

晶焱科技股份有限公司

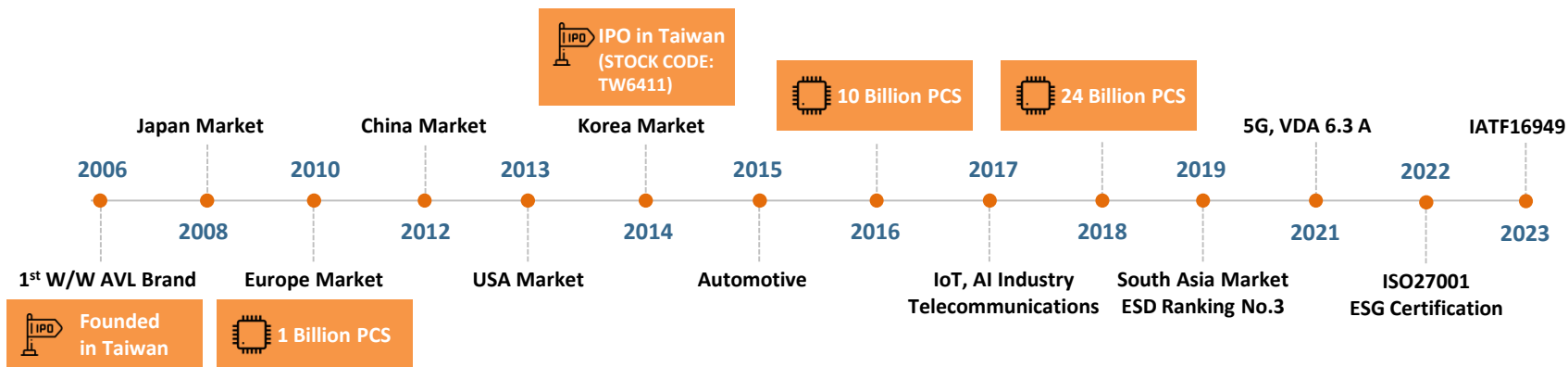
AMAZING Microelectronic Corp.

2023櫃買市場業績發表會 (2023.4.18)

