

# Zhen Ding Technology Holding (4958 TT)

## Investor Presentation

October 2024

- Zhen Ding Technology Holding's statements of its current expectations are forward looking statements subject to significant risks and uncertainties and actual results may differ materially from those contained in the forward-looking statements.
- 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.

# Zhen Ding (ZDT) at a Glance



**No. 1**

PCB Manufacturer Worldwide

**2006** Founded  
(Former Foxconn  
Advanced Tech, 1978)

**Taoyuan, Taiwan**  
Headquarter

**46,693** Employees  
(as of Dec. 31, 2023)



**26** Facilities

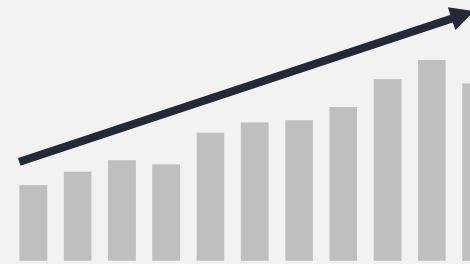
Located in Mainland China,  
Taiwan and India

**NT\$151.4bn**

Revenue in 2023  
(-11.6% YoY)

**+9%**

2013-2023年  
Revenue CAGR



**1,648**

Accumulated Valid Patents

**3,528**

Accumulated Filing  
Patents (as of Dec. 31, 2023)



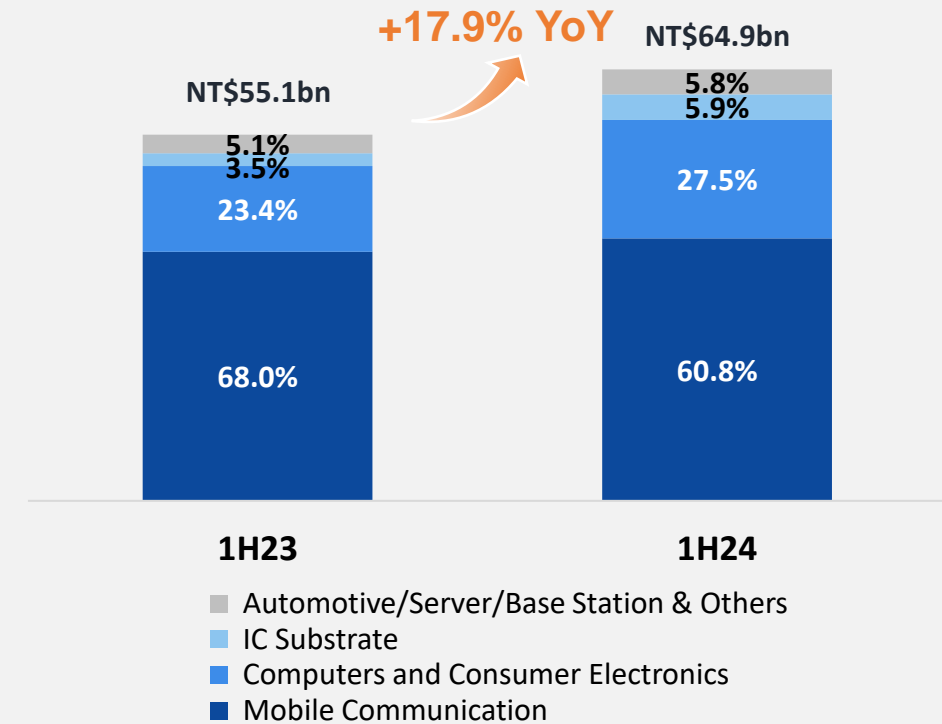
**NT\$108.6bn**

Market Cap  
(as of Sep. 30, 2024)

**14.7%**

10yr Average ROE

## Revenue Breakdown – By Applications



## Why Invest in ZDT?

1

### **World's largest PCB manufacturer with stable long-term growth:**

ZDT has become the world's largest PCB manufacturer since 2017. We have achieved a 9% revenue CAGR during 2013-2023.

2

### **Leverage One ZDT synergies to further widen the market share gap:**

With One ZDT as the core strategy, we will continue to drive steady growth by leveraging the synergies from one-stop shopping. Our global PCB market share was 7.0% in 2023, and we aim to increase it to 10% by 2030.

3

### **Aggressive expansion in IC substrate:**

We plan to invest NT\$60 billion capex for IC substrates in 2022-2027. We strive to become one of the top five global IC substrate suppliers by 2030.

4

### **Global manufacturing footprint:**

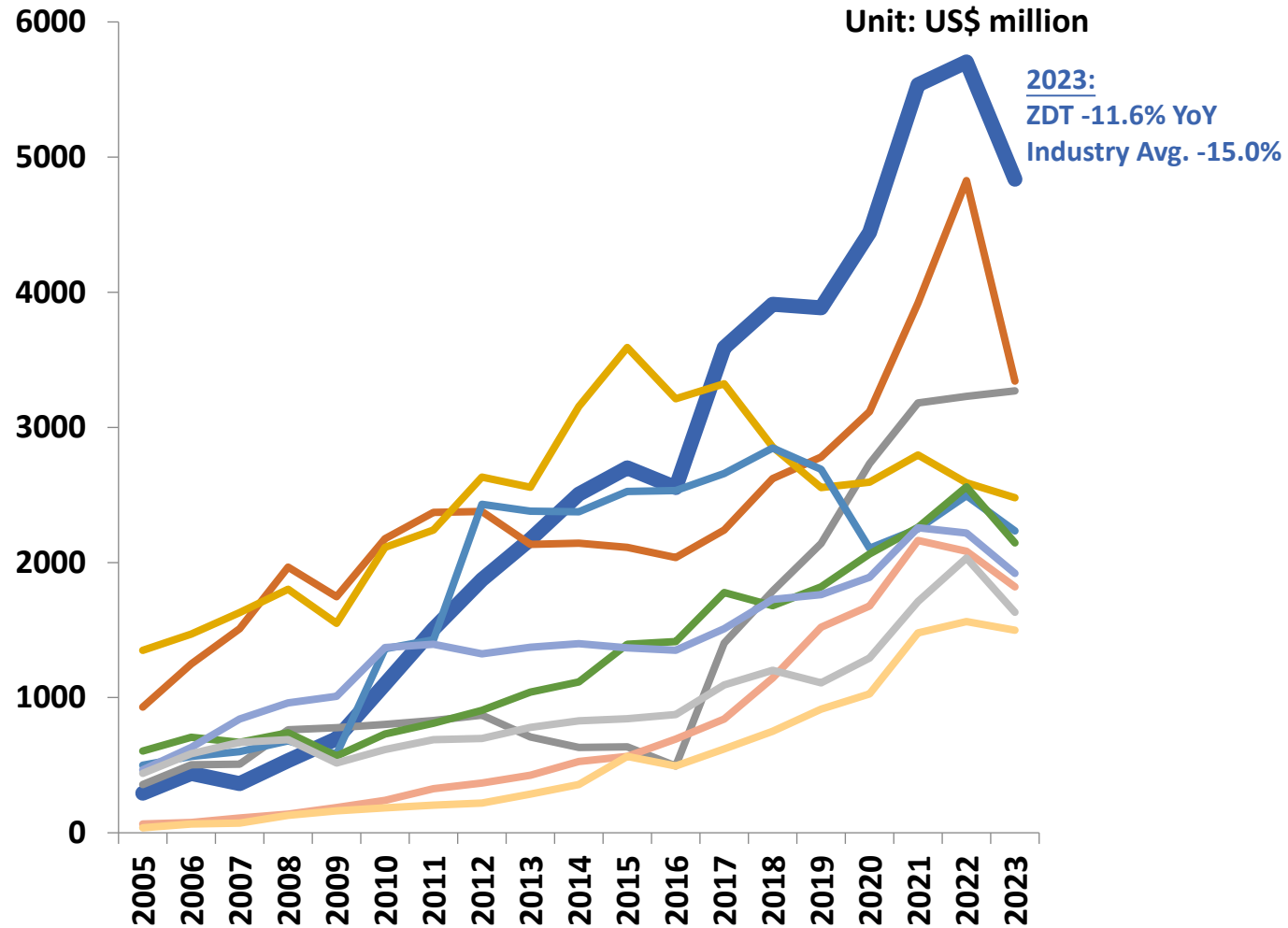
In addition to the three major manufacturing campuses in Mainland China, we also own manufacturing plants in Taiwan and India, and are constructing a new plant in Thailand. In the future, we will keep expand our global manufacturing bases to serve diversified customer needs.

