

Taiwan-Asia Semiconductor Corporation

Investor Conference

2023/07/26

Safe Harbor Statement

- This Presentation contains certain forward-looking statements that are based on current expectations and are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements.
- Except as required by law, we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.

Company Overview

Company Profile

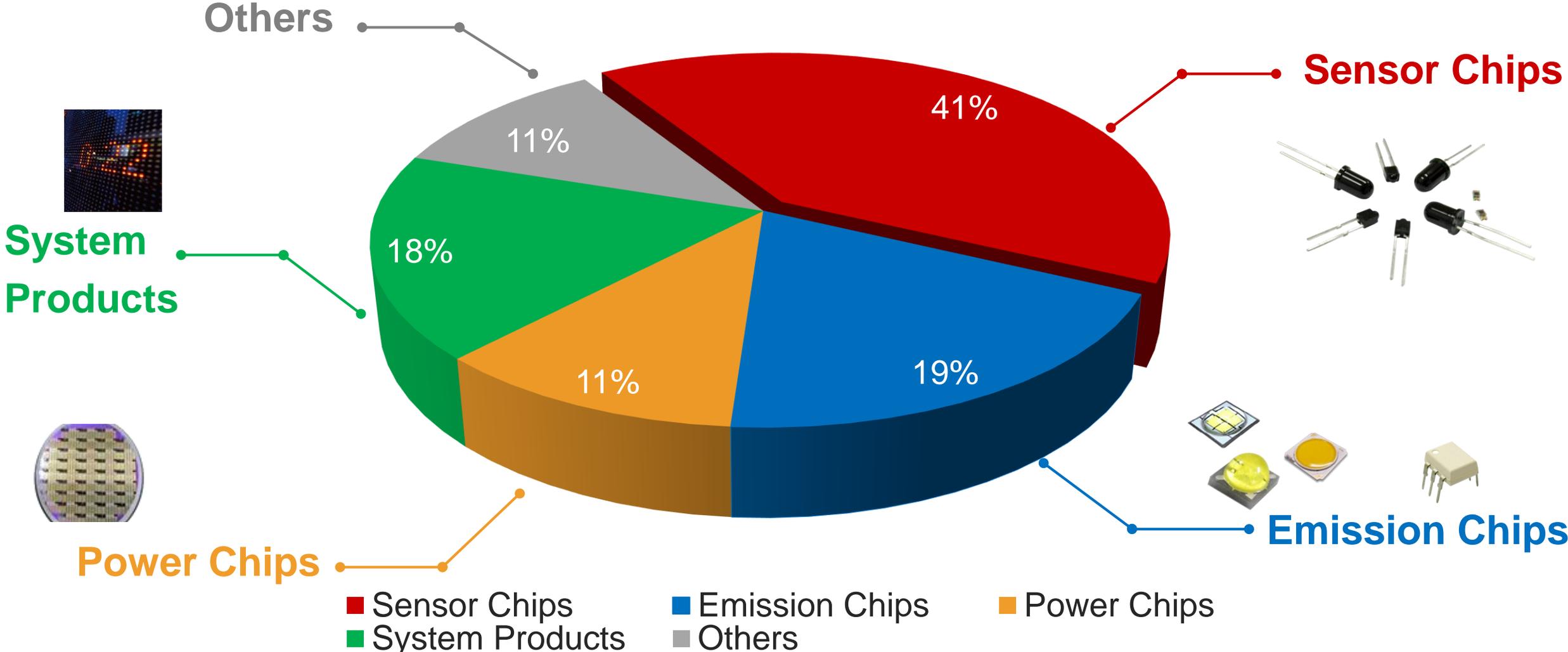
Mar. 2022
Subsidiary Established -
「PASC」

Jun. 2023
Subsidiary - 「OPTO TECH」 Renamed
「SAVC」
Formerly named: OPTO TECH CORPORATION

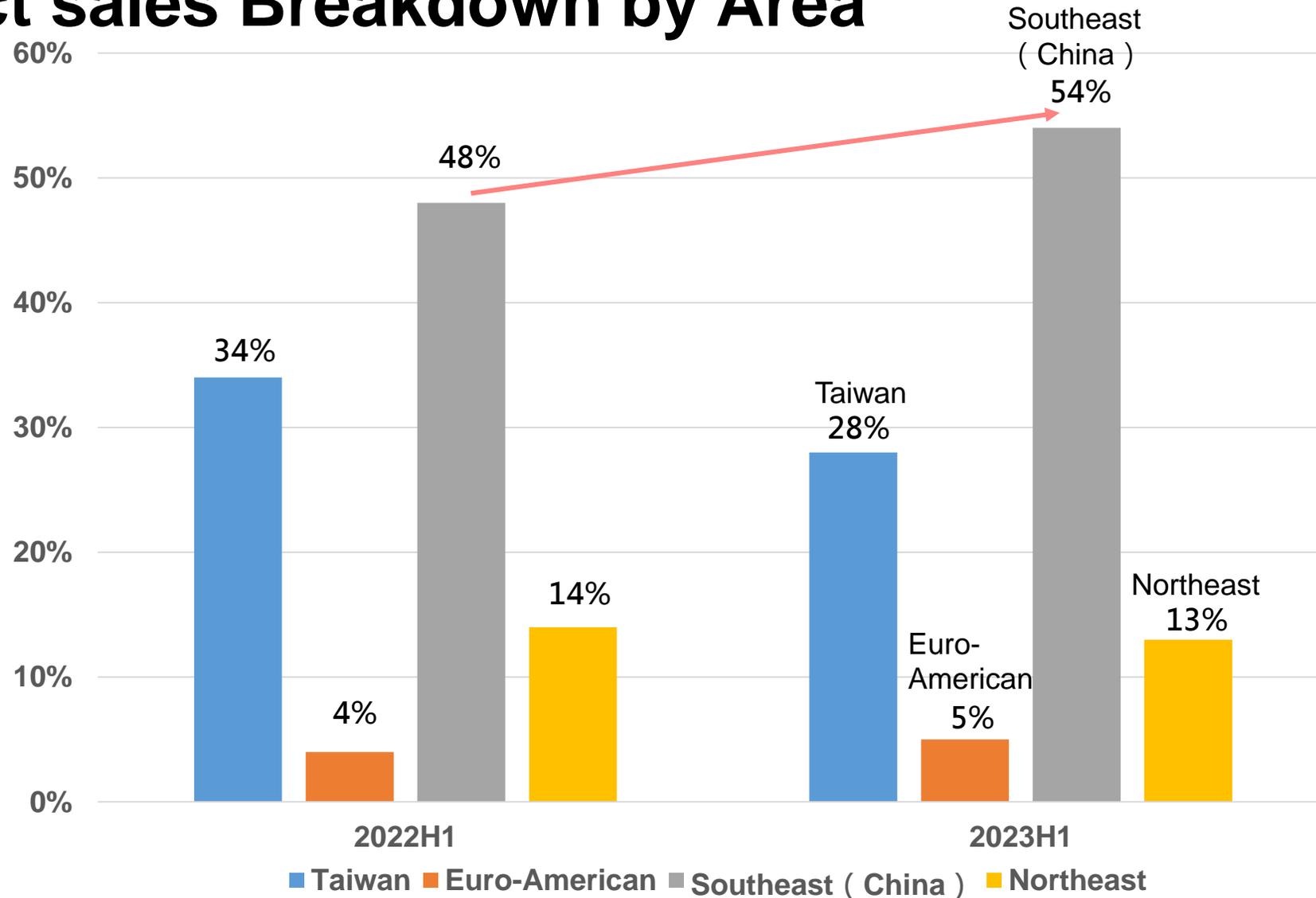
Feb. 2023
TASC Produced the first GaN wafer

