PSI Roadshow in Q1,2024

5 Mar. 2024

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- Except as required by law, we undertake no obligation to update any forward-looking statement, whether as a result of new information, future events, or otherwise.

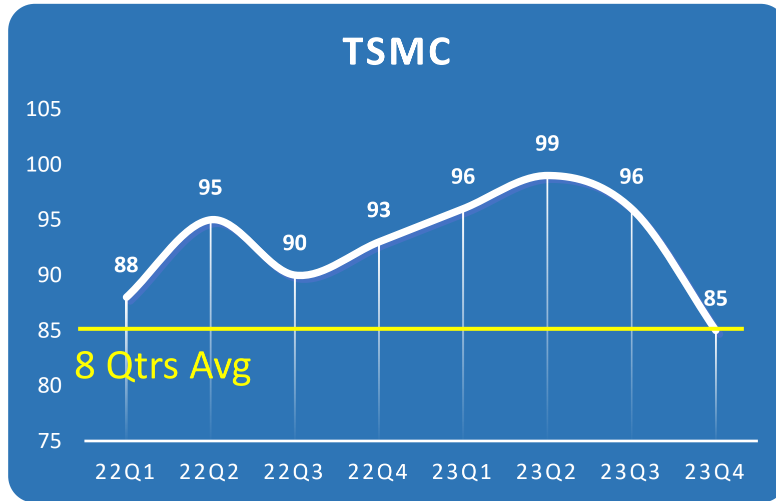
- The numbers of the presentation are prepared under IFRS.

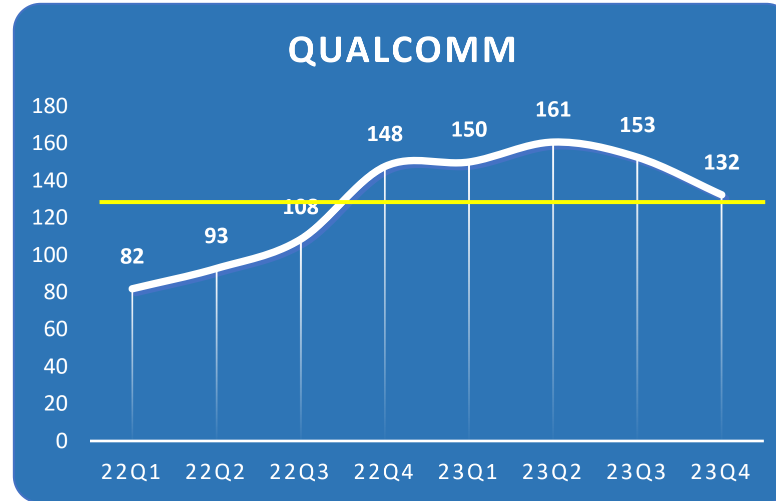
Agenda

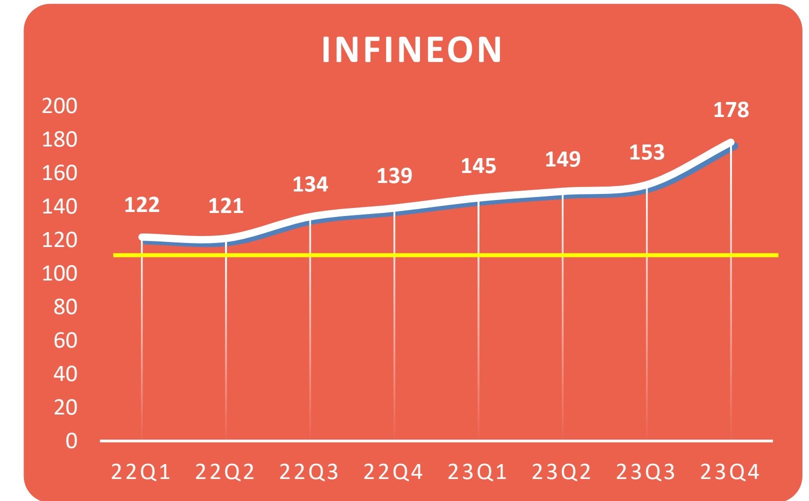
- Semi industry trending
- PSI strategies update
- ESG subject update
- Key takeaways