# World's Largest PCB Manufacturer with Stable Long-term Growth

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# ZDT Outperforms Industry Average, Maintaining #1 Position

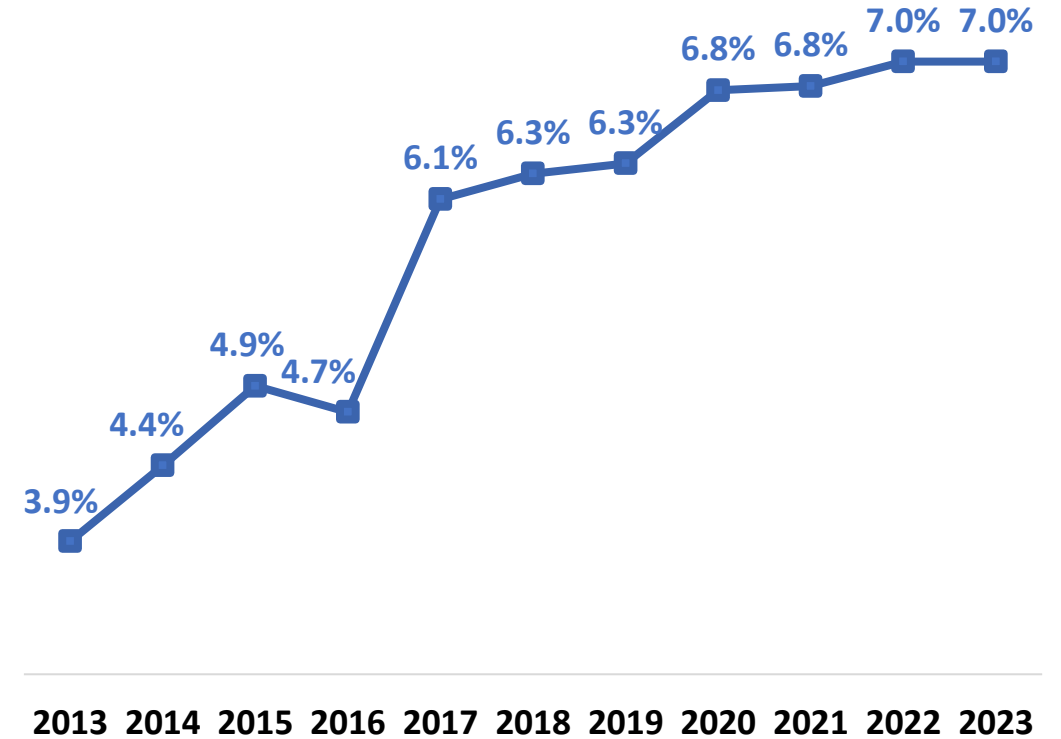
## 2023 Global Top 10 PCB Companies Revenue Trends



Source : NT Information ; Prismark (2024/02)

## ZDT Maintains a Leading Market Share in the PCB Industry

Maintain at Global #1 for 7 Consecutive Years



Source : Prismark

- 1 2Q24 revenue increased by 37.7% YoY, ahead of previous expectation. All four major applications achieved double-digit YoY growth:**

We previously expected a sequential decline in 2Q24 revenue due to the impact of customer product transition. However, the reported 2Q24 revenue was roughly flat QoQ, ahead of previous expectation. 2Q24 revenue reached the second highest for the same period, with all four major product applications achieved double-digit YoY growth. Specifically, revenue for IC substrates and Automotive/Server/Base Station both set record highs for a single quarter.
- 2 Entering the traditional peak season in 2H24, we expect demand for customers' new products to increase and revenue for IC substrates, servers, and automotive products to grow:**

Driven by the demand for customers' new products and the increasing orders for IC substrates, servers, and automotive products, we expect that the performance in 2H24 will follow the pattern of traditional peak seasons. The utilization rate is expected to remain high, and the revenue growth will exceed previous expectation.
- 3 The launch of various AI edge devices (AI smartphones, AI PCs, intelligent automotive, AIoT, etc.) will drive spec upgrades and content growth of PCBs:**

As more edge devices integrate more AI functionalities, product designs become increasingly complex, which will drive corresponding adjustments in PCBs. This potentially will drive spec upgrades and content growth across Zhen Ding's all types of PCBs.
- 4 Secured new orders for optical business; the first phase of the new fab in Thailand is set to enter trial production in 1H25 and mass production in small scale in 2H25:**

The optical business has successfully secured orders from top-tier customers and will begin contributing to revenue from 3Q24. The capacity of the first phase of the new fab in Thailand will focus on high-end server, automotive, and optical applications. Once the new fab enters mass production, it will be able to meet the growing customer demand for related products.

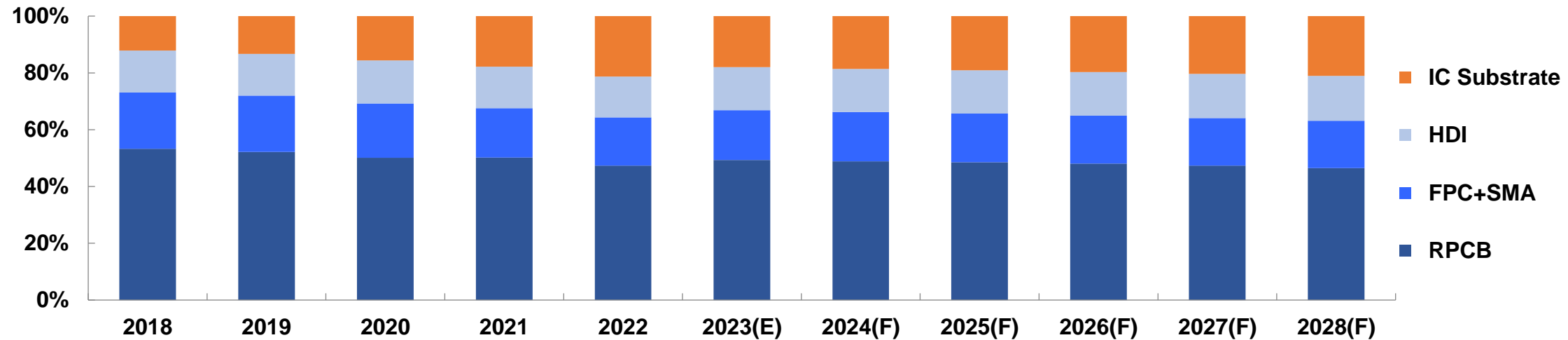
# Leverage One ZDT Synergies to Further Widen the Market Share Gap

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Aim to Reach 10% Global PCB Market Share by 2030



# All PCB Segments to Resume Growth in 2024

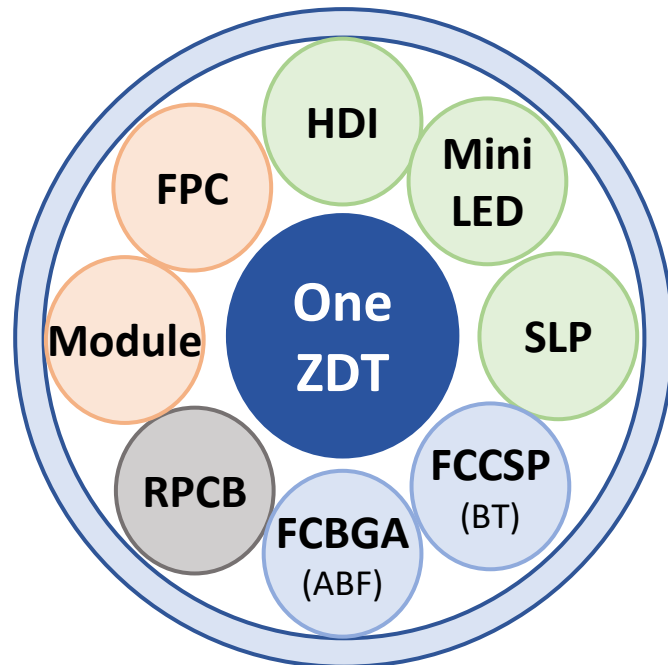


Product	Item	2018	2019	2020	2021	2022	2023(E)	2024(F)	2025(F)	2026(F)	2027(F)	2028(F)	2023-2028 CAGR
RPCB	Value	33,225	31,969	32,674	40,641	38,720	34,292	35,387	37,472	39,174	40,553	41,405	3.8%
	%	53.2%	52.1%	50.1%	50.2%	47.4%	49.3%	48.2%	48.1%	47.6%	46.9%	45.8%	
FPC+SMA	Value	12,395	12,195	12,483	14,058	13,842	12,191	13,106	13,693	14,307	14,947	15,617	5.1%
	%	19.9%	19.9%	19.1%	17.4%	16.9%	17.5%	17.9%	17.6%	17.4%	17.3%	17.3%	
HDI	Value	9,222	9,008	9,874	11,811	11,763	10,536	12,024	12,776	13,575	14,424	15,326	7.8%
	%	14.8%	14.7%	15.1%	14.6%	14.4%	15.2%	16.4%	16.4%	16.5%	16.7%	17.0%	
IC Substrate	Value	7,554	8,139	10,188	14,410	17,415	12,498	12,829	13,975	15,224	16,584	18,065	7.6%
	%	12.1%	13.3%	15.6%	17.8%	21.3%	18.0%	17.5%	17.9%	18.5%	19.2%	20.0%	
Total		62,396	61,311	65,219	80,920	81,740	69,517	73,346	77,916	82,279	86,508	90,413	5.4%
YoY Chang (%)		6.0%	-1.7%	6.4%	24.1%	1.0%	-15.0%	5.5%	6.2%	5.6%	5.1%	4.5%	

Source : Prismark(2024/9) ; 2025~2028 data is calculated based on Prismark's estimation.

# One ZDT: We Offer A Full Range of PCBs for AI

From AI Edge Devices to AI Servers – AI Increases Design Complexity for PCBs  
ZDT Offers the Most Comprehensive and Advanced PCBs for All Kinds of AI Applications