Aug. 2023
PASC Grand Opening Ceremony

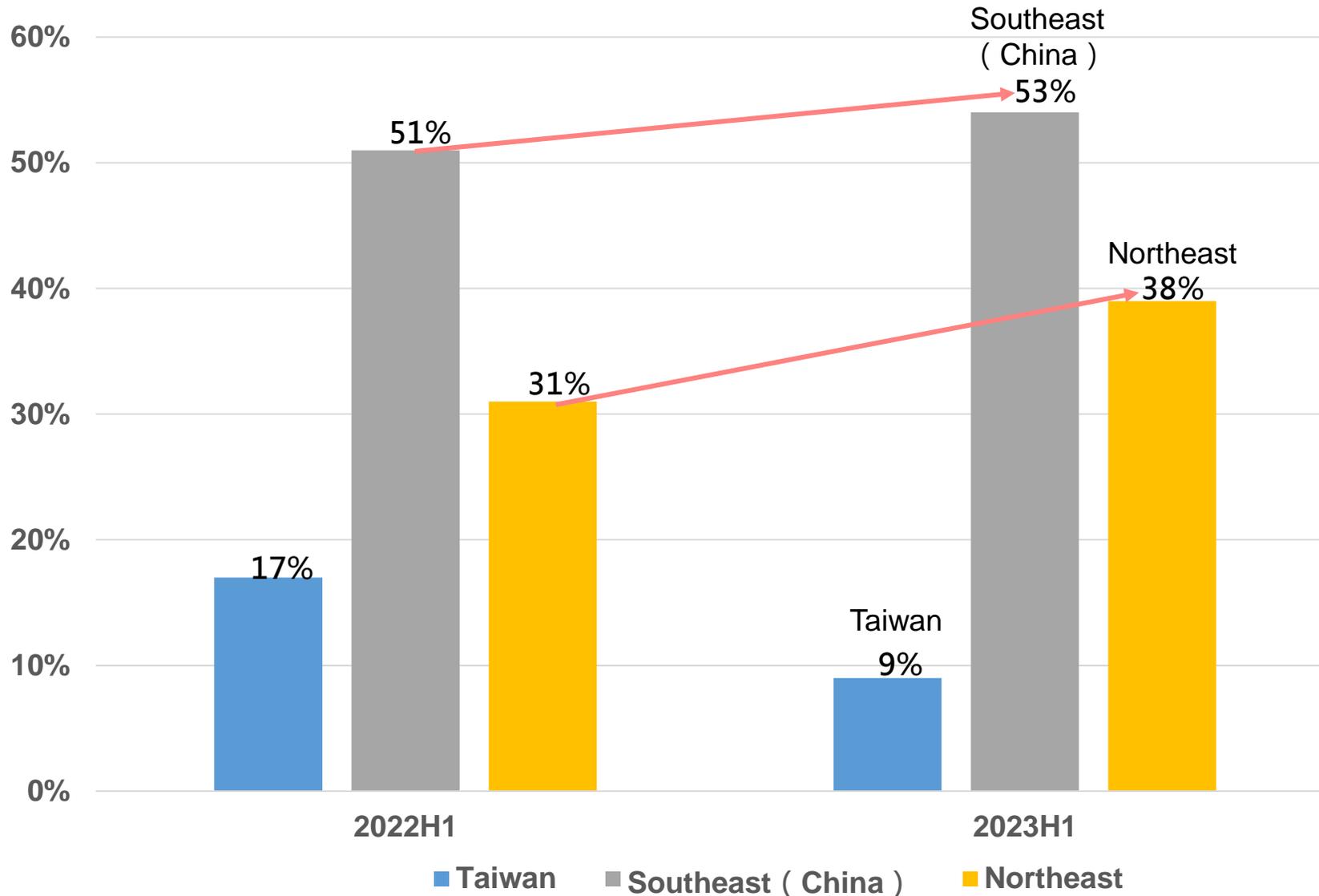
Products



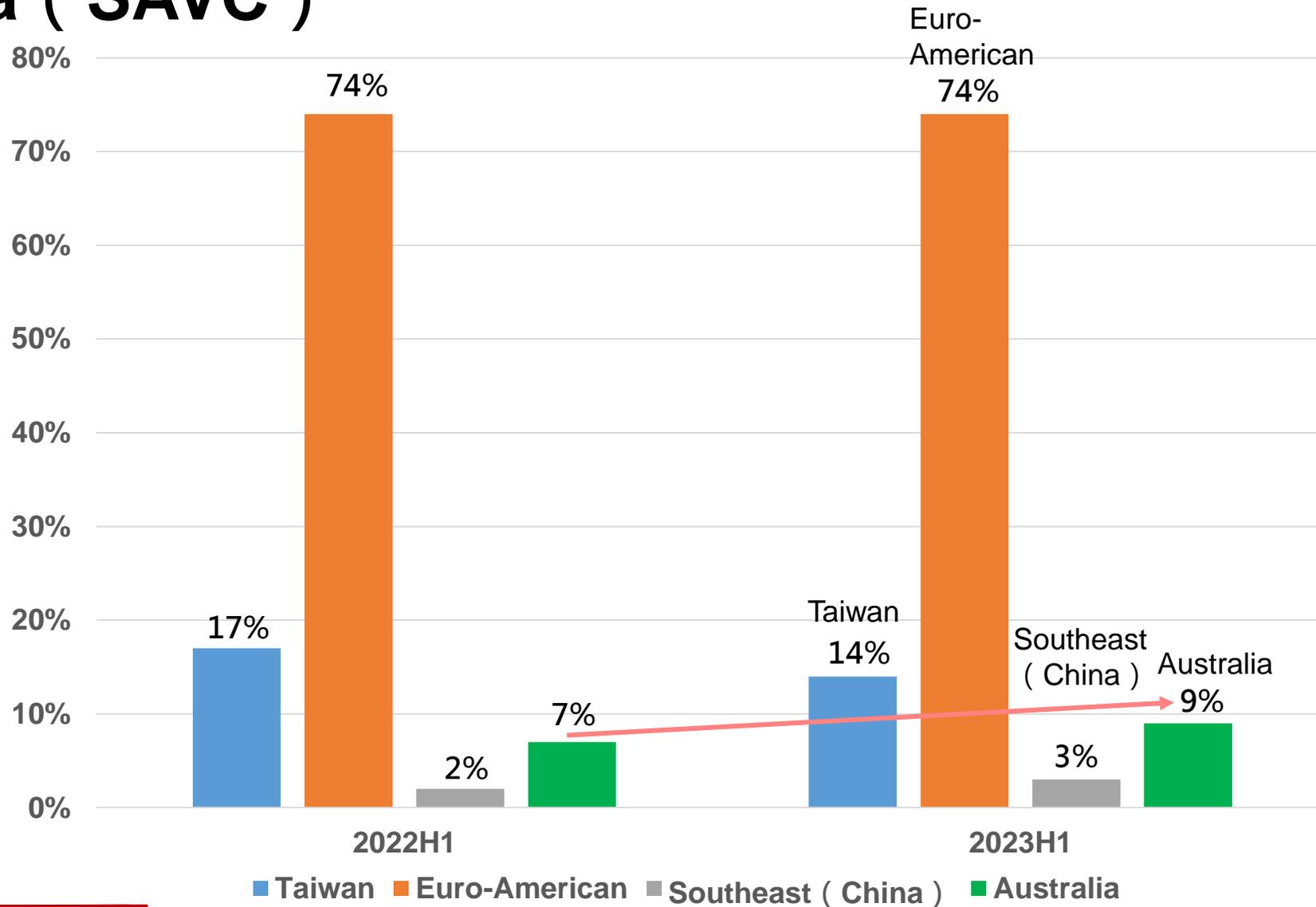
Emission Chips & Sensor Chips Product sales Breakdown by Area



