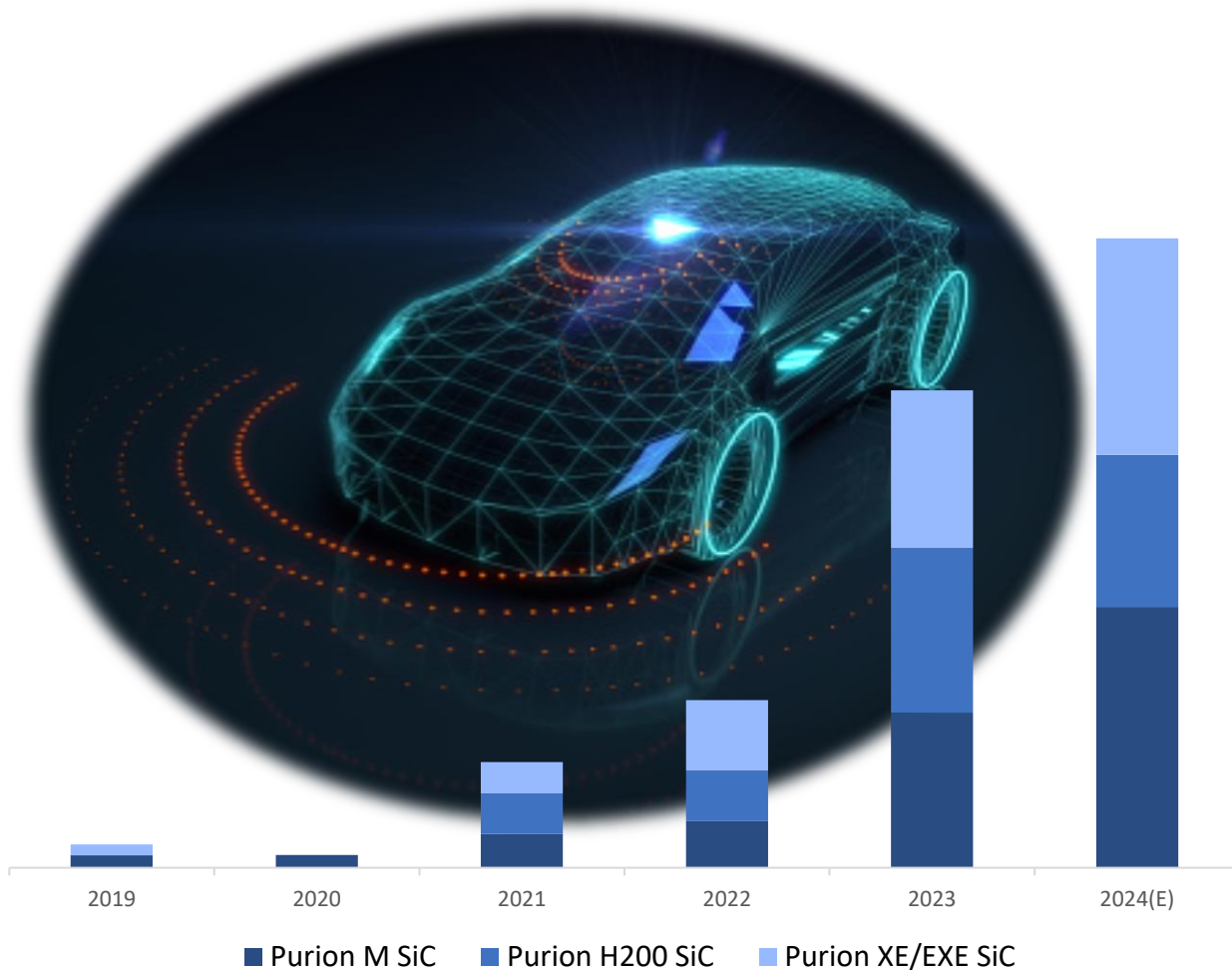


- Implant TAM for SiC devices is expected to grow within the power device segment, driven by end market growth, device performance enhancements, and fab optimization efforts
 - Si IGBT devices designed in by several automakers for first generation EV, but many will switch to SiC for performance over time
 - Silicon power devices will continue to support many end markets including automotive
- Axcelis is well positioned in both the SiC and Silicon power markets
 - Technology leadership
 - Market leadership
 - Customer relationships and partnerships
 - The only company with a full product line to support the power device market