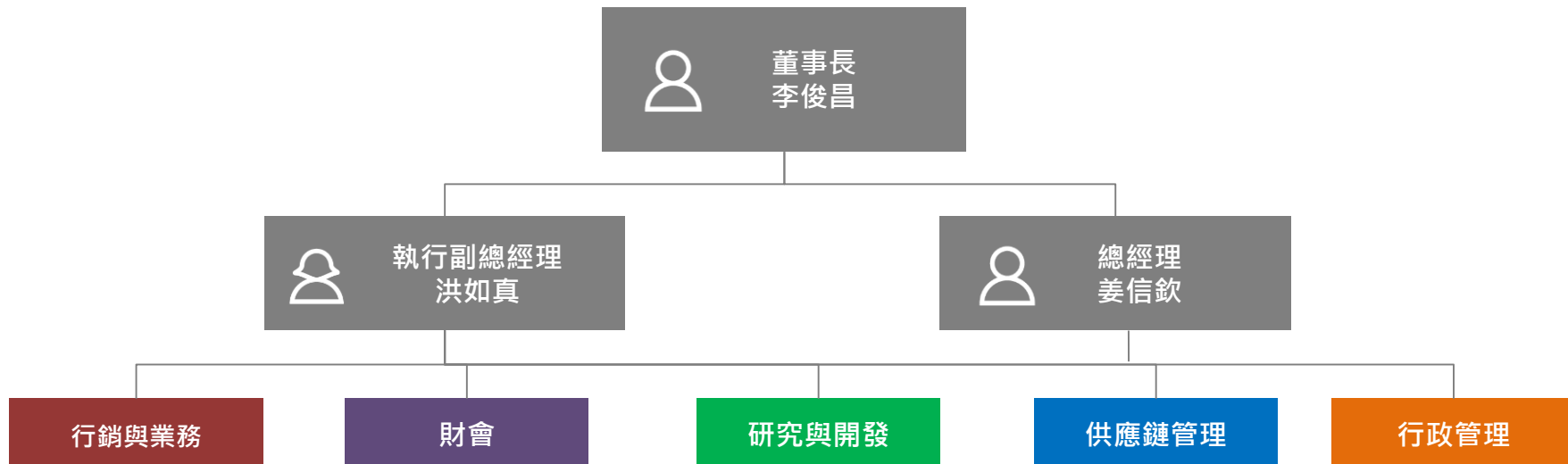


公司簡介

公司沿革



公司組織圖



⚡ 人力資源配置

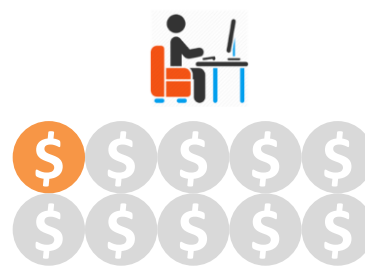
全球員工總數150人/2023.3.31



47%
研究與開發



43%
供應鏈管理/行銷與業務



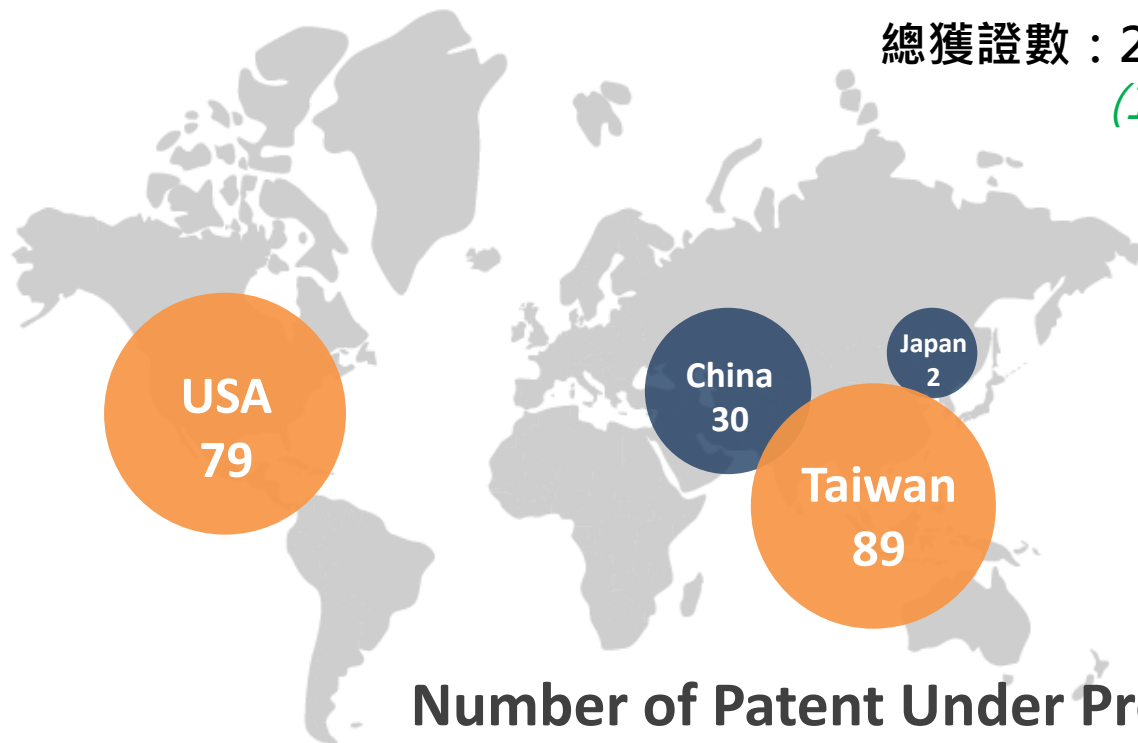
10%
財會 / 行政管理

晶焱辦公室及代理商分佈



⚡ 專利數量

總獲證數：200個/2023.3.31
(180個/2022.3.31)