Power Chips Product sales Breakdown by Area



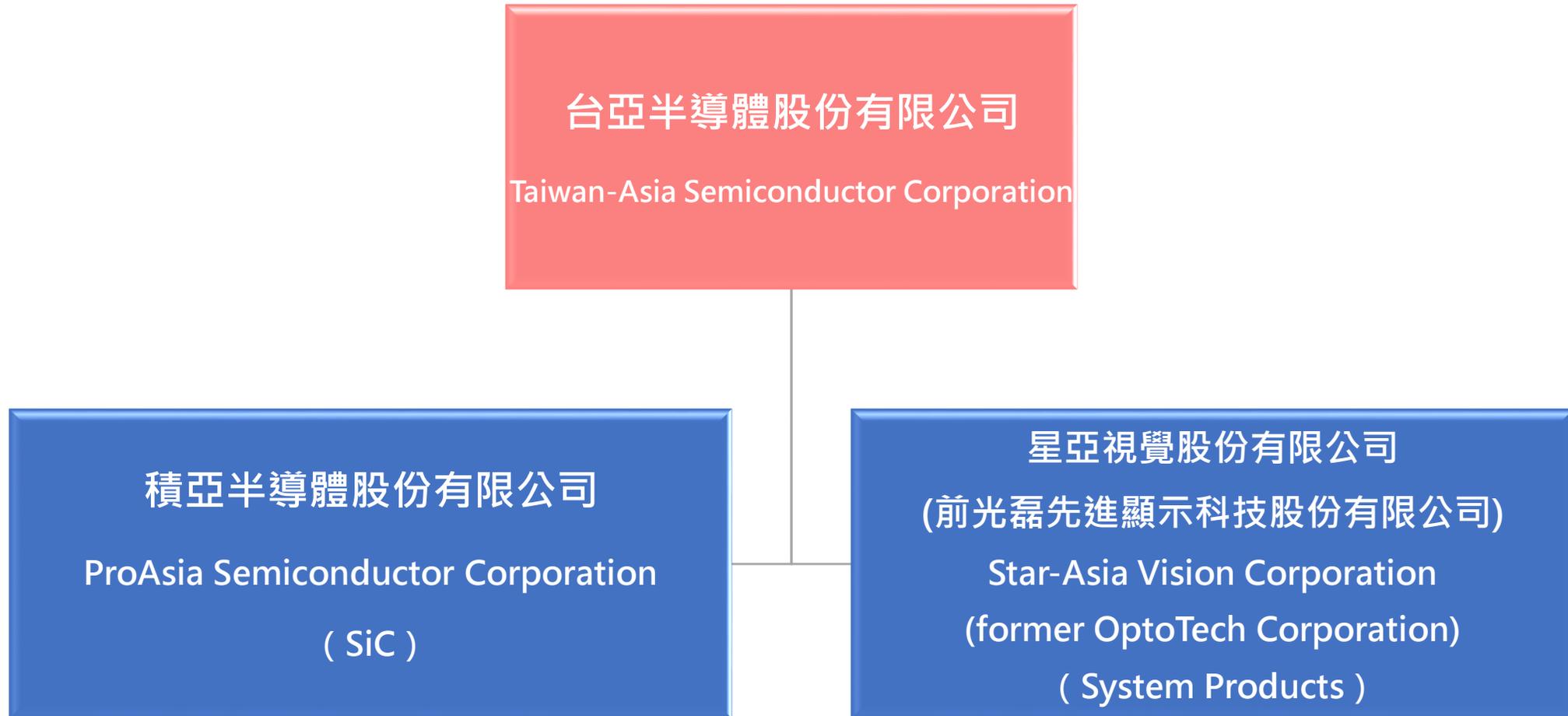
System Products Product sales Breakdown by Area (SAVC)



TASC Group Company Strategy and Future Plan

**Company Strategy, Applications & Market , Technology
Roadmap , Future Plan**

Company Structure

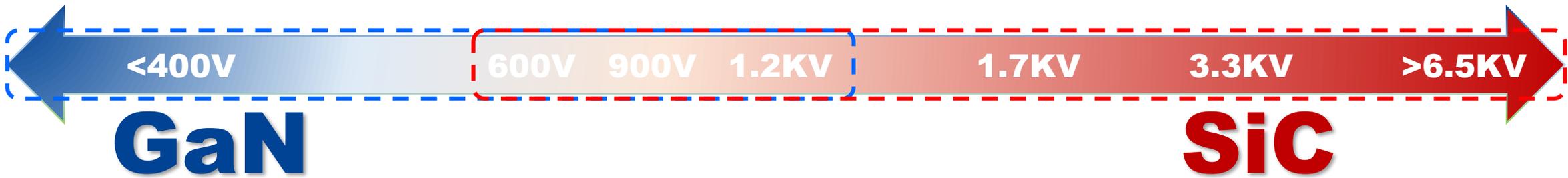


Company Strategy



WBG Power Semiconductor Applications

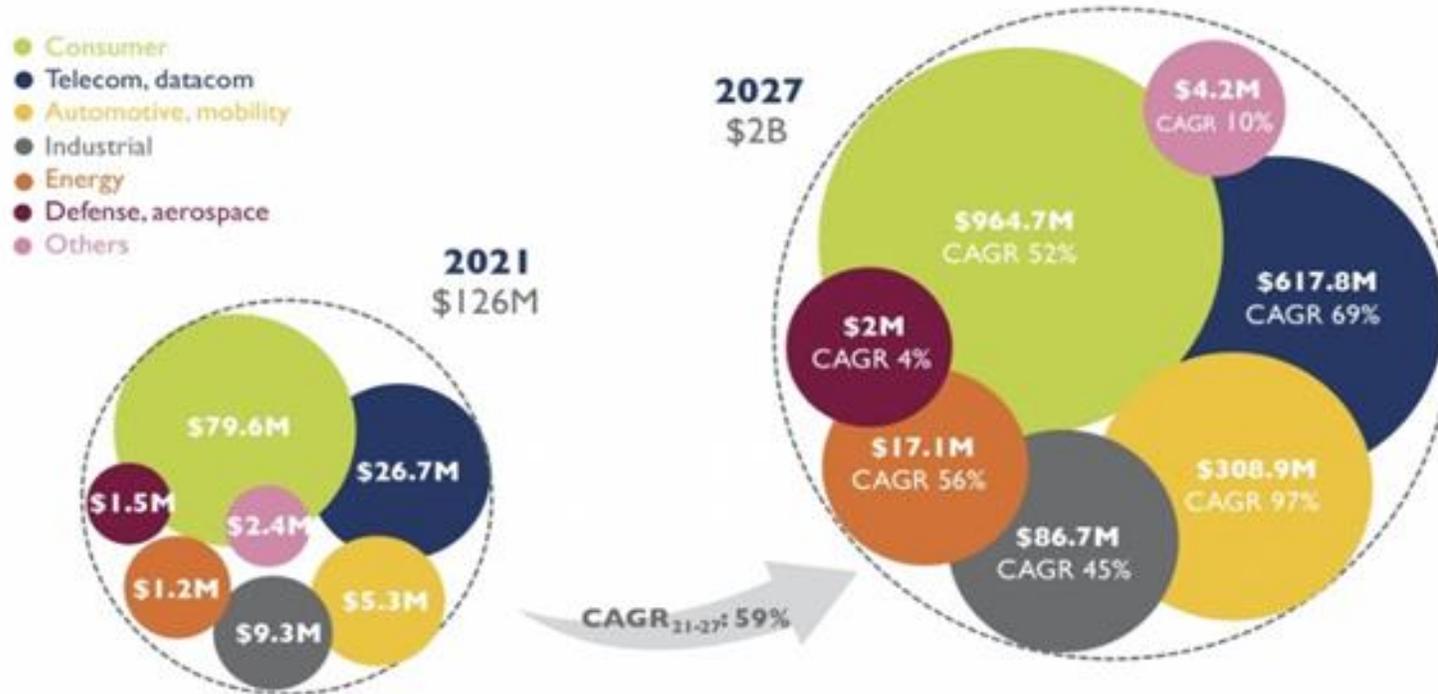
							
Fast Charger	Lighting Driver	EV OBC	Motor Control	EV Charger	Wind Energy	Smart Power Grid	High Speed Rail
							
