



M A L A Y S I A N P A C I F I C I N D U S T R I E S B E R H A D

I N V E S T O R P R E S E N T A T I O N

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INVESTOR RELATIONS CONTACT



Rohit Kumar



+605 5262333 extn 8497



rohitkumar@carsem.com

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TABLE OF CONTENT

1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



Business overview

MPI – A MEMBER OF THE HONG LEONG GROUP

Hong Leong Group and MPI

- The Hong Leong Group was established over 50 years ago and is one of the largest conglomerates in Asia
- Carsem and Dynacraft are operating companies within Malaysian Pacific Industries, which is a part of the Manufacturing & Distribution Services segment of Hong Leong Group
- Carsem was acquired by Hong Leong over 30 years ago
- Carsem has 49 years experience in semiconductor assembly and testing
- Today, Carsem is one the most trusted and recognized names in the Outsourced Semiconductor Assembly & Test (OSAT) Industry

Hong Leong Group Holdings

- Banking & Financial Services segment (2) is the largest segment with over 300 banks in Asia including insurance services
- Property Development & Investment segment (3) builds and manages commercial and residential real estate around the world
- Hospitality & Leisure segment (4) is comprised of hotel and casino operators in Macau and Las Vegas
- Hong Leong continues to grow by acquisition and owns more than 50% stake in each of their group companies

The Hong Leong Group One of the Largest Conglomerates in Malaysia





Financial performance snapshot

STRONG FUNDAMENTALS CREATE BUSINESS RESILIENCE IN TOUGH TIMES

Revenue (RM million)

513

Q1 FY24

PATAMI (%)

>100%

vs. Q4 FY23

Net cash (RM million)

872

as of Q1 FY24

CAPEX (RM million)

54

Q1 FY24

Note: FY24 = July 2023 – June 2024



Business outlook

Semiconductor industry growth has slowed down



- Economic headwinds (inflation and recessionary risks) persist leading to sluggish end consumer demand environment;
- Semiconductor revenue expected to drop by 11% in 2023 (vs. 2022), and rebound by 17% in 2024 (Gartner);
- Elevated inventory levels and dipping chip prices are fueling the slowdown in semiconductor industry

- Trends, such as the switch to battery electric vehicles, autonomous driving, vehicle connectivity;
 - Adoption of 5G, digitalisation, artificial intelligence, and sensing devices
- Robust growth in computing (servers), and in industrial & renewable energy segments;
 - Intelligent applications such as smart watches, etc.



Long term growth drivers

Challenges to MPI's business



- Higher costs – labour, energy, water, transportation, equipment, and raw materials from suppliers;
- Elevated inventory levels and dipping chip prices;
- End market demand drop and deferment; and
- Industrywide talent scarcity

- Prudent cost management measures such as energy consumption optimisation, freight cost reduction, etc.;
- Close collaboration with customers to ensure a healthy overall sales pipeline – short & long term;
- Capacity expansions at China and Malaysia - a reliable supply centre based out of Malaysia and China;
- Strong cash position to pursue technology/ company acquisitions to move further into advanced packaging space;
- upskilling and specialized hiring plans in place



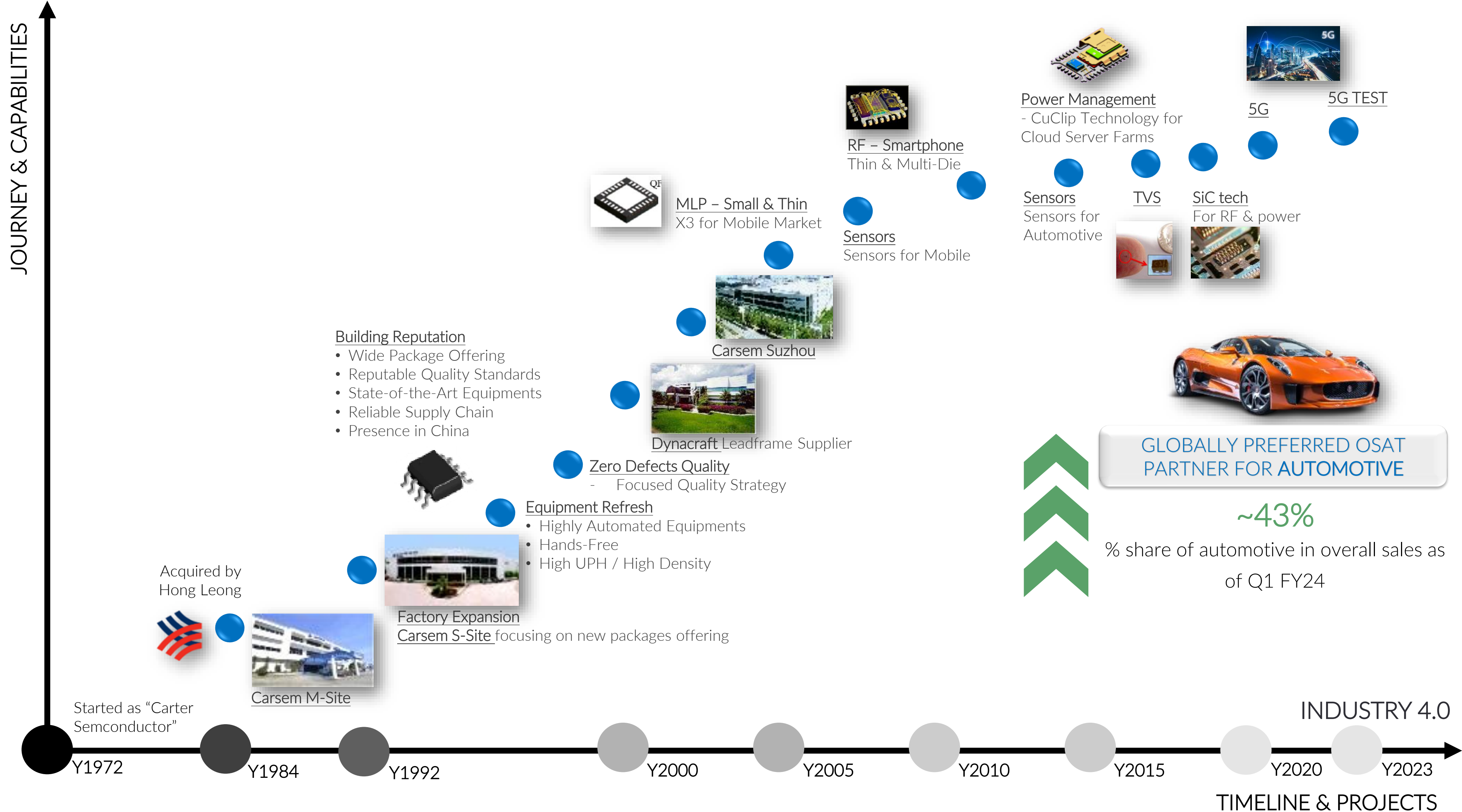
MPI's responsive strategy

TABLE OF CONTENT

1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



Our journey



GLOBALLY PREFERRED OSAT PARTNER FOR AUTOMOTIVE

~43%
% share of automotive in overall sales as of Q1 FY24

Carsem
One of the most trusted OSAT partners globally

100% Malaysian

Healthy Balance Sheet (Equity to debt 100:0)

Semiconductor Experience – 50 years



Board of Directors

YBHG DATUK KWEK LENG SAN

CHAIRMAN; Non-Executive/ Non-Independent

- Appointed to BoD of MPI in Jul 1990, and as GMD of MPI from Sept 1990-Aug 1993; Member of the nominating committee
- Chairman of Hong Leong Industries Bhd., Hume Industries Bhd., and Southern Steel Bhd.; Director of Hong Leong Company (Malaysia) Bhd

YBHG DATO' MOHAMAD KAMARUDIN BIN HASSAN

Non-Executive Director/ Independent

- Mar 2015: Appointed to board of MPI, and is a member of the Board Audit & Risk Management Committee of MPI
- Is a Director of Duopharma Biotech Bhd and Muhibbah Engineering (M) Bhd, and ManagePay Systems Bhd

MANUEL ZARAUZA

GROUP MANAGING DIRECTOR/ Non-Independent

- Over 25 years of experience across various manufacturing sectors
- April 2015-Aug 2016: Joined HLMG Management as its Managing Director
- Aug 2016-Present: Group Managing Director of MPI

MS JENIFER THIEN BIT LEONG

Non-Executive Director/ Independent

- Nov 2023: Appointed to board of MPI, and is a member of Nominating Committee of MPI
- Is a Director of UEM Edgenta Berhad & AEON Co. (M) Berhad
- Is the founder & principal of Grit & Pace, through which she advises corporations on ESG & Sustainability strategies

IR. DENNIS ONG LEE KHIAN

Non-Executive Director/ Independent

- Nov 2014: Appointed to board of MPI; is the Chairman of the Nominating Committee and a member of the Board Audit & Risk Management Committee of MPI
- Held directorships in Shell Malaysia Trading Sdn Bhd, Champ Distributors Sdn Bhd, Lubetech Sdn Bhd, Assar Chemical Dua Sdn Bhd and was the Chairman of the Board for UMW Pennzoil Distributors Sdn Bhd.

MS FOO AI LI

Non-Executive Director/ Independent

- Appointed as an Independent Non-Executive Director of the Company on 1 September 2021.
- She is presently attached to CDC Consulting Sdn Bhd providing advisory work.
- Her last position in the energy industry was as the Chief Financial Officer of Hengyuan Refining Company Berhad (formerly Shell Refining Company (FOM) Berhad) from 2016 to 2019.



Management team

MANY YEARS OF CONSOLIDATED EXPERIENCE IN THE INDUSTRY



MANUEL ZARAUZA, GROUP MANAGING DIRECTOR, MPI

Over 25 years of manufacturing sector experience; Previously with Siemens, Osram Opto Semiconductors, and Seoul Semiconductor



PO LAU
CFO, MPI

Over 20 years of financial management experience



INDERJEET SINGH
GM, CARSEM S-SITE, MY

Started his career at Carsem & went on to hold various management positions



MURALITHARAN
GM, CARSEM M-SITE, MY

Previously held senior leadership positions at NXP semiconductors



RAYMOND SHI
GM, CARSEM SZ-SITE, CHINA

More than 20 years of experience with Carsem SZ handling operations



CK LEE
HEAD, CARSEM CHINA

Started his career at Carsem & went on to hold various management positions

TABLE OF CONTENT

1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



Supply chain & business model

CARSEM'S PACKAGING & TESTING SERVICES FORM A VITAL PART OF SEMICONDUCTOR VALUE CHAIN



Growth opportunities exist among margin pressures - *Advanced packaging (SiP, 3D), Industry 4.0 and downstream niches present upsides*

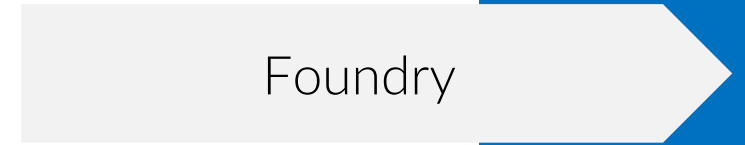


Carsem provides turnkey packaging & test services



EMS expanding into engineering services and IC backend

Foundries expected to further offer broader set of services, incl. packaging & testing



IDMs applying selective 'make-and-buy' strategy



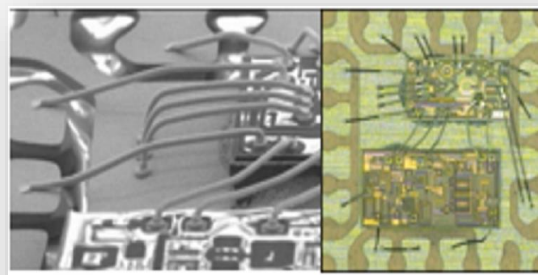
Engineering service providers covering wide range of value chain steps without own packaging & testing facilities



Wide portfolio

COMPREHENSIVE TURNKEY PACKAGING & TEST SERVICES

ACROSS KEY APPLICATIONS

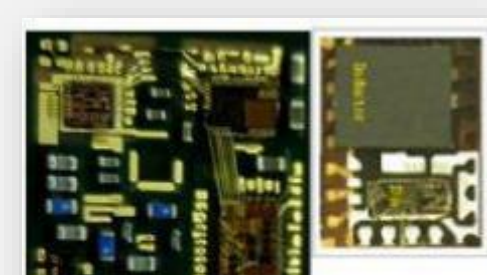


X3.2

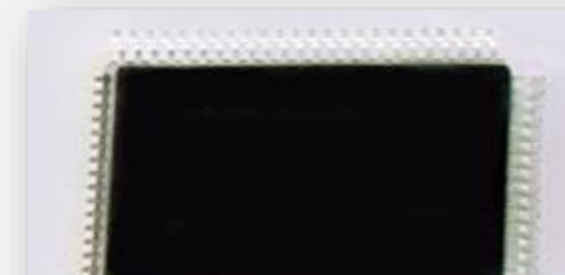
MLP



Small Outline IC




System in Package (SiP)



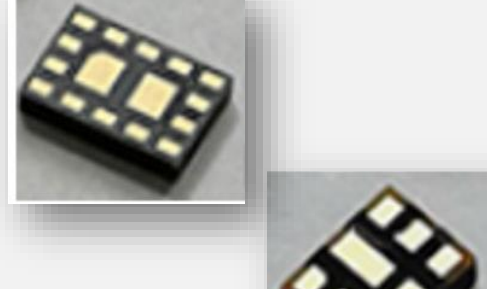
Quad Flat Package (QFP)



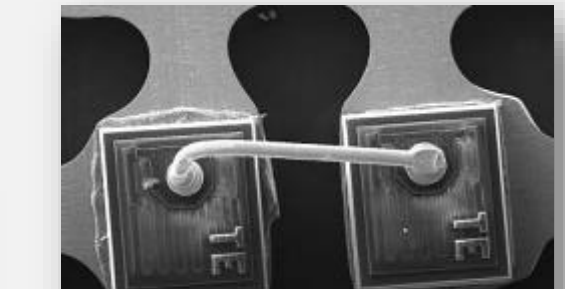
MEMS & Sensors



Copper Clip



Flip Chip



Transient Voltage Suppressor (TVS)



Power Management (SiC, GaN, GaN on SiC)



MICRO



Land Grid Array (LGA)



