



axcelis

6th "Somewhat Annual" SEMICON West
Investor Technical Seminar

July 14, 2022



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.

Agenda

8:30 – 9:00	Registration and Breakfast	
9:00 – 9:10	Introduction	Doug Lawson
9:10 – 9:25	EV Impact on Ion Implant Market	Bill Bintz
9:25 – 9:45	Purion Power Series	Greg Redinbo
9:45 – 10:00	Summary and Q&A	Doug Lawson



Doug Lawson
EVP Corporate Marketing



Bill Bintz
EVP Product Development



Greg Redinbo
SVP Marketing

Key Take Aways



The Implant TAM has more than doubled in the last couple of years

Mature markets represent greater than 60% 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 the most implant intensive devices
High value Purion Product Extensions were designed to optimize Power device and image sensor device manufacturing

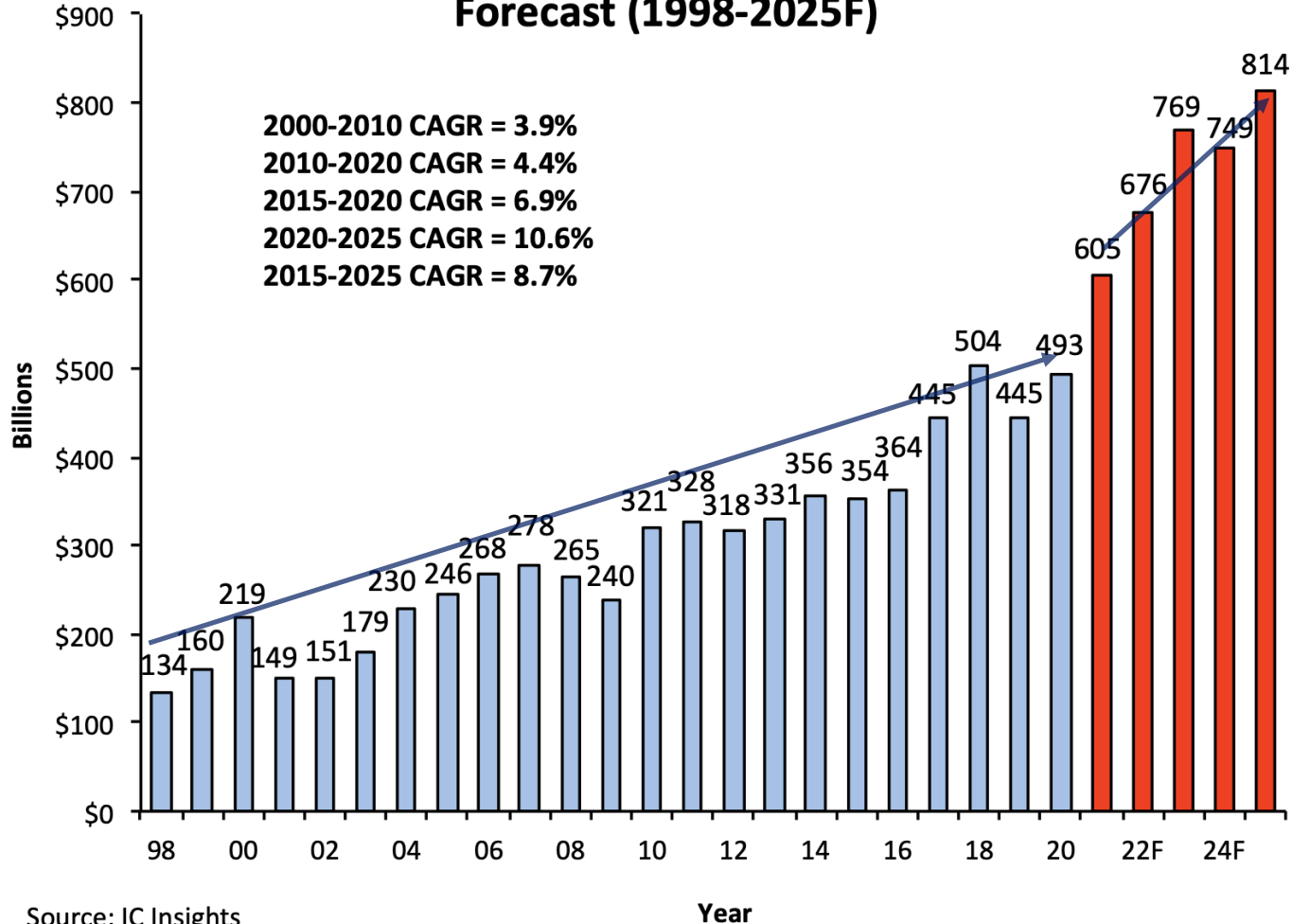


Axcelis is the implant leader in the high growth specialty device market segments

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

Semiconductor Growth - A Brave New World

Worldwide Semiconductor Market History and Forecast (1998-2025F)



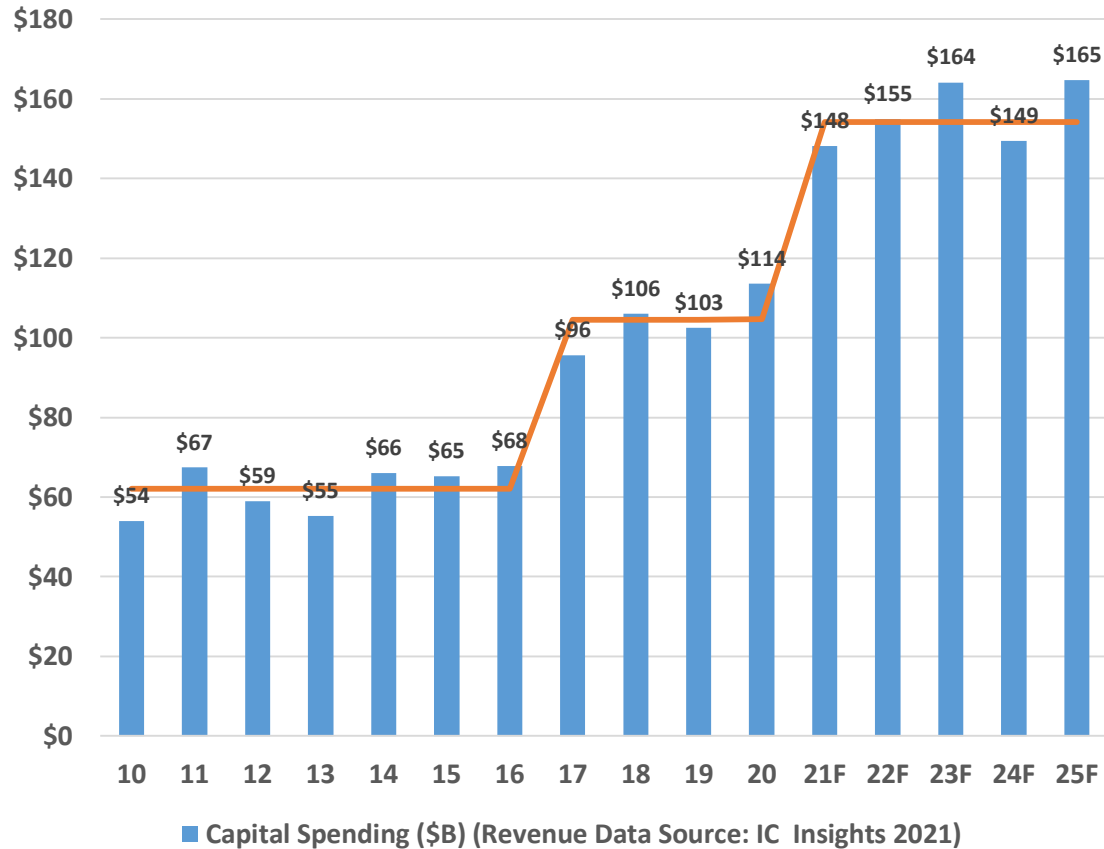
Source: IC Insights

- Fundamental growth drivers for long-term cycle
 - Communications - 5G, phones, Internet of Things and Data analytics, AI, visualization, Metaverse
 - Mature Devices, NAND, DRAM, Advanced logic
 - Electrification of the automotive industry with ADAS (Driver Assist) – “Computer on Wheels”
 - Mature Devices, Power devices and image sensors