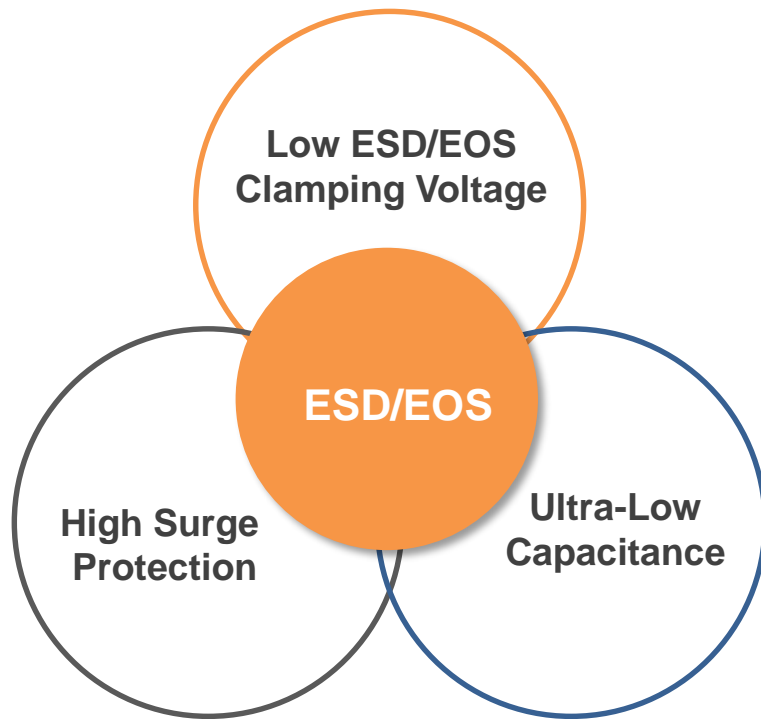


Number of Patent Under Process：44個

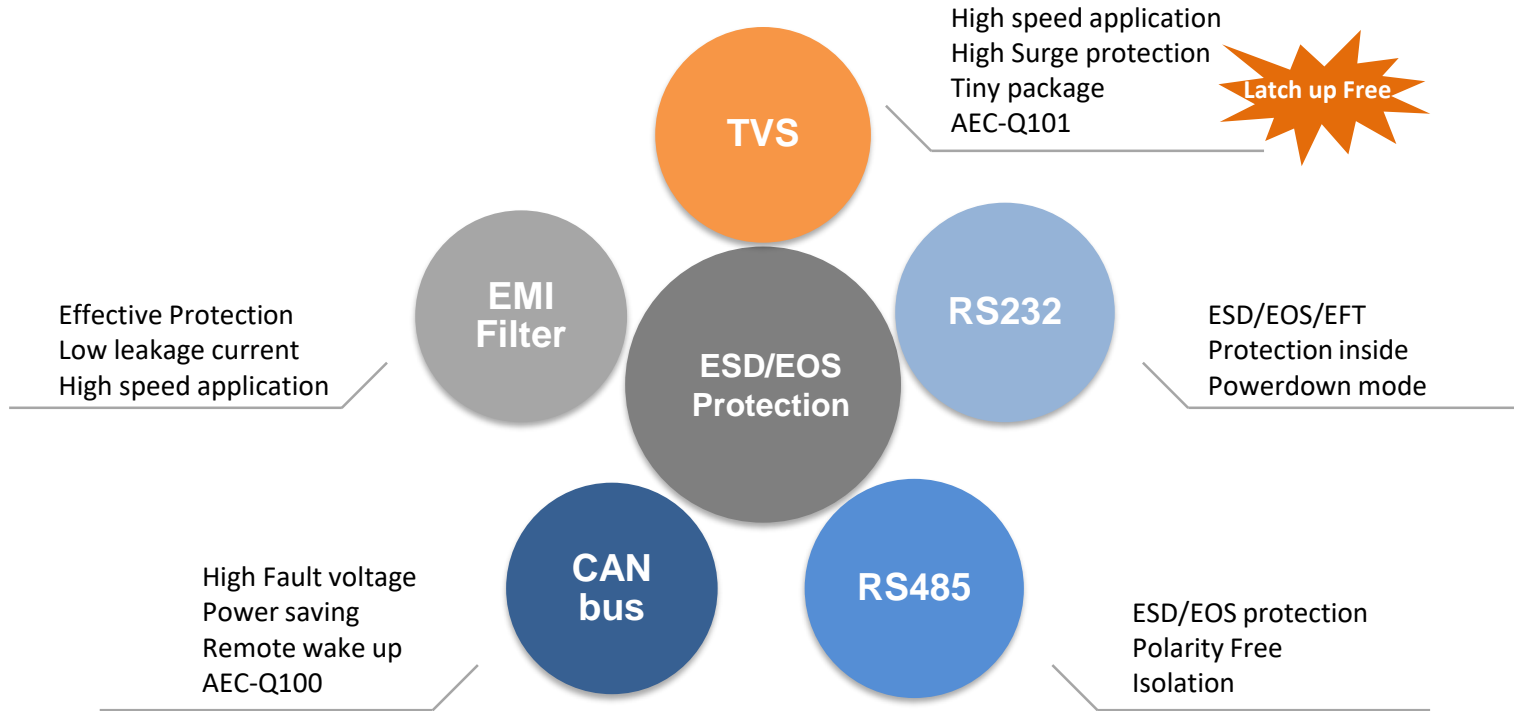
(48個/2022.3.31)