* The chart is not a forecast of results but is intended to be indicative of results Axcelis may achieve based on our strategic objectives

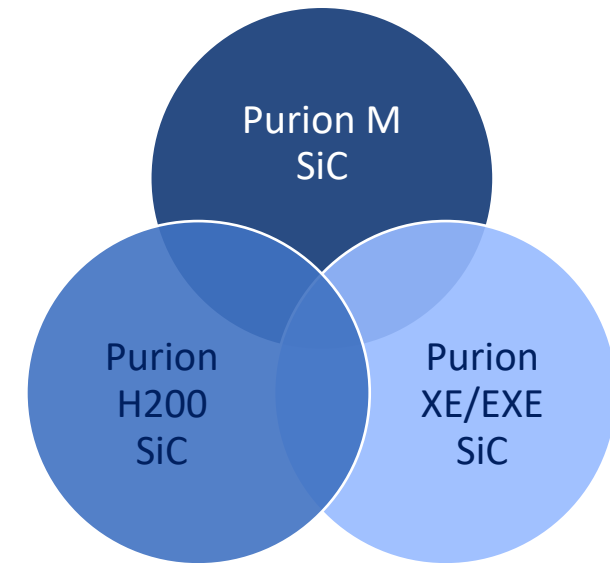
Purion Power Series Revenue Growth*

Driving Customer Success in Manufacturing SiC Power Devices



Purion Power Series

- Providing full recipe coverage for all power device applications
- Enabling high volume manufacturing and device optimization
- Reducing customer Cost of Ownership