Wireless Charger	AI Server	EV Inverter	Solar Inverter	PV System	Industry Drivers	Electric Aviation	Ships & Vessels
							
Laptop Adapter	Class D Audio	Home Appliances	Robotics	UPS	Energy Storage	Welding	Induction Heating



Power GaN Market

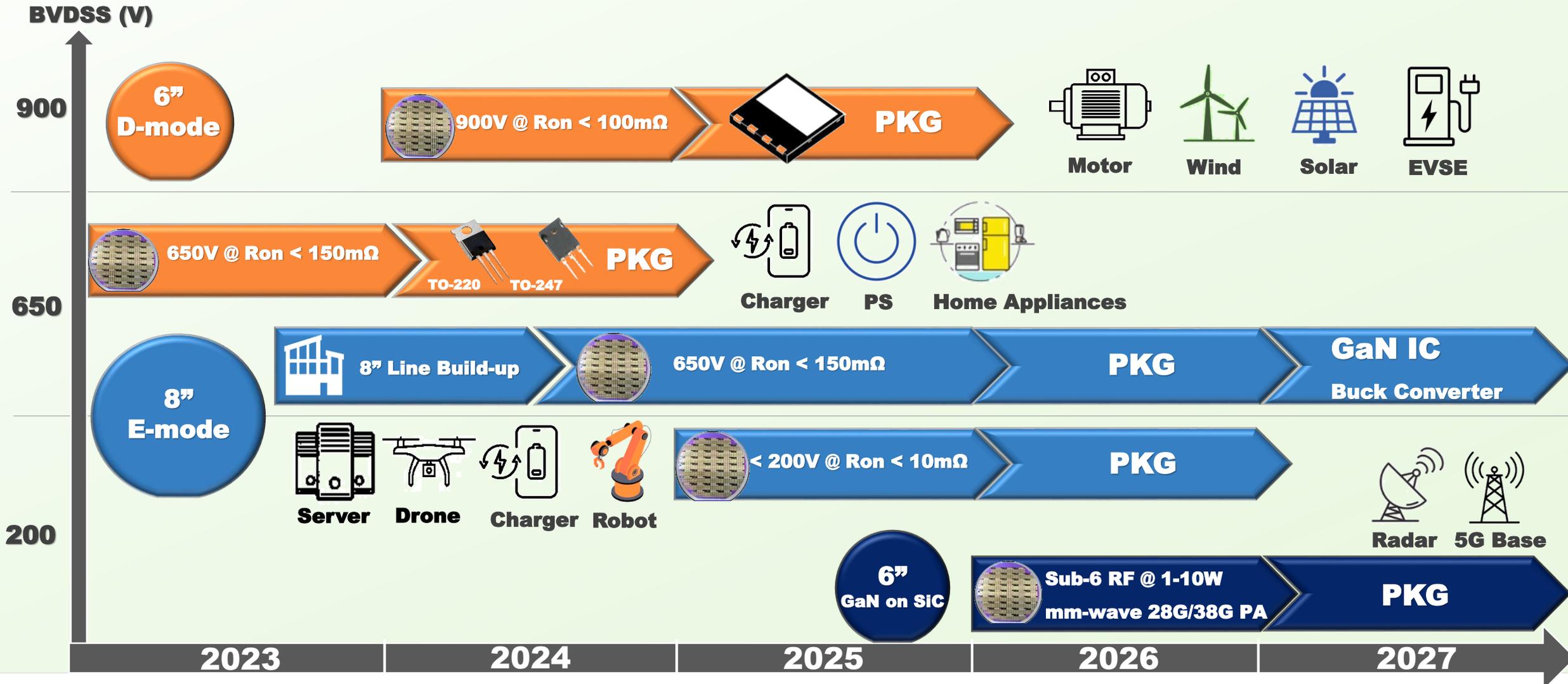
2021-2027 power GaN device market revenue

(Source: Power GaN 2022 report, Yole Développement, 2022)



- Yole predicts Power GaN market size will grow from \$126M in 2021 to \$2B in 2027, CAGR~59%
- Top 3 markets are (1) Fast Chargers for 3C, (2) **Telecom, Data Centers**, (3) OBC, DC-DC, DC-AC

Power GaN Technology Roadmap 2023-2027 TASC



ProAsia Semiconductor (PASC) Business Plan



CONTENT

- 1 Company Profile & Core Team
- 2 Market & Business Strategies
- 3 Applications & Tech. Roadmap
- 4 Core Competency
- 5 Future Plan
- 6 Ramp Plan vs. Possible Demand