技術與產品簡介

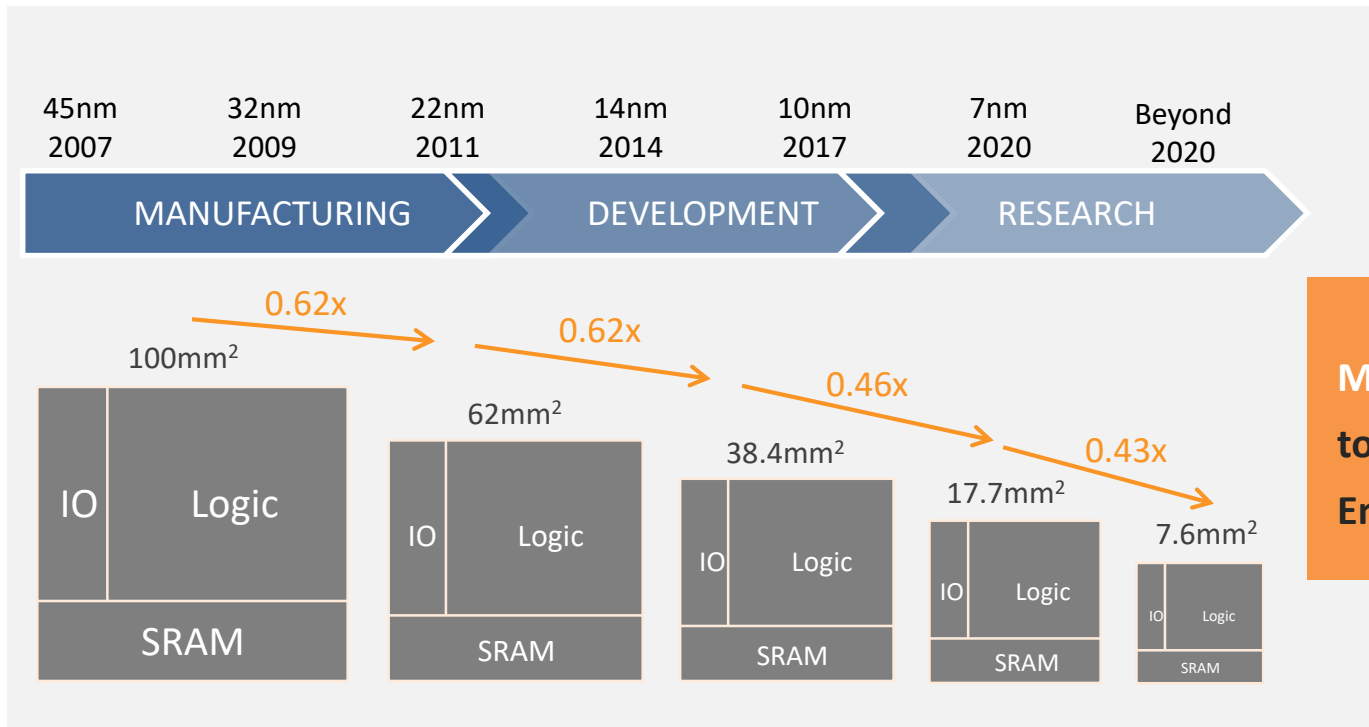
AMAZING Core Technology



⚡ AMAZING Product Family

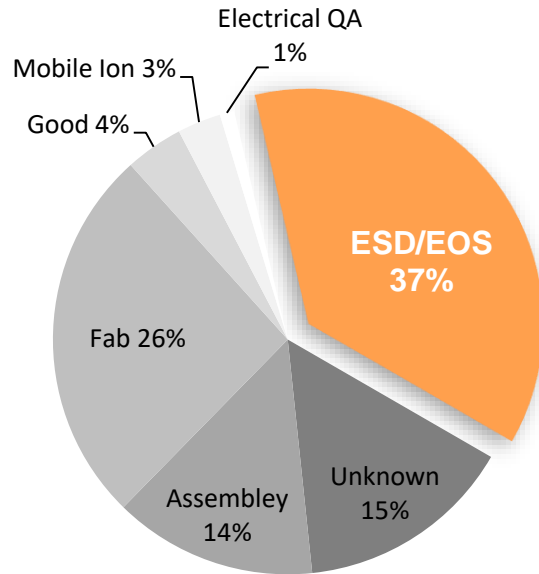


⚡ ESD Robustness of Main-Chip Decrease Dramatically



**Main-chip will be Weaker
to Withstand ESD/EOS
Energy Transient Events.**

All Electronics Have High Risk of ESD/EOS



Source: National Semiconductor & American EOS/ESD Association

**IC Failure rate due to ESD/EOS is
Up To 37%**

- Extra Cost for Mass Production
- High Expense to Re-work
- EOS RMA Damages Reputation