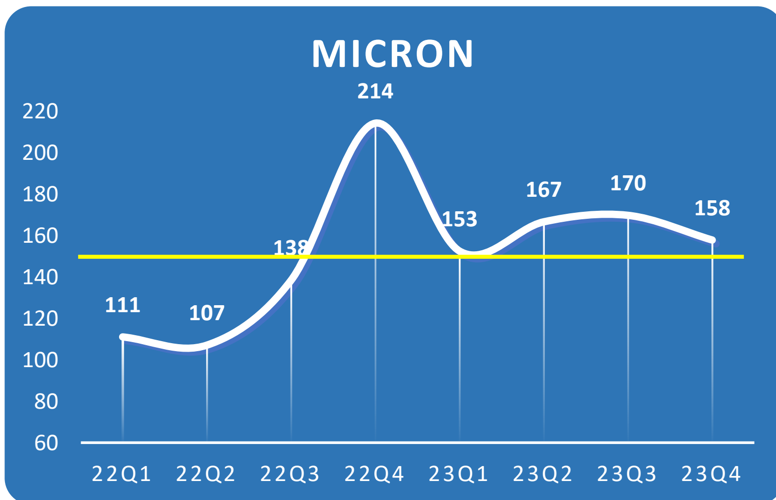
Semi Outlook

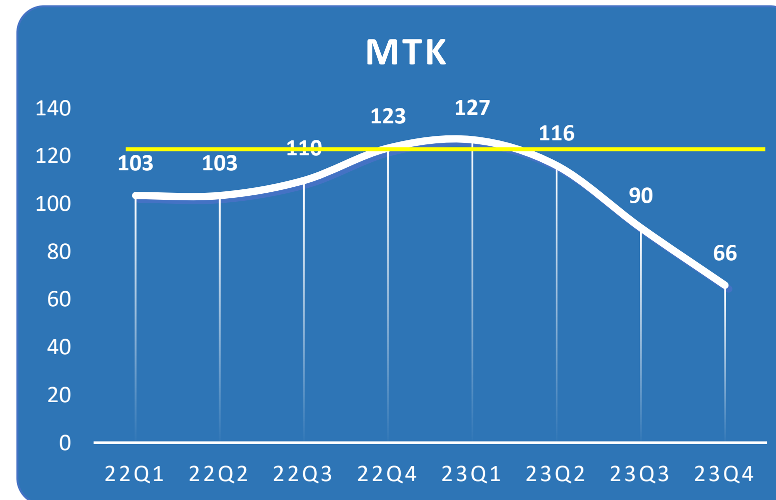
Inventory Show Improvement - Except Power Semi