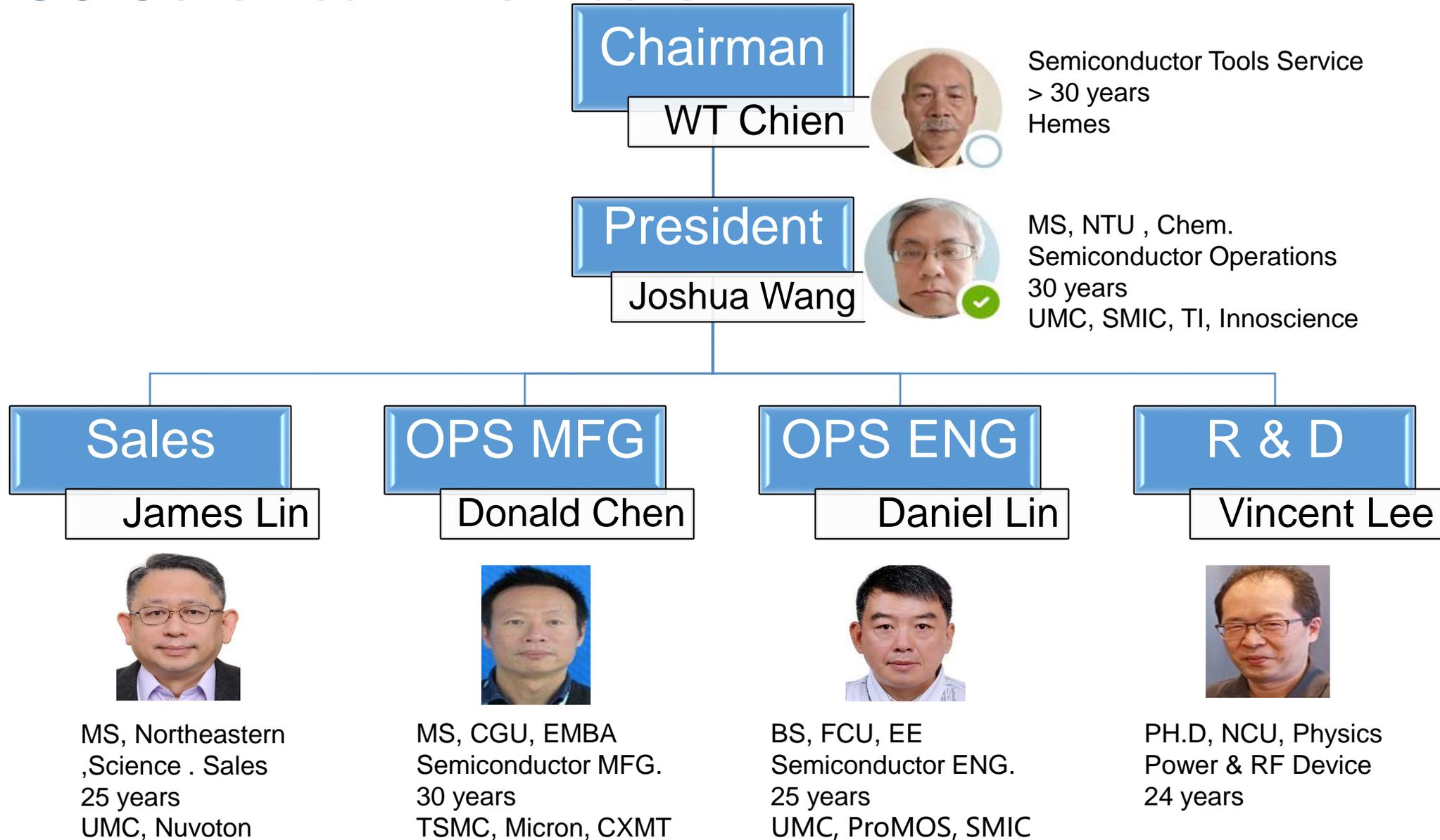
PASC Company Profile



- Founded in Mar. 2022
- Products: SiC Power Devices Foundry
- Capital Plan: NTD\$3.0 Bn
- Location:
 - FAB1(5Kwpm): Hsinchu Science & Industrial Park, TW
 - FAB2: Tunglo Science Park, under approval.
- Mission: SiC Chip Advanced Manufacturing Platform to provide a competitive SiC Wafer Foundry Service.
- Vision : To Be The Leading Edge of SiC Device Wafer Foundry Service Company.
- Employees: 70+ → 220+



PASC Core Team Members



Business Focus

- Build strong R&D capability to expedite MOSFET product delivery to the market.
- Ramp up manufacturing capacity with excellent infrastructure and supply chain in Taiwan.
- Focusing on Automotive/Energy Storage/Industrial/Data Center applications for end customers.
- Provide the highest quality of products with the state-of-the-art equipment and technology.

 Fast Charger	 Lighting Driver	 EV OBC	 Motor	 EV Charger	 Wind Energy	 Smart Power Grid	 High Speed Rail
 Wireless Chargers	 Data Server	 EV Inverter	 Solar Inverter	 PV System	 Industry Drivers	 UPS	 Ships & Vessels
 Laptop Adapter	 Class D Audio	 Home Appliances	 Robotics	 UPS	 Energy Storage	 Welding	 Induction Heating



Target Market & Customer Strategies

Key Customer

Partner Customer

Design house partners to deliver Diode & MOS products

Strategic Customer

Provide the competitive performance & cost incentive for IDM CTMs

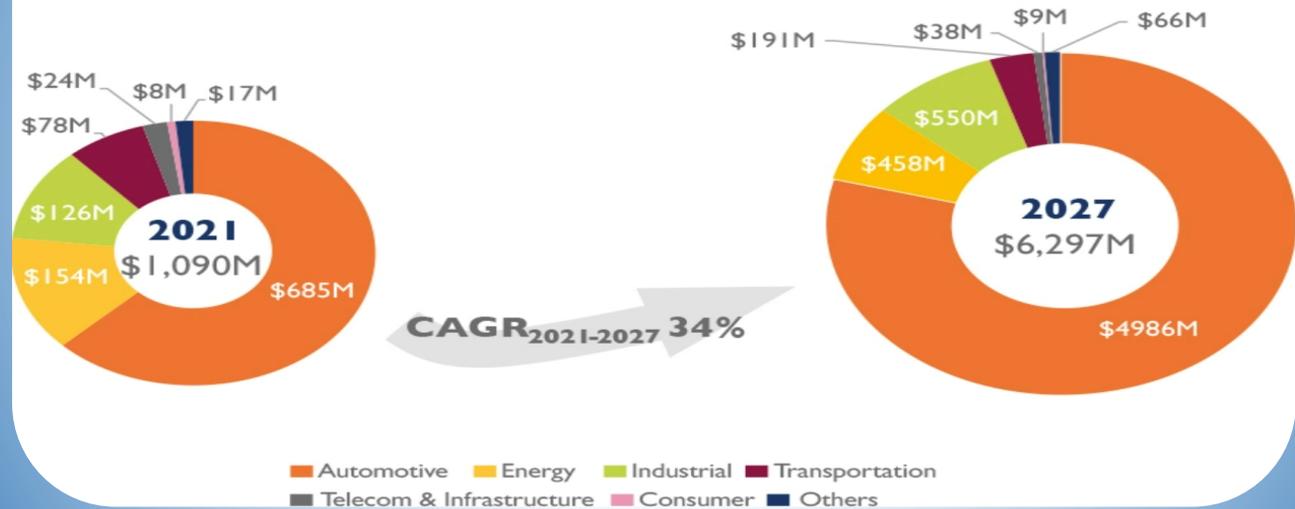
System Customer

Work with System end CTM for turnkey solutions for design win Biz

Key Applications

- Automotive 79%
- General Industrial 20%

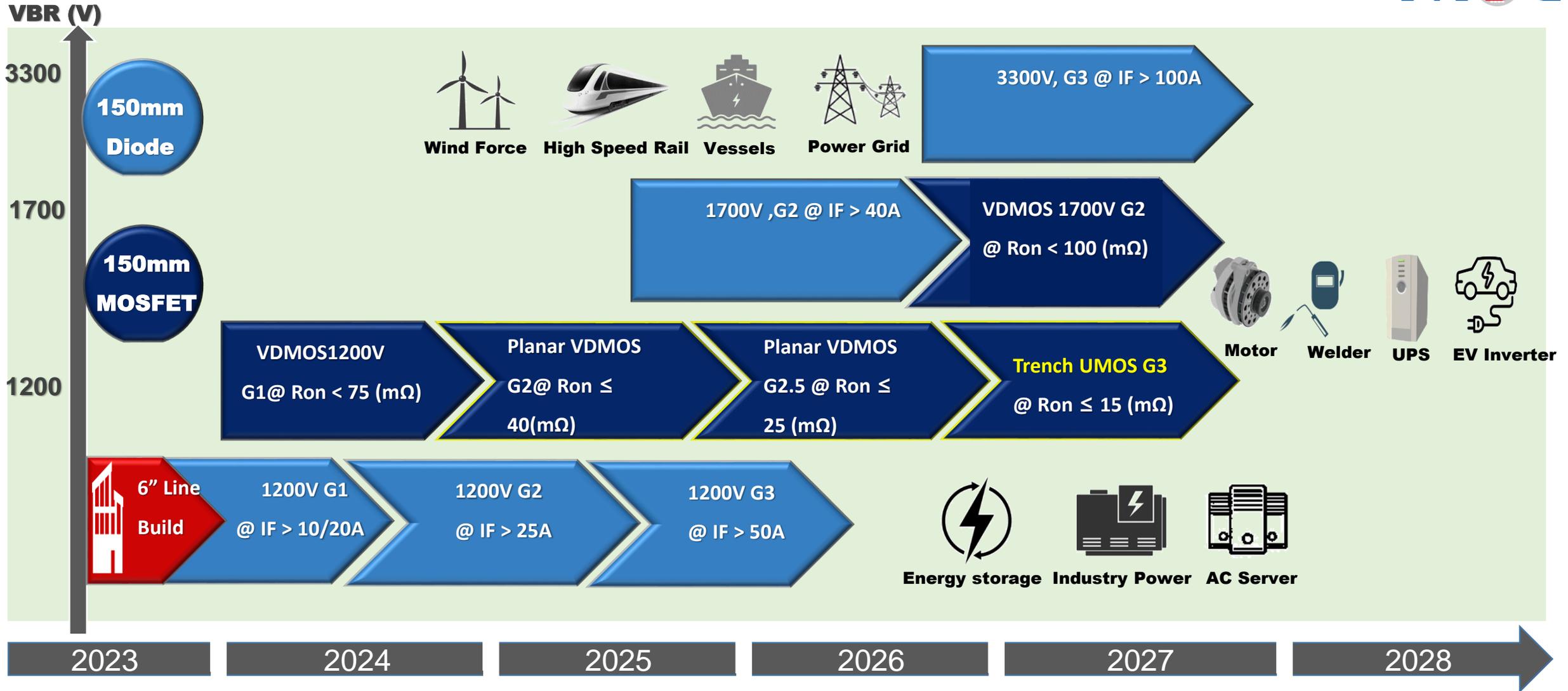
2021-2027 power SiC market devices split by segment
(Source: Power SiC 2022, March 2022)