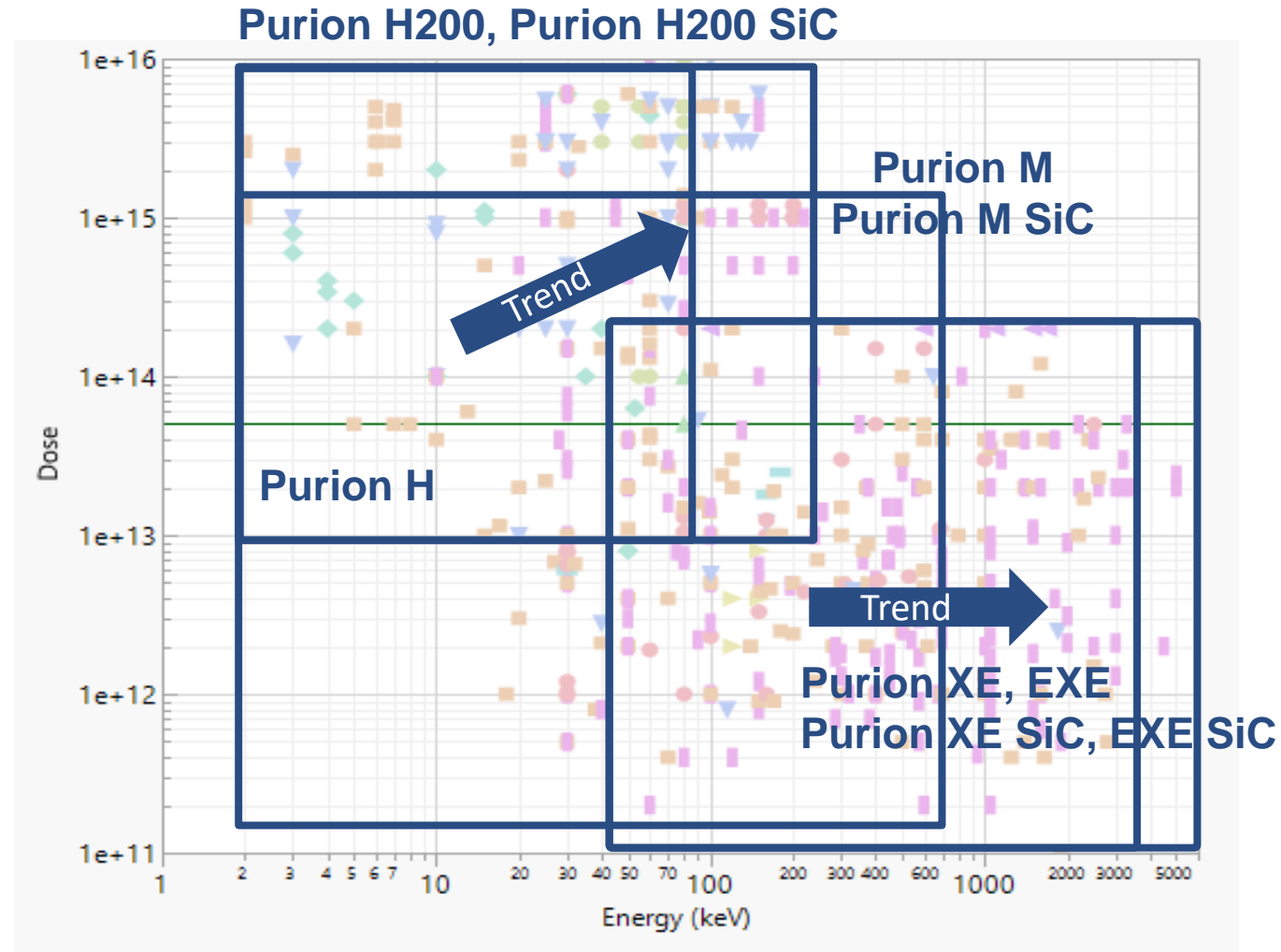


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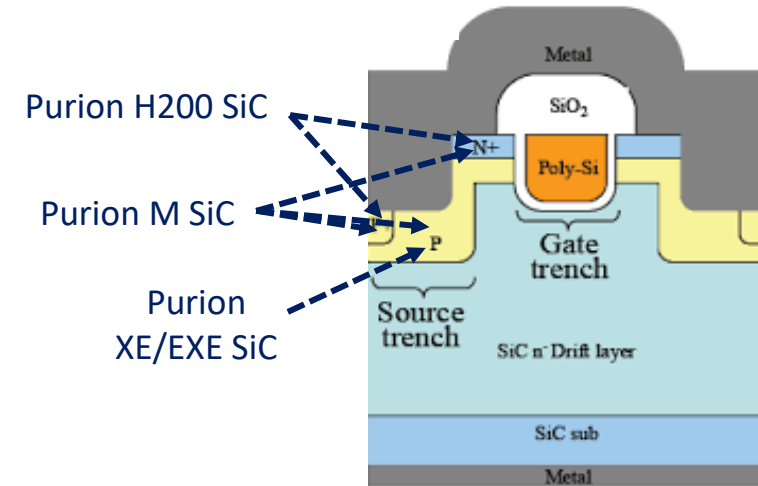


Purion Power Series

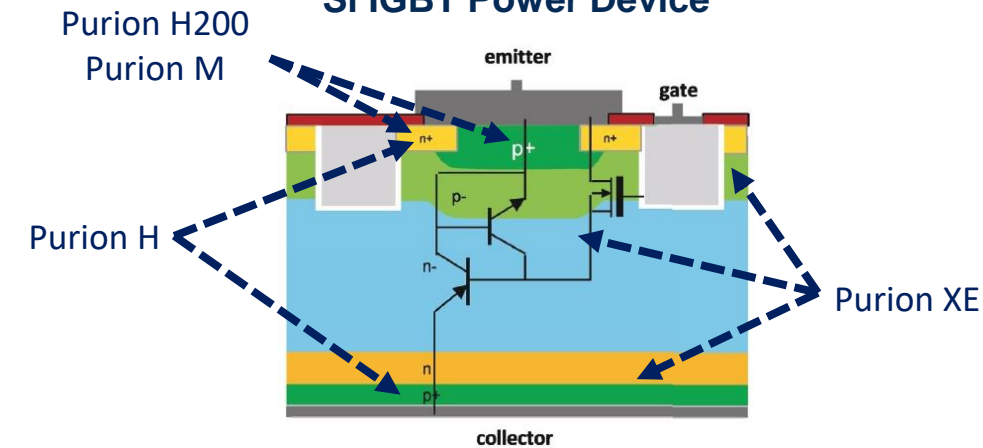
Optimizing SiC and Si Power Device Performance



SiC Trench MOSFET Power Device



Si IGBT Power Device



Purion – The Core of Our Growth Strategy

		Targeted Market Segments			
<i>Ion Implantation</i>		Base Purion Product	Power	Image Sensors	Advanced Memory/Logic
<i>High Current ~50% of TAM</i>	Common Purion Platform	H	H80 H200 H200 SiC	Dragon	Dragon
<i>High Energy ~25% of TAM</i>		XE	EXE XE SiC EXE SiC	EXE VXE XE_{max}	XE
<i>Medium Current ~25% of TAM</i>		M	M M SiC	M	M