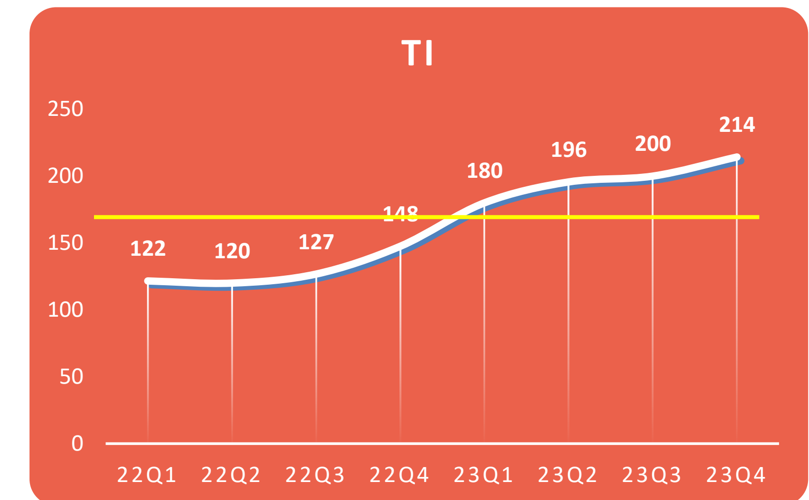












Source: Company data

Semi Industry FCST

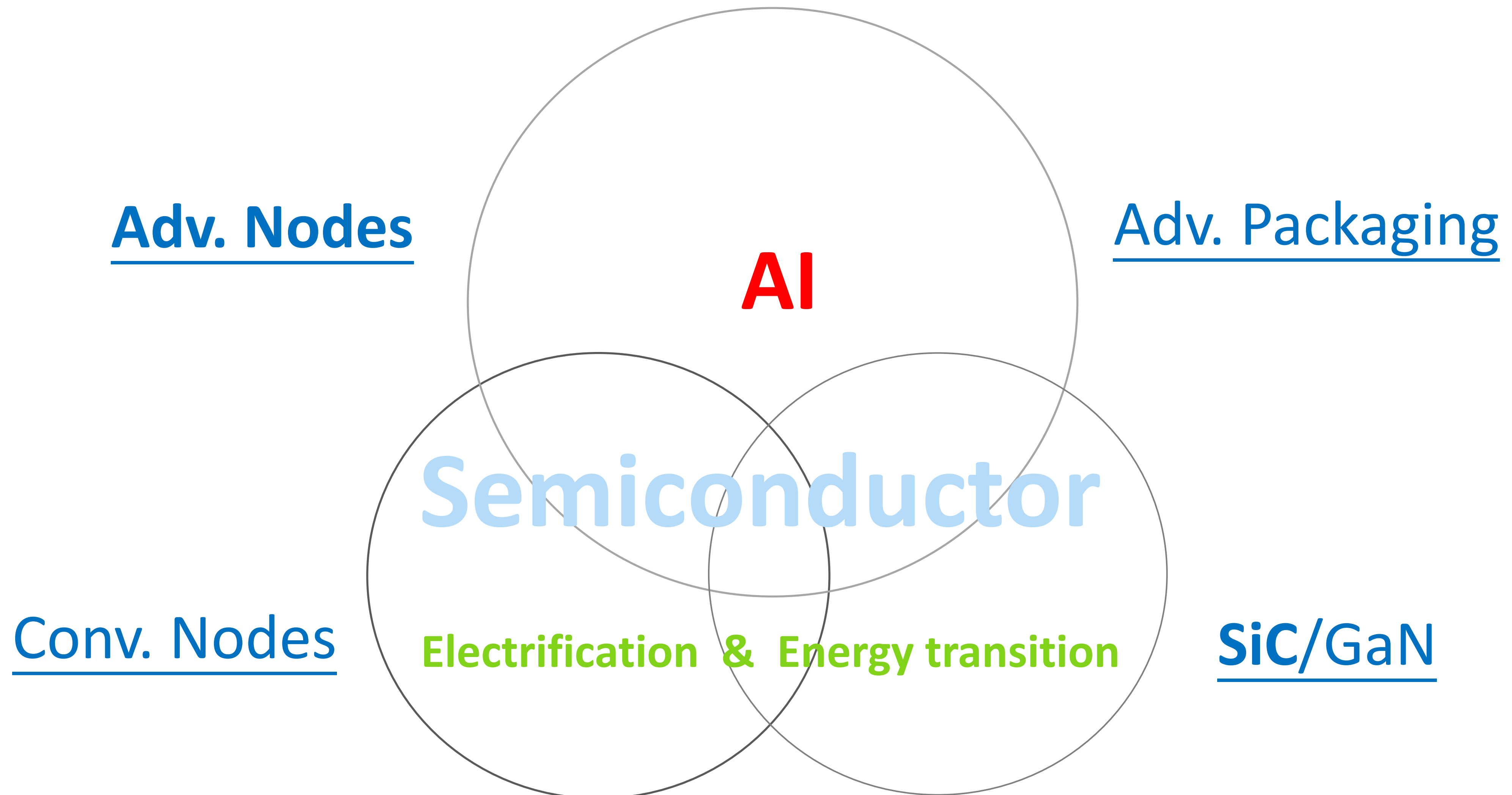
1 Trillion

USD M