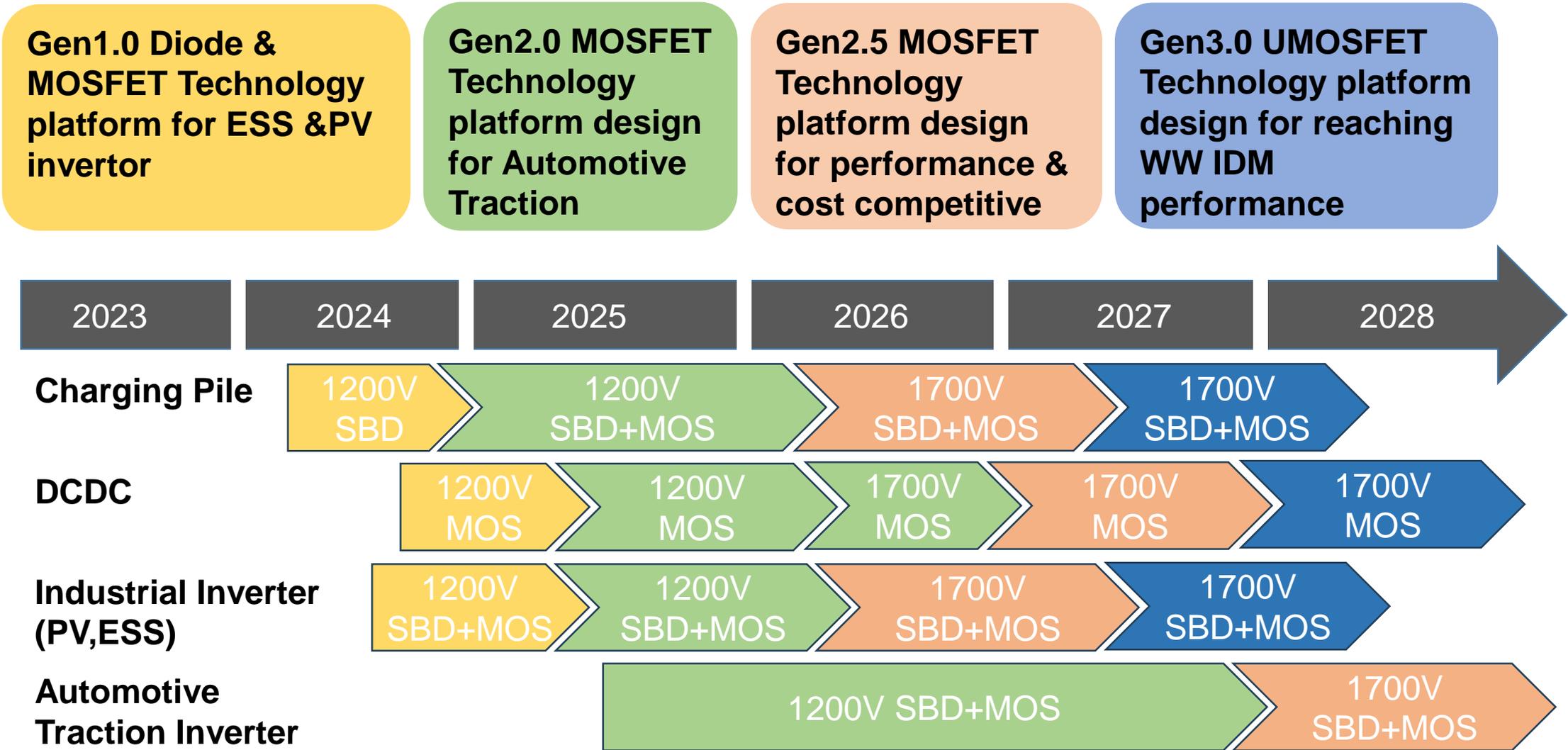
SiC Power Applications

Markets	Power	30W ~ 3KW	3KW ~ 50KW	50KW ~ 500KW	> 500KW
	Device Voltage	650V ~ 1200V	650V ~ 1200V	650V ~ 1700V	≥3300V
Applications	Automotive				
	Industrial(+Consumer)				
Device Requirements		2A ~ 30A 150mΩ ~ 40mΩ	4A ~ 40A 100mΩ ~ 20mΩ	10A ~ 100A 100mΩ ~ 15mΩ	10A ~ 100A 80mΩ ~ 10mΩ
	PASC Product Portfolio	Device	Voltage(Vds)	Application	Prod. required
	Diode	1200V	Automotive, Solar Inverter, ESS,OBC	5A~40A~100A	
		1700V	EV Charger, Motor Control	10A ~50A	
	MOSFET	1200V	EV Charger,PV Inverter, xEV Traction	5A~100A	80mΩ~15mΩ
		1700V	SMPS, EV Charger	10A ~40A	1Ω~30mΩ

PASC SiC Technology Development Roadmap

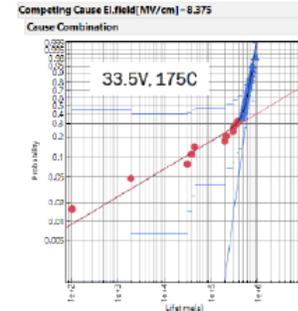


SiC Product Development Roadmap



- GOX stress test & Marathon stress test build
- Inline defect screen & ink-out capability

RE & YLD mgt.