IC - PDIP, SOP packages



Test



Automotive

Industrial



Consumer & Communications

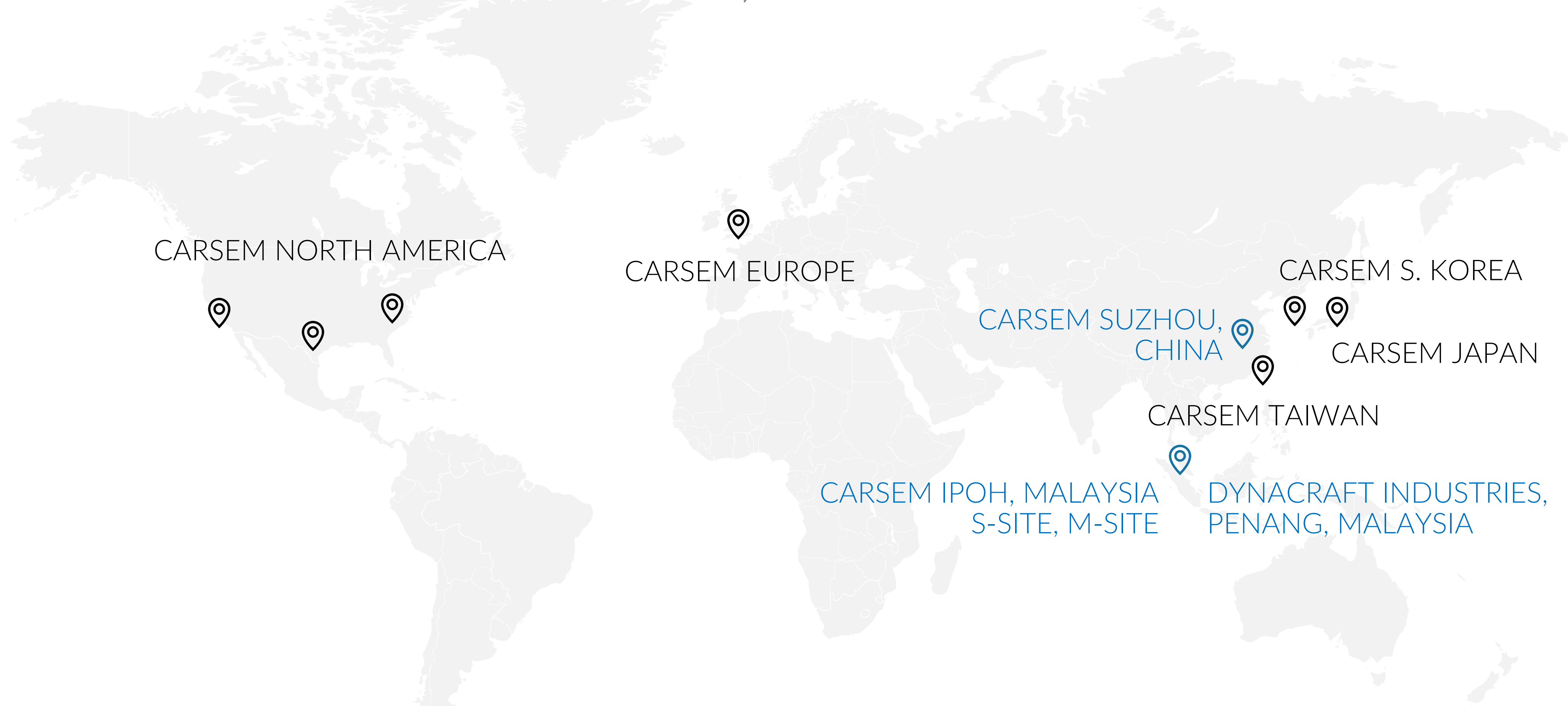
PC/ Notebook





Geographic footprint

BROAD GEOGRAPHIC PRESENCE, SERVING A GLOBAL CUSTOMER BASE



LEGEND

Manufacturing plants & Sales offices

Sales offices



Production facilities

CARSEM MANUFACTURING SITES & BUSINESS UNITS



Carsem (M-Site, Ipoh)

- Floor Space: 436K sq. ft. (40,500 sq. m.)
- Workforce: 2,215 employees
- GM: Muralitharan



Automotive & Consumer

SOIC

MICRO

MSU



Carsem (S-Site, Ipoh)

- Floor Space: 640K sq. ft. (60,000 sq. m.)
- Workforce: 2,882 employees
- GM: Inderjeet Singh



Automotive & Industrial

PMG

MLP

TEST



Carsem Suzhou, China

- Floor Space: 600K sq. ft. (56,000 sq. m.)
- Workforce: 1,960 employees
- GM: Raymond Shi



Automotive & Consumer

RF

MLP

LGA

FC



Production facilities

OUR FACTORY EXPANSION PLANS CONTINUE AT M-SITE



Capacity Expansion Plan

Existing Factory = 143K sqft

New 4 storey Factory = 76K sqft

Level 4 = 15,800sqft

Future expansion

Level 3 = 20,000sqft

Future expansion

Level 2 = 20,000sqft

10K clean room production floor

Completed

Level 1 = 20,000sqft

100K clean room production floor

Completed

Note: 1. Level 1 & 2 received CCC approval (Certificate of Completion and Compliance)
2. Level 3 & 4 are pending facilitisation



Production facilities

DESPITE NEAR TERM CHALLENGES, CONSTRUCTION OF NEW FACTORY AT SUXIANG IN CHINA CONTINUES



2023-Apr
Foundation work

2023-May
Foundation work

2023-Jun
Scaffolding work

2023-Jul
L2 formwork

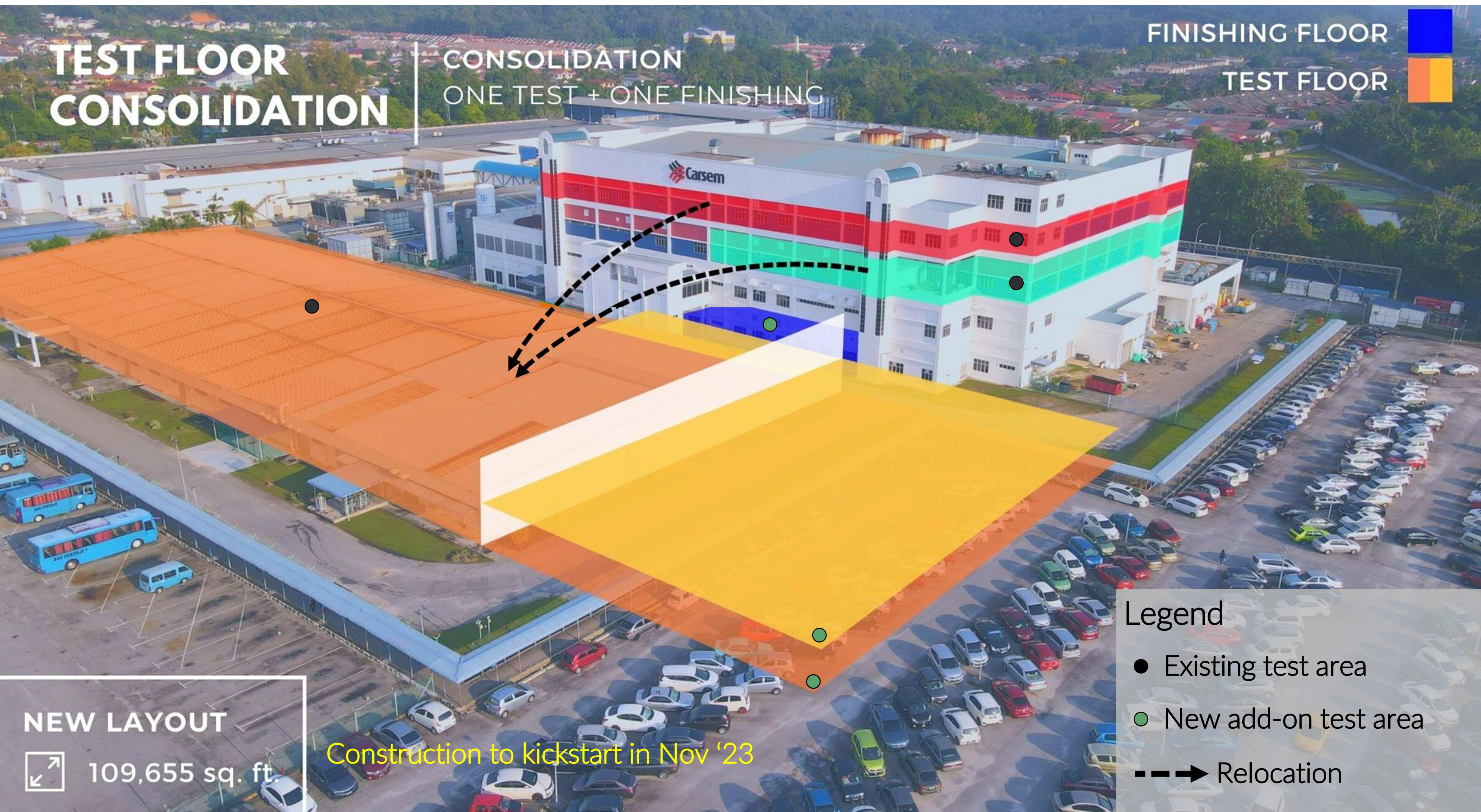
2023-Aug
L2 slab casting

Production expected to commence by 2025



Production facilities

INVESTING AT S-SITE TO STRENGTHEN CAPABILITIES FOR THE GROWING AUTOMOTIVE & INDUSTRIAL SEGMENTS



- 1 Equipment standardization
Replacing current legacy handlers with newer high efficiency test handlers
- 2 One floor consolidation
Expanding test floor to support the additional machines
- 3 Test automation
Overhead tunnel

Benefits

- ✓ Achieve world class OEE
- ✓ Eliminate variance of test machines
- ✓ Consolidate floor space
- ✓ Automate test operations (Industry4.0, AI)
- ✓ Develop 5G capabilities

Legend

- Existing test area
- New add-on test area
- > Relocation

TABLE OF CONTENT

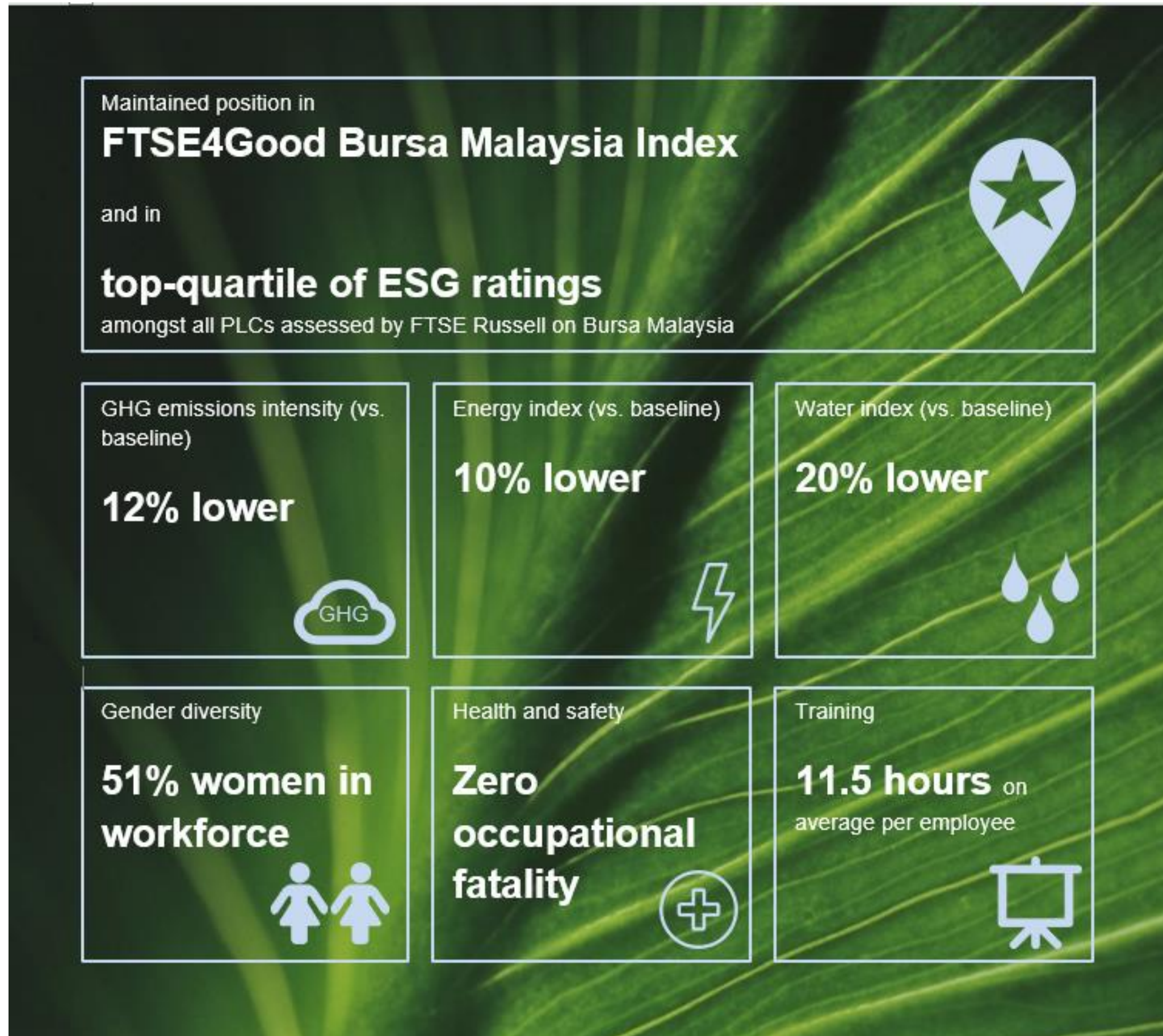
1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
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Sustainability performance

FOR THE SECOND SUCCESSIVE YEAR, MPI IS IN TOP QUARTILE FTSE4GOOD FOR FY23 AS WELL

FY23 performance snapshot





Sustainability at MPI

OUR APPROACH IS RESPONSIBLE & RESPONSIVE, DRIVEN BY 3 THEMES

Better Economy

- We create economic value for our shareholders
- We work with like-minded partners
- We prioritise safety & productivity, and offer innovative solutions to our customers

Shareholders Customers Suppliers

Better Environment

- We respect the local environment
- We strive to manage our energy consumption and GHG emissions
- We manage our waste and use natural resources with care

Energy & emissions Water Waste

Better Society

- We prioritise the safety & wellbeing of our people
- We conduct business ethically and compete fairly
- We engage with & support our communities

Employees Business ethics Community







Sustainability themes at MPI



UN Sustainable Development Goals

6 PRIORITY SDGs MOST ALIGNED WITH OUR BUSINESS



<p>3 GOOD HEALTH AND WELL-BEING</p> 	<p>Safeguarding employee health & safety is a top priority for MPI</p>	<p>MPI makes a significant contribution towards employment and economic growth</p>	<p>8 DECENT WORK AND ECONOMIC GROWTH</p> 
<p>5 GENDER EQUALITY</p> 	<p>As a global employer, MPI strives to ensure workforce diversity and address inequality</p>	<p>MPI actively focuses on innovation, technology and related infrastructure development</p>	<p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p> 
<p>6 CLEAN WATER AND SANITATION</p> 	<p>MPI's operations strive for water conservation and wastewater management</p>	<p>MPI has a role to play in emissions control, energy efficiency improvement and waste management</p>	<p>13 CLIMATE ACTION</p> 



Environment

IMPROVING PREPAREDNESS AND RECEIVING RECOGNITION

Emergency response knowledge training



Leakage chemicals handling



Eye washing





Environment

Joint venture with NGO and residents of Taman Meru in the Cuci Sungai Meru programme.

Carsem has committed to making part of the Meru River to be monitored using the kit provided.