Purion products targeted at high value applications and market segments



Multiple Initiatives Will Accelerate Purion Growth Across All Markets

- Continued focus on the growing power device market opportunity
 - New customers and expanding footprint with existing customers to support ramp to high volume manufacturing
- Geographic expansion
 - China emphasis on mature process technology for a large, diverse group of customers
 - Japan focus on power devices, image sensors and NAND
- Purion footprint growth at our existing customer base
 - Adding Purion product types
 - Expanding served applications through joint development targeting improved device performance and higher productivity
- New implant applications
 - Collaborating with customers and industry peers to develop novel uses for ion implant

Accelerated Purion Systems Evaluation Activity

- Seven Purion evaluation systems currently in the field
 - Located at strategic customer sites in key market segments
- Continued successful evaluations of new products in key markets will drive Axcelis growth
 - Purion Dragon to R&D fab at leading memory and advanced logic manufacturer
 - Purion H200 SiC evaluations will enable silicon carbide customers to prepare for production volume ramps and to optimize device performance earlier

	Memory		Mature Process Technology			Advanced Logic	Total Systems
	DRAM	NAND	Image Sensor	Power Device	General Mature		
High Current				Purion H200 SiC Purion H200 SiC Purion H200 SiC		Purion Dragon	4
High Energy			Purion XEmax	Purion VXE	Purion XE		3
Medium Current							
Total Systems			1	4	1	1	7

Key Purion Placements in Target Segments

Supporting Long Term Revenue Growth and Margin Expansion

Axcelis Announces Shipment of Purion Dragon™ High Current Implanter to a World-Leading Research and Innovation Center

The System Will be Used in Sub 3 Nanometer Logic Device Development

BEVERLY, Mass., Oct. 10, 2023 -- Axcelis Technologies, Inc. (Nasdaq: ACLS), a leading supplier of innovative, high-productivity solutions for the semiconductor industry, announced today a shipment of the Purion Dragon™ high current implanter to a world-leading research and innovation center in nanoelectronics and digital technologies located in Europe. The system will be used in technology development for advanced logic devices. The system shipped in the third quarter of 2023.

Axcelis Announces Multiple Shipments of Purion SiC Power Series Implanters to Leading Power Device Chipmakers in Europe and Asia

BEVERLY, Mass., Dec. 12, 2023-- Axcelis Technologies, Inc. (Nasdaq: ACLS), a leading supplier of enabling ion implantation solutions for the semiconductor industry, today announced shipment of multiple Purion H SiC Power Series™ and the Purion M SiC Power Series™ ion implanter systems to leading power device chipmakers in Europe and Asia, and the closure of an Purion H200 SiC Power Series™ evaluation tool in Europe. Shipments include both evaluation and revenue systems and will be used in high volume production of power devices supporting automotive industry electric vehicle (EV) applications.

Axcelis Announces Shipment of Purion EXE Power Series Implanter to Leading SiC Power Device Chipmaker in Japan

BEVERLY, Mass., Oct. 18, 2023-- Axcelis Technologies, Inc. (Nasdaq: ACLS), a leading supplier of enabling ion implantation solutions for the semiconductor industry, today announced the shipment of the Company's Purion EXE SiC Power Series™ 200mm high energy implanter to a leading SiC power device chipmaker located in Japan. The system will be used in high volume production of SiC power devices for use in automotive applications.

AXCELIS ANNOUNCES SHIPMENT OF 'PURION EXE SIC POWER SERIES' IMPLANTER AND SUCCESSFUL 'PURION H200 SIC POWER SERIES' EVAL CLOSURE AT LEADING POWER DEVICE MANUFACTURERS IN JAPAN

BEVERLY, MASS., APRIL 2, 2024-- AXCELIS TECHNOLOGIES, INC. (NASDAQ: ACLS), A LEADING SUPPLIER OF ENABLING ION IMPLANTATION SOLUTIONS FOR THE SEMICONDUCTOR INDUSTRY, ANNOUNCED TODAY A SHIPMENT OF THE COMPANY'S PURION EXE™ SIC HIGH ENERGY IMPLANTER AS WELL AS A SUCCESSFUL PURION H200™ SIC MEDIUM ENERGY IMPLANTER EVALUATION CLOSURE AT LEADING POWER DEVICE CHIPMAKERS LOCATED IN JAPAN. THE SYSTEMS WILL BE USED FOR 150MM AND 200MM PRODUCTION OF SILICON CARBIDE POWER DEVICES SUPPORTING AUTOMOTIVE, INDUSTRIAL, ENERGY, AND OTHER POWER INTENSIVE APPLICATIONS.