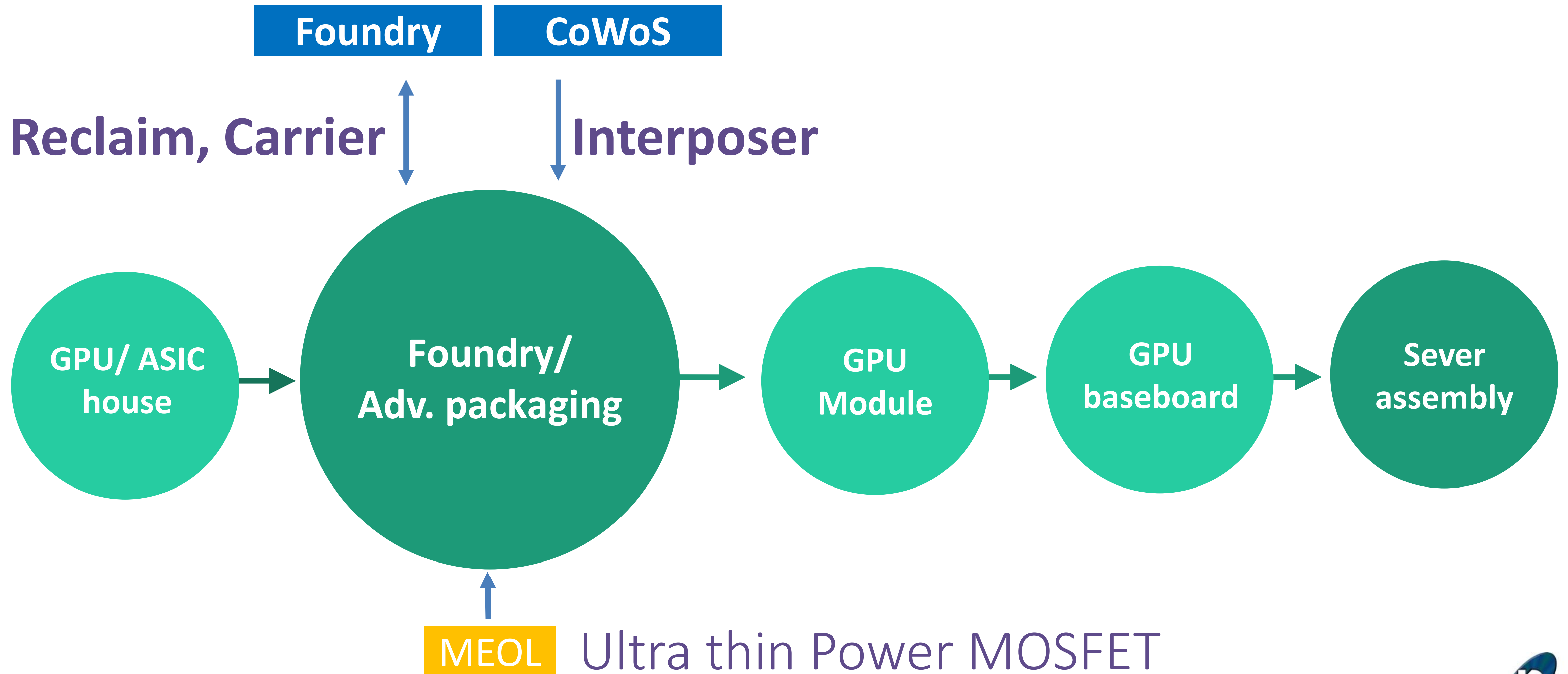
	2021	2022	2023	2024E	2025E	2026E	2030E
Growth	27.1%	0.2%	-10.9%	16.8%	15.5%	6.1%	
Value	598	600	535	624	721	765	1,000