Green Day celebration every first Friday of the month



Health & safety

ORGANIZED FIRE DRILLS TO IMPROVE EMPLOYEE AWARENESS AND CAPACITY FOR EMERGENCY RESPONSE

EMPLOYEE AWARENESS

EMERGENCY PREPAREDNESS & RESPONSE





Health & safety

EMPLOYEE AWARENESS

EMERGENCY PREPAREDNESS & RESPONSE

Successfully organized ESH Week 2023 with overwhelming involvement from internal and external parties such as DOE, DOSH, Bomba, MOH, SOCCSO and PDRM





Training & education

TRAINING AND UPSKILLING IS AMONG OUR TOPMOST STRATEGIC PRIORITIES

Online & offline training – IATF16949 internal auditor training, VDA 6.3 training, Kaizen competition, 8D methodology, Quality awareness training, Work injury prevention training, Legal training



IATF16949 Internal Auditor Training



VDA 6.3 Training



8D Training



Kaizen Competition



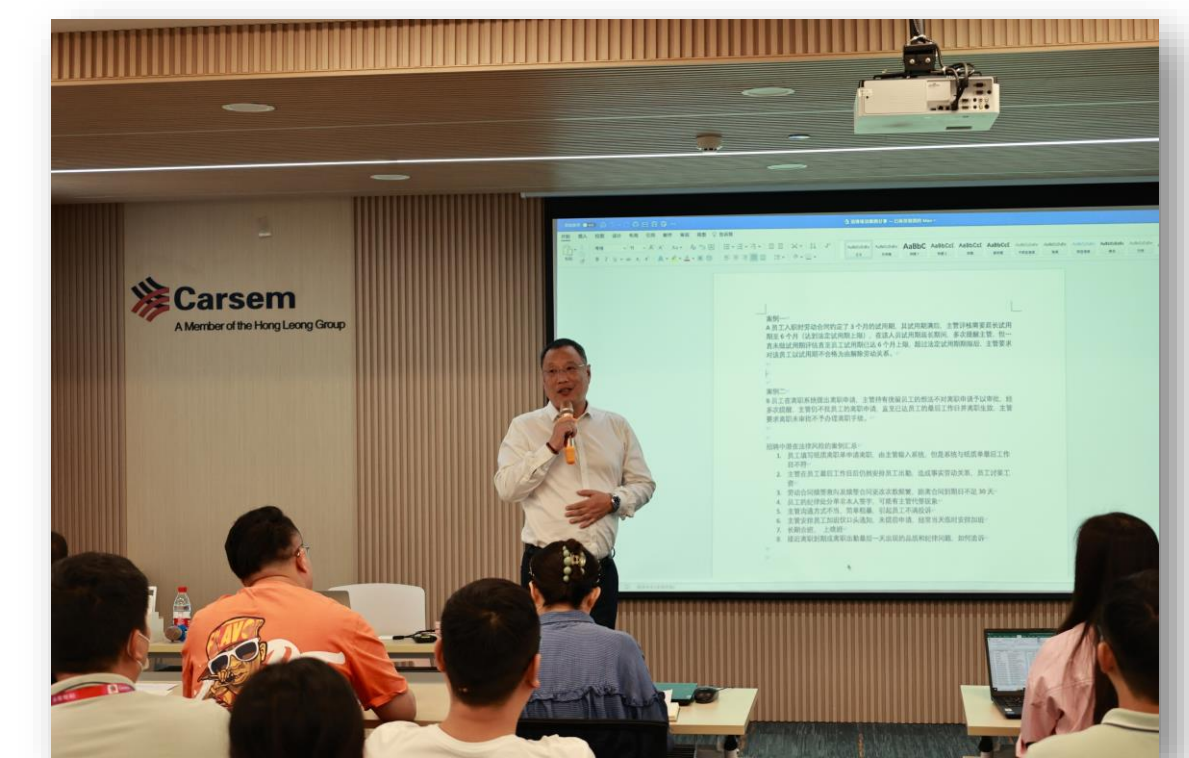
Quality Awareness Training



Quality Awareness Training



Work Injury Prevention Training



Legal Training



Training & education

TRAINING AND UPSKILLING IS AMONG OUR TOPMOST STRATEGIC PRIORITIES

Online & offline training - OSH Training, Automotive Series Training, Engineer Core Competency – Acceptance Sampling, Expanding Six Sigma Toolbox Training



Managing Hazardous Atmospheric Gases at Work Place Training



Emergency Response Team Training (Emergency preparedness and response)



Occupational Safety and Health Act (OSHA) Awareness Training



Acceptance Sampling Training



Expanding Six Sigma Toolbox - Robust Optimization & Tolerance Design



Understanding IATF 16949:2016 Training



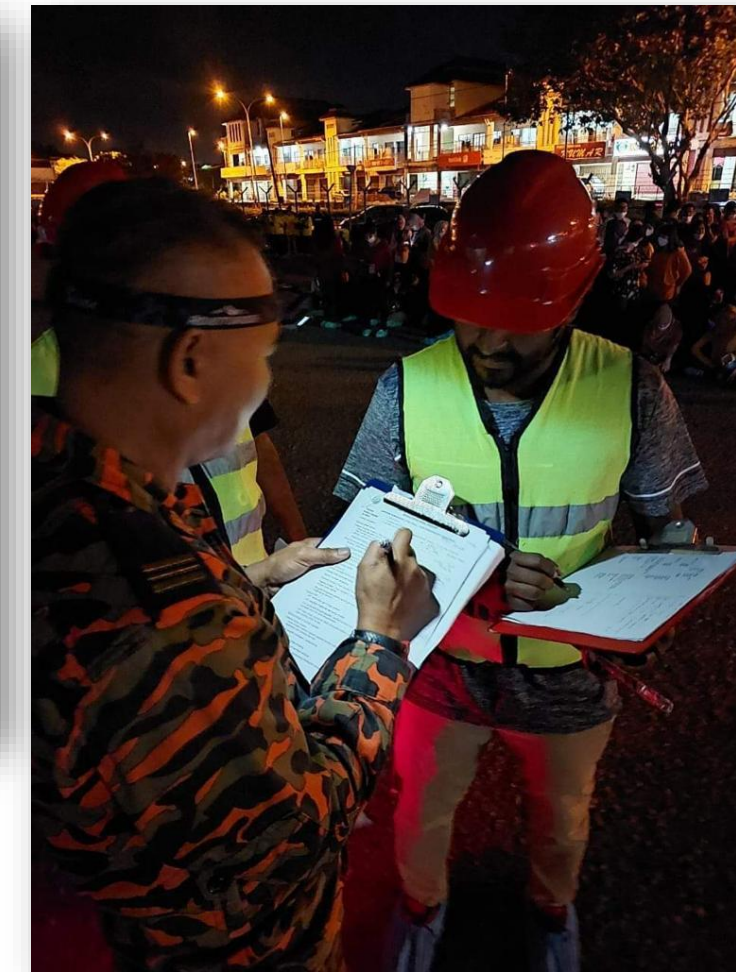
Training & Awareness



Basic First Aid for Supervisors & Line Leaders



Contractor Safety Briefing



Chemical Handling Training



Gas Handler Training



Evacuation exercise conducted for 6 sessions involve local authority (Bomba)



Anti-bribery & anti-corruption

LEADING ETHICALLY & TRANSPARENTLY

Certification for implementing Anti-Bribery Management Systems, complying with ISO 37001:2016.

Operating subsidiaries	Certifying authority	Status
Carsem M	SIRIM QAS International Sdn. Bhd.	Re-certified in FY23
Carsem SZ	Shanghai Ingeer Certification Assessment Co., Ltd.	Certified in FY23
DCI	SIRIM QAS International	Certified in FY23

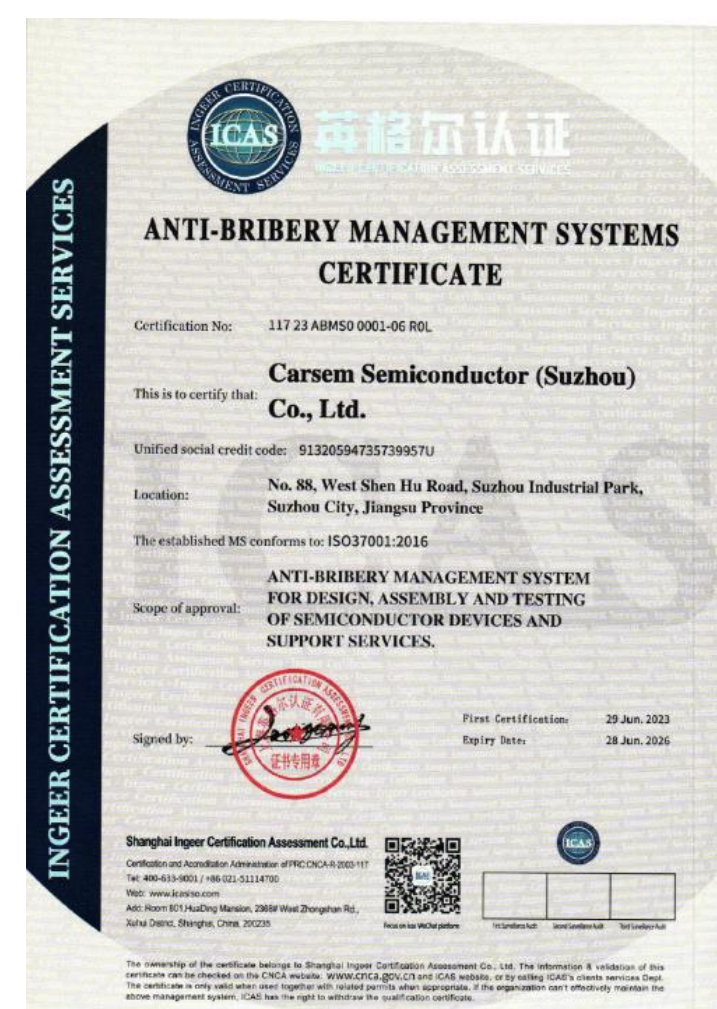


TABLE OF CONTENT

1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



Industry dynamics

DESPITE SHORT-TERM CYCLICAL DOWNTURN, GLOBAL SEMICONDUCTOR MARKET'S LONG-TERM OUTLOOK IS STRONG

While China is witnessing improvement in consumer demand, it is being countered by drastic demand drop in EU



China



Europe



North America

Goldman Sachs predicts U.S. economic resilience amid high interest rates

↑ Increase ↓ Decrease □ No change

Slower-than-expected demand recovery is leading to delay in normalization of inventory. Sluggish growth for semicon market

- ✓ Worldwide EV car sales up by 28% annually - Global sales of plug in EV reached 1.3 Million units mark
- ✓ Global PC Shipment dropped by 7% annually - smallest contraction YoY, GaN to be the game changer
- ✓ Smartphone shipment fell by 1% annually - decline continues but the gap is narrowing



- Economic headwinds persist leading to weak end consumer demand environment
- Bolstered by regional recoveries and new product upgrade demand, smartphones/ PC signaling a slowdown in its decline