AI

Cloud



AI Server



Edge Server



High  
Performance  
Memory

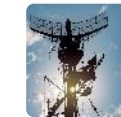
Channel



Optical



Switch



Base Station

Device



AI Smartphone/  
Chip



AI PC



AI Tablet



Wearable  
Devices



AR/VR  
Metaverse



Intelligent Vehicle/  
Smart Cockpit  
Domain Controller



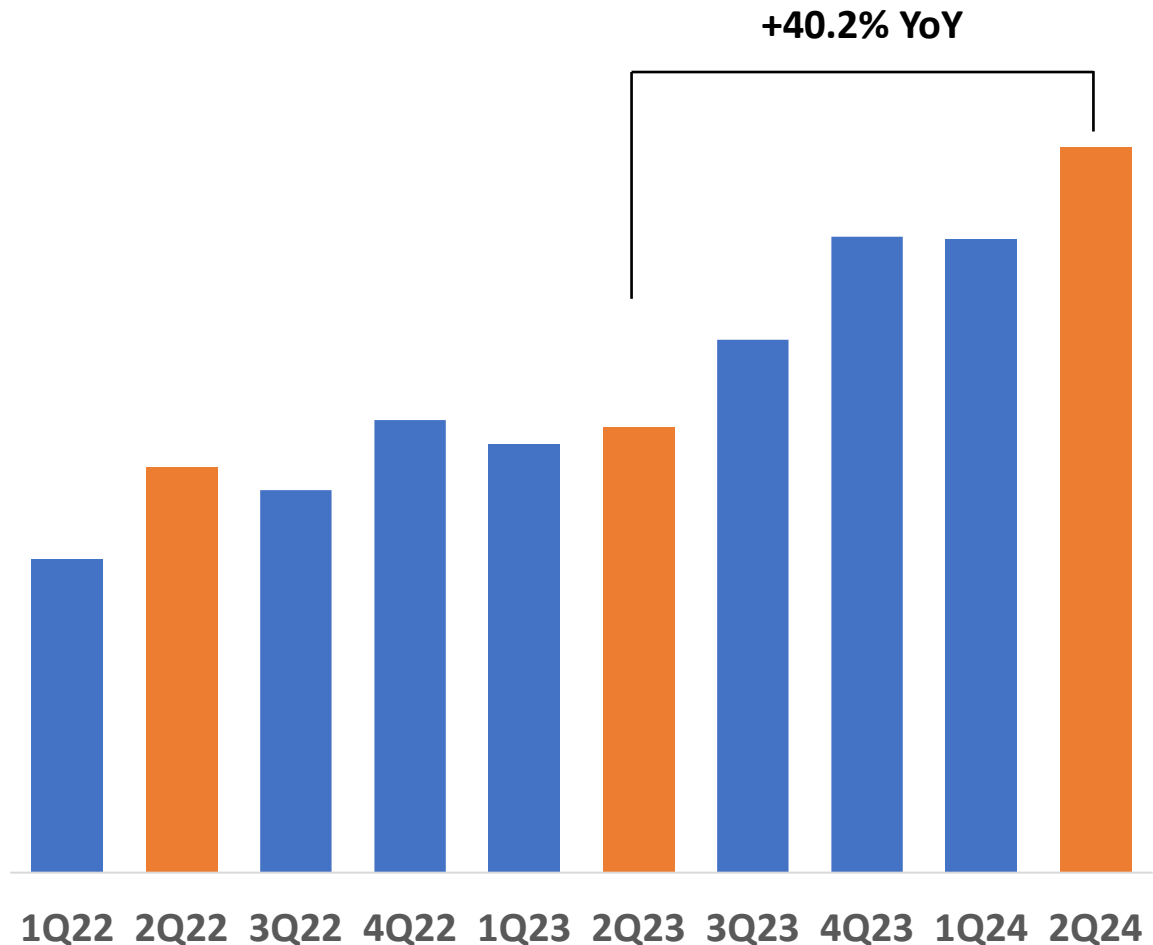
Autopilot Chip/  
mmWave Radar



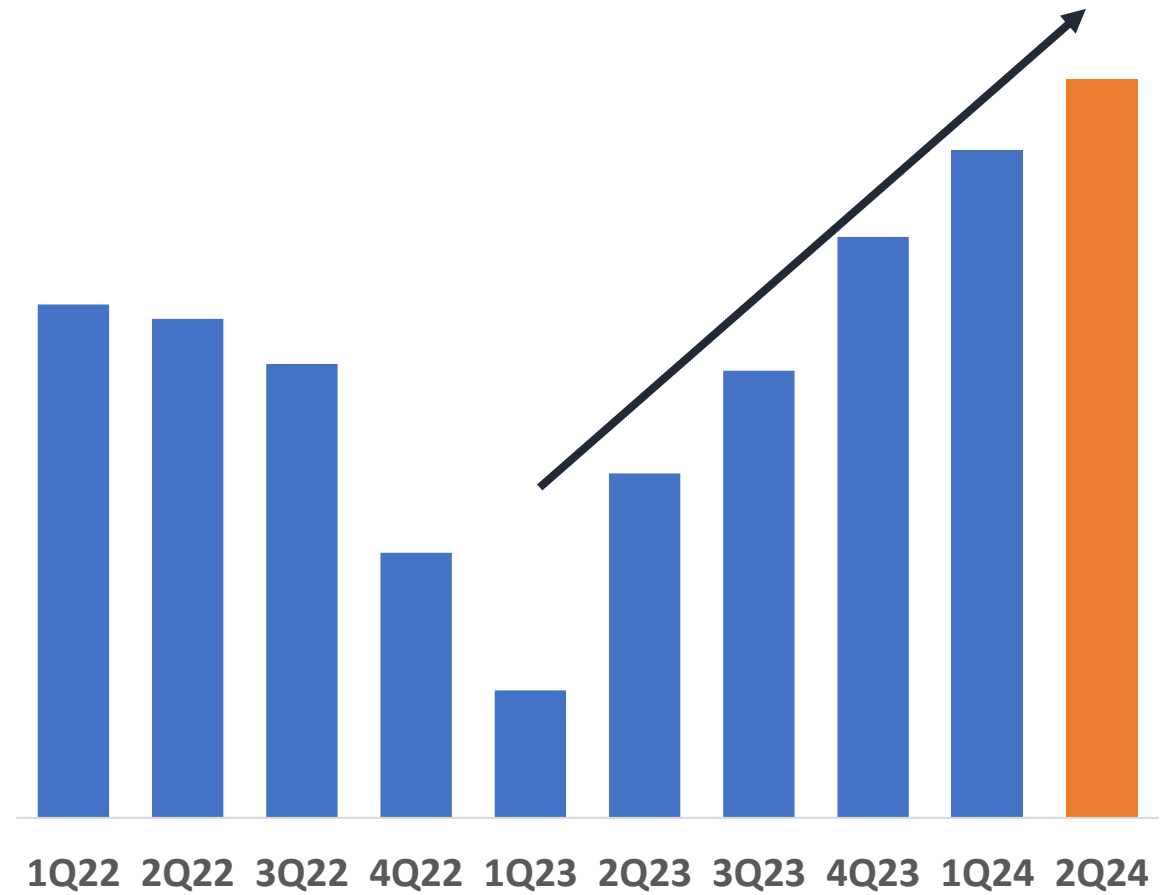
NEV/  
Battery

# Continued Effort to Diversify Product Portfolio

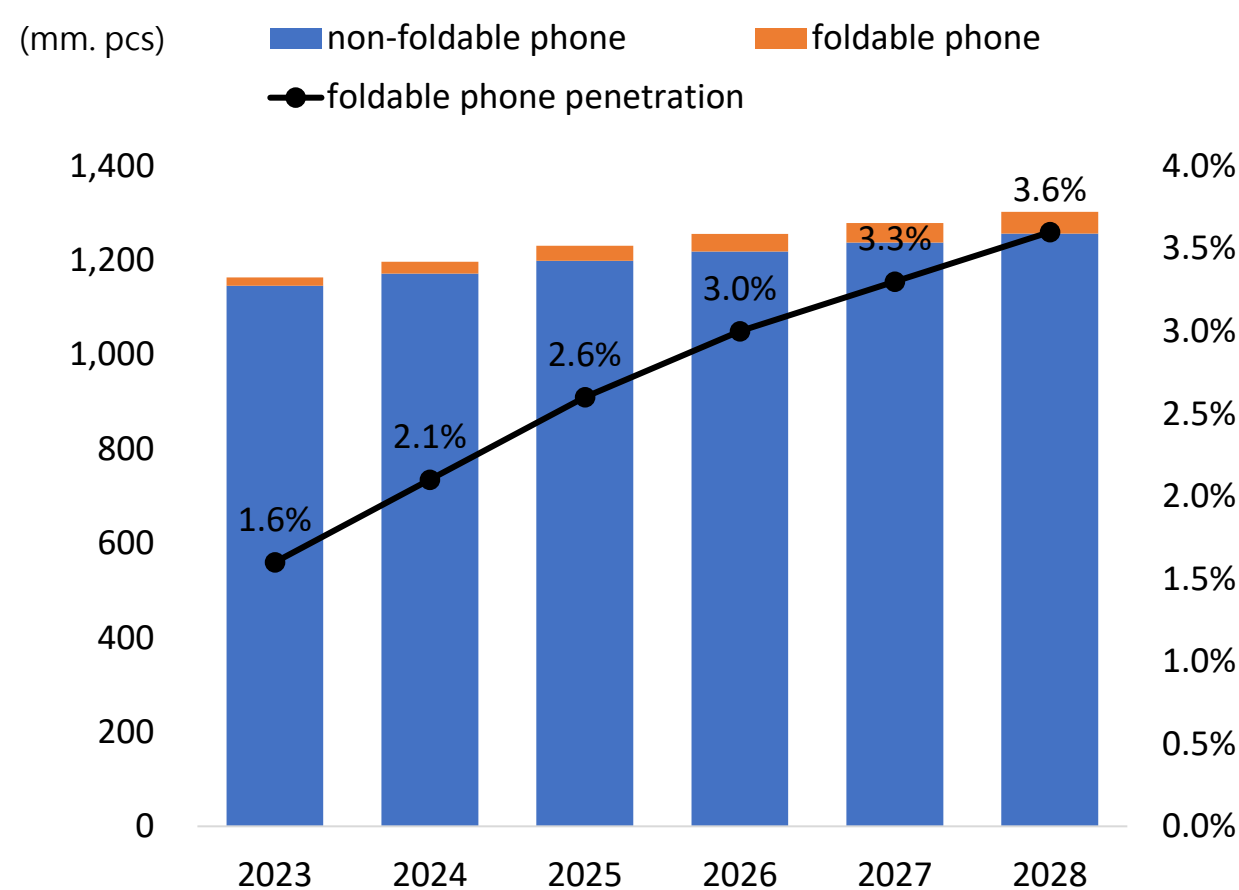
ZDT's 2Q24 Revenue for Automotive/Server/Base Station  
Achieved 40.2% YoY Growth