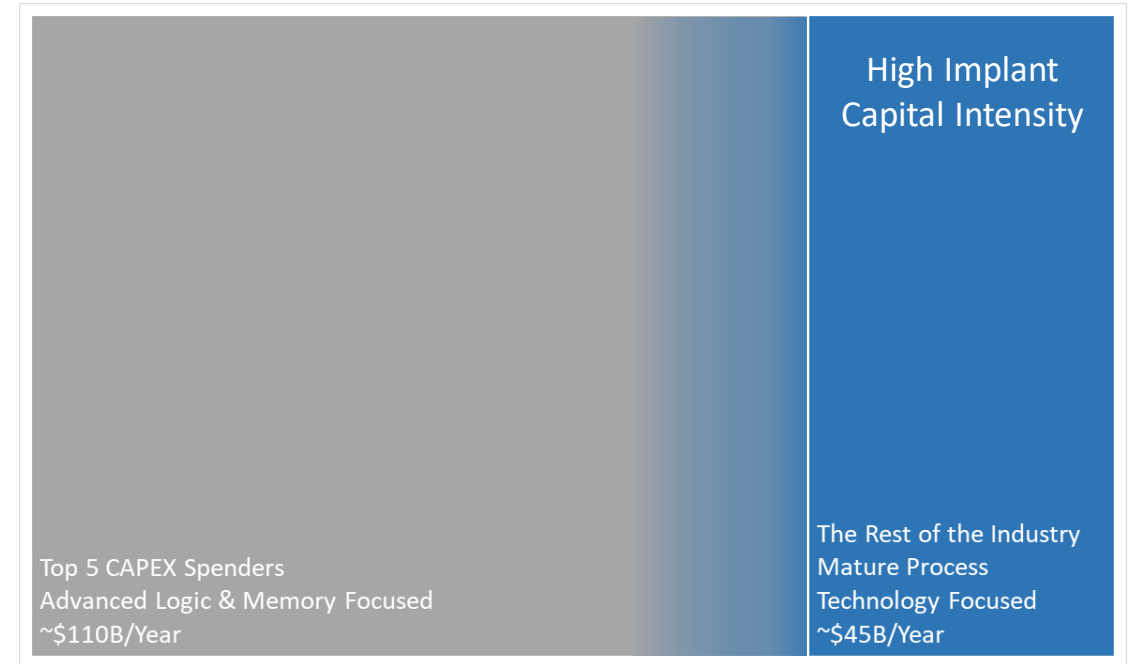
- Additional accelerants to the near-term rapid growth
 - Device shortages impacting many industries causing additional investment in 2022
 - Geographical fab expansions over next several years driven by nationalism and government incentives

Semiconductor Capital Spending has Moved to a New Plateau Driven by Rapidly Growing Mature Process Technology Segment

Worldwide Semiconductor
Capital Spending Trends



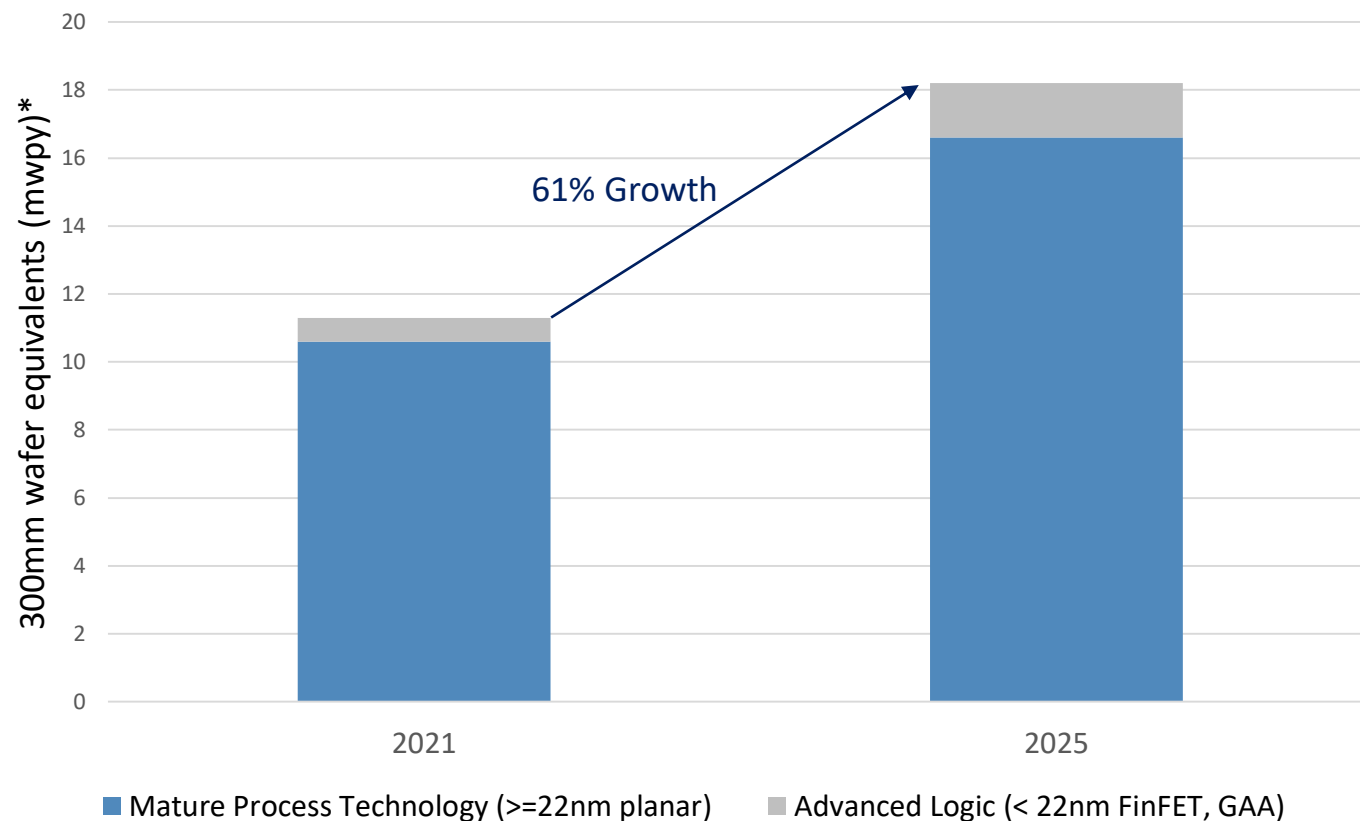
Total CAPEX
~\$150B to \$165B Through 2025