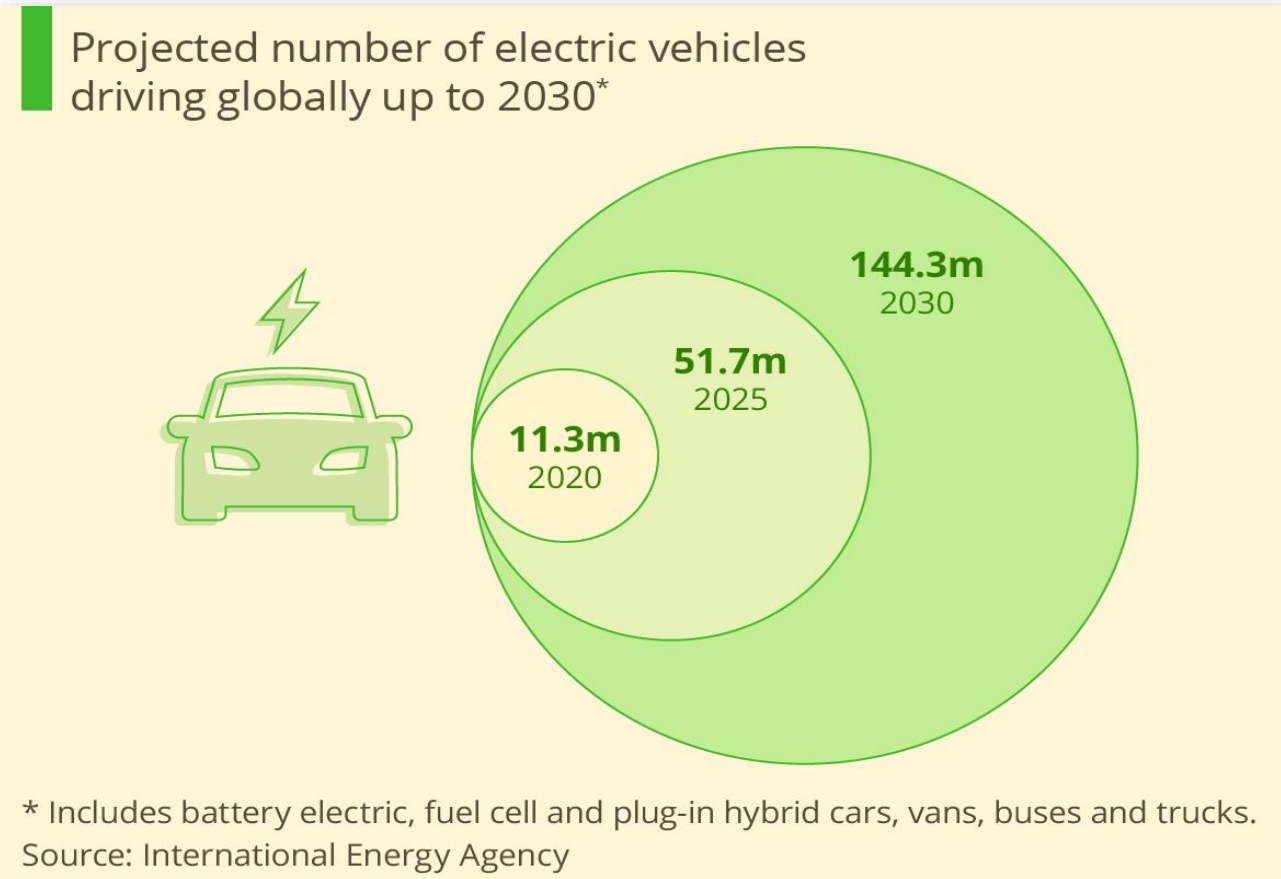
Source: InsideEVs; Canlys



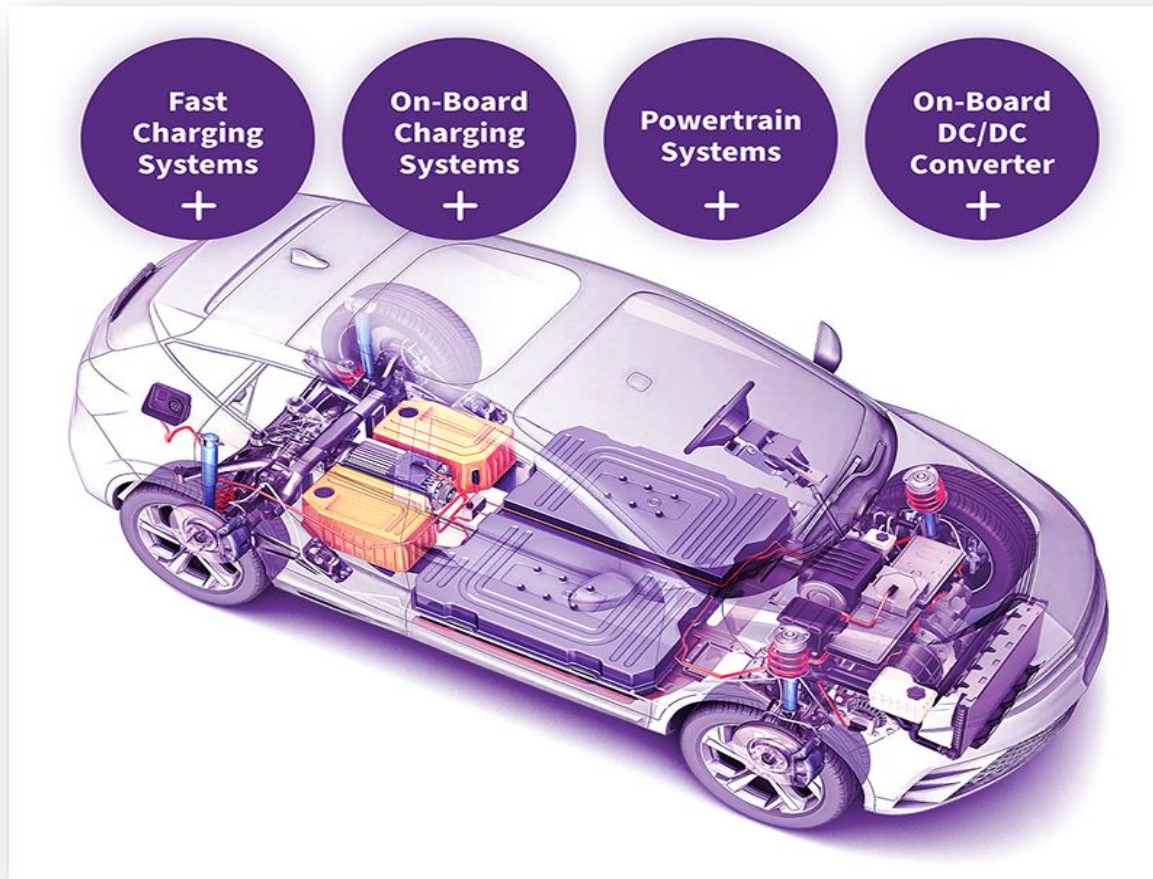
Industry dynamics

AUTOMOTIVE SEMICONDUCTOR MARKET IS PROJECTED TO WITNESS A MASSIVE GROWTH IN COMING YEARS

Compounded Growth of EV



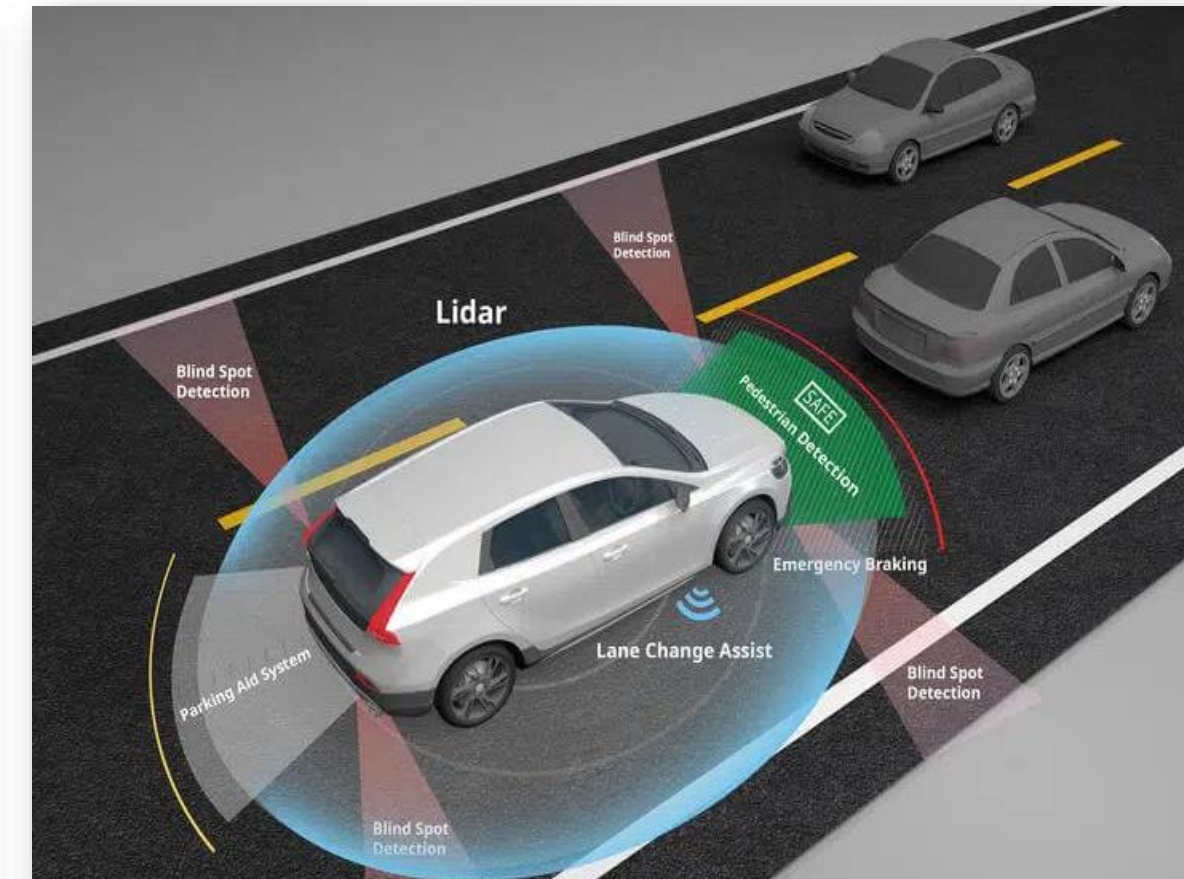
Silicon Carbide & Gallium Nitride



5G enabled driving assistance



Advanced automotive sensors



Japan's Renesas to make next-gen silicon carbide chips from 2025

Technology expected to enable longer driving ranges for electric vehicles

Sanan, STMicroelectronics to Invest USD3.2 Billion in China EV Chipmaking Project

Infineon to invest €25b in world's largest SiC Power Fab in Kulim, Kedah

Onsemi to invest US\$2 billion in SiC capacity, moving from Fab Litar to Fab Right

Advanced Driver Assist Systems (ADAS) Market Size & Share to Surpass USD 71.24 Billion by 2028 | Vantage Market Research

New Automotive Sensors Improve Cameras, Tire Pressure, and EV Batteries

Source: Reuters, McKinsey Report



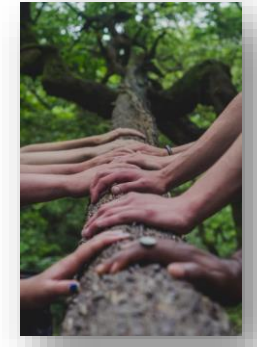
Growth strategy

OUR LONG TERM VISION IS TO BE THE LEADING OSAT FOR AUTOMOTIVE, DRIVEN BY 4 STRATEGY TENETS



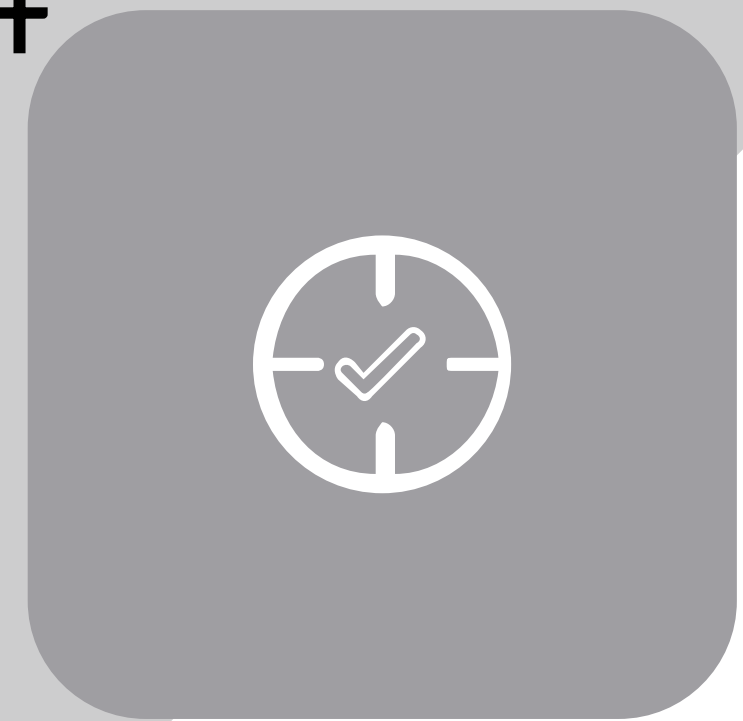
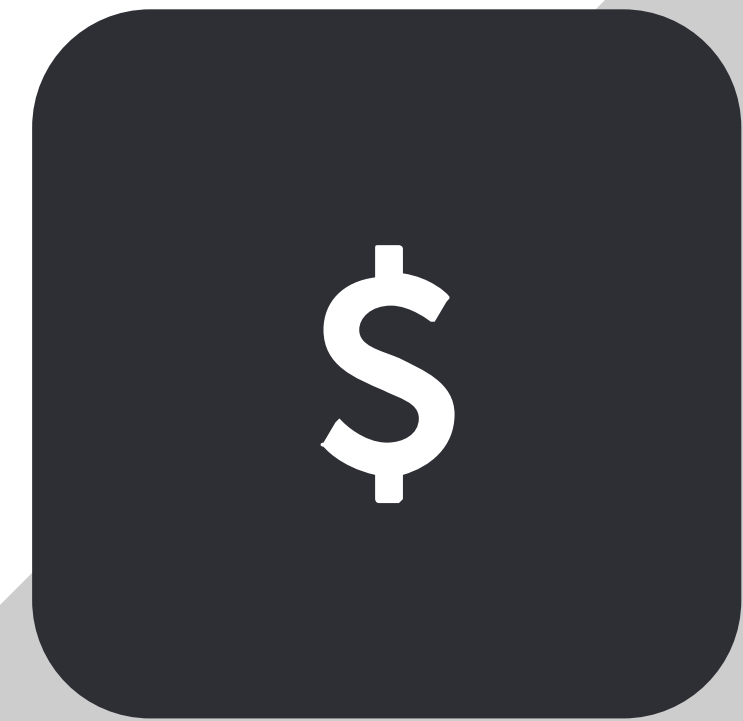
Sales

- Strategic sales across application & geography segments
 - Sharp sales pipeline management



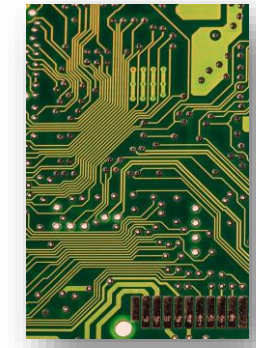
People

- Strategic workforce – restructuring & hiring
 - Upskilling, training
- Covid mitigation, Employee engagement



4

Technology



- Investing in SiC, MEMS sensors, GaN, 5G testing
- Advanced packaging – inorganic options for modules/ 3D printing/ design house
- Robust R&D; own product (TVS)



Quality

- Zero Defects Culture
- Automation, high productivity
- State-of-the-Art Equipments



Sales - Carsem's strong positioning in Automotive

CARSEM HAS MAJORITY AUTOMOTIVE PORTFOLIO WITH ALL FACTORIES EQUIPPED TO RIDE THE NEXT WAVE OF OPPORTUNITIES

Silicon Carbide/Gallium Nitride

S



- Anchor SiC customer
- Dedicated SiC tech trained team for assembly & test
- Enhanced dedicated floor space & lines to cater to latest technology – SiC & GaN

Automotive MEMS Sensors

M



- Transformation to advanced automotive sensor packages
- Already working with major automotive customers for miniaturized & robust packages

5G/6G Connectivity

SZ



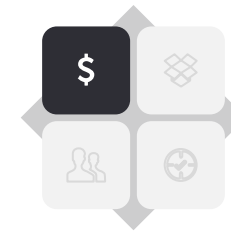
- Skilled manpower focusing on packages for 5G/6G connectivity
- Huge investments made for dedicated machines in Front End Module line
- Hired domain specific trained people for 5G test

EV Focused Automotive Packages

SX



- Focus on automotive segment packages for China
- Strong pipeline in different stages on automotive projects
- Hired Senior management with automotive expertise



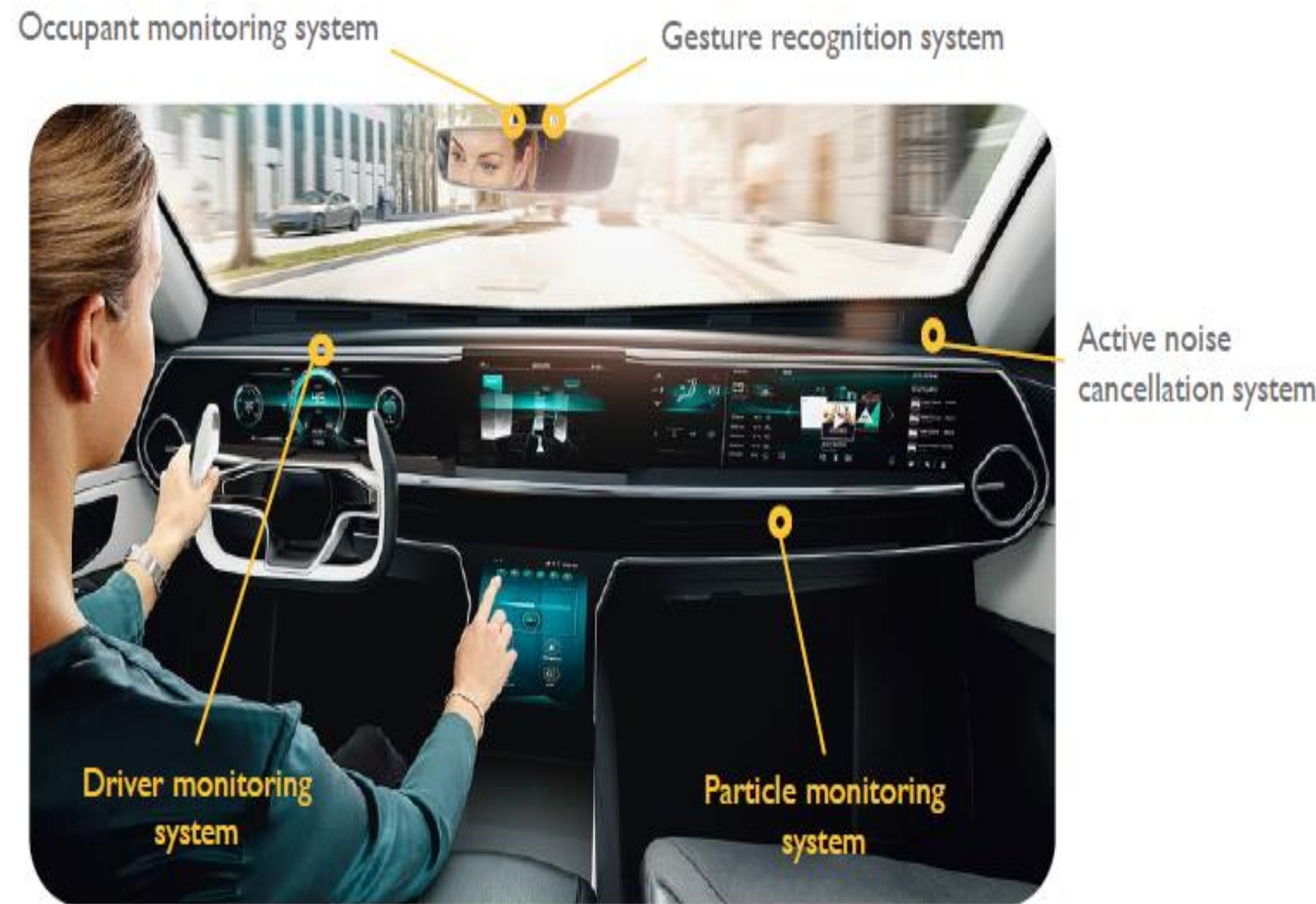
Sales – Target segments to play in

MPI MADE A STRATEGIC MOVE TOWARDS UPCOMING TECHNOLOGIES

Continued investments in complex packaging technologies



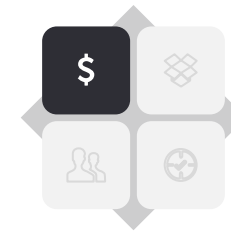
SiC adoption in EVs is gaining momentum – Experience of handling SiC packaging will lead the way



Customized sensors used for monitoring several data points – multi-functionality in small, cost-competitive, customized packages