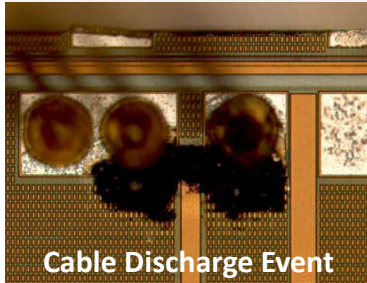
ESD/EOS Protection Suggestion

⚡ How to Test the ESD Completely



Hot Plugging often causes

- Serious Damage to the System
- High Risk Field Return



Cable Discharge Event



To Improve the Product ESD/EOS Robustness- Direct Pin Injection Test




- Guarantee the Robustness of product if pass
- Reduce the Damage Risk from Hot Plug Energy
- Improve product Quality and Robustness



⚡ How to Select the TVS Solution

The Factors of TVS Selection

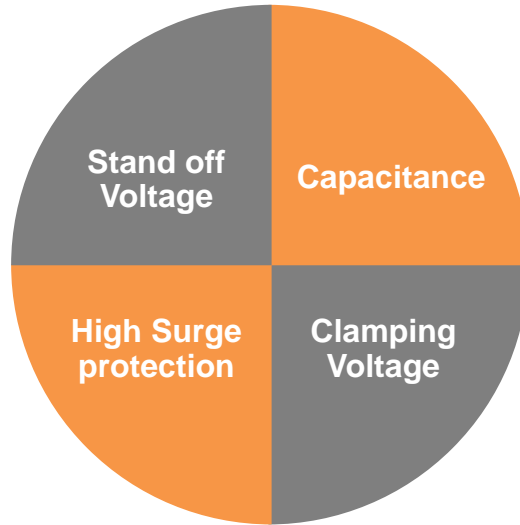
Various Low Voltage TVS

- 1.2V
 - 1.8V
 - 2.5V
 - 3.3V
- 

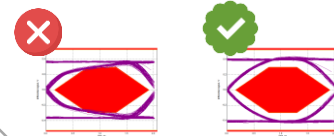
High Surge Level for Reducing EOS



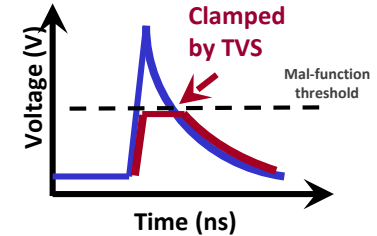
Surge robustness



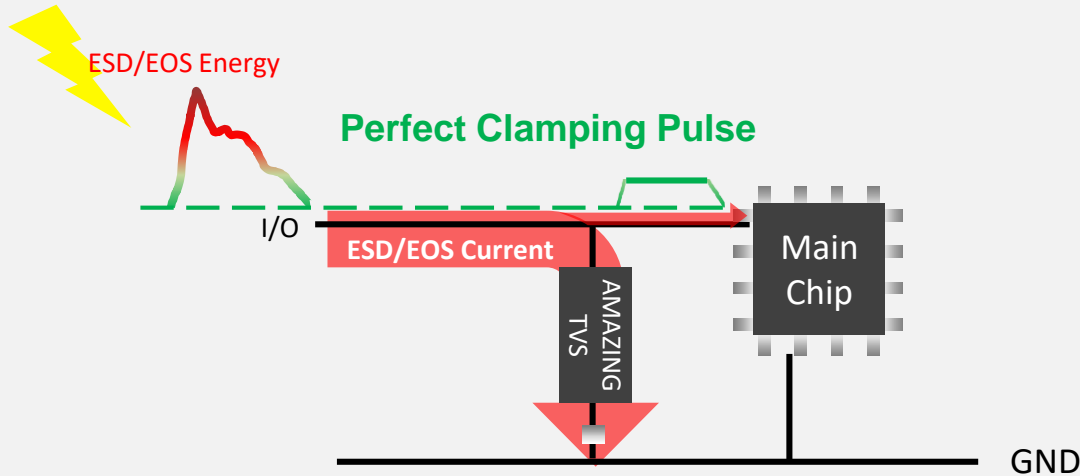
Ultra Low Capacitance



Low Clamping Voltage



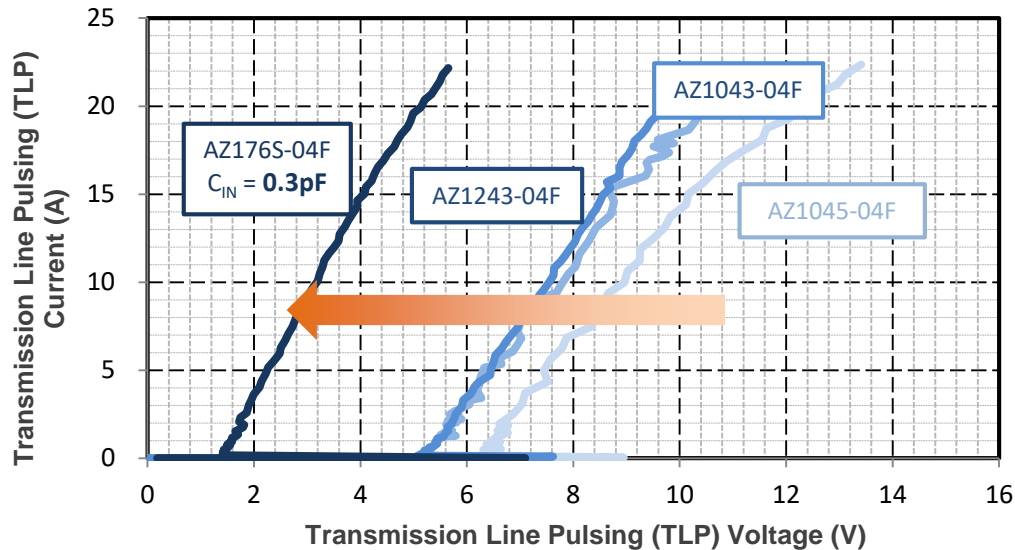
⚡ The Most Important Parameter: Clamping Voltage



- Bypass the ESD/EOS Current
- Clamp the Voltage at Low Value
- Improve System Robustness

⚡ Outstanding Spec.

Transmission Line Pulsing (TLP) Measurements



AMAZING Keeps Offering

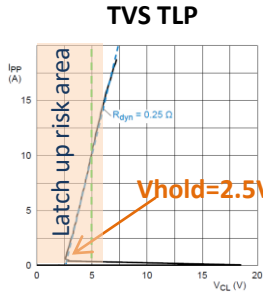
- Low clamping voltage
- Ultra-low Capacitance
- High Surge Performance

to Enhance System ESD/EOS Robustness.

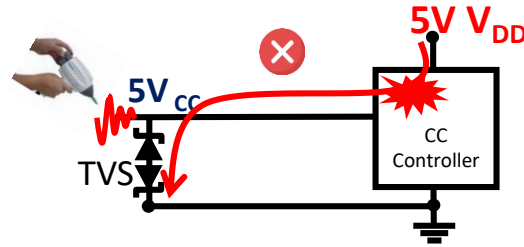
But...

⚡ TVS Selection Issue - Latch Up