Source: Gartner, PSI estimate

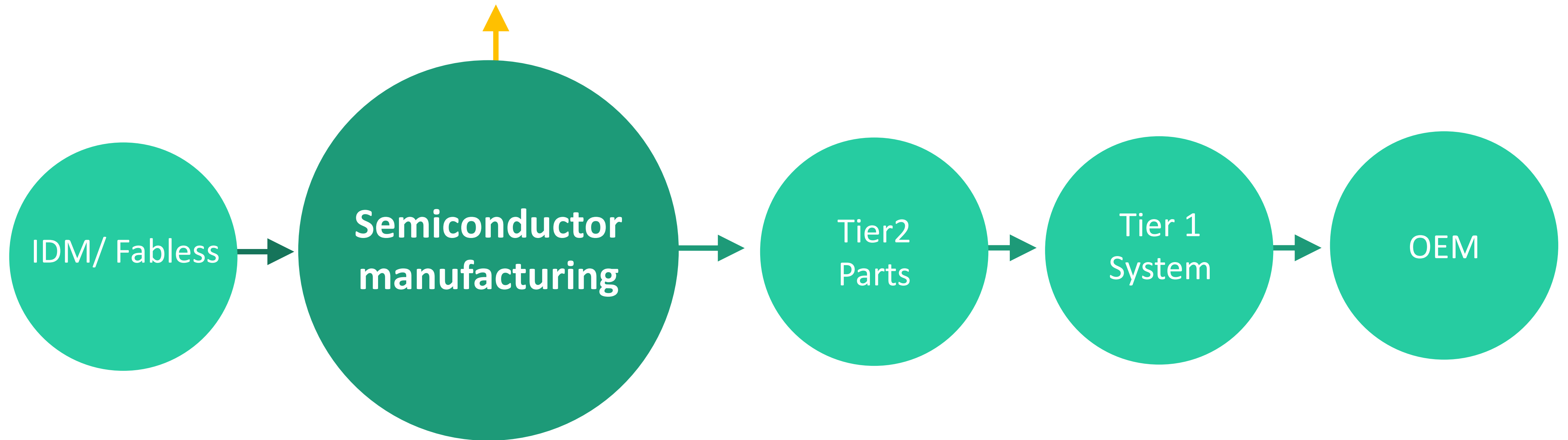
Semiconductor Major Drivers



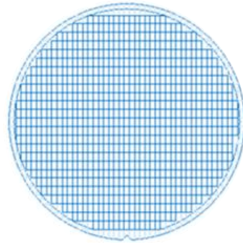
PSI Part Of AI Supply Chain



PSI Part Of EV Supply Chain



PSI Key Strategy



- Leading Tech in Ultra clean reclaim wafer
- Tailor made TEST/ CARRIER wafer
- WW No.1 Wafering capacity

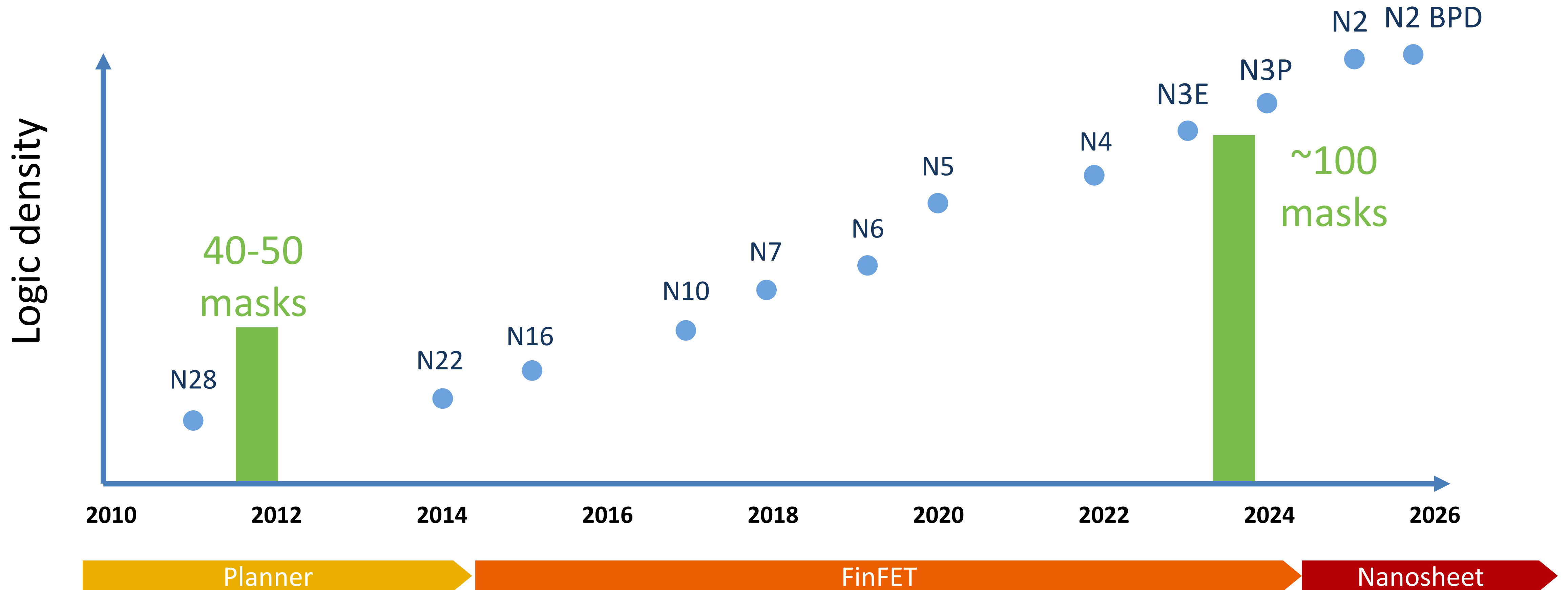
- Focus on AI, high power application
- Enabling 8” SiC thinning business
- WW No.1 Thinning Capacity