Key Tools & Process

- non-C cluster GOX growth
- Less damage imp. & repairing
- Post SiC etch damage repairing
- SiC/metal interface ohmic contact formation
- SiC backside grinding & backside metal ization

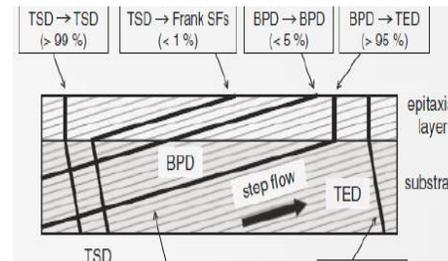


Performance, Cost & Reliability Quality control

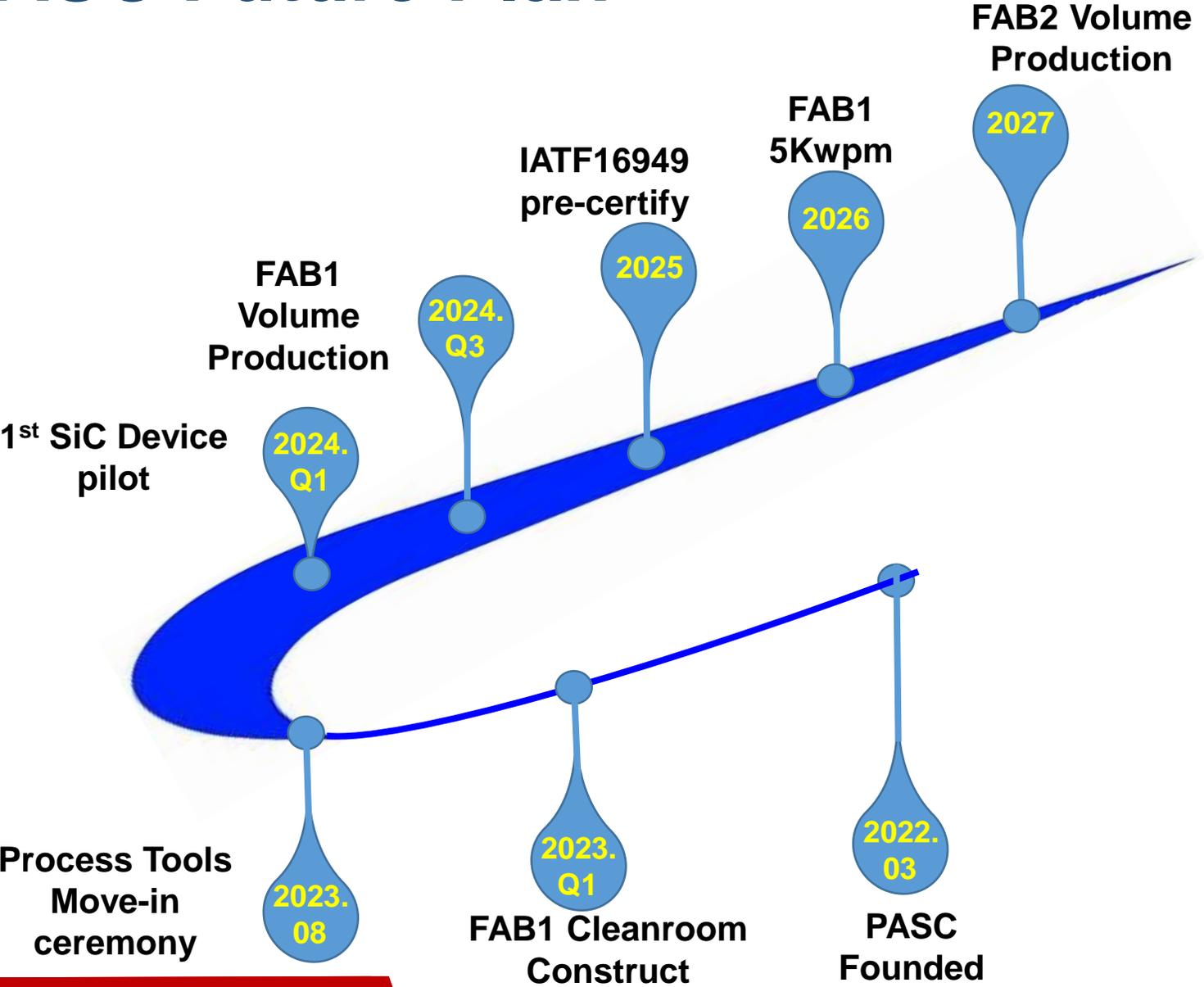
- Epi Quality & cost control
- Device performance & Reliability stability Control



- Cost Saving**
- CTM capacity flexibility & cycle time request.
 - Cost incentive



PASC Future Plan



PASC SiC Production Ramp Plan



2024 Q3 MOSFET(Planar) production for industrial(PV, ESS, Charging Pile). **2026 Q3** • MOSFET entering automotive market • FAB2 production

2025 Q3 **2025 Q4** **2027 Q2** **2028 Q4**

Diode volume production for home appliance & industrial

IATF16949 & AEC-Q101 certificate

FAB1 Full loading + FAB2, total capacity depends on Market

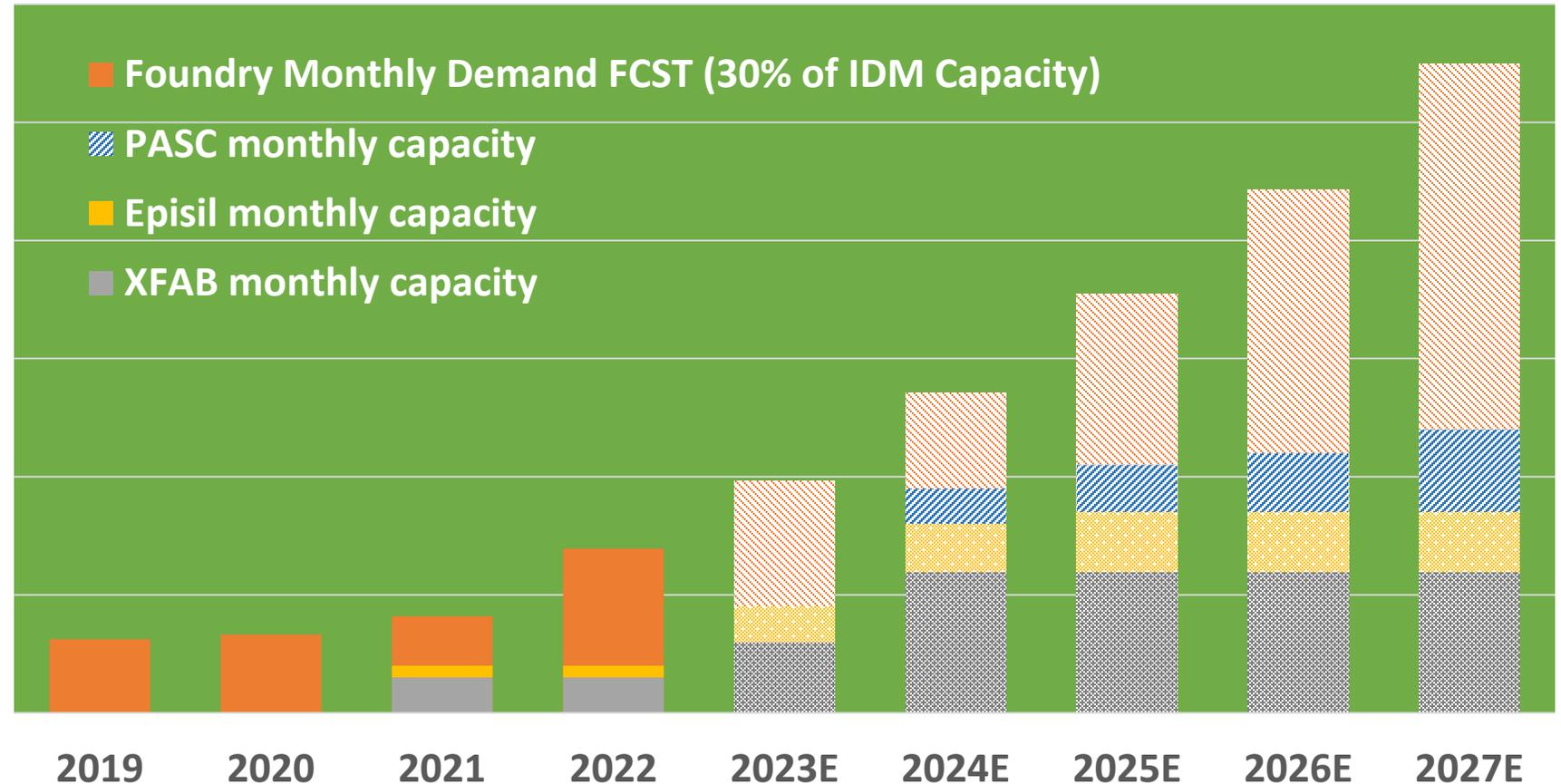
Breakeven

SiC Device Wafers Worldwide Demand Forecast

Potential Foundry Monthly Demand

Global Power SiC Sales \approx \$1.6B (2022)