The Holding Voltage (V_{hold}) must be Bigger than Working Voltage (V_{RWM}) to Avoid the Latch Up Risk.



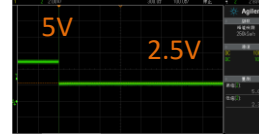
5V TVS with $V_{hold} = 2.5V$



Before Test



After Test



Serious Issues Caused by Latch Up

System Signal Abnormal



Latch up issue effect the system signal.

Serious Burn Out Risk



High Current through the IC will has the risk to burn out.

Business Reputation Loss



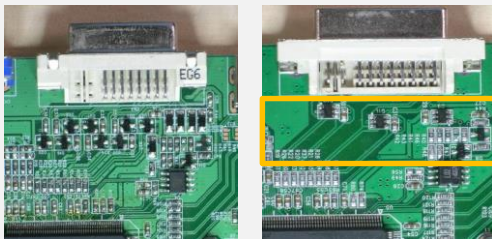
Pay huge indemnity and loss for the company credibility

⚡ TVS Benefit for Customer



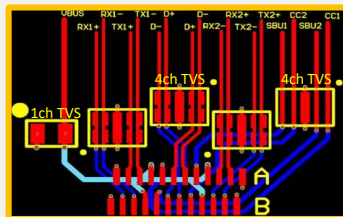
TVS Array

Traditional Diodes **AMAZING TVS Array**



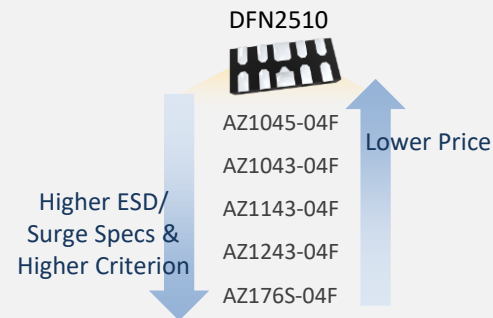
**Save PCB Area
Save Cost**

Feed Through Design



Easy to Design

Pin Compatible for Same Package



**Multiple ESD and EOS
Protection Solution**

⚡ IC Benefit for Customer

EMI Filter, RS232, RS485, CAN bus Series

Robust Design

Provides ESD, EFT
and Surge protection



Patents

Over 21 worldwide patents











Customized










Enhance specific parameters



⚡ Traditional One Channel vs TVS Array

	Single Channel TVS	TVS Array
		
Cost	Normal	Save Money 
PCB Occupied Area	Large Area	Save Area 
Function	Normal	Better 
Environment Effect	Normal	Eco-Friendly  
Application	Power Line, Control Signal	Differential Pair 