Top 5 CAPEX Spenders also
Spending in Mature Technologies

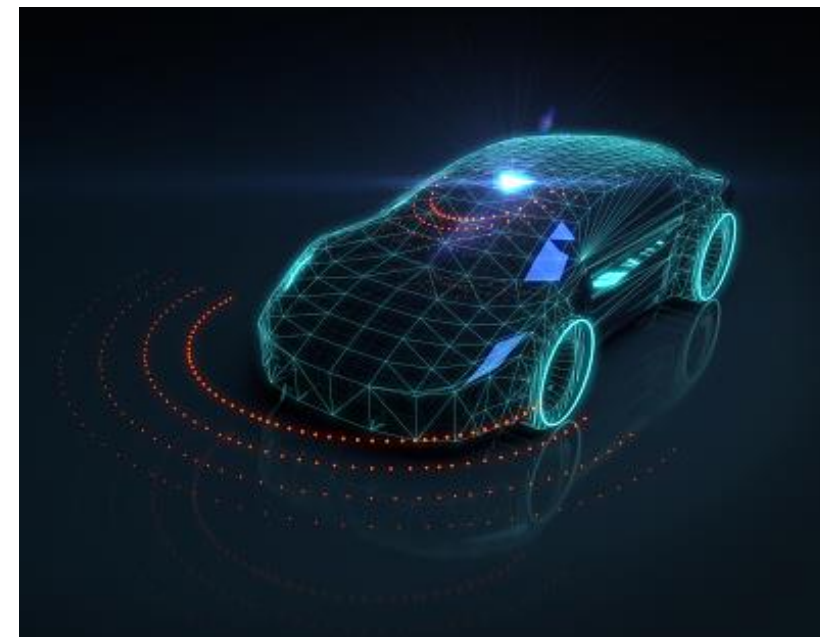
Greater than 90% of Automotive Semiconductor Applications Utilize Mature Process Technology

Automotive Semiconductor Demand by Node



* mwpv – Millions of Wafers per Year (300mm equivalents)
Source: IHS Semiconductor Applications Forecast Q1 2022

Advanced Automotive Technology Built on Mature Semiconductor Technology



EV Impact on Ion Implant Market

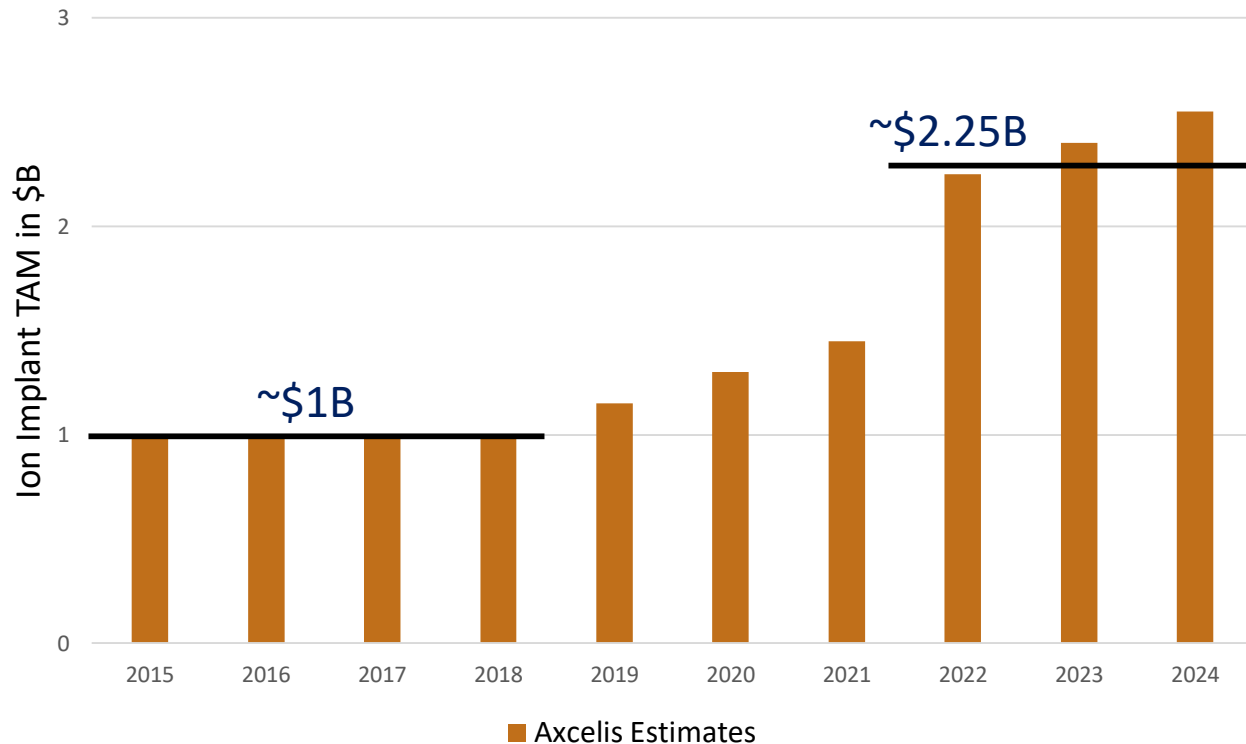
Bill Bintz

EVP Product Development



Ion Implant TAM has More Than Doubled Over the Last 3 Years

Ion Implant Annual TAM Estimates (\$B)



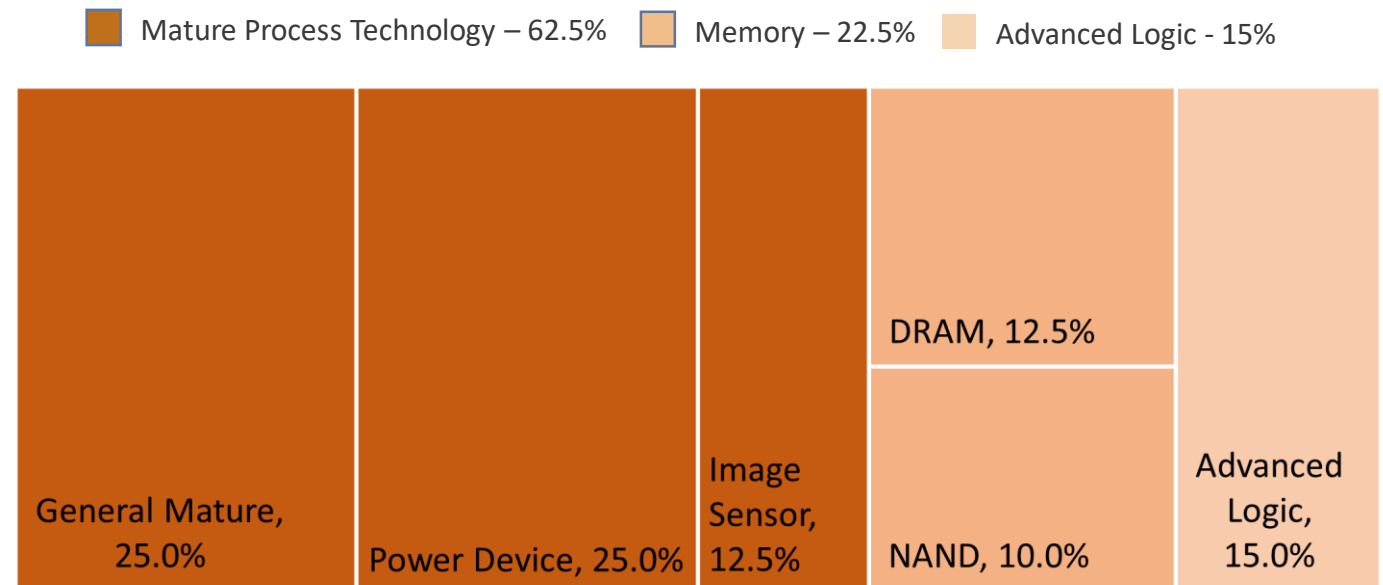
Source: Axcelis Internal Estimates July 2022