Wafering Business Line

Reclaim demand up driven by Advanced node

Test wafer for carrier wafers emerging in Advanced packaging

Requiring More Advanced Process



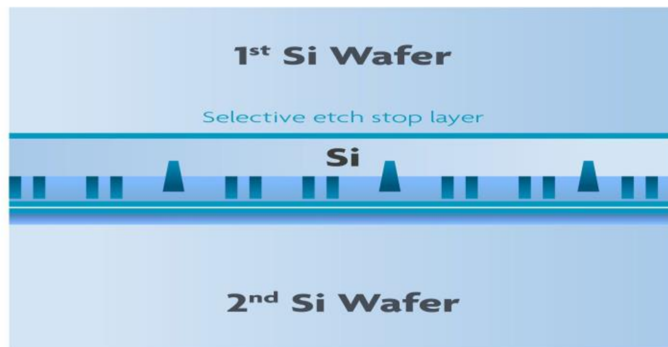
Source: Company data, PSI

Permanent Bonding With Carrier Wafer

BPD

2nm/18A

STEP 2



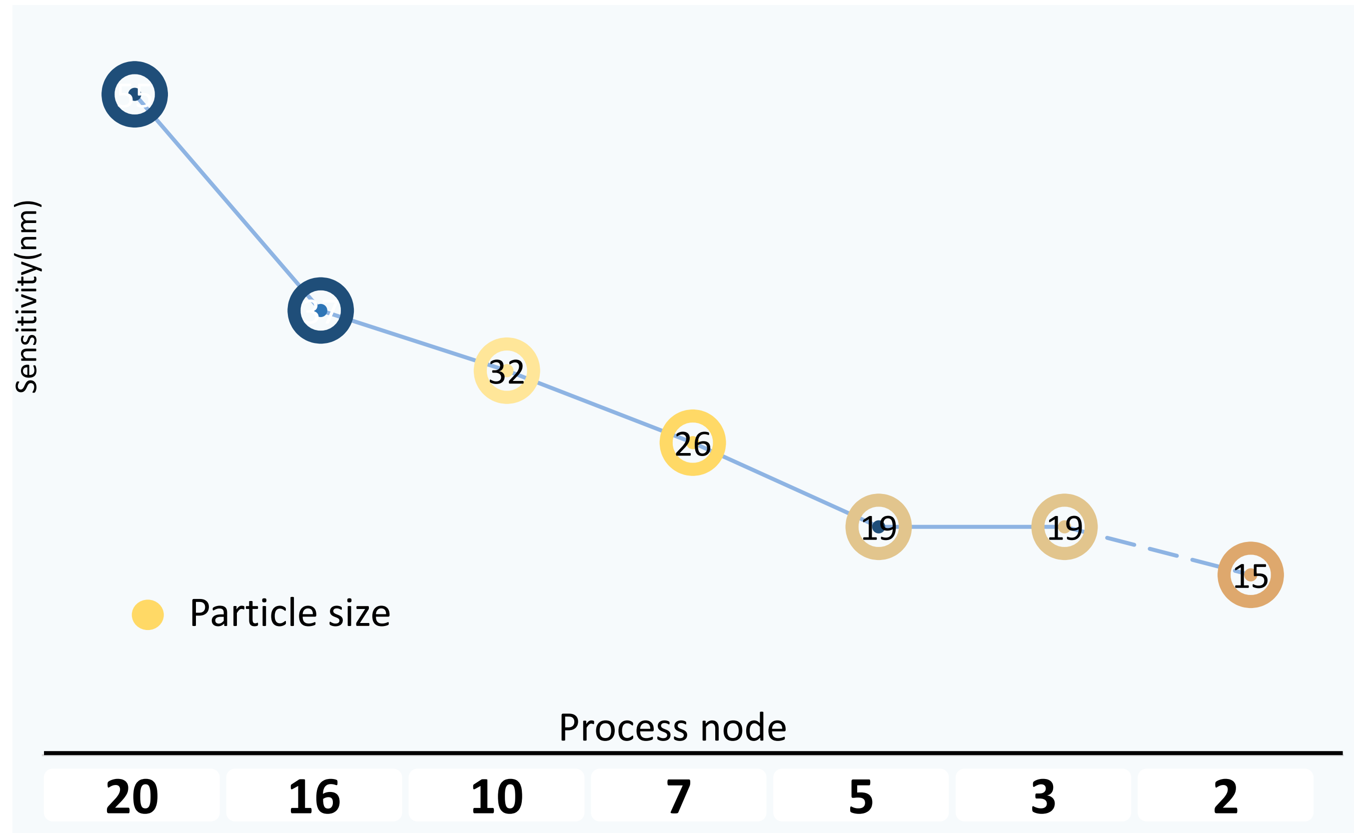
Permanent bonding to second Si wafer

Wafer grinding and **thinning** to < 5μm

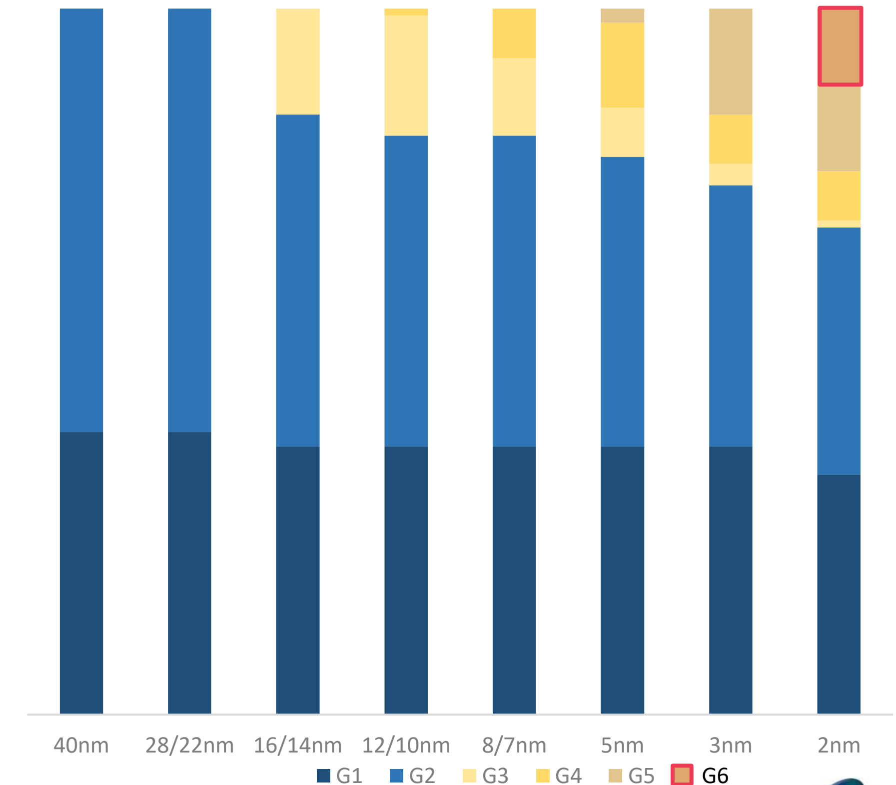
Selective Si etch and **removal** of the **buffer layer**