⚡ IC Integration Comparison

	Traditional	AMAZING
	 <p>Interface IC + ESD Protector</p>	 <p>Interface IC + ESD In a Single Device</p>
Device No.	Many	Only One 
Integrated Efficiency	Low	High 
Cost	Cost High	Low 
PCB Space	More	Less 
ESD Protection	Weak	Good 
Environment Effect	Normal	Eco-Friendly  

AMAZING Product Family

ESD Protection Device Product Families

Cover the widest range of ESD protection device spec in the market with more than **400 items** !

Family	Functions
AZ1	High Speed , ESD/EFT/Lightning/EOS Protector
AZ2	Low Speed , ESD/EFT/Lightning Protector
AZ3	Lightning Protector
AZ4	High Voltage (> 5V) , ESD/EFT/Lightning/EOS Protector
AZ5	Tiny Package , ESD Protector
AZ6	Low Voltage (<3.3V) , ESD Protector
AZ9	Automotive Application, ESD Protector, AEC-Q101
AZC	Customization , High Speed, ESD Protector
AZM	EMC component , EMI Filters with ESD Protectors

Transceiver IC Product Families

RS232 Transceiver Series for Industry Application

Family	Functions
RS232	4T/5R
RS232	2T/2R
RS232	3T/5R

RS485 Transceiver Series for Industry Application

Family	Functions
Surge RS485	30A Surge Protection RS485 with H/L Speed
ESD RS485	System 15kV ESD Protection RS485
Polarity Free RS485	Transceiver with Bus Polarity Free Function
Low Power RS485	3.3V RS485 with H/L Speed
Ultra High Speed RS485	60Mbps Ultra High Speed RS485
Profi-Bus RS485	RS485 Transceiver for Profi-Bus Application
RS232 Series	Multi-Channel RS232 Transceiver

CAN bus Transceiver Series for Automotive Application (AEC-Q100)

Family	Functions
Automotive	5Mbps CAN-FD Bus Transceiver with Standby mode for Automotive application
Industrial	5Mbps CAN-FD Bus Transceiver with Standby mode for Industrial application

Reference Design

with Worldwide Leading IC Supplier in the Following Field



3C Peripheral



NB, TV, Monitor



Industrial



Medical Electronic



Networking



Automotive



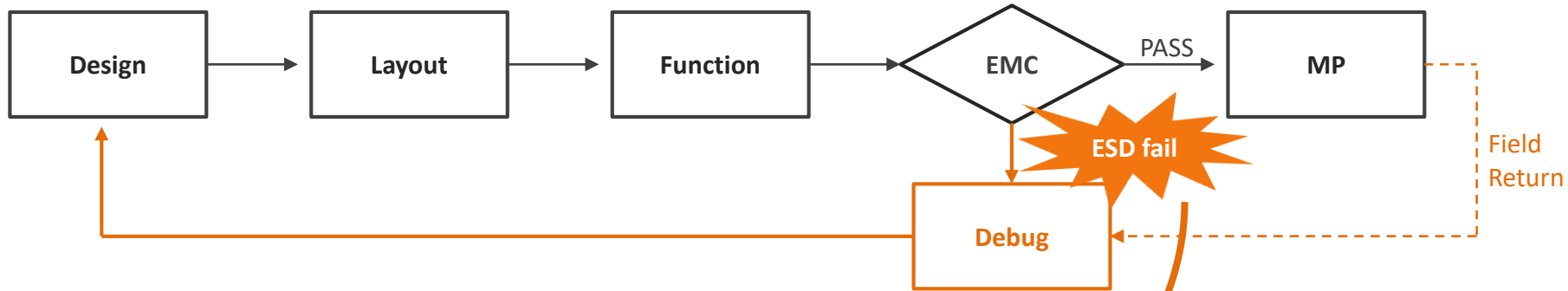
Aerospace



LCM(Panel)

⚡ AMAZING Can Help!!!

> Product design flow



AMAZING Can Help!!!

1. Provide proper **TVS Solution**
2. Robustness **ESD/EOS Protection**
3. Reduce **Field Return Rate**
4. Save **Product Design Cost and Time**

What can Amazing offer?