- Step function in TAM 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
 - eg. Purion Power and Image Sensor Series
- Mature market segments now account for greater than 60% of the implant TAM
- Continued TAM growth driven by implant intensive mature nodes and specialty devices

Ion Implant TAM Segment Breakdown

- The mature process technology segment accounts for greater than 60% of the ion implant TAM
 - Mature process technology growing based on wafer starts increases, high implant capital intensity, and higher value systems for specialty devices
 - Memory remains 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 will grow from 30% to 50% within the power device segment over the next few years driven by strong demand from the automotive market

Approximate Ion Implant TAM - Segment Breakdown*

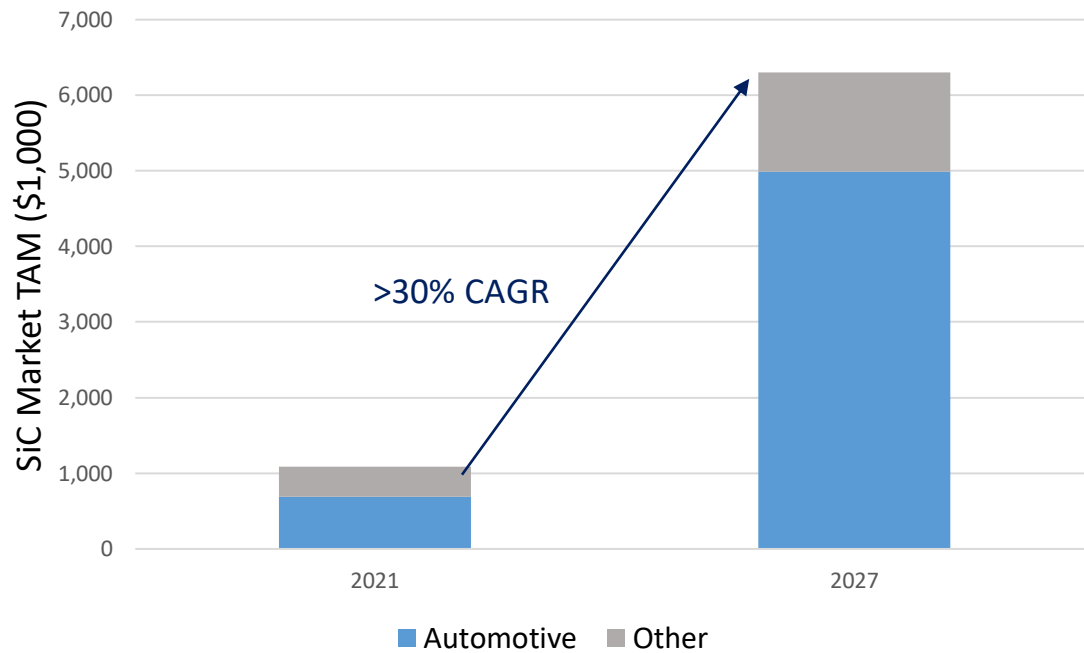


* Axcelis Internal Estimates for 2022 - 2024 (Annual numbers will vary based on customer activity and projects)

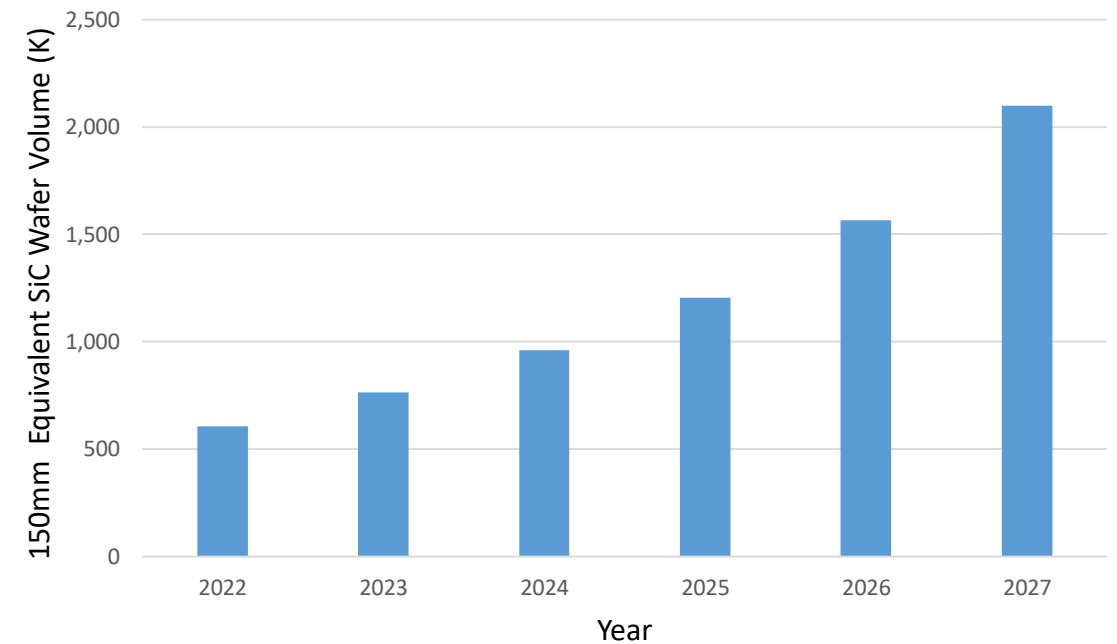
Mature Process Technology Segment is Driving Ion Implant TAM Growth