ZDT's 2Q24 Revenue for IC Substrates  
Continues to Reach a Record High

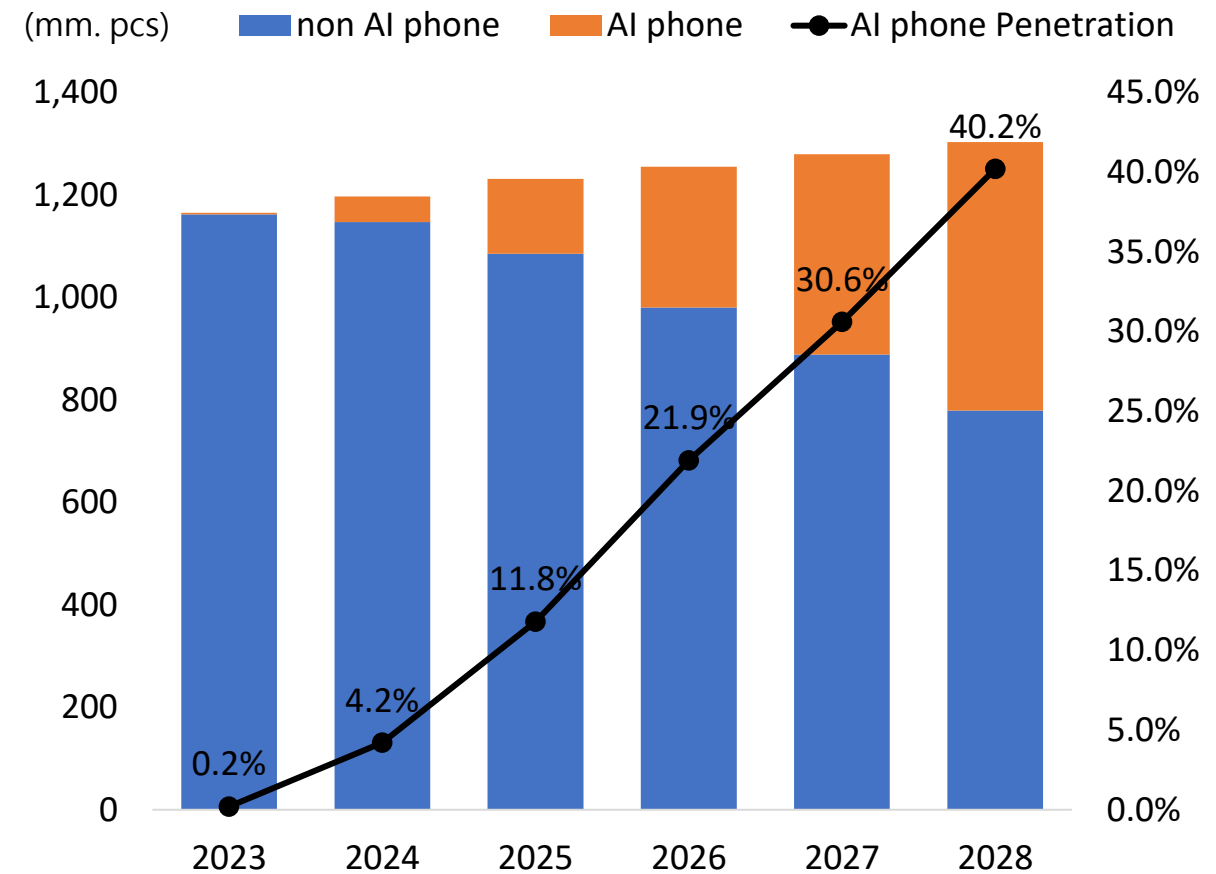


## Global Foldable Phone Market Scale : ZDT has delivered to multiple customer



資料來源：IDC(2024/2)

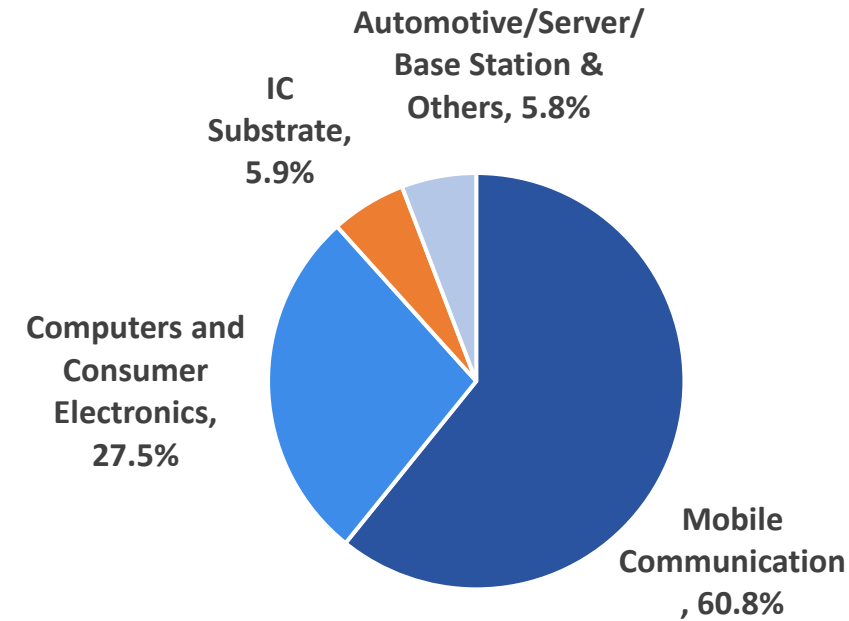
## Global AI phone Market Scale : ZDT actively collaborates with customers to develop new products



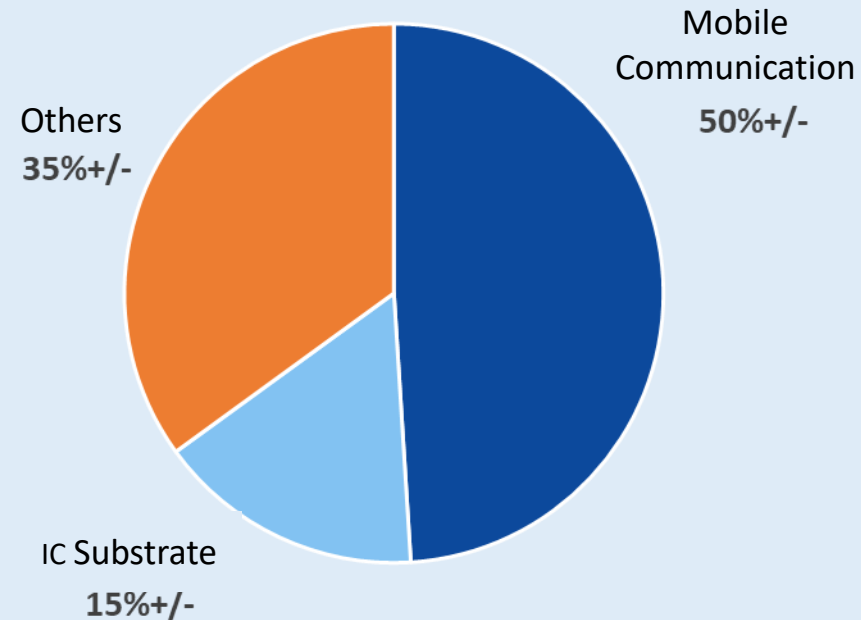
資料來源：IDC(2024/2)

# Aim to Reach 10% Global PCB Market Share by 2030

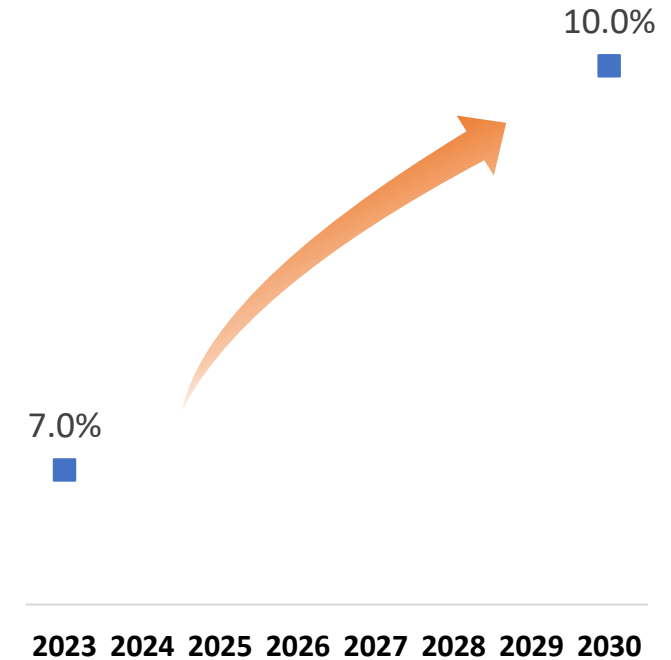
## 1H24 Revenue NT\$64.9bn



## 2027 Target Revenue by Application



## Aim to Reach 10% Global Market Share by 2030



# Aggressive Expansion in IC Substrate

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Aim to Become One of the Top Five in the World by 2030

# IC Substrate Business Update

1

**IC substrate revenue again reached a record high for a single quarter in 2Q24, with revenue contribution increasing to 5.9% in 1H24. IC substrate revenue will maintain at rapid growth this year:**

- IC substrate revenue increased by 96.7% YoY in 1H24, and it is expected to maintain rapid growth for the entire year. In the mid-term, we maintain our goal of achieving a >50% revenue CAGR for IC substrate during 2023-2027.

2

**Our ABF substrates passed the qualification for 2nm platform by an industry leader:**

- Our ABF substrates successfully passed the qualification for the next-generation 2nm platform by an industry leader in the first half of the year, demonstrating that our technology capabilities can now match the most advanced semiconductor processes. Our future development strategy will continue to focus on mid- to high-end products.