Source: imec

Consuming More high-Grade Reclaim Wafer



High Grade > 25%



Source: KLA, PSI

WW No.1 **Lights out** Wafering Fab

100	40	15	5
2021	2023	2025	2027

Picture: PSI

WW No.1 Wafering House **Capacity**

12	20	30	+60
2023	2025	2027	Tbd building 2

Picture: PSI

Strategic Expansion in Customers and MFG

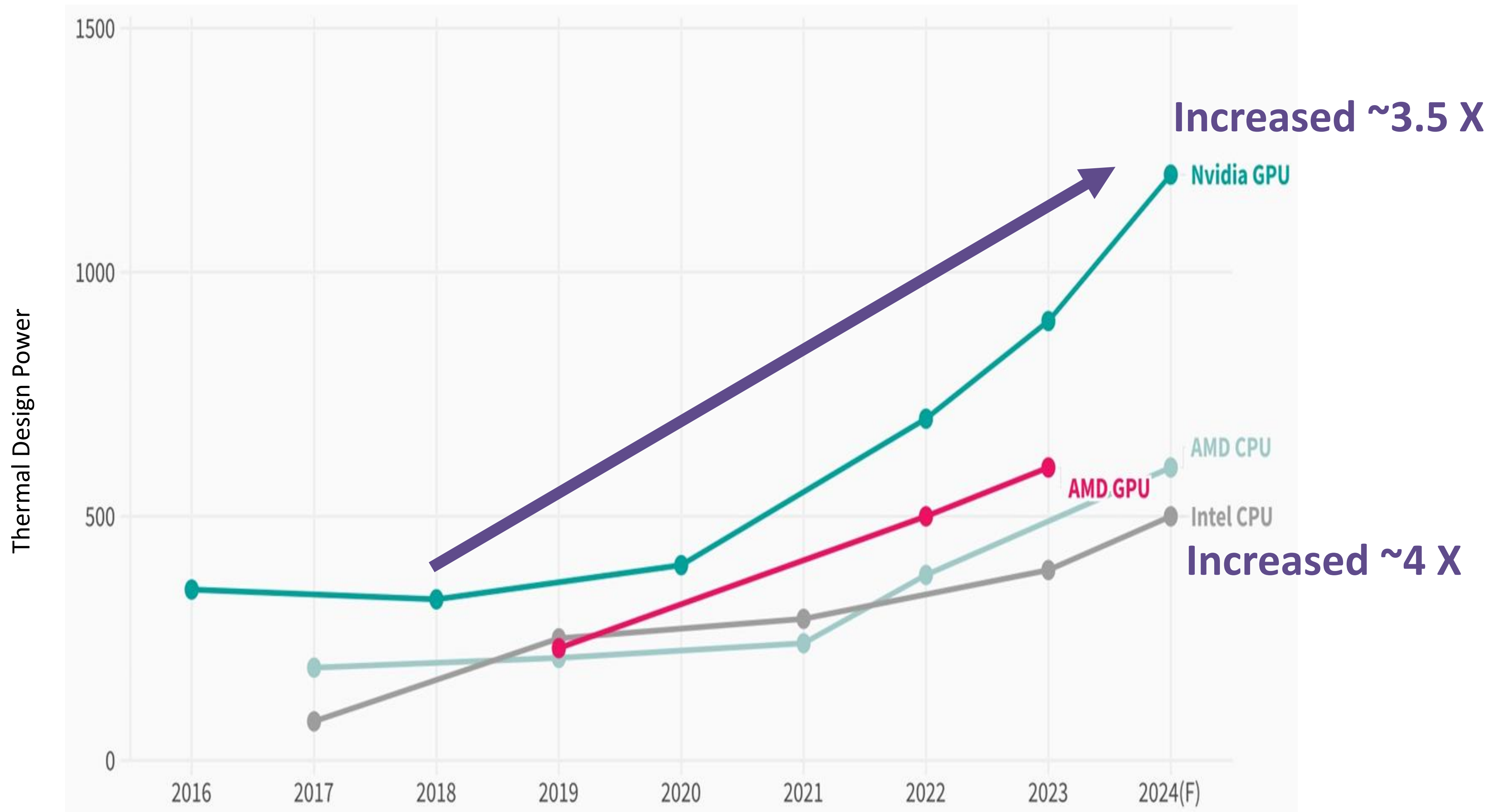
New customers　Customers' oversea site

Thinning Business Line

Focus on AI Centric

Next generation focus on SiC and 12"

AI Require More Efficient Thermal Solution



Source: E.Sun Security, company data, PSI

Power Discrete Must Do Thin Wafer Process

Source
Gate
Source
SiC N- Epitaxy
SiC N+ Substrate
Drain
M1/M2
Planar, Square/Hex Cell

Gate
Source
Source
Drain
M3T, M3S
Planar, Stripe Cell
Thin Wafer Technology
Significant unit cell reduction

Gate
Source
Source
Drain
1200V M3E
Best-in-Class Planar
Thin Wafer Technology
Modest unit cell reduction

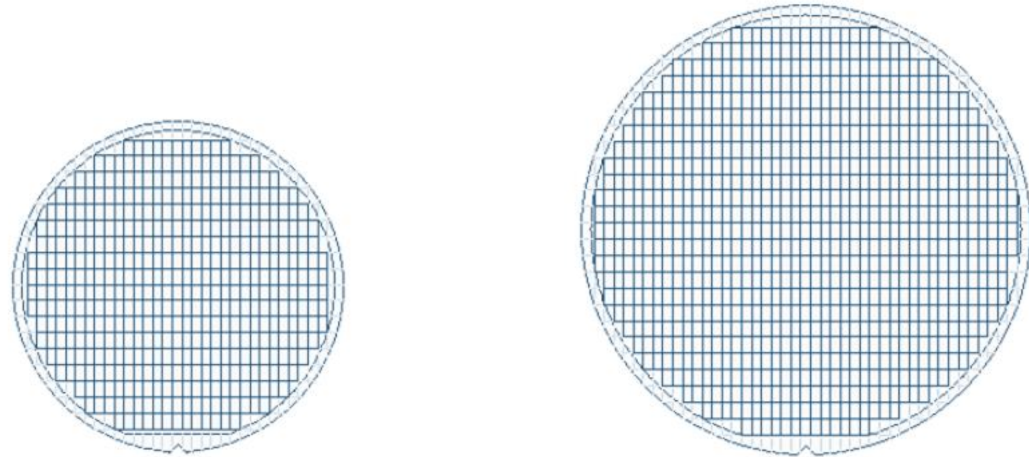
Gate
Source
Source
Drain
M4T
Best-in-Class Trench
Advanced Trench Design
Thin Wafer Technology
Modest unit cell reduction

Public Information © onsemi 2023

Source: M. Das, "Market Dynamics of the Automotive SiC Revolution for Electrification," PowerUP Expo 2023