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

SiC Device Market Growth Dominated by Automotive



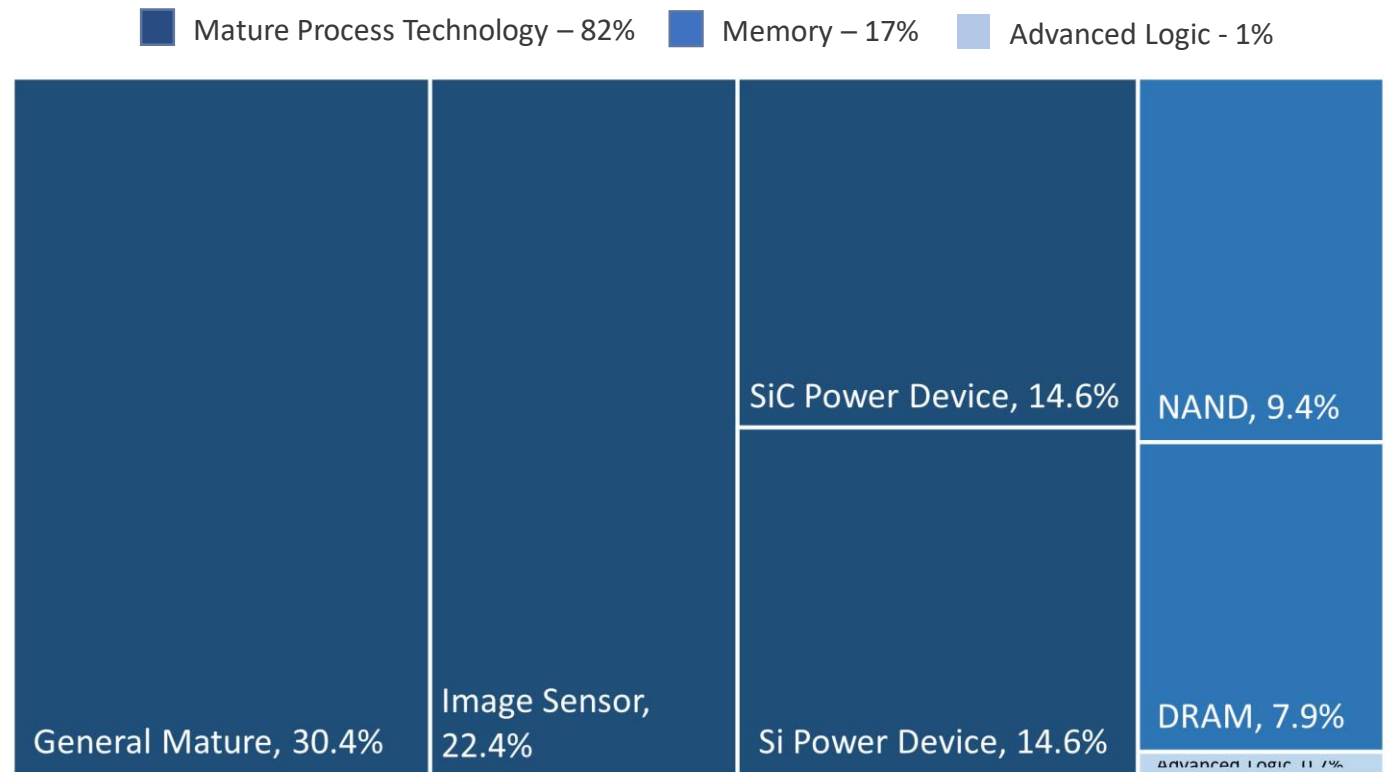
SiC Wafer Starts Projected to Double Every 3 Years



Axcelis Strong Systems Growth Driven by Targeted Market Segments

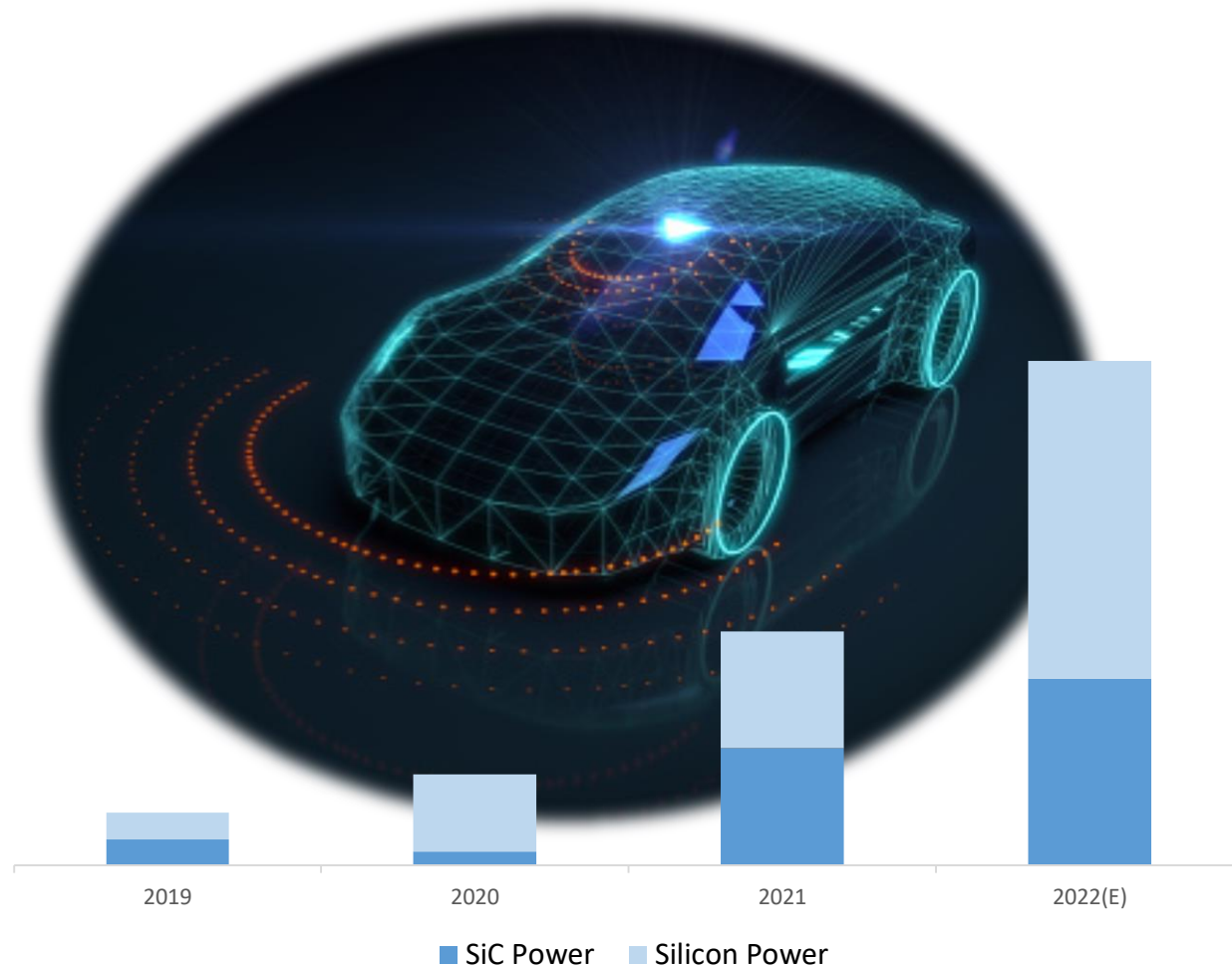
- The mature process technology segment saw significant growth in 2021, accounting for 82% of Axcelis systems revenues
- The mature process technology segment is expected to make up approximately 80% of Axcelis systems revenue in 2022
- Power devices are expected to represent between 35% and 40% of systems revenue in 2022
- In 2022 memory expected to recover to revenue levels comparable to the last peak

2021 Market Segment Systems Revenue



Targeted Purion product investments made 5+ years ago paying off handsomely

Axcelis Power Device Revenue Growth* – Fueled by Automotive



- SiC power devices will grow from approximately 30% of the implant power device TAM to 50% over the next few years driven by automotive
- Si IGBT devices designed in by several automakers for first generation EV, but many will switch to SiC for performance over time
- Axcelis is well positioned in both Silicon and SiC 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

Greg Redinbo
SVP Marketing



Purion – The Core of Our Growth Strategy

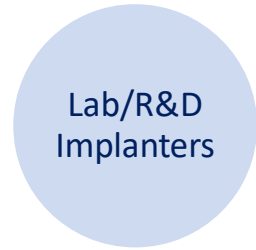
		Targeted Market Segments			
<i>Ion Implantation</i>		Base Purion Product	Power	Image Sensors	Advanced Memory/Logic
<i>High Current ~50% of TAM</i>	Common Purion Platform	H	H80 H200 H200 SiC	Dragon	Dragon
<i>High Energy ~25% of TAM</i>		XE	EXE XE SiC EXE SiC	EXE VXE XE_{max}	XE
<i>Medium Current ~25%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