Axcelis Announces Shipments of Purion XE High Energy and Purion H High Current Implanters to DRAM Memory Chipmakers

BEVERLY, Mass., Dec. 7, 2023 -- Axcelis Technologies, Inc. (Nasdaq: ACLS), a leading supplier of innovative, high-productivity solutions for the semiconductor industry, announced today shipments of the Purion XE™ high energy and the Purion H™ high current implanters to multiple fabs in Korea and China to manufacture DRAM memory devices. The systems include a follow-on shipment to an existing customer in Korea, and the penetration of a new customer in China. The systems shipped in the fourth quarter of 2023.

AXCELIS ANNOUNCES MULTIPLE SHIPMENTS OF PURION POWER SERIES IMPLANTERS TO LEADING SILICON CARBIDE CHIPMAKERS WORLDWIDE

BEVERLY, MASS., APRIL 17, 2024 -- AXCELIS TECHNOLOGIES, INC. (NASDAQ: ACLS), A LEADING SUPPLIER OF ENABLING ION IMPLANTATION SOLUTIONS FOR THE SEMICONDUCTOR INDUSTRY, TODAY ANNOUNCED MULTIPLE SHIPMENTS OF THE PURION POWER SERIES™ ION IMPLANTER SYSTEMS TO LEADING SILICON CARBIDE (SIC) POWER DEVICE CHIPMAKERS WORLDWIDE. THE SHIPMENTS, ALL SHIPPED IN THE FIRST QUARTER, INCLUDED THE PURION H200™ SIC HIGH CURRENT, THE PURION XE™ SIC HIGH ENERGY AND THE PURION M™ SIC MEDIUM CURRENT IMPLANTERS. THE 150MM AND 200MM SYSTEMS WILL BE USED IN HIGH VOLUME PRODUCTION OF POWER DEVICES SUPPORTING AUTOMOTIVE, INDUSTRIAL, ENERGY, AND OTHER POWER INTENSIVE APPLICATIONS.

Rapid Manufacturing and Supply Chain Growth Enabled by Smart Capacity Planning and Execution

Beverly MA Headquarters



- Numerous capital projects and kaizen events in place to increase revenue dollars per square foot of space at our Beverly site
- Investing in our next phase of lean manufacturing with augmented reality and AI to improve productivity and capacity