3

**The utilization rate of ABF substrates continues to increase, and we will add additional capacity for ABF Fab 1 by the end of this year:**

- For ABF substrates, there is strong demand for high-end AI, networking, and automotive products. We are actively engaging customers in these key areas and expect an increase in utilization rate in 2H24, with revenue to reach a record high quarter by quarter.
- In response to the growing demand for large body size (over 70mm x 70mm) and high layer counts (over 16 layers) customer orders, we will add additional capacity for our ABF Fab 1 by the end of this year.

4

**The utilization rate of BT substrates remains high, and revenue for 2H24 will surpass that of 1H24:**

- Our BT substrates are primarily used in smartphone processors, memory, and RF applications, and we closely collaborate with top-tier customers. The utilization rate of BT substrates exceeded 80% in 1H24. In 2H24, driven by the peak season of consumer electronics, revenue is expected to surpass that of 1H24.
- Fine line 6/8um Embedded Trace Substrate (ETS) is expected to enter mass production by the end of the year. Additionally, in 2024, the newly developed DDR-5 and NAND substrates will gradually enter mass production. Our yield is also on par with Tier 1 players.

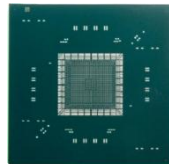
The complexity of IC substrates is increasing:

**High** layer counts

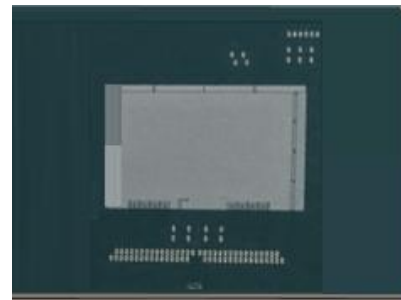
**Large** body size

**Flat** surface

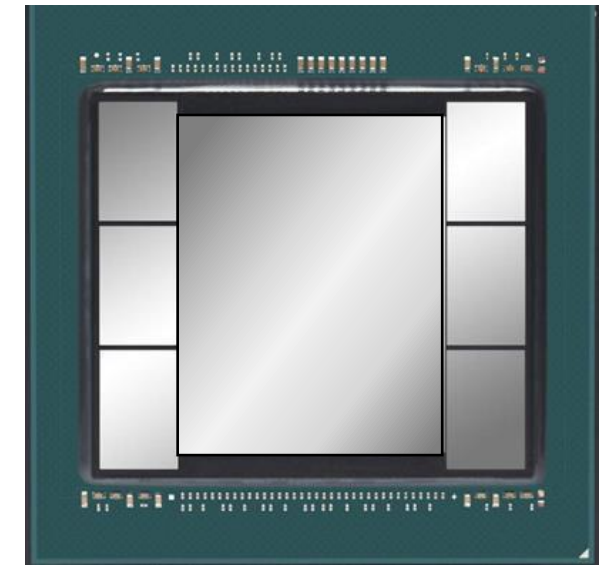
**Accurate** product precision



2005



2020



2026

	2005	2020	2026	
Body Size (mm)	31 x 31	75 x 60	120 x 140+	x20+
Layer count (L)	6	20	28+	x4+
Bump Count	1K	100K	300k+ ~ 500k+	x300+



## AI

**High-speed  
Computing**

**Data  
Transmission**

AI applications require high-speed computing capabilities and the integration of fast read-write memory.

## Chip Solution

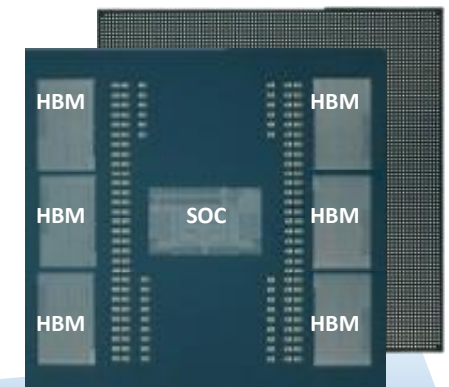
**Single SOC  
(System on Chip)**

Larger die size, more complicated manufacturing process, and higher costs

**Chiplet**






Chiplet packaging increases efficiency

## Chiplet Substrate



### IC Substrate Technology

**Zhen Ding's  
IC Substrate**

High Layer Counts	Large Body Size	Micro-drilling	Fine Line	Surface Finish Process
 18~20 Layers	 90x90 ~ 95x95mm	 40~60 um	 9~15 um	 Low roughness, high cohesion

# Applications and Capabilities of IC Substrates

## Intelligence



### DCU

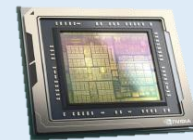
- Autopilot DCU
- Cockpit DCU

### Sensor

- mmWave Radar
- Laser Radar
- Camera

## Chip

Autopilot AI Chip  
Smart Cockpit Chip  
DCU Chip



CMOS  
Storage Chip  
ADAS Chip

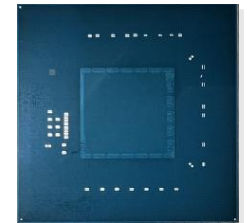


## Packaging

FCBGA  
CSP

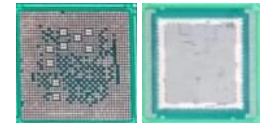
## ZDT's IC Substrate

### FCBGA



4~26L  
12x12~102x102 mm

### FCCSP



2~5L  
7x7~27x27mm

### WBCSP



2~4L  
7x7~27x27mm

## Connectivity



### Communication Module

Remote Communication Box

### Internet of Vehicle

- 5G Module

Smart Cockpit Chip



CSP

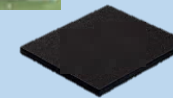
## Information



### Display System

- HUD
- AR/VR
- NFC

Smart Cockpit Chip  
Storage Chip



FCBGA  
CSP



## Advanced Packaging

- As Chiplet and HBM increase, the designs of bump area will become more irregular, which requires tighter control on packaging yields.
- The demand for more complex designs with large body sizes and high layer counts will increase.
- As packaging complexity increases, the quality of IC substrate becomes more important.
- Automotive products will extensively adopt advanced packaging, which will drive new demand for IC substrates and critical materials.

## Advanced Chiplet

- Interposer will become larger and bump counts will increase, driving the demand for more advanced large body size and high layer counts IC substrates.
- Optoelectronic device is the future trend, and there will be a significant number of bumps, wiring, and stacked vias along the edges of IC substrates.
- Backside power delivery to wafers will transform the structure of IC substrates and packaging designs.

## Co-Packaged Optics (CPO)

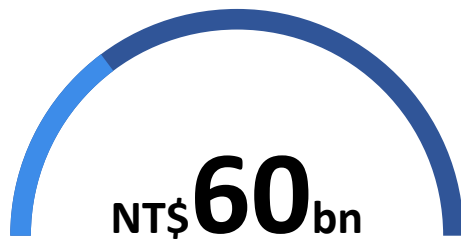
- CPO is the future trend, and the current consensus is that IC substrate remains the most optimal carrier.
- CPO can significantly improve transmission efficiency while reducing power consumption and signal loss.
- Closely monitor the progress of the integration of CPO+CoWoS.

# IC Substrate Capacity Expansion Plan

		2023				2024				2025				2026			
		1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
<b>SZ ABF Substrate Plant</b> (Two Fabs’ floor area in total: 170,000 m²)	<b>Fab 1</b> (Mid-to high-end products)	Installation															
		Sample certification															
		Mass production, target yield: comparable to tier 1 peers										Full utilization, target yield: comparable to tier 1 peers					
	<b>Fab 2</b> (High end products)											Installation					
												Sample certification					
														Mass production			
<b>QHD BT Substrate Plant</b> (Two Fabs’ floor area in total: 60,000 m²)	<b>Fab 1</b>	Industry Leading Quality															
	<b>Fab 2</b>	Mass Production		Utilization at 80%+					Industry Leading Quality								