Purion products targeted at high value applications and market segments

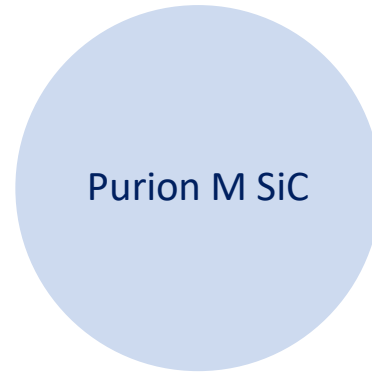


Purion Power Series

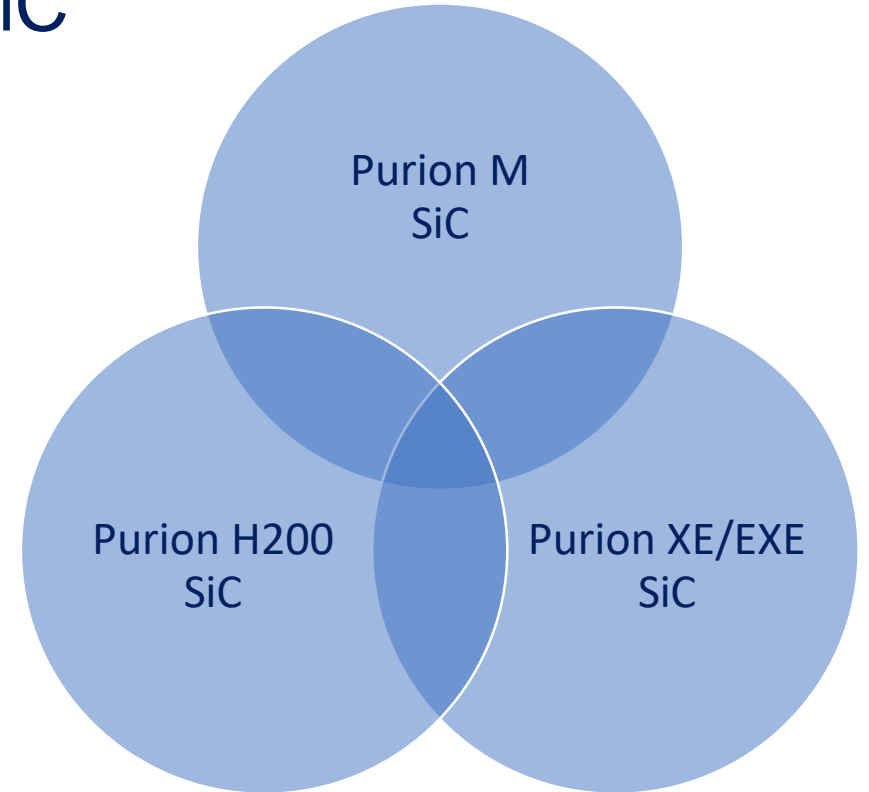
Enabling High Volume Manufacturing for SiC



- 100mm or smaller substrates
- R&D and low volume production
- Flexible
- Reliability not critical



- 150mm substrates
- Initial customer qualification followed by medium volume production
- Full factory automation
- High uptime and production proven platform

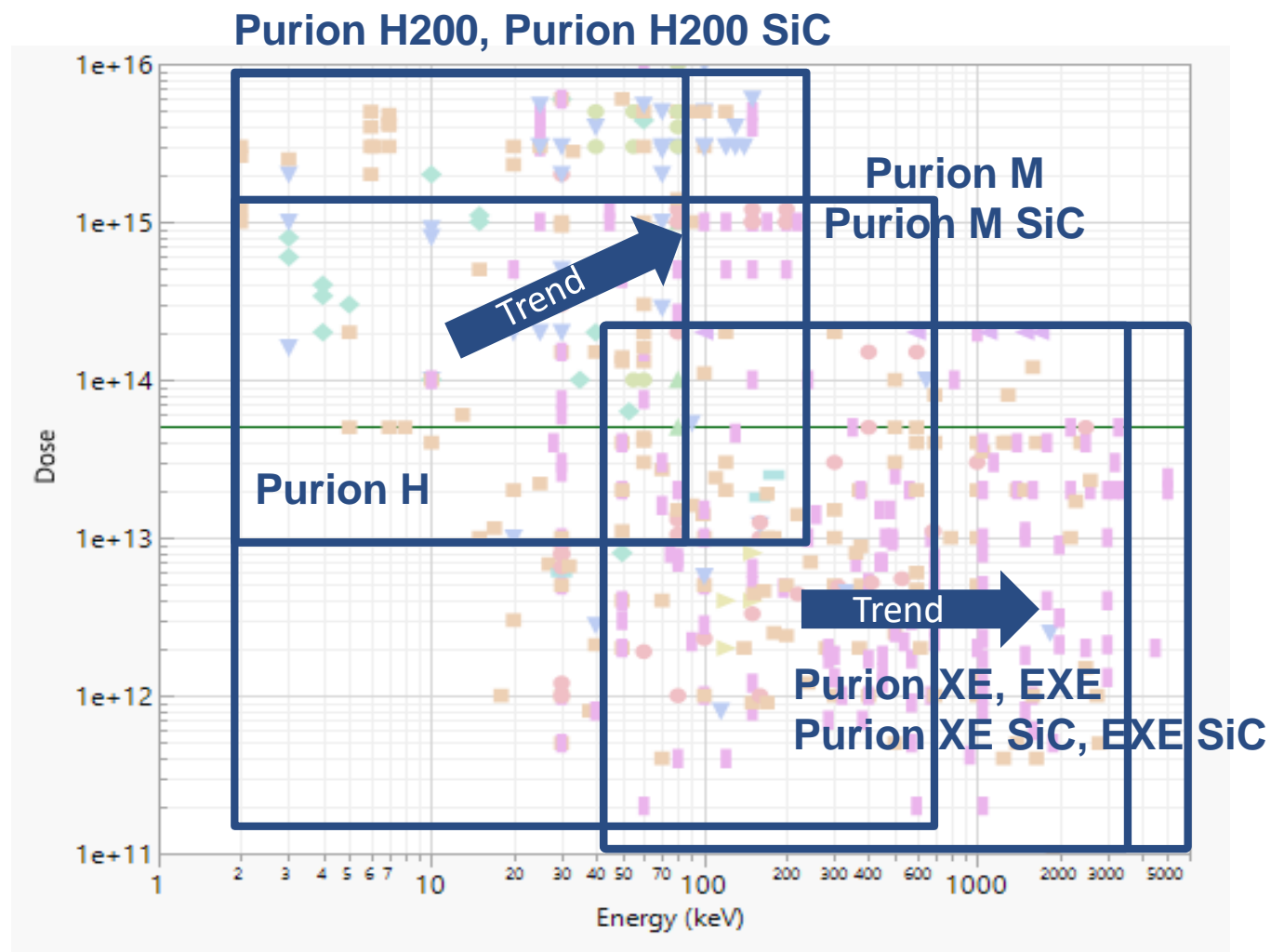


- 150mm and 200mm substrates
- High volume production
- Customer can optimize implanters for production output and cost of ownership
- Full factory automation required
- High uptime and production proven platform