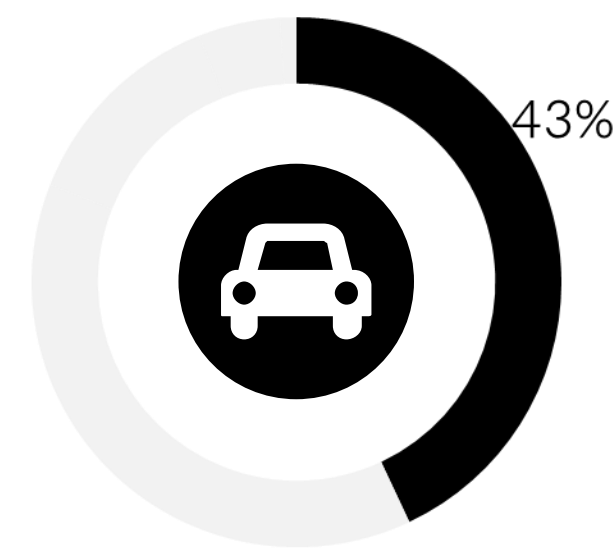


5G technology has a bright future – it is small for Carsem right now but in the next few years it will ramp up



Sales – Revenue composition

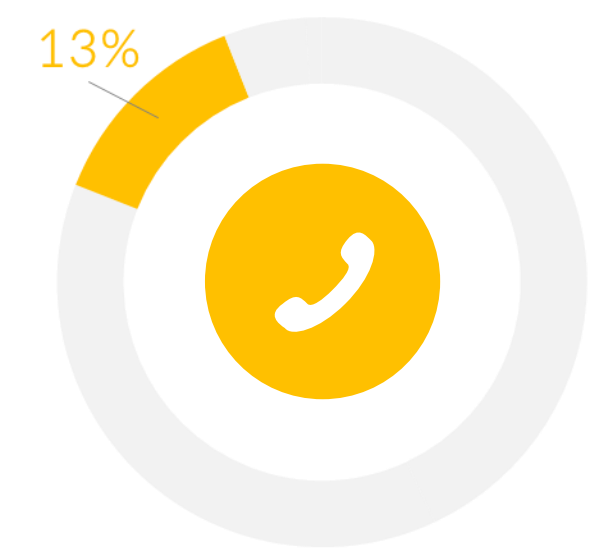
AUTO REMAINS STRATEGIC – GROWN FROM ~29% IN FY18 TO 43% OF OUR SALES NOW



% Revenue share

AUTOMOTIVE

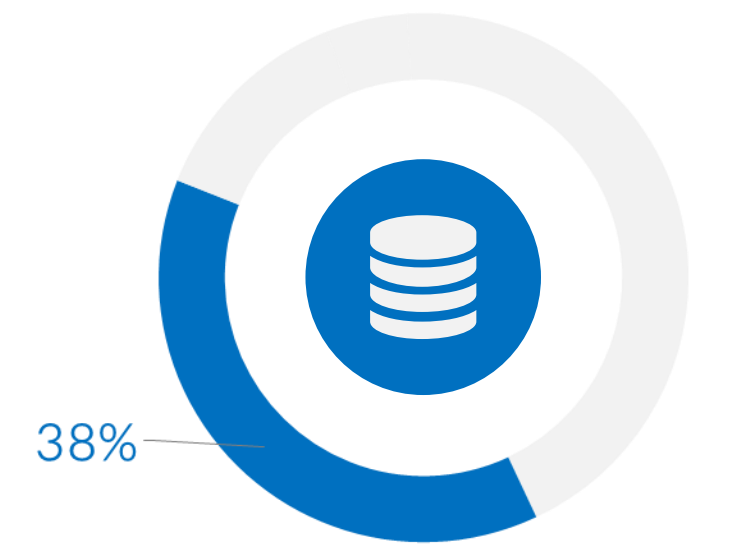
- Long term growth is driven by **electrification, ADAS/ AD, safety, and connectivity** trends



% Revenue share

CONSUMER & COMMUNICATIONS

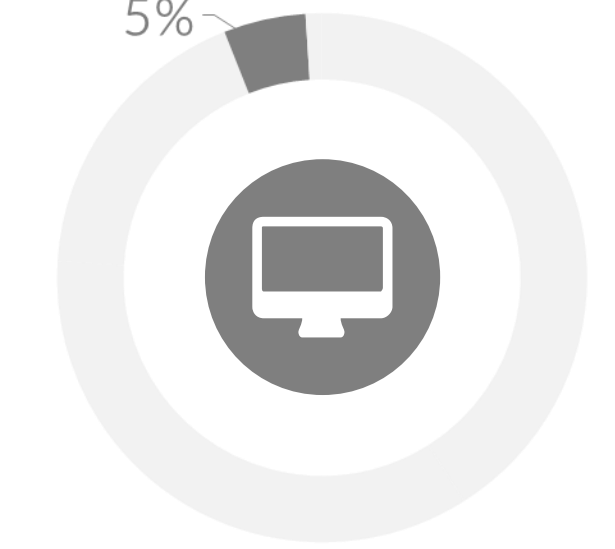
- **5G and IoT** are unlocking multitude of use cases – smart cities, healthcare, etc.
- Semiconductor demand is likely to ride this wave with need for **advanced packaging solutions**



% Revenue share

INDUSTRIAL

- With **Big Data and Industry4.0** gaining further momentum, need to power data centers & servers is growing
- This **high power & high efficiency** requirement is fueling new innovations

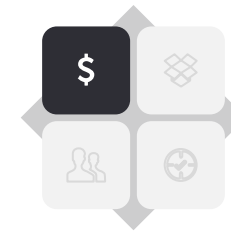


% Revenue share

PC/ NOTEBOOK

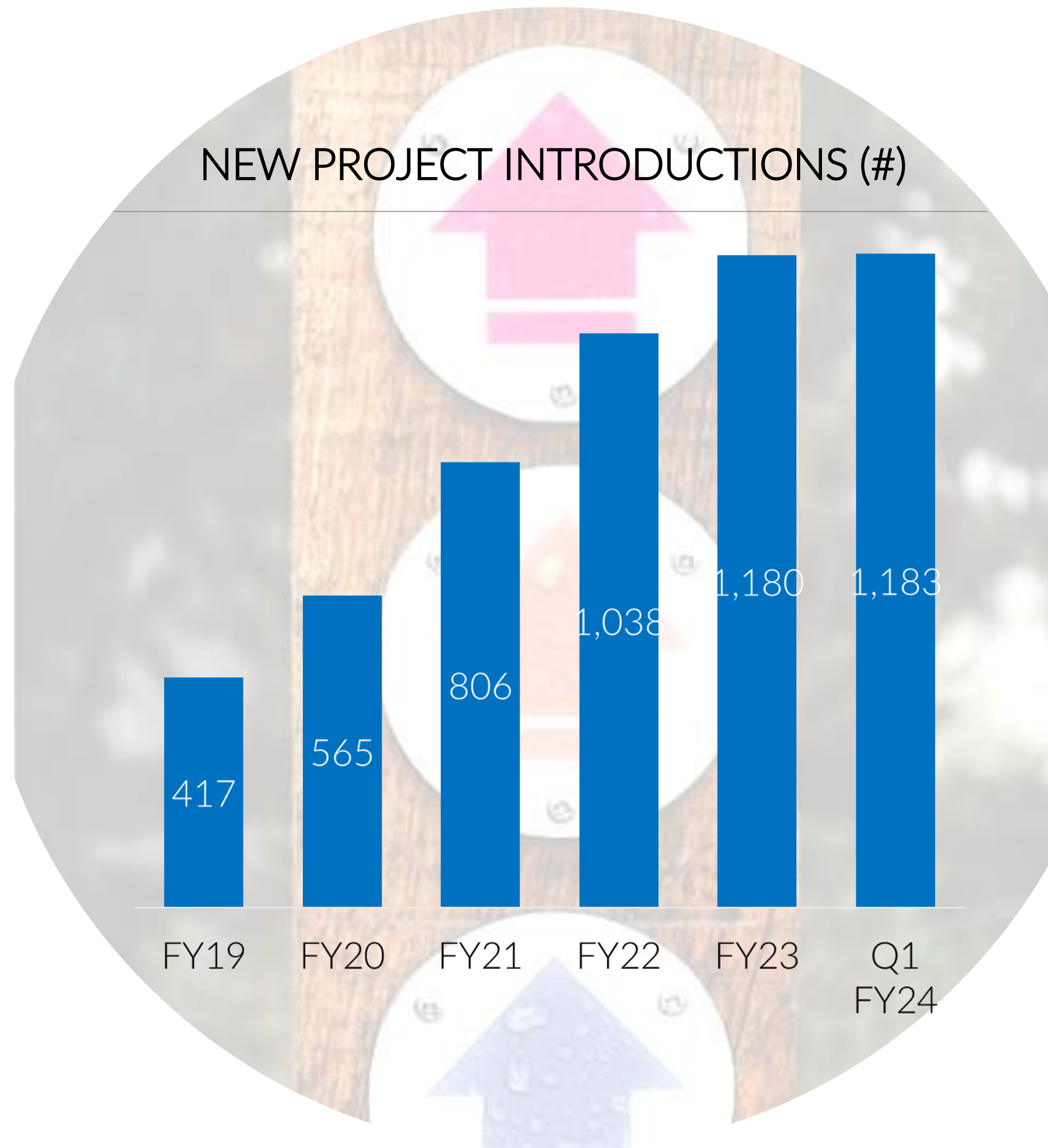
- Consumer electronics industry sales witnessing significant downward trend as the demand induced from trends such as WFH, online education, etc. normalizes with opening up of offices/ schools across economies

NOTE: Remaining 1% share of revenue is towards Miscellaneous applications



Sales – Pipeline

HEALTHY PIPELINE BUT RECESSIONARY RISKS HAVE PUSHED PROJECTS TO FUTURE QUARTERS



- Carsem has a healthy order book with major projects coming from the Automotive segment

- Pipeline is full but the recent wafer shortage & end customer demand drop/ postponement has pushed projects to future quarters

- Ease of travel has helped Carsem team & customers engage in on-site physical meetings, driving closer collaboration on new pipeline projects



Technology – Automotive segment

INNOVATING IN LINE WITH STRATEGY TO BE GLOBALLY PREFERRED OSAT PARTNER FOR AUTOMOTIVE

Major trends impacting semiconductor demand (Mobility disruptions)



Electrification

Novel battery technologies, growth of electrical powertrain, demand for power electronics



Autonomy

Surge in autonomous driving platforms & advanced safety features



Connectivity

New use cases (V2X, V2V, OTA) - progression in connectivity technology (5G, WIFI-6)

>20 years as a certified automotive supplier

Carsem Technology Value Propositions & Activities

MEMS & Sensors – riding ‘Electrification’ and ‘Sensorization’ wave

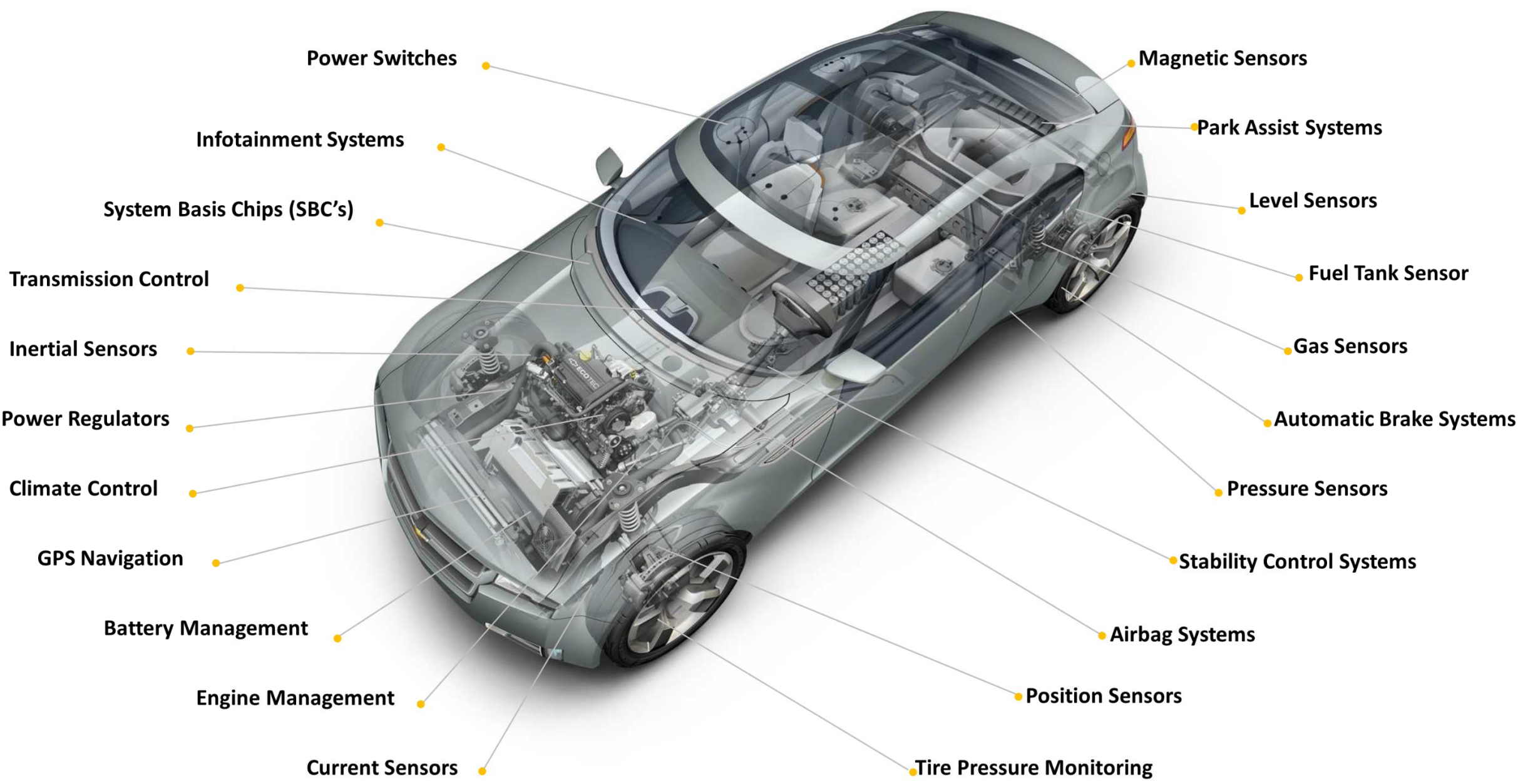
- ✓ SiP Pressure sensors for ICE and Safety are ramping up for Automotive, Gas & Flow sensors – safe launch production stage and some in ramp up stage to HVM
- ✓ New focused development: current sensor for EV with wettable flank technology - sample launched for qualification with target segment on TPMS and EV controllers.
- ✓ New design concept under review for Lidar/ Radar segment
- ✓ Expanding into module base product- at concept phase review with customer

Power Packaging

- ✓ EV power inverter module started development, expected HVM in Apr '25
- ✓ EV onboard charger DDPACK package started development, expected HVM in Dec'24
- ✓ Fast charging adapter (TO top side cooling) in development, expected HVM in Mar'25
- ✓ Automotive: MIS solution PMIC module, in mass production; SiC module development
- ✓ TOLL/ TOLT R&D plan for automotive, industrial - focus on full CLIP solution R&D

RF for Connectivity

- ✓ Differentiated support on diverse applications using Gallium Nitride (GaN) technology

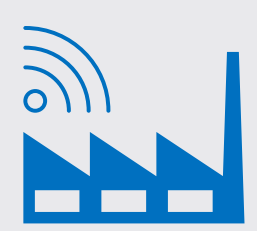




Technology – Industrial segment

EXPANDING PORTFOLIO ALIGNED WITH TRENDS IN ADVANCED PACKAGING & TESTING FOR POWER

Major trends impacting semiconductor demand



Industry 4.0

Higher performing devices with greater functionality driving models that enable increased flexibility, higher productivity & lower costs