Beverly Logistics Center



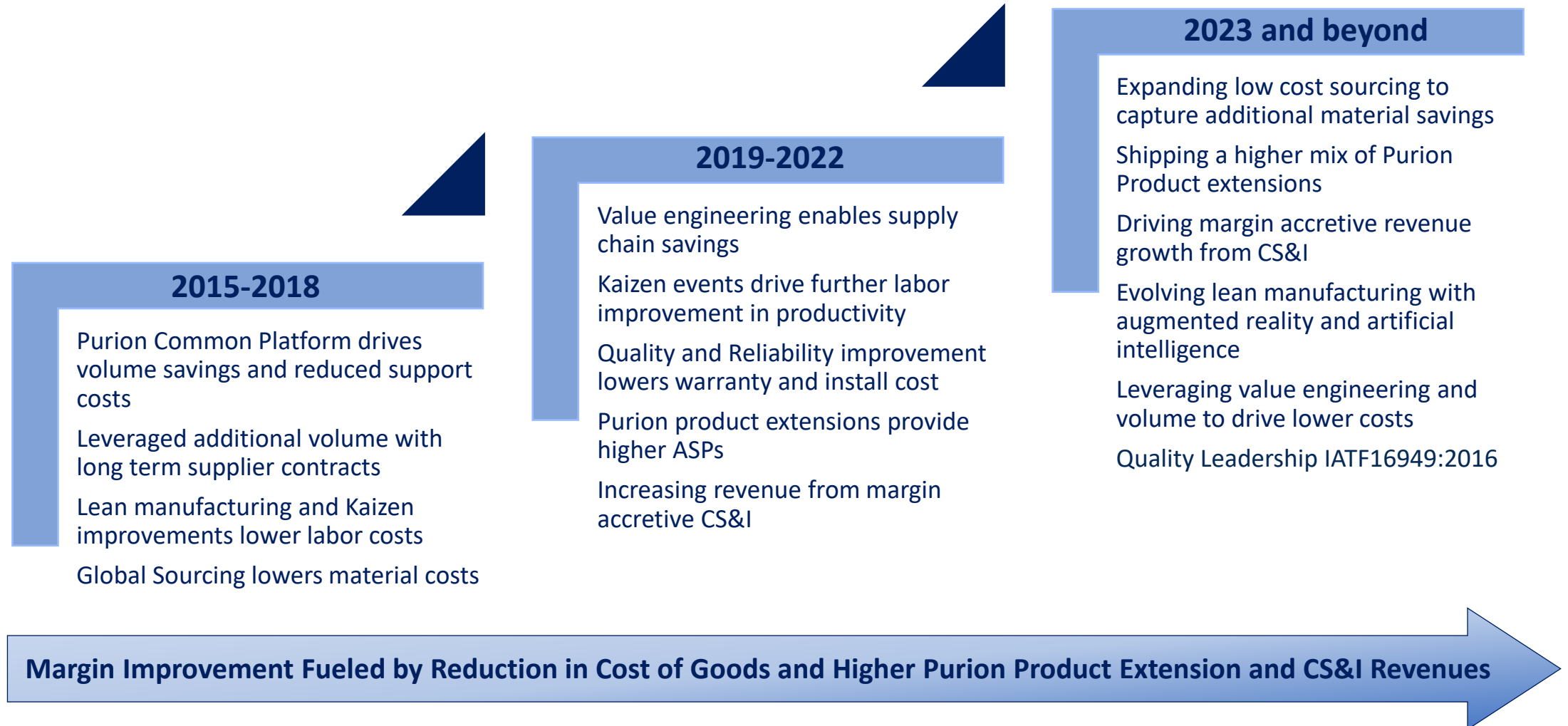
- Beverly logistics center opened in Q3/2023 and is fully functional providing significant efficiencies to US manufacturing

Axcelis Asia Operations Center in South Korea



- Axcelis Asia Operations Center in South Korea celebrates 2nd year of production at the end of 2023
- More than \$300M of systems shipped from the AAOC in it's first two years of operation

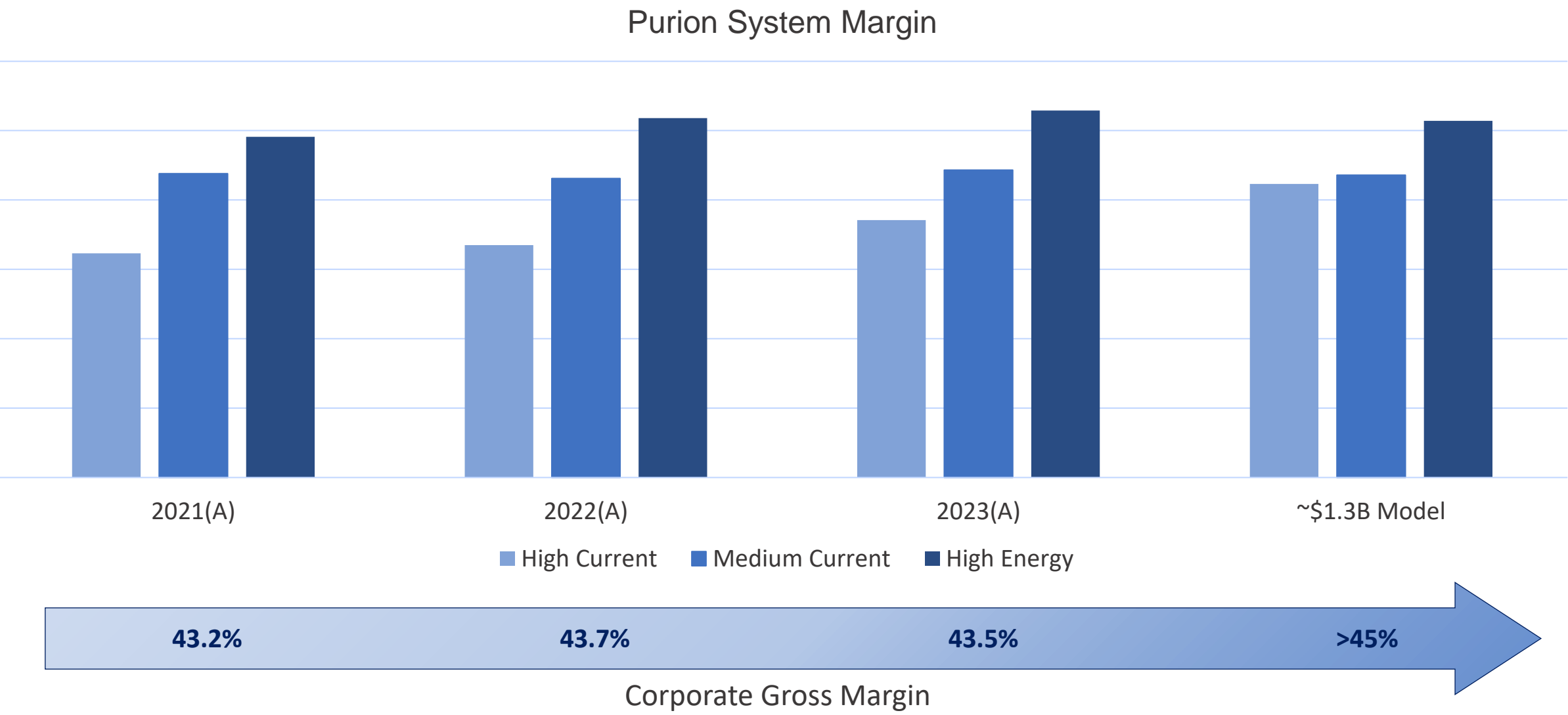
Methodical Program-Driven Gross Margin Improvement