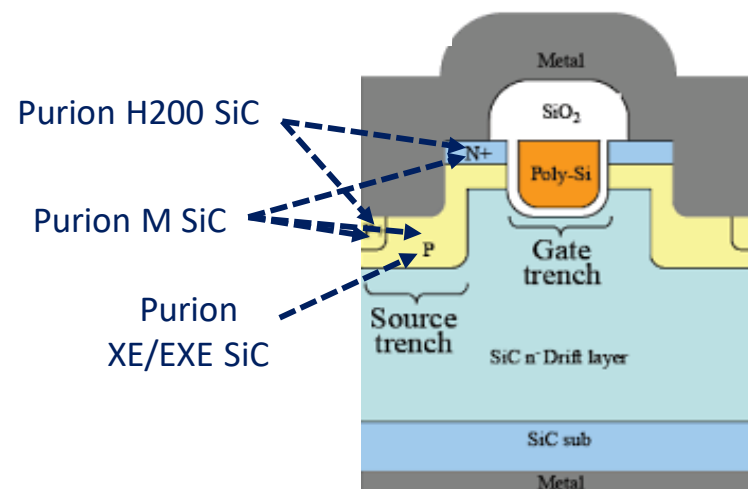
Silicon Carbide Power Device and Market Development Timeline

Purion Power Series

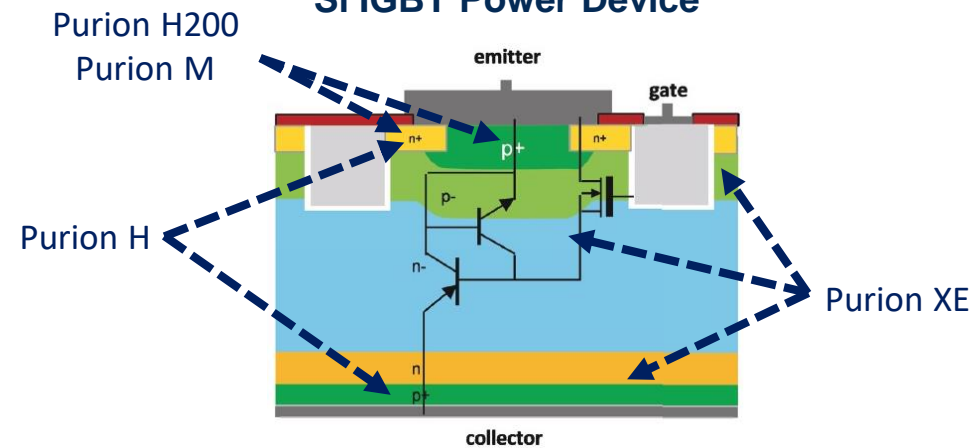
Optimizing Si and SiC Power Device Performance