Big Data

More servers with high power & high efficiency to support large volumes of data

>30 years in power packaging

Carsem Technology Value Propositions & Activities



Power Packaging

- ✓ Awarded the next generation of Power stage products for servers and workstation (Cu Clip). In production since Q3'FY23
- ✓ First chip embedding product goes into production in Q2'FY24
- ✓ Taiko ring released to production, with 50um thin die handling
- ✓ Working with customer to develop Dr. MOS MOSFET/ CuClip MLP packaging, as power management IC to support AI application

MEMS & Sensors

- ✓ Ramping gas sensing applications & flow sensor under R&D, target production in Q4 FY23; also, ramping current sensor and magnetic sensor applications. Expanding further in high end applications with special coating on die technology – under devp.
- ✓ Hermetical & Non hermetical Ceramic Packages (Gyroscopes & Accelerometers) with safe launch. Targeted production by Q2 FY24



Technology – Consumer/ communications segment

TAPPING INTO THE 5G REVOLUTION THROUGH ROBUST CUSTOM OFFERINGS

Major trends impacting semiconductor demand



5G
High data rates, massive connectivity and ultra-low latency, catalyzing remote health care, autonomous driving, AR/ VR experiences



IoT
Need for combining functionalities – security, connectivity & microprocessors - stimulating usage of sensors, actuators & computing power

Carsem in Communication



Carsem Technology Value Propositions & Activities

RF (5G mobile, WiFi6)

- ✓ FC MIS with underfill plus exposed die process start HVM in Q4FY23
- ✓ QFN SIP solution : FC+ SMT, power management application under development, high end wireless charging, fast charging , Li-Ion battery management
- ✓ WiFi 7 project under engineering study stage

Power Packaging

- ✓ RF Power (mid-high) packaging expertise for handphones/ 5G base stations; high volume manufacturing experience of handling GaN
- ✓ RF module/ high power switch for 5G base stations remains focus

MEMS & Sensors

- ✓ New growth in timing MEMs with 3 variants project base under qualification
- ✓ Expanding into high grade BOM for RF segment and qual in progress



Technology – Invention patent

GRANT OF IP030 - DFN SIDE WALL PLATING

国家知识产权局

100033
北京市金融街35号国际企业大厦A座16层 北京三友知识产权代理有限公司
陈伟(010-62300800) 李辉(010-62300800)

发文日:
2023年10月28日

申请号: 201811324155.5 发文序号: 2023102800263110

申请人: 嘉盛半导体(苏州)有限公司

发明创造名称: 引线框架条、半导体封装方法、半导体封装结构及其单元

授予发明专利权通知书

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申请日提交的摘要附图、说明书摘要、说明书附图;2018年12月19日提交的说明书第1-169段;2023年10月12日提交的权利要求第1-10项。

3.授予专利权的上述发明专利申请的名称:
未变更。
由_____变更为上述名称。

4. 申请人于_____年_____月_____日提交专利号为_____的“放弃专利权声明”,经审查:
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未进入放弃专利权的程序。理由是:申请人声明放弃的专利与本发明专利申请不属于相同的发明创造。

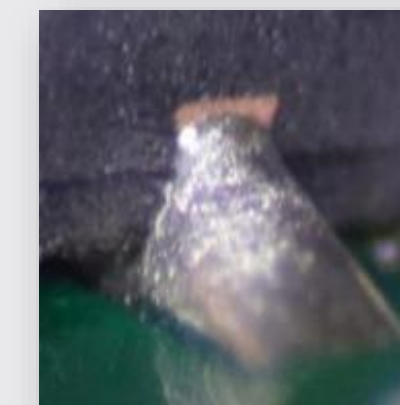
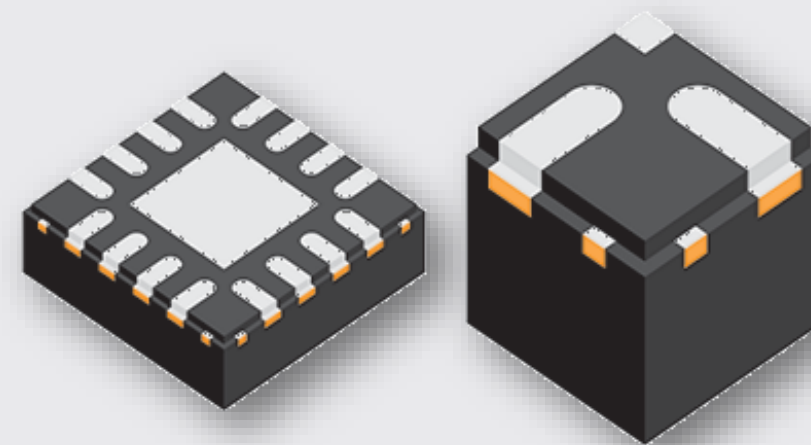
5. 审查员依职权对申请文件修改如下:

6. 申请人在申请日后补交了实验数据,该数据未包含在授权公告文本中。
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审查员:张敬文
联系电话:0512-88995439

专利审查业务章

210413 纸件申请,回函请寄:100088 北京市西城区蓟门桥西土城路6号 国家知识产权局专利局管理处收
2022.10 电子申请,应当通过电子专利申请系统以电子文件形式提交相关文件。除另有规定外,以纸件等其他形式提交的文件视为未提交。



Invention patent description:

a package design method to achieve side wall plating, a process method to achieve “Zero Burr”. Carsem Suzhou is the market leader in mainland China for side wall plating

Patent validity period: 20 years

- Leader in China OSAT for Wettable Flank MLP (QFN/DFN), FC MIS, CuClip for Automotive.
- 16 customers in mass production and 10 of them qualified wettable flank MLP.
- More than 600 kk units shipped, in many OEM and Tier 1 supply chain
- 100 NPI in pipeline, with 55% from US/ EU customers



Technology-Immediate focus

SiC - UNLOCKING RF & POWER APPLICATIONS

CARSEM ADVANTAGE

- ✓ Already working with the No.1 SiC wafer supplier in the world
- ✓ Optimized packaging & performance for better results
- ✓ Ongoing advanced SiC packaging solutions for major customers in Europe and China
- ✓ Dedicated SiC technology trained team for assembly & test
- ✓ Enhanced dedicated floor space & lines to cater to latest technology - SiC & GaN
- ✓ Witnessing double digit growth YoY with strong pipeline for the coming years in SiC

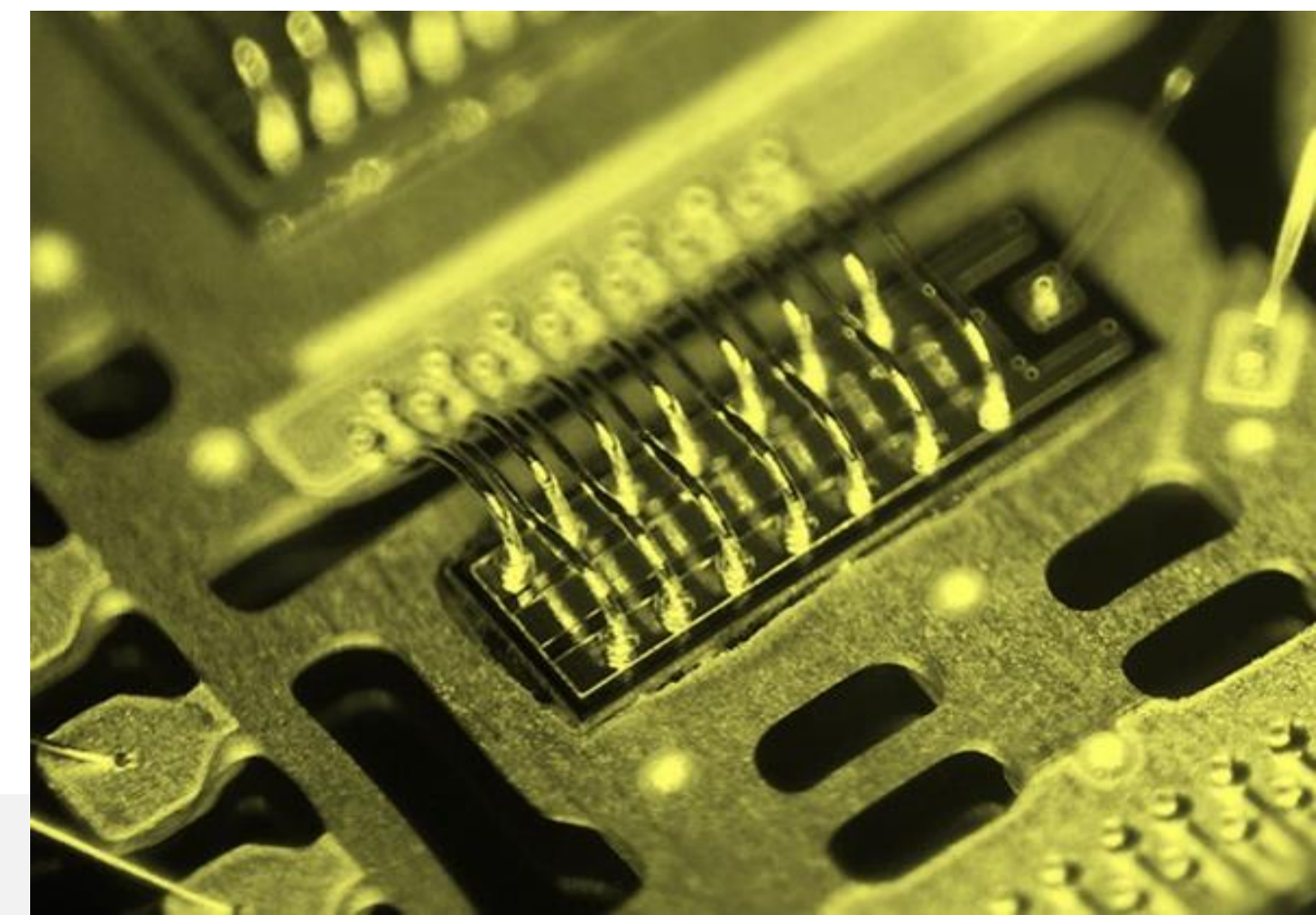
SiC technology for power has a promising future, globally

Carsem S-site at Ipoh, Malaysia is already working with major players on pipeline for SiC packages



Benefits of SiC over previous gen materials

- ✓ Wider bandgap,
- ✓ improved energy conversion efficiency & power density,
- ✓ higher thermal conductivity (3-4X Si/GaAs/GaN),
- ✓ higher switching frequencies, and reduced system size



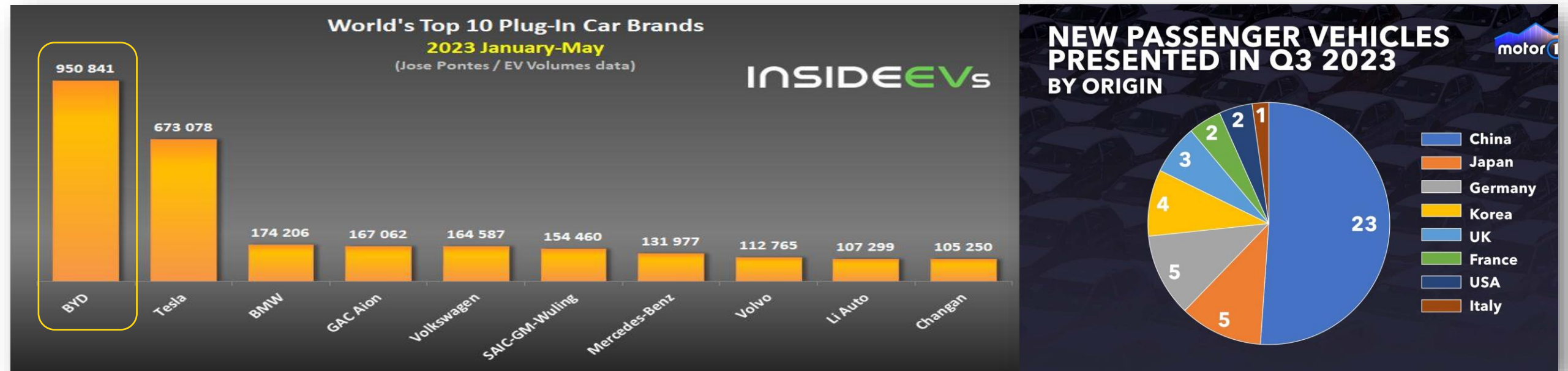


Technology-Immediate focus

STRATEGICALLY INVESTING TO GROW AUTOMOTIVE SEGMENT IN CHINA

Chinese brand is No.1 in EV Sales in 2022 & 2023 YTD

BYD beats Tesla in 2022 EV sales, as the world's No 1 electric car seller vindicated Warren Buffett's bet



- Automotive segment in China has a strong high compounded growth rate
- Over 100 automotive projects already in different stages of pipeline
- Transfer some technology & experience manpower from Ipoh