SiC Power Solution Provider (Device, Discrete, and Module)	Market Share (Percentage)
	37.21%
	20.46%
	13.29%
	9.49%
	7.08%
	2.55%



- ❑ SiC Device Wafers Capacity < 50% of Demand.
- ❑ PASC Capacity Expansion depends on Market needs.

SiC New Application

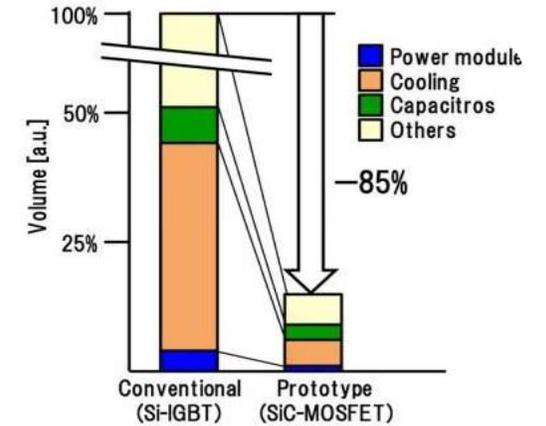
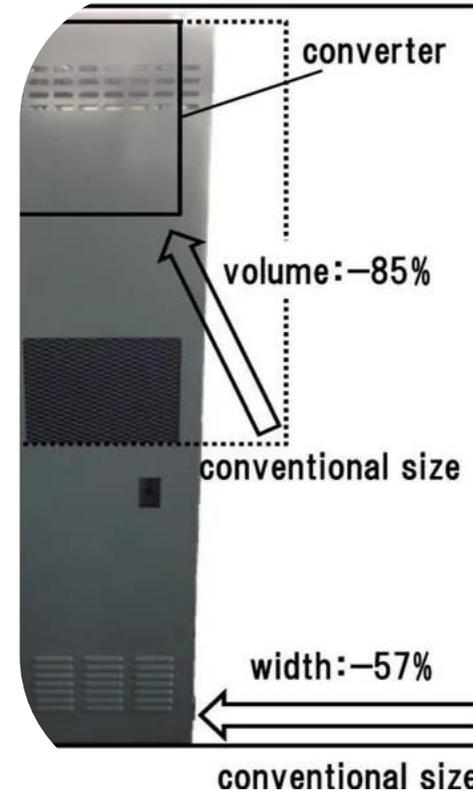
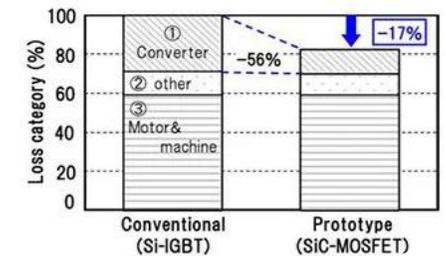
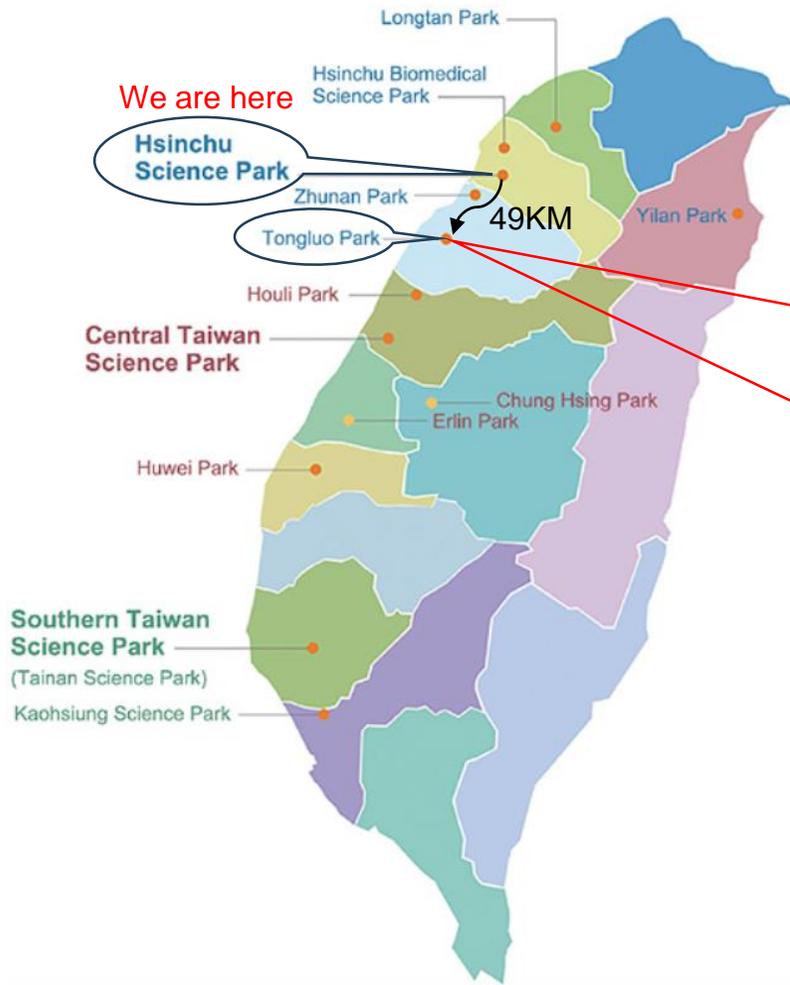


Fig. 8. Comparison of the each part volume. [Color figure can be viewed at wileyonlinelibrary.com]



Other than the existing applications from automotive, the New Applications preferred to conduct SiC device because of energy saving as well as the global warming.

Future Expansion : Tong-Luo Science Park TASC



Application submitted to HSP: Mar 2023
 HSP rental review meeting: Jun 2023
 HSP official approval of rental: Sep 2023 (F)
 Construction application start: Dec 2023 (F)
 Construction license granted: Mar 2024 (F)

Total area: 40,565.5 m²
 Ground-breaking: June 2024
 Construction done: Nov 2025
 Clean room ready: Dec 2026

SUMMARY

- **Both GaN (8") and SiC (6") mini-line will be ready for pilot run by end of 2023. Both fab capacity is planned for 5K wafer out per month, break-even in 2025.**
- **First company in Taiwan has Si, GaN and SiC power device manufacturing capability in one location. Next phase of capacity expansion is planned in Tong-Luo Science Park.**
- **IDM-like power semiconductor supply chain is planned for future expansion, including Si, GaN and SiC Epi, device process, packaging, testing, BG/BM and module design companies.**

用“芯”守護台灣，用減碳愛護地球

Thank You!
Q & A