SiC Trench MOSFET Power Device

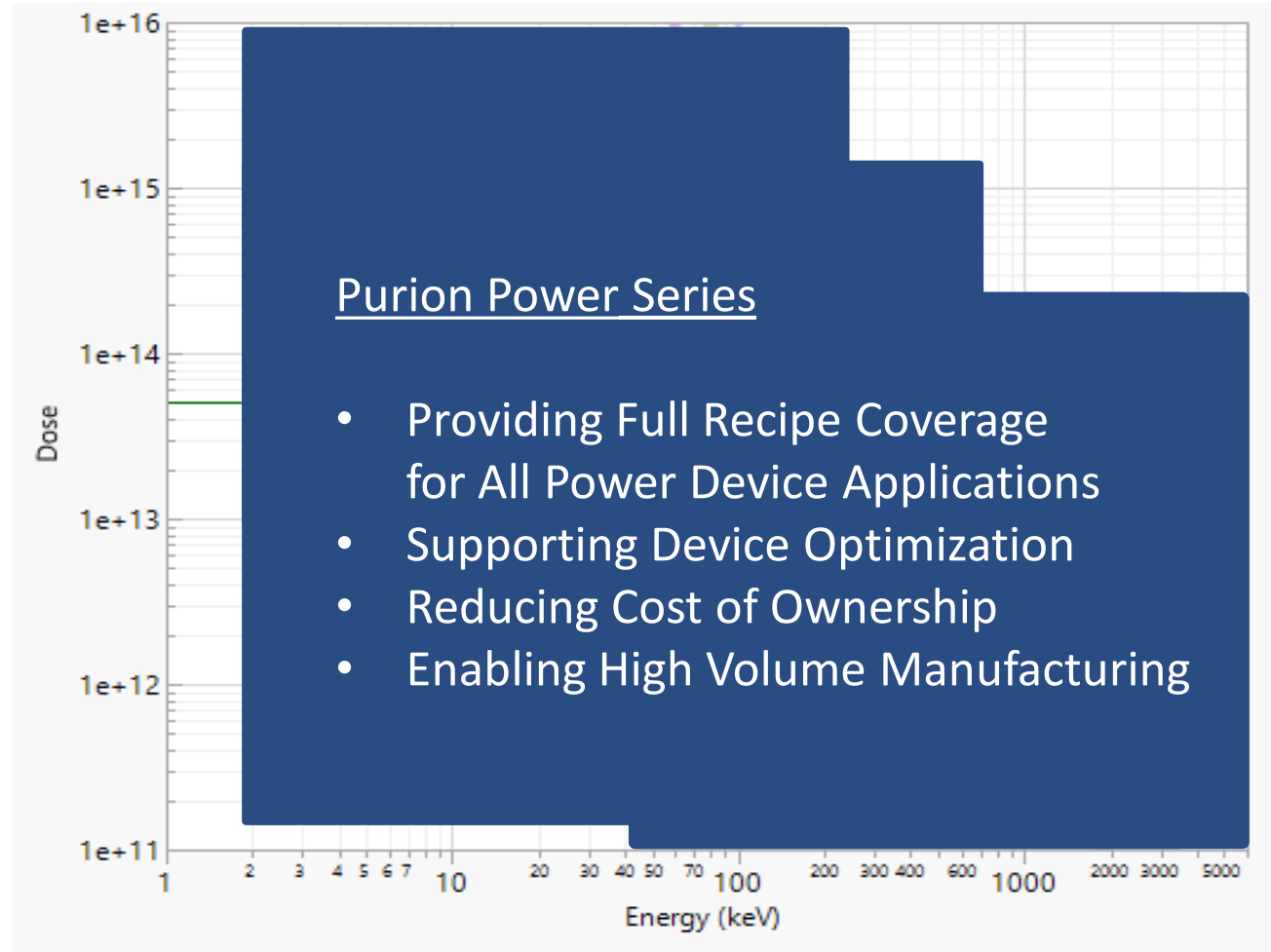


Si IGBT Power Device

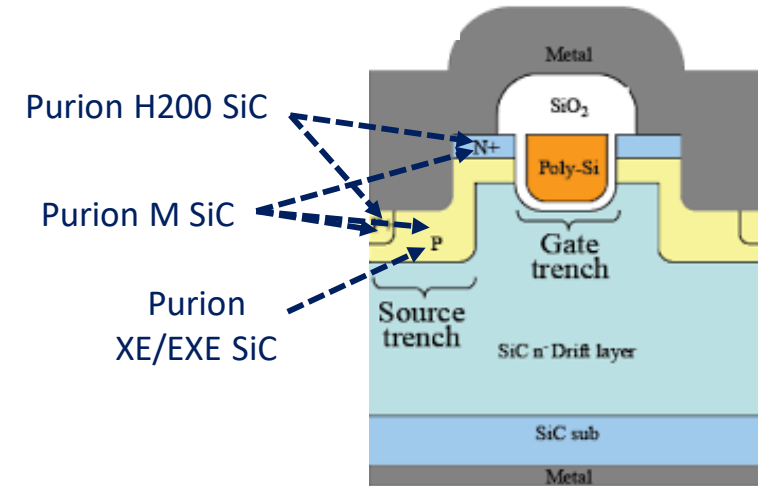


Purion Power Series

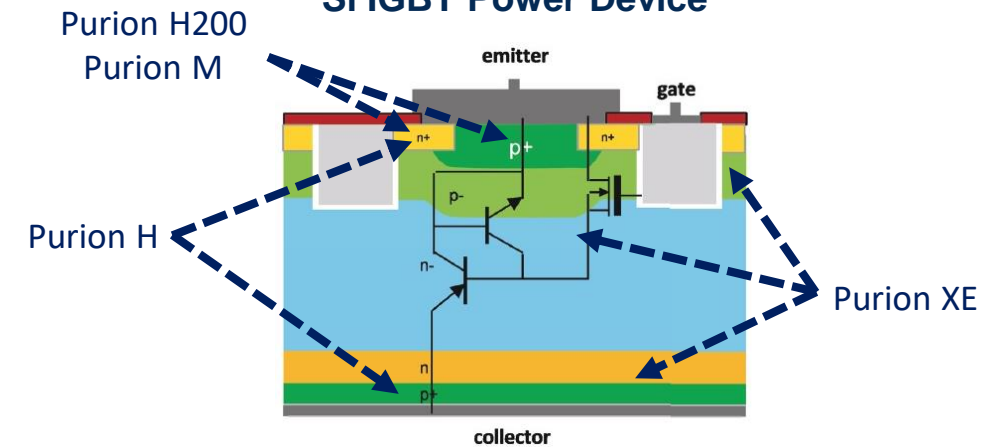
Optimizing Si and SiC Power Device Performance



SiC Trench MOSFET Power Device



Si IGBT Power Device



Purion Power Series – Enabling Advanced Power Device Technology

Purion <i>Power Series</i>	SiC				Si				
	M	XE	EXE	H200	M	XE	EXE	H	H200
 Aluminum Implantation	✓	✓	✓	✓					
 Hot Implantation to 700C For 150mm Wafers	✓	✓	✓	✓					
 Hot Implantation to 700C For 200mm Wafers	✓	✓	✓	✓					
 80keV Antimony Implantation								✓	
 Thin Wafer Handling					✓	✓	✓	✓	
 Extended High Energy Range			✓				✓		
80keV High Current Capability								✓	
200keV High Current Capability				✓					✓

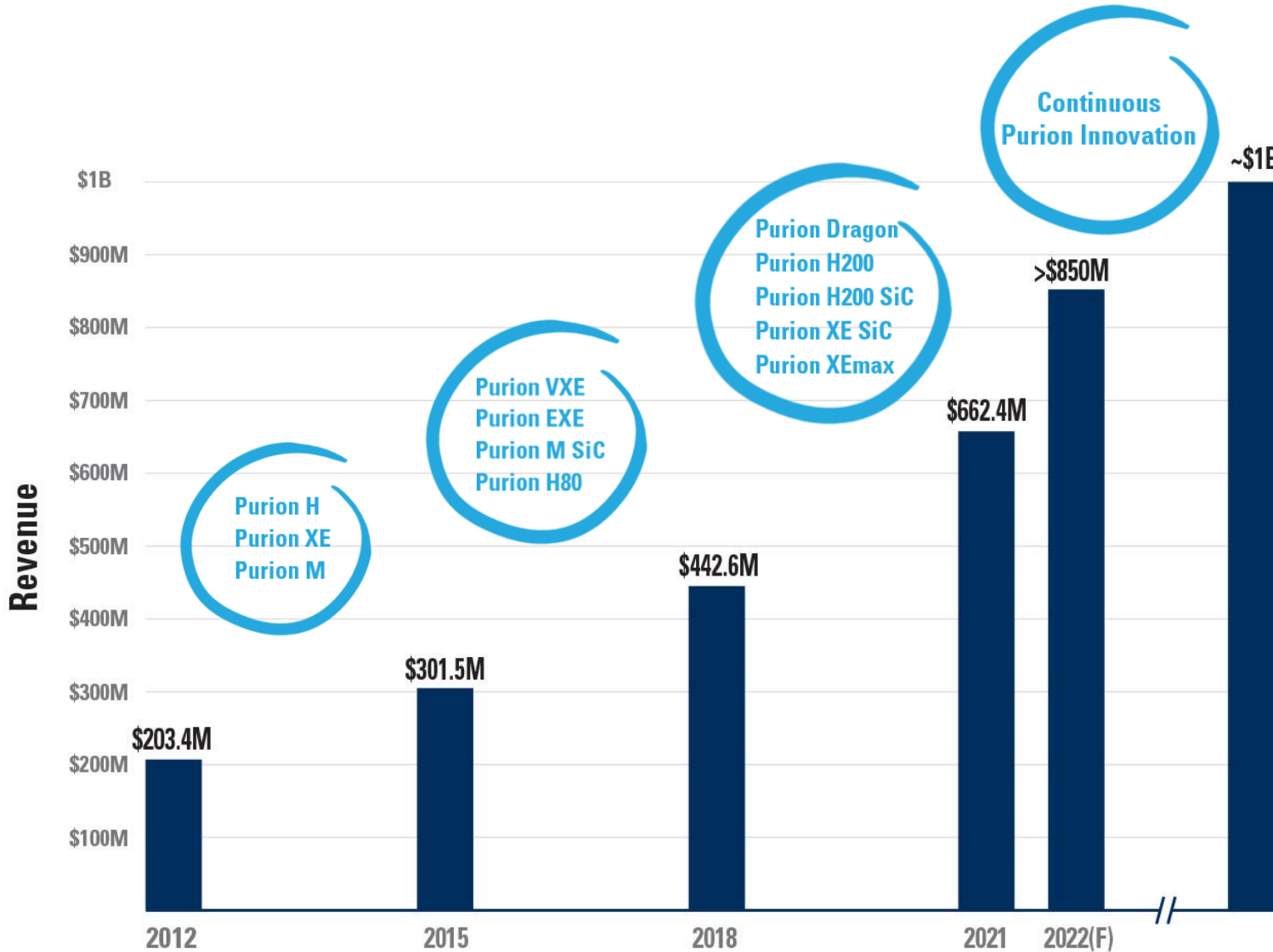
Summary and Q & A

Doug Lawson

EVP Corporate Marketing & Strategy



Purion Continues to Drive Axcelis' Growth



- Unprecedented market conditions
- 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 expects to achieve ~\$1B over the next couple of years

Revenue	\$442.6M 2018(A)	\$343.0M 2019(A)	\$474.6M 2020(A)	\$662.4M 2021(A)	>\$850M 2022(F)	~\$1B Model*
Gross Margin	40.6%	42.0%	41.8%	43.2%	~42%	45-46%
Total OPEX	27.0%	35.0%	29.6%	24%	~21%	20-21%
Operating Profit	13.5%	7.1%	12.2%	19.2%	~21%	24-26%
Free Cash Flow (Cash From Operations – Capex)	9.5%	(7.5%)	13.2%	21.4%	>15%	>22%

* 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

Key Take Aways



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Q & A



Axcelis Technologies, Inc Nasdaq - ACLS