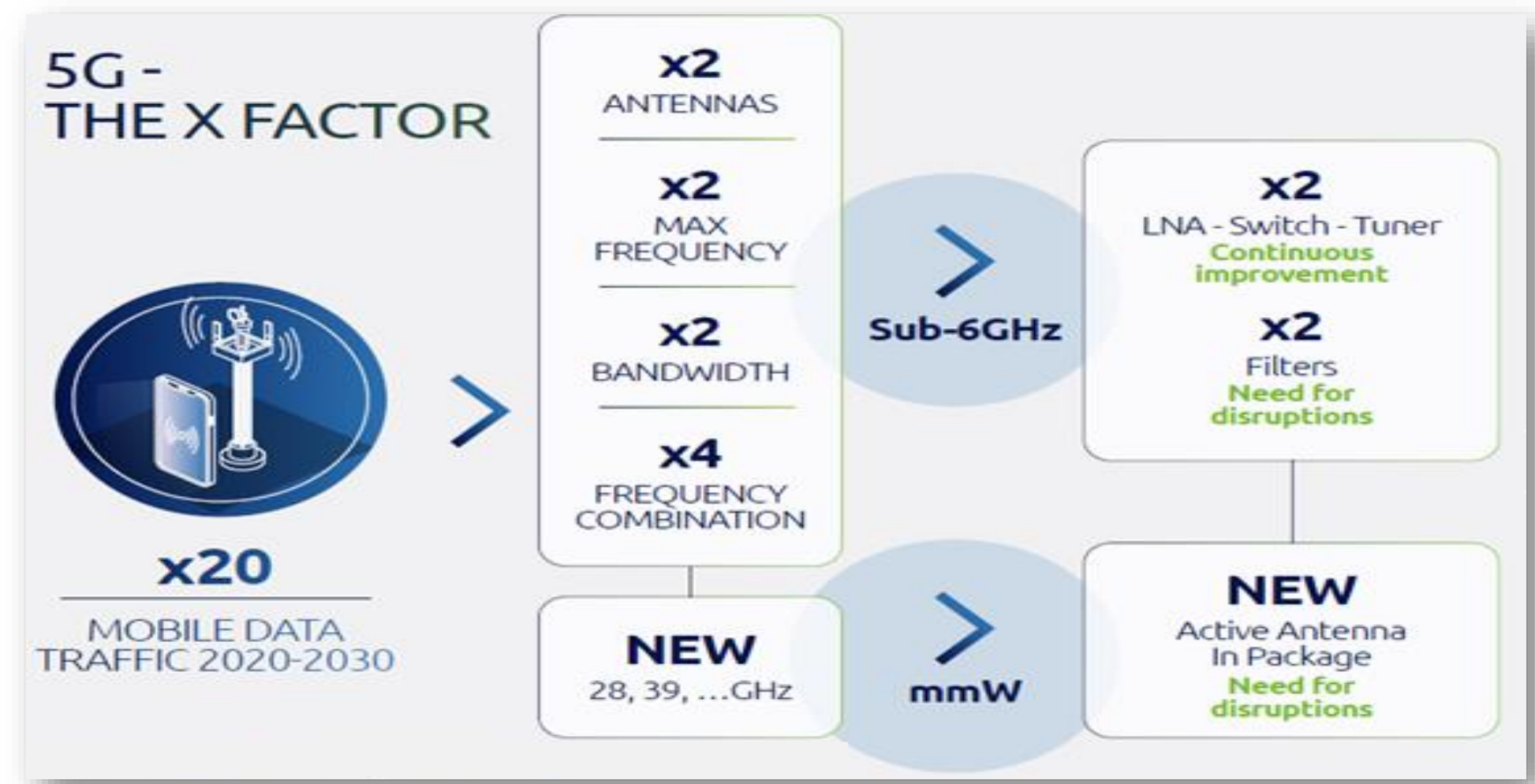


Production to commence by 2025



Technology – Immediate focus

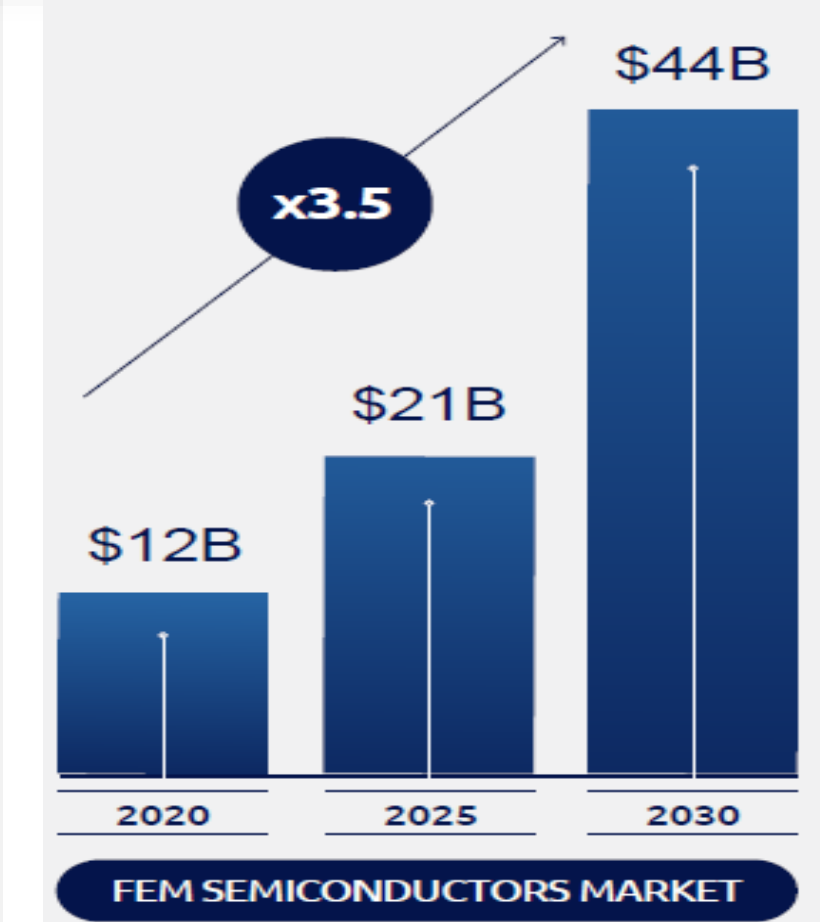
GaN FOR RADIO FREQUENCY (RF) APPLICATIONS – 5G BASE STATIONS



		POWER AMPLIFIER (PA)	LOW NOISE AMPLIFIER (LNA)	SWITCH	ANTENNA TUNER (AT)	FILTER	ENVELOPE TRACKER (ET)	PHASE SHIFTER	SYSTEM ON CHIP (SoC)
4G / 5G SUB-6GHZ FEM KEY BLOCKS	RF-SOI	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	POI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	FD-SOI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5G MMW FEM KEY BLOCKS	RF-SOI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	FD-SOI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	GaN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
WIFI & UWB FEM KEY BLOCKS	RF-SOI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	POI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	FD-SOI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Significant growth is projected for front end modules (FEM) in the next 8 years

- ✓ Carsem spent US\$ 12Mil for 5G RF FEM. Carsem Suzhou already has experience in FEM for 4G/5G, include DiFEM Module/DiFEM Module/Duplexer+ Quadruplext and Inregular SiP package, started initial production in Q2 FY24
- ✓ Industry technology trend suggests that the business of GaN related FEM will be much more than 4G
- ✓ Carsem Suzhou is already engaging with main 5G players of China for 5G base stations FEM

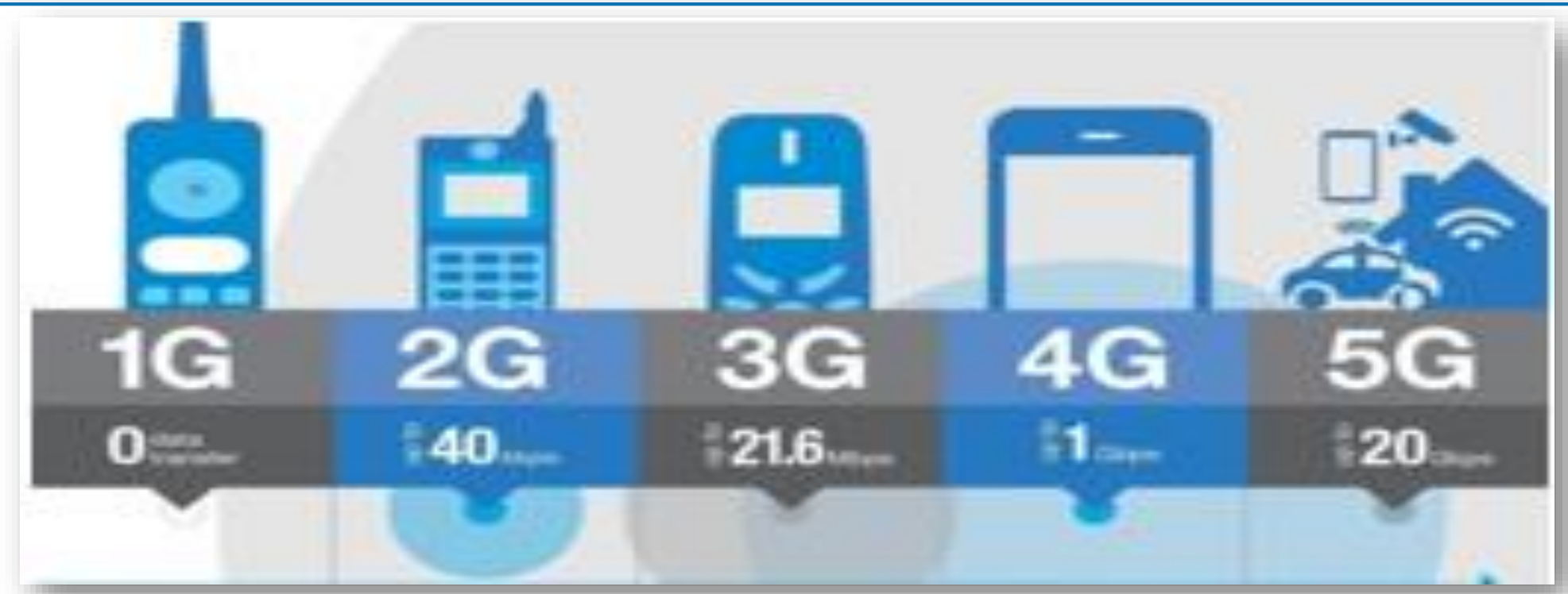


Source: Yole, Ericsson, Soltec, Qualcomm



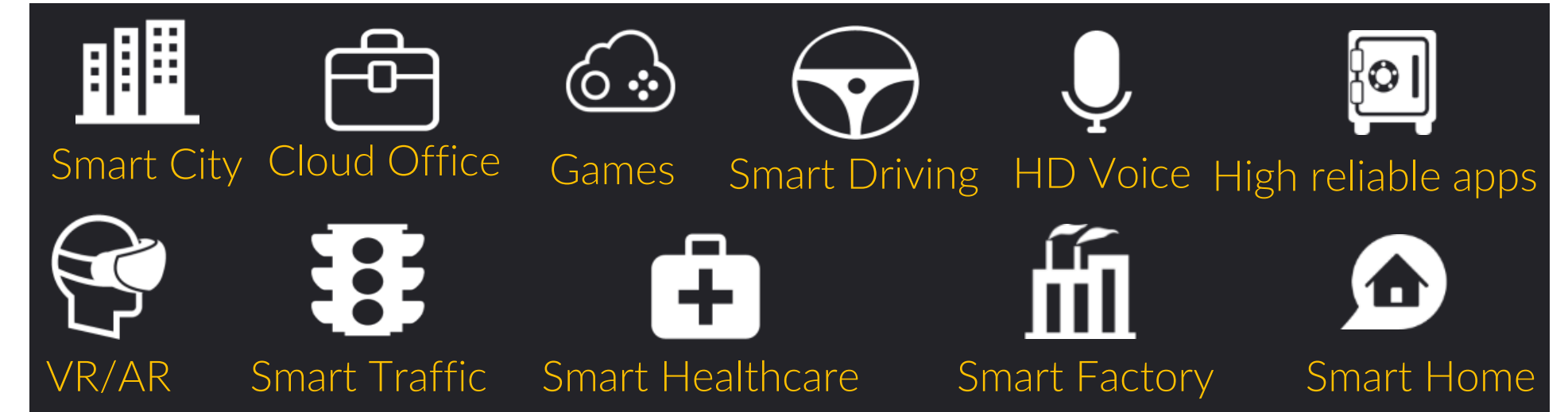
Technology – Future focus

5G – Next Generation of mobile broadband



- ✓ Exponentially faster download & upload speed
- ✓ Drastically decreased latency
- ✓ Implementation of IOT, Autonomous Cars, Artificial intelligence.
- ✓ High frequency signals on shorter wavelengths will require more base stations than usual 4G

5G use cases



5G TESTING

Carsem Suzhou has been working extensively on 5G test technology development

- ✓ CSZ is working with 10+ customers for 5G device testing
- ✓ Completed 5G and Wifi7 RF test capability development, up to WiFi7 7.125GHz
- ✓ Continuing engagement with specialized customer for 5G FR2 (mmWave) testing development
- ✓ Building an exclusive 5G RF domain specific test development team to be the best in this field

CSZ R&D capability - able to support 5G sub 6GZ, but not ready for 5G mmWave yet

Product	2G	3G	4G LTE	5G (Sub-6GHz)	5G (mmWave)
	800MHz~2GHz	2GHz~2.2GHz	1.7G~2.7G	3.3GHz~6.0GHz (Sub-6GHz)	>28GHz (mmWave)
Bandwidth	6MHz~24MHz	15MHz	15MHz~130MHz	<1G Hz	>1G Hz
Switch	✓	✓	✓	✓	Under development
Filter (SAW/BAW)	✓	✓	✓	✓	Under development
Diplexer/Multiplexer	✓	✓	✓	✓	Under development
PA (Power Amplifier)	✓	✓	✓	✓	Under development
LNA (Low Noise Amplifier)	✓	✓	✓	✓	Under development
Antenna Tuner	✓	✓	✓	✓	Under development
SiP (include 2 or more components into a package)	✓	✓	✓	✓	Under development



Technology – Future focus

MODULES

Entirely new SMT Line



3D X - Ray



C - Mold



CARSEM SUZHOU

- ✓ Invested in dedicated machines for FEM module line under production
- ✓ Invest in dedicated machine and skilled manpower to extend FEM line capacity
- ✓ Attacking high end customer FEM product, under engineering stage

CARSEM MALAYSIA

- ✓ Assembling advanced packages with complete flexibility for customization
- ✓ Major portfolio of advanced packages is with big semiconductor companies in NA & EU
- ✓ Investing in superior machines and skilled manpower to handle advanced packaging

BENEFITS OVER STANDARD PACKAGES

RELIABILITY COST SAVING PERFORMANCE ROBUST REDUCED SIZE CUSTOMIZABLE





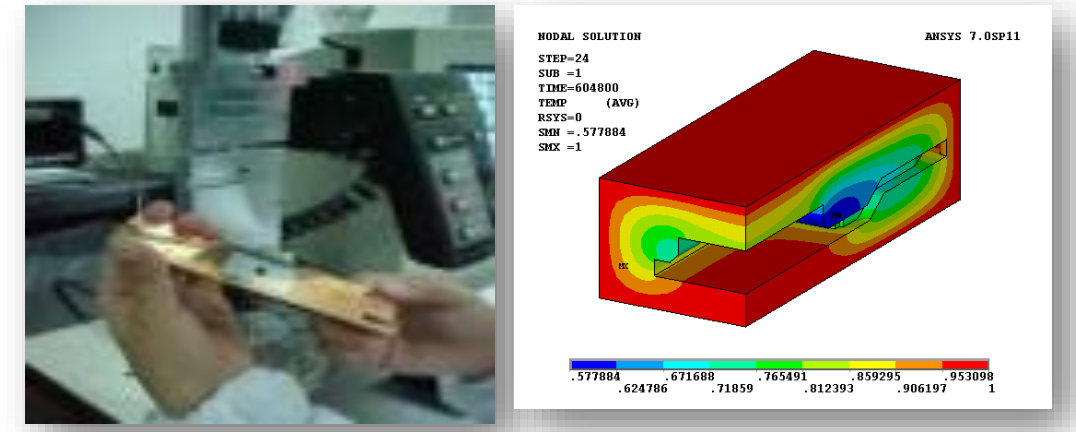
Technology – Carsem technology center

DEDICATED TECHNOLOGY CENTER TO DRIVE INNOVATION & TECHNOLOGY DEVELOPMENT

CARSEM TECHNOLOGY CENTER (CTC) – 4M APPROACH TO R&D

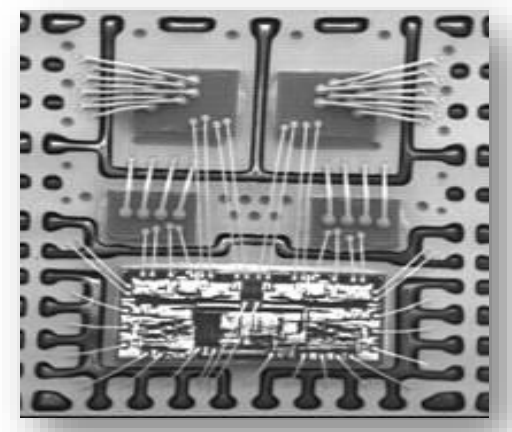
MATERIAL

- Materials lab,
- Design & Simulation



METHODOLOGY

- Process development
- Total 75 active patents



MACHINE



- Dedicated to package/process/materials development

MAN (HUMAN CAPITAL/ EXPERTISE)

- Total headcount: 59 (Technical Management ~8%, Project Management ~34%, Engineering ~58%)