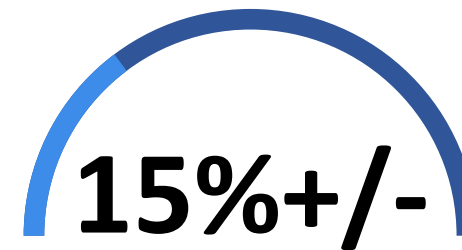
# IC Substrate Goals



**IC Substrate Capex:**  
Plan to invest NT\$60bn  
from 2022~2027



**IC Substrate Revenue:**  
2023~2027 Revenue  
CAGR >50%



**IC Substrate Revenue:**  
Account for 15 %+/- of  
company's consolidated  
revenue in 2027



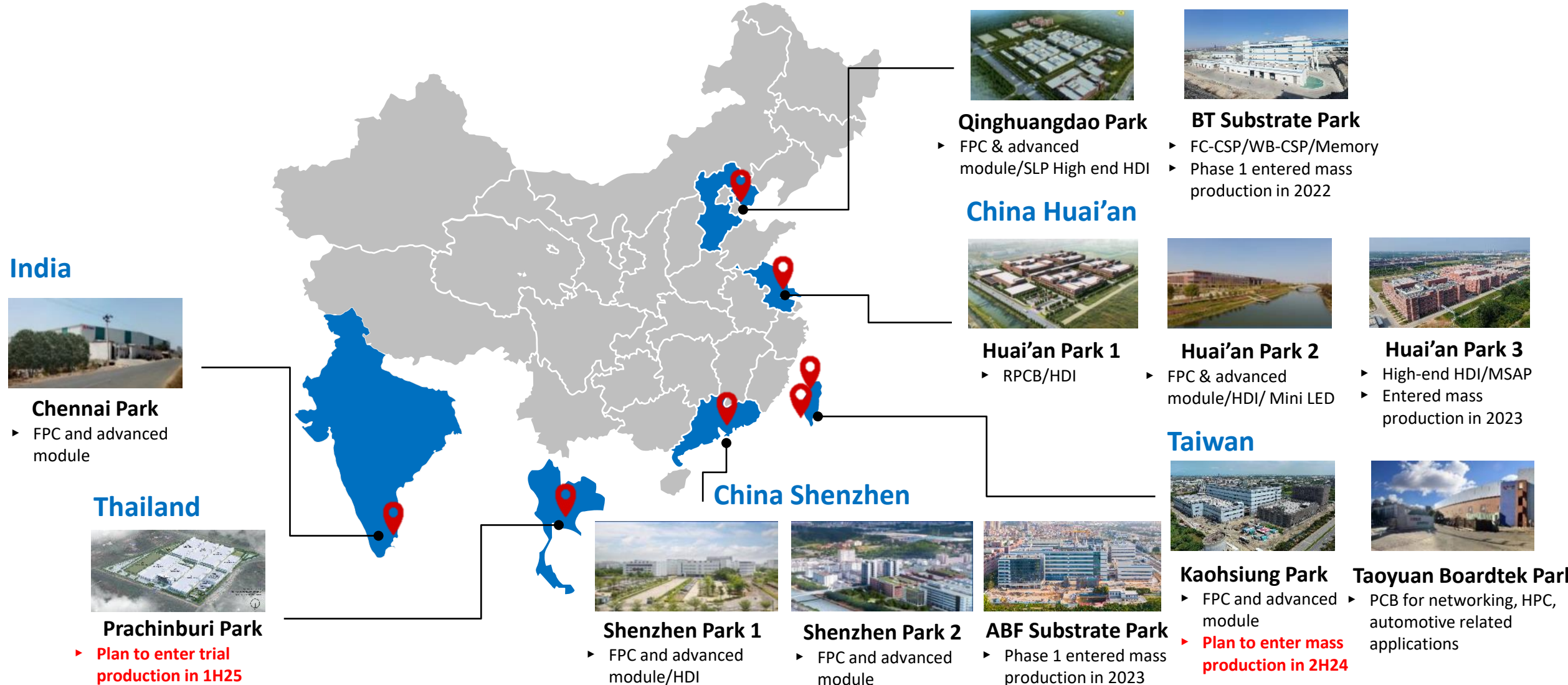
**IC Substrate Market Share:**  
Aim to become one of the  
global top 5 companies in the  
IC substrate market in 2030

# Global Manufacturing Footprint

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# Six Major Global Manufacturing Campuses

Multiple manufacturing campuses to fulfill clients' needs





# Global Manufacturing Footprint is advancing step by step with actively construction in Thailand according to the plan

(last Dec.) Phase I : high-end RPCB/HDI



(currently) Thailand Prachinburi Park (Phase I) :  
High-end RPCB/HDI

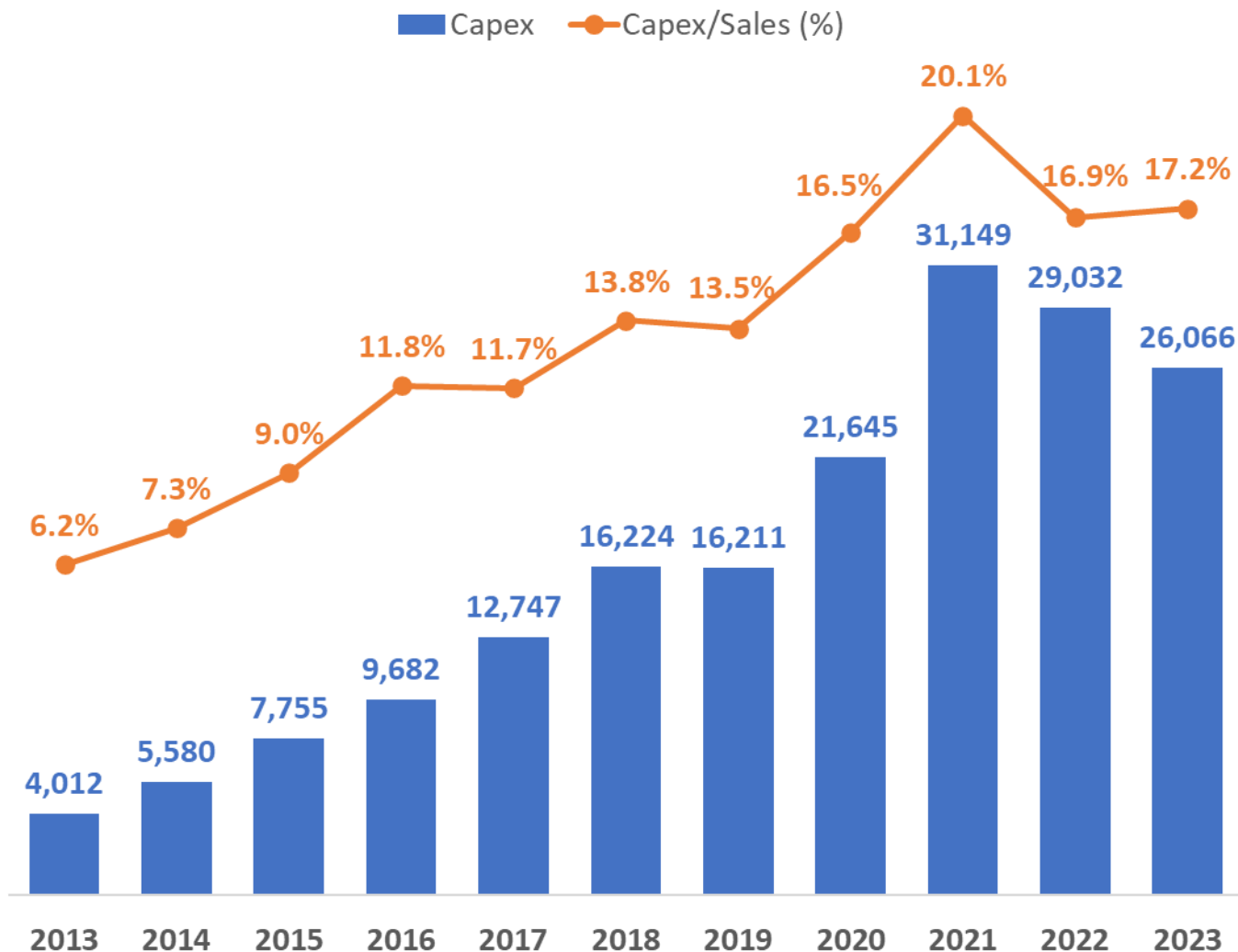


- The construction of the new fab in Prachinburi Province, Thailand is progressing according to plan. We hosted a topping out ceremony for the main building on August 26th, with equipment installation by the end of this year, trial production in 1H25, and mass production in small scale in 2H25.
- Phase 1 capacity will focus on high-end server, automotive, and optical applications, providing high-end RPCB/HDI products.
- It will be ZDT's key manufacturing site in Southeast Asia.

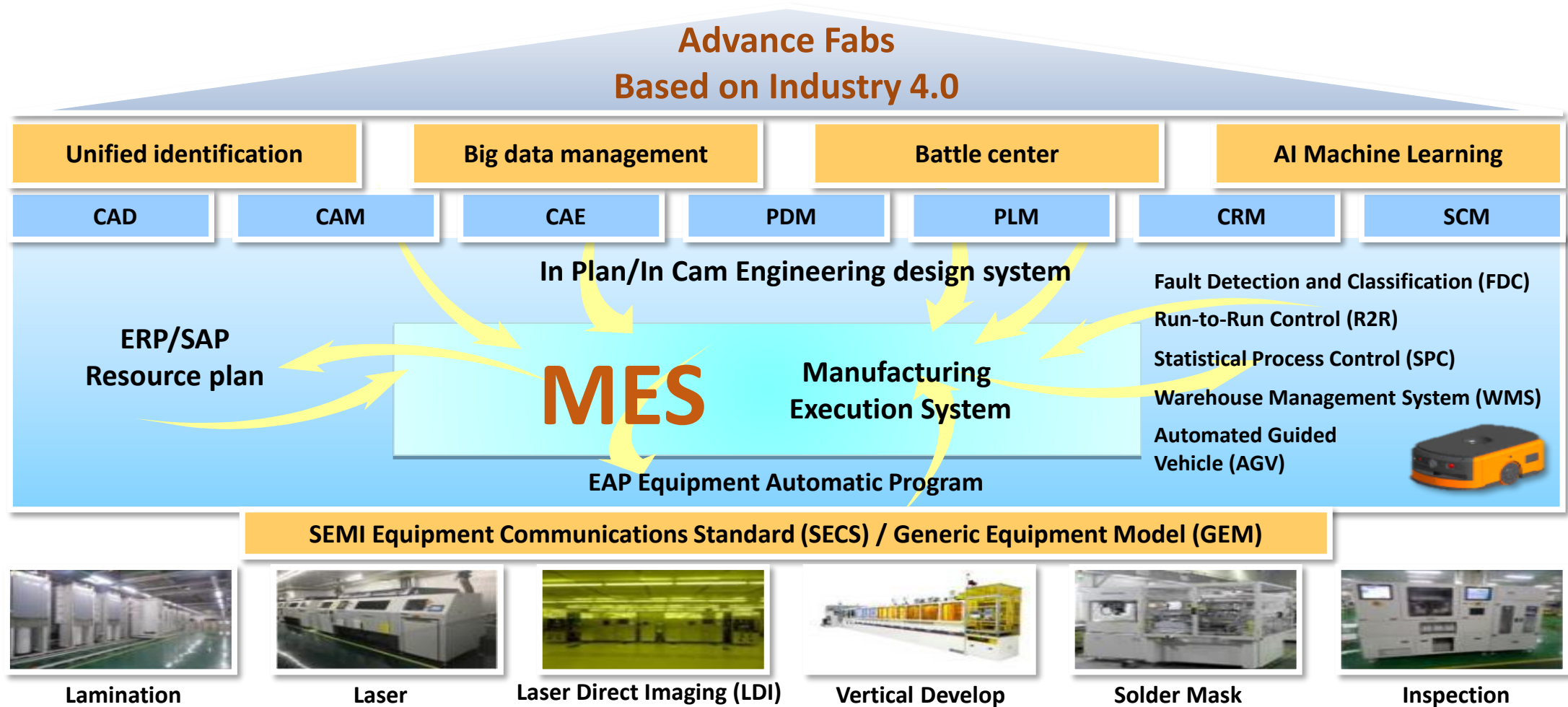




# Continued Capacity Expansion, Pursuing Stable Growth



- As the world's largest PCB manufacturer, we keep positioning ourselves as a growth-oriented business, continually adopting early deployment of production capacity to meet customers' need.
- Continually investing in Kaohsiung and Thailand, laying the foundation for long-term growth.