Advantage Of Large Diameter SiC Wafer

32 mm^2 die



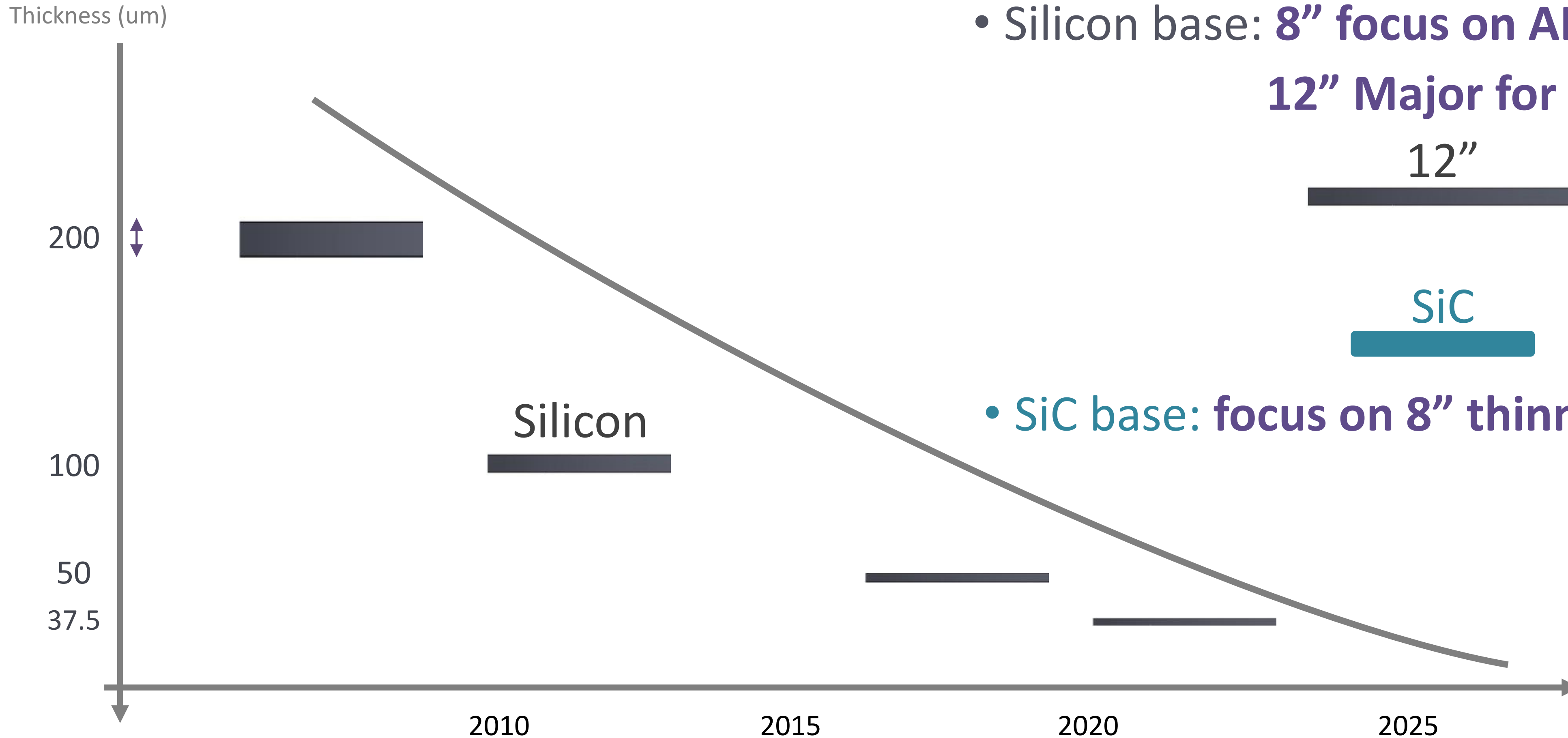
	150mm	200mm
# whole die	448	845
% edge die	14	7

More devices from a single wafer with enhanced productivity and efficiency

Source: Wolfspeed
Picture: PSI

Thinning Bu Roadmap

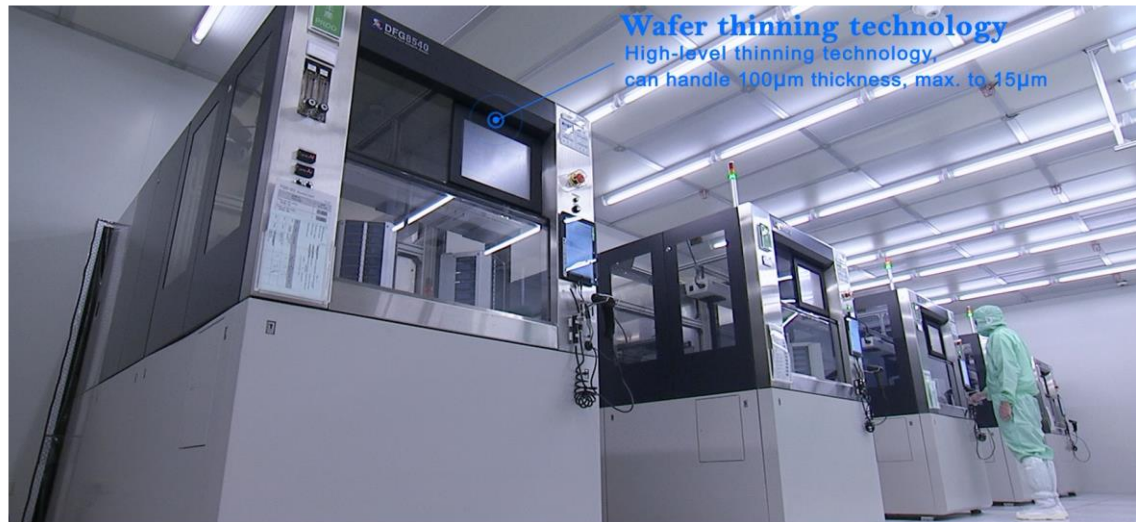
- Silicon base: **8” focus on AI sever**
  12” Major for Adv. packaging
- SiC base: **focus on 8” thinning**



Source: PSI

WW No.1 Thinning House **Capacity**

FSM → BGBM → Test



Picture: PSI

Key Takeaways

Key Takeaways

- The global semiconductor industry is poised to become a trillion-dollar industry by 2030. Major growth is **driven by AI and Smart electric vehicles.**
- For PSI, 2024 marks a transitional year, heralding significant growth leading into 2025. The year **2025 is poised to witness substantial growth**.
- LT: Reclaim, overseas 12" factories increasing, PSI **planning overseas expansion.**
  Thinning, the demand for EV Surging, and the **8” SiC thinning process is enabling.**
- ST: Reclaim expects higher recovery in 2H. **Taichung Fab capacity pull in.**
  Thinning high inventory in major customers, except AI. **Focus on AI customers.**

PSI

Thank you