Quality & productivity focus

INVESTING IN AUTOMATION & INDUSTRY4.0 TO ACHIEVE ZERO DEFECTS & HIGH PRODUCTIVITY GOALS

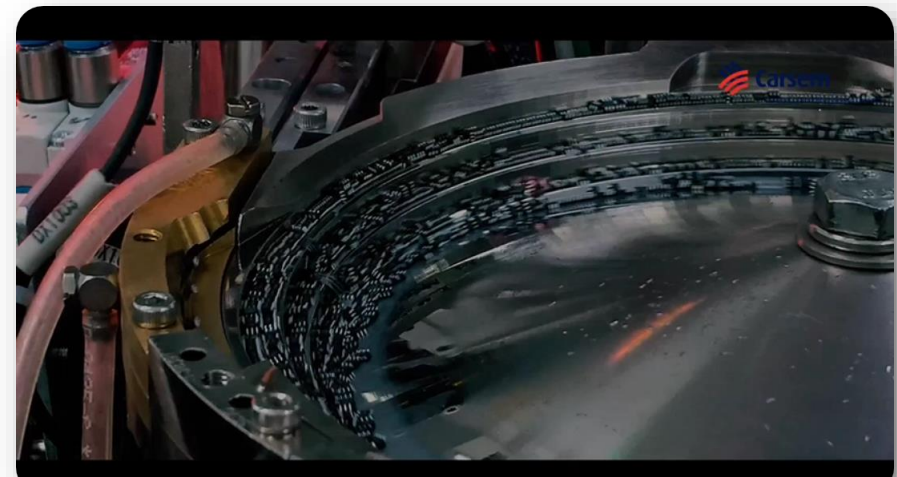


End Game – Smart factory



Highlights

- > Highly automated line with minimal dependence on people
- > Productivity improvement
- > Connecting shop floor & processes

State of the art advanced facilities, towards lean manufacturing

<p>5G testing</p>	<p>Lights-off factory</p>
 <p>Rack & stack with Pentamaster handler</p>	 <p>Automated guided vehicle</p>
<p>Zero defects quality</p>	 <p>Robotic arm</p>



Quality & productivity focus

AUTOMATION: GOLD WIRE MANAGEMENT SYSTEM (GWMS)



(GWMS)



Wire Spool stored in GWMS



Linked with WB to validate wire usage



(Wire bonder)

- Automated wire usage recording
- Wire usage weight (GWMS) vs used length (Wire Bonder) validation
- Auto dispense Goldwire via BOM Part no.
- Eliminate Manual Recording

1 Quality & Productivity Improvement



Reduced human dependency

2 Cost Savings



Reduction of usage through monitoring

3 Supervisor Workload



Simplify supervisor job workflow




Quality & productivity focus

CERTIFIED ON INDUSTRY'S LEADING PERFORMANCE PARAMETERS



ESD Control

Applicable to Design, Assembly, Testing & Finishing of semiconductor component




IATF 16949:2016

Design & manufacturing of semiconductor components



ISO 45001:2018

Occupational Health & Safety Management System implemented in compliance



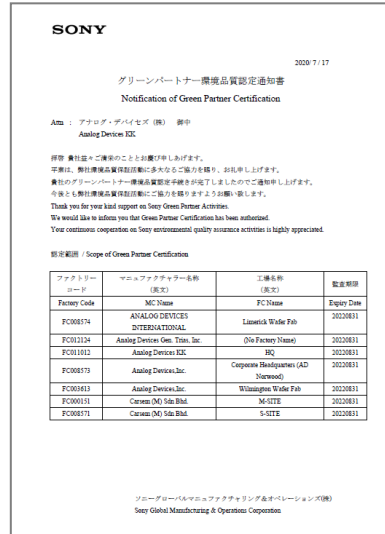
ISO 14001:2015

Environmental Management System implemented in compliance



Sony Green Partner Program

Environmental quality assurance activities



Model Name	Product Name	Category	Issue Date	Expiry Date
PM2020	ARMY DESIGN INC.	Design & Development	2020/01/01	2020/12/31
PM2021	ARMY DESIGN INC.	Design & Development	2021/01/01	2021/12/31
PM2022	ARMY DESIGN INC.	Design & Development	2022/01/01	2022/12/31
PM2023	ARMY DESIGN INC.	Design & Development	2023/01/01	2023/12/31
PM2024	ARMY DESIGN INC.	Design & Development	2024/01/01	2024/12/31
PM2025	ARMY DESIGN INC.	Design & Development	2025/01/01	2025/12/31
PM2026	ARMY DESIGN INC.	Design & Development	2026/01/01	2026/12/31
PM2027	ARMY DESIGN INC.	Design & Development	2027/01/01	2027/12/31
PM2028	ARMY DESIGN INC.	Design & Development	2028/01/01	2028/12/31
PM2029	ARMY DESIGN INC.	Design & Development	2029/01/01	2029/12/31
PM2030	ARMY DESIGN INC.	Design & Development	2030/01/01	2030/12/31

ISO 9001:2015

Design & manufacturing of semiconductor components





Awards and recognitions

QUALITY, PEOPLE and ESG

BEST SUPPLIER AWARDS received

The Edge-FTSE ESG award 2023



Best Quality Award, 2023

Allegro



Strategy Partner Award, 2022

AOS



MPI won this award for the second successive year

HIGHEST GROWTH IN PROFIT AFTER TAX OVER THREE YEARS

TECHNOLOGY

Malaysian Pacific Industries Bhd

Automotive-centric strategy proves prescient






Awards and recognitions

QUALITY, PEOPLE and ESG

BEST SUPPLIER AWARDS received



Best Quality Award, 2023

Allegro



Strategy Partner Award, 2022

AOS

The Edge - FTSE ESG award 2023

The Edge Billion Ringgit Club & Corporate Awards 2023

MPI won this award for the second successive year



HIGHEST GROWTH IN PROFIT AFTER TAX OVER THREE YEARS

TECHNOLOGY

Malaysian Pacific Industries Bhd

Automotive-centric strategy proves prescient



TABLE OF CONTENT

1	INTRODUCTION
2	CORPORATE OVERVIEW
3	BUSINESS OVERVIEW
4	SUSTAINABILITY
5	GROWTH DRIVERS
6	FINANCIALS & SUMMARY



Financial highlights

Q1 FY24 SNAPSHOT

REVENUE

Despite continuous weak end consumer demand, Q1 FY24 has grown revenue by 4% against Q4 FY23

PATAMI

Optimized productivity & strict cost management led to PATAMI grew by 104% on revenue increase of just 4% Vs Q4

DIVIDEND

Even in these uncertain market situation, 1st interim dividend of 10 Sen to be declared

CAPEX

MPI believes in future technological advancements, continues to invest in machines & manpower. Q1 FY24 – RM 54M

CHALLENGES

Global end market demand drop, High inventory stock with customers & Manpower constraints

SEGMENTS

Automotive segment is strengthening; Automotive (43%); Industrial (38%); Consumer (13%)



Key financials

MPI GROUP RESULTS AT A GLANCE

	Q1 FY24	Q4 FY23	Q1 FY23	Q1 vs Q4	Q1 vs Q1	YTD FY24	YTD FY23	YoY
	RM mil	RM mil	RM mil	%	%	RM mil	RM mil	%
Revenue	513.2	482.4	564.0	6%	-9%	513.2	564.0	-9%
PAT	30.0	17.1	67.7	76%	-56%	30.0	67.7	-56%
PATAMI	16.5	8.1	52.7	>100%	-69%	16.5	52.7	-69%
EPS (sen)	8.31	4.09	26.50	>100%	-69%	8.31	26.50	-69%
EBITDA %	23%	21%	28%			23%	28%	
Capex	53.7	58.9	86.5	-9%	-38%	53.7	86.5	-38%
Dividend	0	50	0			0	0	
Net Cash	871.9	801.4	840.4			871.9	840.4	
EDR	100:0	100:0	100:0			100:0	100:0	
ROSF	0.8%	0.4%	2.6%			0.8%	2.6%	



Investments

CONTINUING STRATEGIC INVESTMENTS FOCUSING ON SENSORS, 5G TESTING & SiC/ GaN TECHNOLOGIES

CARSEM SITES

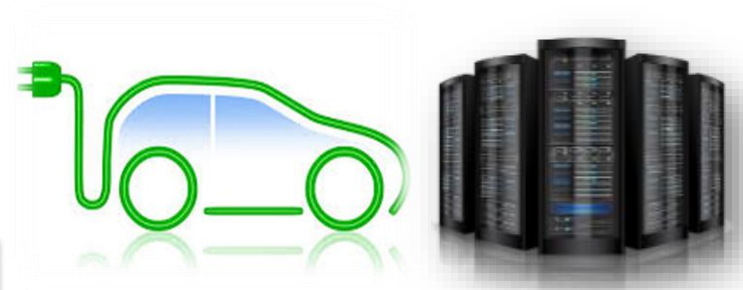
SZ

5G TESTING



S

SILICON CARBIDE

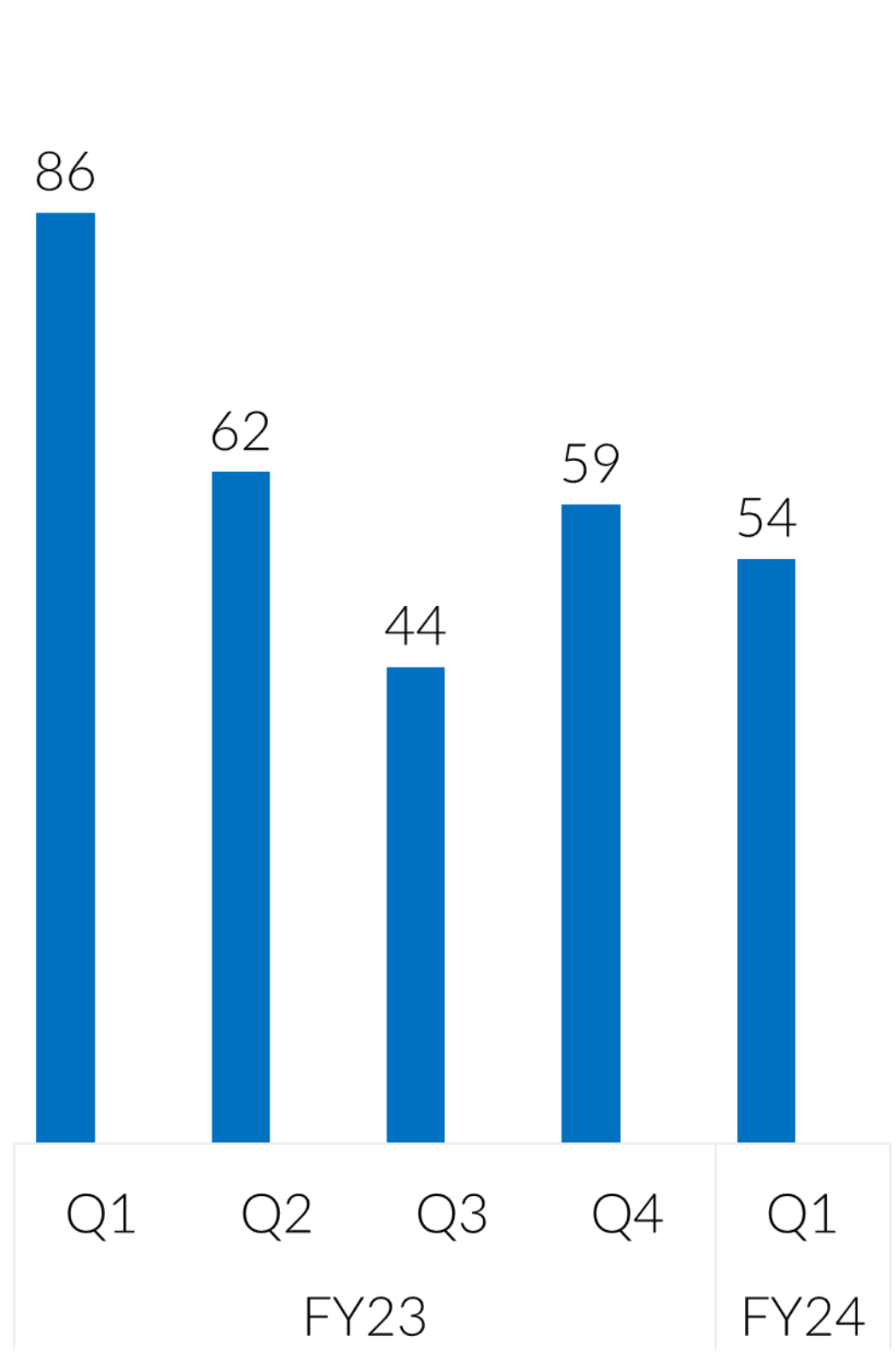


M

MEMS SENSORS



MPI CAPEX (RM million)



- Hire domain specific relevant people across the globe to support business operations & sales
- Investing in research & development to deliver latest technology solutions to our customers
- Floor space expansion to meet increasing business demands from existing & new customers
- Continuing Industry 4.0 via automation in each factory to have zero defects quality
- Upskilling existing operational & technical manpower to be able to perform better with latest technology
- Looking for more anchor customers to secure more guaranteed business in future



Cash

STRONG NET CASH POSITION MEANS STABILITY IN UNCERTAIN TIMES

NET CASH (RM million) position remained healthy



MPI is cash rich despite significant capital expenditure and expenses towards managing externalities



Statement of profit or loss

	Q1FY24 RM '000	Q1FY23 RM '000	Changes %
Revenue	513,210	564,015	-9%
Cost of sales	(449,335)	(473,857)	-5%
Gross profit	63,875	90,158	-29%
Operating expenses	(29,248)	(33,434)	-13%
Other operating expenses/(income)	(6,761)	15,365	-144%
Profit from operation	27,866	72,089	-61%
Interest income	9,747	3,972	145%
Interest expenses	(2,491)	(2,266)	10%
Profit before taxation	35,122	73,795	-52%
Taxation	(5,088)	(6,135)	-17%
Profit for the period	30,034	67,660	-56%
Profit attributable to:			
Owners of the Company	16,519	52,699	-69%
Non-controlling interests	13,515	14,961	-10%
Profit for the period	30,034	67,660	-56%
Earnings per ordinary share (sen)			
Basic	8.31	26.50	-69%
Ratio			
GP %	12%	16%	
PBT %	7%	13%	
PAT %	6%	12%	
EBITDA %	23%	28%	



Statement of financial position

	30/09/2023	30/06/2023
	RM'000	RM'000
Non-current assets		
Property, plant and equipment	1,390,522	1,416,233
Right-of-use assets	45,524	47,298
Investment properties	26,819	27,026
Investments	46	46
	1,462,911	1,490,603
Current Assets		
Inventories	138,589	149,537
Trade and other receivables, including derivatives	327,013	318,871
Tax recoverable	201	4
Cash and cash equivalents	1,058,908	1,053,096
	1,524,711	1,521,508
TOTAL ASSETS	2,987,622	3,012,111



Statement of financial position

	30/09/2023 RM'000	30/06/2023 RM'000
Equity		
Share Capital	352,373	352,373
Reserves	1,854,019	1,826,261
Treasury shares	(163,816)	(163,816)
	2,042,576	2,014,818
Non-controlling interests	362,558	345,570
	2,405,134	2,360,388
Non-current liabilities		
Borrowings (unsecured)	105,258	79,480
Lease liabilities	10,265	21,788
Deferred tax liabilities	8,108	6,936
	123,631	108,204
Current liabilities		
Trade and other payables, including derivatives	341,550	346,104
Borrowings (unsecured)	81,739	172,184
Lease liabilities	13,093	3,177
Current tax liabilities	22,475	22,054
	458,857	543,519
TOTAL LIABILITIES	582,488	651,723
TOTAL EQUITY AND LIABILITIES	2,987,622	3,012,111
Net Assets per share attributable to owners of the Company (RM)	10.27	10.13
Net Cash	871,911	801,432
EDR	100 : 0	100 : 0



Summary



MPI revenue closed at US\$ 111 million for Q1 FY24, a sequential growth of 4% QoQ



PATAMI improved by more than 100%, proving the implemented cost prudence measures to be effective



MPI has a healthy order book for future quarters despite the ongoing market uncertainty



Carsem continues to invest in SiC & GaN Technology, 5G Testing, MEMS Sensors to grab the next wave of opportunities



Investing in expansion - new factory in Ipoh, additional floor in Carsem S – Site (Ipoh) & a new site in China



Net cash (RM 872 million for investment and M&A), no debts



Thank You