Margin Improvement of Purion Products

Improves Overall Gross Margin and Reduces Mix-Induced Variability





Strong Supply Chain Capabilities

■ Continued Focus on Customer Satisfaction

- Closely work with supply chain partners to ensure on time delivery. Added additional resources and qualified new suppliers in bottleneck areas
- Working with freight providers to add extra shipping lanes. Will take advantage of our new Korean factory to improve material flow
- Strengthened our logistics team and will continue to remain focused on delivery and lowering shipping costs
- Ongoing review of MRP lead times, enabling timely adjustments to ensure ability to meet customer requirements
- Buffering supply chain disruptions with inventory. Plan to continue to carry a higher than required level of inventory until we see sustained improvement across the supply chain



Customer Solutions & Innovation (CS&I) Drives Margin Growth and Customer Satisfaction

- Significant contributor to Axcelis financials
 - Expected to contribute approximately 25% of total revenues
 - Accretive to Axcelis corporate gross margins
- CS&I business revenues comprised of
 - Contracts, time & material, repairs, spares & consumables, upgrades and used tools
- Customer Satisfaction programs driving continuous improvement
 - Utilizing Voice of Customer (VOC) and key performance metrics
 - CS&I is the face of Axcelis to our customers
- Committed to investment in CS&I to drive financial growth and increased customer satisfaction levels
 - Continuous organizational development and performance improvement through training, certification, and hiring
 - Innovative service offering "Digital Tool Box" – online training, remote diagnosis and install, and automated troubleshooting guide
 - Software licensing for advanced features
 - Data analytics to drive self testing and predictive maintenance



Investing in Products, Infrastructure and Employees to Drive Growth

- Axcelis has heavily focused R&D spending on Purion product development. Many new products and extensions have been released and shipped to numerous first time and existing customers
- We will continue to invest R&D dollars on new Purion product extensions, CIP, field upgrades and new technologies
- Expect R&D to be funded at 9-10% of revenue in our target models
- Investing across the company to strengthen our business processes, capabilities and employee talent
 - Upgrading many IT enterprise systems with new technology
 - Focusing on software automation in several support areas
 - Investing in employee development and training
 - Continuing to align employee compensation with benchmark data
- SG&A as a percent of revenue is modeled lower as revenue grows
- Spending will be aligned with initiatives that fuel revenue growth and gross margin expansion

ESG at Axcelis

■ Environmental

- Founding Member of Semiconductor Climate Consortium
- Committed to Science Based Targets and the path to Net Zero by 2050
- Reported Global Scope 1 and Scope 2 CO₂ emissions through Carbon Disclosure Project
- Sourcing 100% of electricity for WHQ from Renewable Hydro Generation