Under the One ZDT strategy, we have been introducing smart manufacturing into each plant step by step. Currently, Huai'an Park 3 is the 9th smart fab. These fabs have significant improvements in yields and efficiency.

# EPS + ESG – Improvement of ESG Ratings

## ► Corporate Governance Evaluation Ranking

Ranked between 6% to 20% in the 2024 Corporate Governance Evaluation for listed companies and **re-selected for inclusion in the TWSE Corporate Governance 100 Index.**

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## ► S&P Global ESG Rating

In 2023, Zhen Ding's S&P ESG Score improved to 73 and was **selected as the only PCB company in the S&P Global Sustainability Yearbook** for the second consecutive year.

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## ► Sustainalytics ESG Risk Rating

Zhen Ding's 2023 Sustainalytics ESG Risk Ratings improved from 17.8 to 15.6, classified as **low risk.**

## ► ISS ESG Rating

ISS has upgraded Zhen Ding's ESG Rating from "C" to "C+," granting Zhen Ding **"Prime" status.**

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## ► CDP

In 2023, Zhen Ding received a 'B' rating from CDP for climate change, marking a one-notch improvement from last year. Additionally, we achieved an **'A-' leadership** rating for water security, also advancing by one notch compared to the previous year.

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## ► FTSE Russell ESG Rating

Zhen Ding's FTSE Russell ESG Rating reached 4.4 (out of 5) and ranked in the **5th place among all listed companies in Taiwan.**

# Financial Summary

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# 2Q24 Financial Results

(Unit: NT\$ million, unless otherwise stated)

	2Q24	2Q23	YoY (%)
Revenue	32,411	23,537	+37.7%
Gross Profit	4,247	2,123	+100.1%
<b>Gross Margin</b>	<b>13.1%</b>	<b>9.0%</b>	<b>+4.1ppts</b>
Operating Expense	4,891	4,011	+21.9%
Operating Profit	(644)	(1,888)	
<b>Operating Margin</b>	<b>-2.0%</b>	<b>-8.0%</b>	<b>+6.0ppts</b>
Non-Operating Income/Expense	1,153	1,393	-17.2%
Net Income	667	150	+343.9%
<b>Net Margin</b>	<b>2.1%</b>	<b>0.6%</b>	<b>+1.5ppts</b>
Net Income to Parent	486	(90)	
<b>EPS (NT\$) <sup>(1)</sup></b>	<b>0.51</b>	<b>(0.09)</b>	
R&D Expense	2,858	2,298	+24.4%
Depreciation and Amortization	4,346	4,042	+7.5%
Cash Inflow Generated from Operations	1,899	3,471	-45.3%
Cash and Cash Equivalents <sup>(2)</sup>	69,461	59,916	+15.9%
ROE(%) <sup>(3)</sup>	<b>2.0%</b>	<b>0.5%</b>	<b>+1.5ppts</b>

Note : (1) Weighted Average Shares outstanding as of 1H24 : 944,956 thousand shares (actual issuance 947,049 thousand shares, with 2,093 thousand shares held in treasury)  
(2) Including current financial assets at amortized cost (time deposits, etc.) (3) ROE is annualized data calculated based on the average of equity attributable to owners of parent

# 1H24 Financial Results

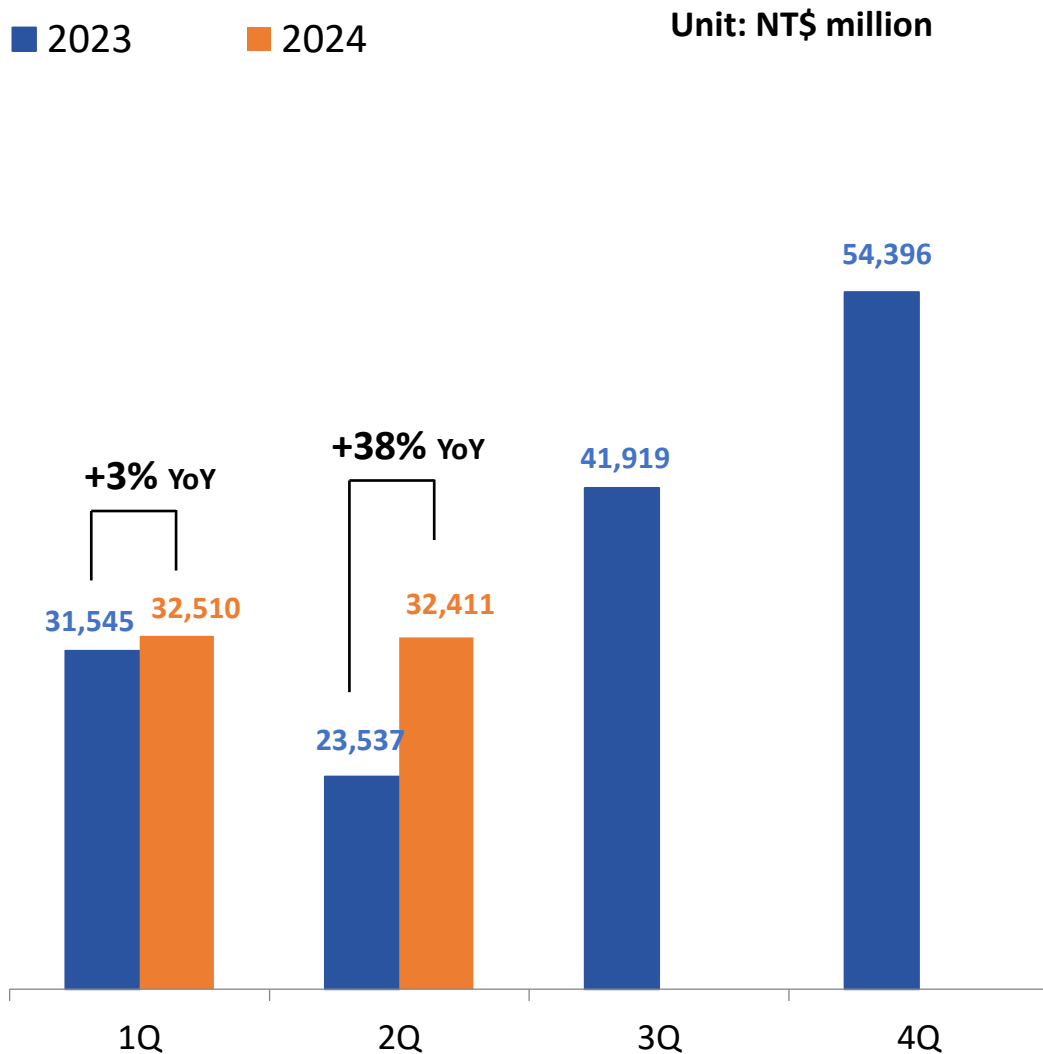
(Unit: NT\$ million, unless otherwise stated)

	1H24	1H23	YoY (%)
Revenue	64,922	55,082	+17.9%
Gross Profit	9,584	7,198	+33.2%
<b>Gross Margin</b>	<b>14.8%</b>	<b>13.1%</b>	<b>+1.7ppts</b>
Operating Expense	9,485	7,867	+20.6%
Operating Profit	99	(669)	
<b>Operating Margin</b>	<b>0.2%</b>	<b>-1.2%</b>	<b>+1.4ppts</b>
Non-Operating Income/Expense	1,908	1,075	+77.5%
Net Income	2,103	1,013	+107.6%
<b>Net Margin</b>	<b>3.2%</b>	<b>1.8%</b>	<b>+1.4ppts</b>
Net Income to Parent	1,463	414	+253.5%
<b>EPS (NT\$) <sup>(1)</sup></b>	<b>1.55</b>	<b>0.44</b>	
R&D Expense	5,493	4,236	+29.7%
Depreciation and Amortization	8,577	8,000	+7.2%
Cash Inflow Generated from Operations	10,161	15,216	-33.2%
Cash and Cash Equivalents <sup>(2)</sup>	69,461	59,916	+15.9%
ROE(%) <sup>(3)</sup>	<b>3.1%</b>	<b>1.6%</b>	<b>+1.5ppts</b>

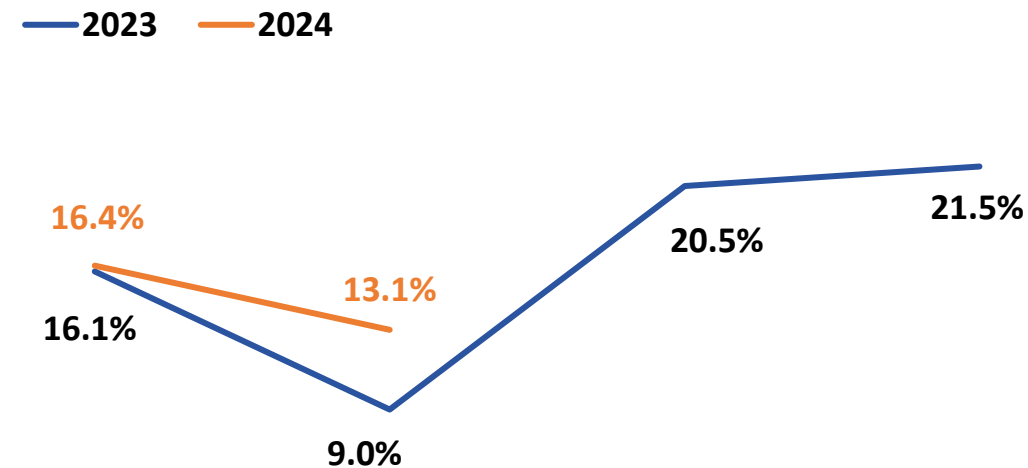
Note : (1) Weighted Average Shares outstanding as of 1H24 : 944,956 thousand shares (actual issuance 947,049 thousand shares, with 2,093 thousand shares held in treasury)  
(2) Including current financial assets at amortized cost (time deposits, etc.) (3) ROE is annualized data calculated based on the average of equity attributable to owners of parent