■ Social

- Supporting an inclusive community through DEIB initiatives and a women's ERG
- In 2022, % of women in the US workforce increased by 6.5% and non-white, non-Asian US employees grew by 35.5%
- 162 employees participated in leadership training since 2021
- Increased tuition reimbursement program up to \$15K annually
- Axcelis Cares charitable program active in our communities



■ Governance

- Committed to ethical standards and legal compliance
- Axcelis Board has three female directors and two male directors of Asian and Hispanic ethnicities
- Axcelis has a long history of best practice governance policies

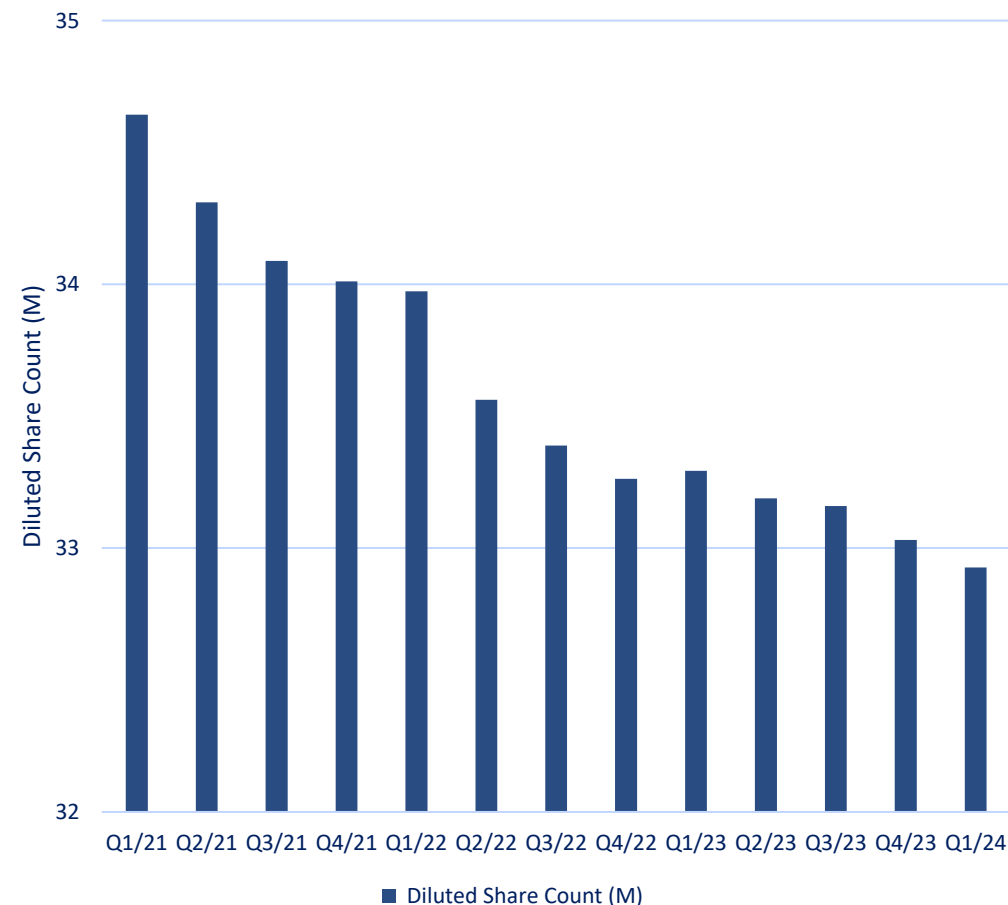


For more details refer to our [2023 ESG Report](#) and our [ESG Document Hub](#).

Axcelis Capital Allocation Strategy

- The company will continue to maintain a strong and healthy balance sheet while investing in initiatives that are expected to drive strong revenue growth and gross margin expansion
- Cash will be used to offset dilution
 - Board approved a \$100M dollar share repurchase program starting March 2022, supplemented by \$200M in additional funding approved in August 2023
 - Repurchased approximately \$15M in ACLS shares in Q1 2024 and have returned over \$200M of cash to shareholders since 2019 through our share repurchase programs
- Near term Axcelis will be focused on growing the implant business, but we are beginning to explore M&A to grow beyond the \$1.3B implant driven business model

Quarterly Diluted Share Count

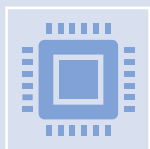


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Nasdaq - ACLS