# Quarterly Operation Results

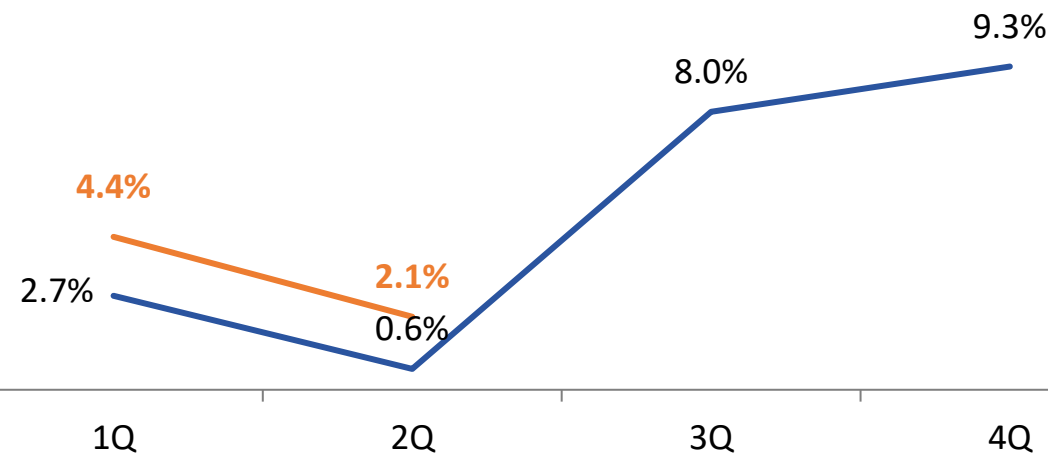
## Revenue



## Gross Margin (%)

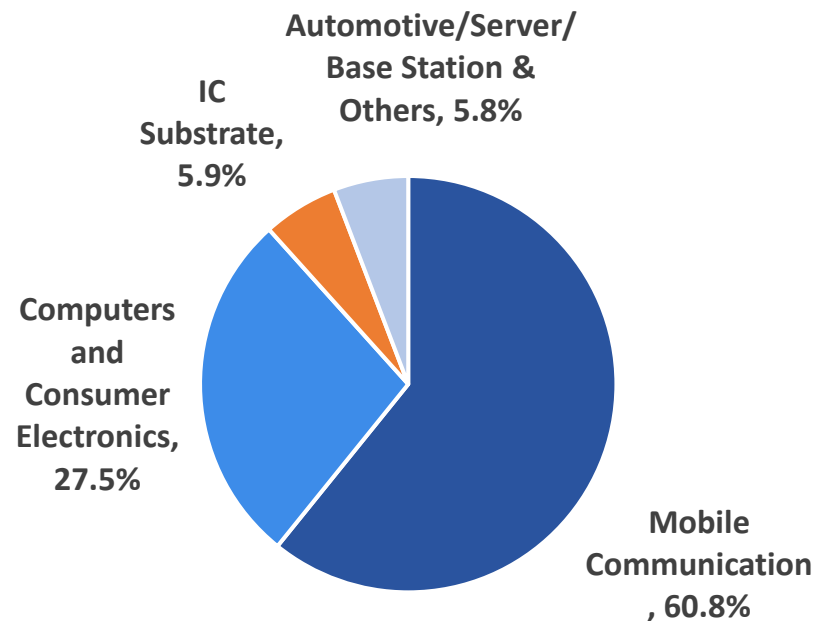


## Net Margin (%)

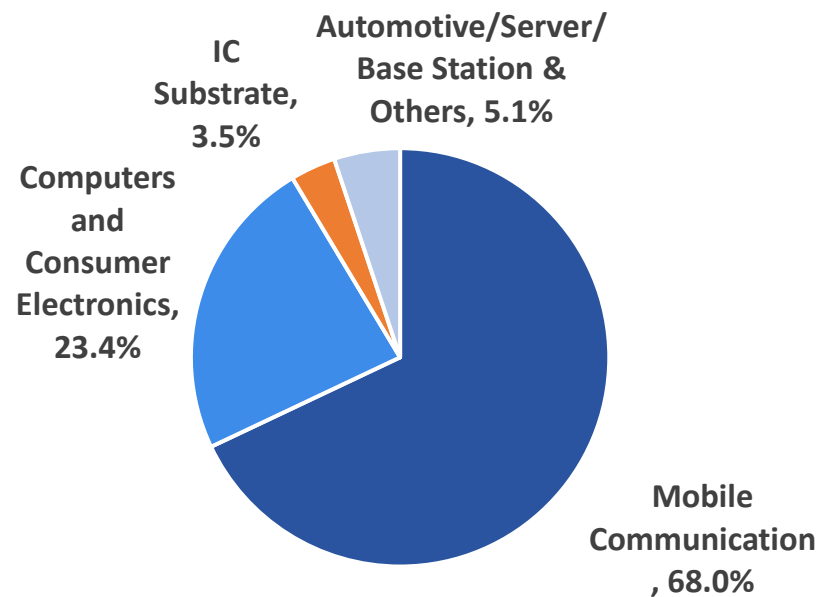


# Revenue Breakdown – By Applications

1H24 Revenue NT\$64.9bn



1H23 Revenue NT\$55.1bn



Applications	1H24 Revenue YoY%
Mobile Communication	5.4%
Computers and Consumer Electronics	38.6%
IC Substrate	96.7%
Automotive/Server/Base Station & Others	33.3%



# Consolidated Balance Sheet and Key Indices

(Unit: NT\$ million)

	2024-6-30		2023-6-30		Change	
	Amount	%	Amount	%	Amount	%
Cash and Cash Equivalents <sup>(2)</sup>	69,461	28.2%	59,916	26.8%	9,545	+1.4ppts
Notes & Accounts Receivable	22,317	9.1%	17,496	7.5%	4,821	+1.6ppts
Inventories	18,784	7.6%	13,784	5.9%	5,000	+1.7ppts
Property, Plant and Equipment <sup>(3)</sup>	112,558	45.7%	108,559	48.5%	3,999	-2.8ppts
<b>Total Assets</b>	<b>246,563</b>	<b>100.0%</b>	<b>223,833</b>	<b>100.0%</b>	<b>22,730</b>	
Debt	54,590	22.1%	47,455	21.2%	7,135	+0.9ppts
Notes & Accounts Payable	37,251	15.1%	35,325	15.8%	1,926	-0.7ppts
<b>Total Liabilities</b>	<b>107,321</b>	<b>43.5%</b>	<b>98,219</b>	<b>43.9%</b>	<b>9,102</b>	
<b>Total Equity</b>	<b>139,242</b>	<b>56.5%</b>	<b>125,615</b>	<b>56.1%</b>	<b>13,627</b>	

## Key Indices

A/R Turnover Days	72	78
Inventory Turnover Days	61	66
Current Ratio (x)	1.76	1.30
PPE Turnover (x) <sup>(4)</sup>	1.17	1.03

Note : (1) Weighted average shares outstanding as of 1Q24 : 944,956 thousand shares (2) Including current financial assets at amortized cost (time deposits, etc.)

(3) Property, Plant and Equipment includes investment property (4) PPE Turnover = annualized net revenue / average net property, plant and equipment.

# 2013-2023 Financial Summary

Unit: NT\$ million

Period	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Revenue	64,483	75,954	85,738	82,393	109,238	117,913	120,068	131,279	155,022	171,356	151,398
Gross Profit	11,894	14,323	16,427	12,542	17,833	26,061	27,222	26,584	30,537	39,888	27,459
Net Income	5,471	6,735	7,731	3,456	6,772	11,536	12,402	11,508	13,694	20,535	9,432
Net Income to Parent	5,471	6,735	7,731	3,456	5,172	8,448	8,685	8,095	9,651	14,197	6,189
Depreciation & Amortization	3,742	4,293	4,850	5,295	5,679	6,820	7,955	8,405	11,875	14,638	16,323
EPS (NT\$)	7.41	9.12	9.80	4.29	6.43	10.50	9.93	8.90	10.21	15.02	6.550
DPS (NT\$)	3.00	3.67	4.50	2.20	3.30	4.46	4.50	4.50	5.00	6.00	3.275
Payout Ratio (%)	40.5%	40.2%	45.9%	51.3%	51.3%	42.5%	45.3%	50.6%	49.0%	40.0%	50.0%
Cash and Cash Equivalents*	10,016	23,482	31,572	30,241	33,296	49,154	43,071	46,775	35,179	57,599	65,970
Property, Plant and Equipment	27,843	30,073	32,074	32,262	36,681	41,913	46,243	68,177	86,073	104,814	109,965
Capital	7,386	7,386	8,047	8,047	8,047	8,047	9,022	9,470	9,470	9,470	9,470
ROE (%)	23.77%	23.33%	20.82%	8.59%	14.49%	17.30%	14.72%	11.84%	12.59%	16.67%	7.10%
Debt Ratio (%)	64.06%	62.54%	53.70%	59.72%	55.33%	44.25%	35.41%	42.56%	42.01%	42.87%	44.67%

\* Including current financial assets at amortized cost (time deposits, etc.)

# Q&A

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臻鼎科技控股

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THANK YOU