The Best Specification

- Lower Clamping Voltage
- Ultra Low Capacitance for Signal Quality
- Array Solution Saving PCB Area and Part Counts

Debug Service

- Provide Pre-Test Support by Own ESD Lab
- Provide Debug Service



Develop New Solution

- Amazing is Willing to Cooperate with Customer to Develop New Product if the Advance Solution is Preferred by Customer

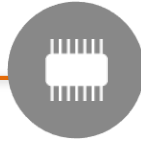
Design Consult

- Provide ESD/EOS Prevention Consult
- System Design and Technique Support

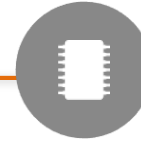
Amazing's Strength



Over **400** TVS Products
for
Various Applications



Complete TVS Solutions for
High Speed and **Power Line**
Applications
with **ESD** and **Surge Protection**

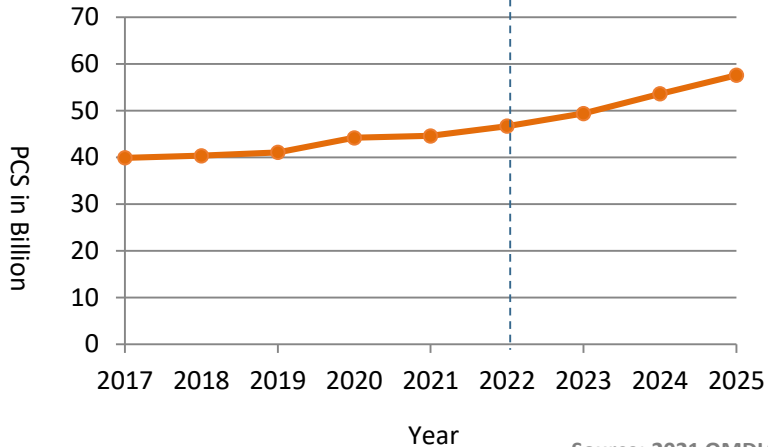


Integrate
ESD and **EMI** Solution
Save PCB Area
and
Supply Complete Protection

業績與財務

⚡ Global ESD/EOS Protection Market

ESD Protection Devices Market Forecasts Predict Growth for 2022-2025



AMAZING in World No.3!

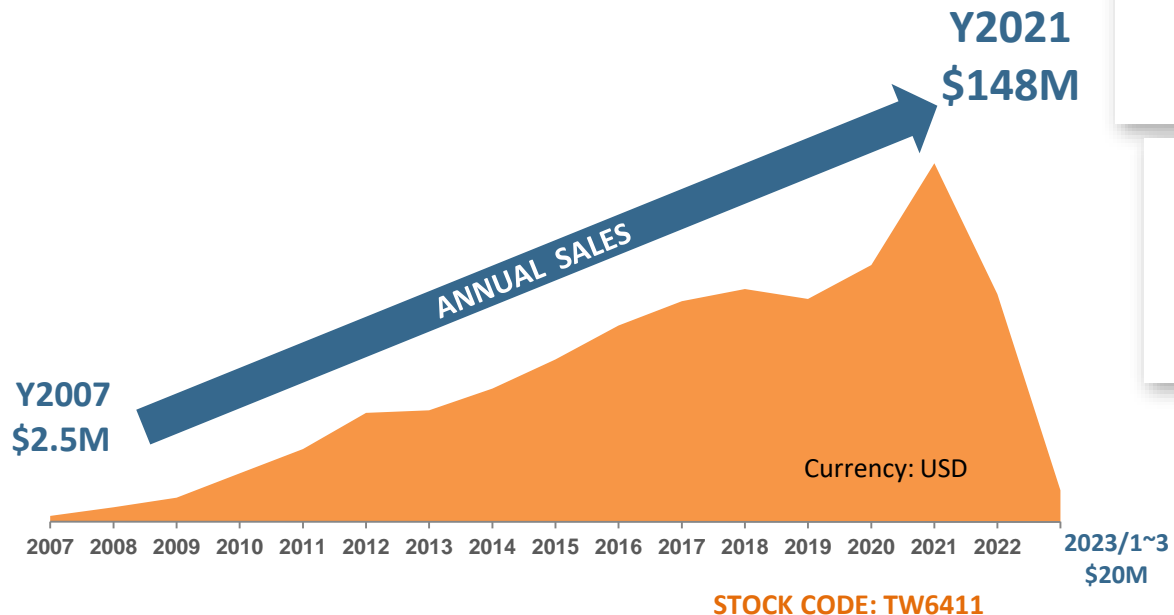
Table 3.3
World Market Shares - Pure ESD Protection Devices
Revenues (\$M)

	Company Name	2019 Sales (\$M)	2019 Share (%)	2020 Sales (\$M)	2020 Share (%)
1	Nexperia	189.3	24.9%	192.0	24.6%
2	ON Semiconductor	104.6	13.8%	105.1	13.5%
3	Amazing	86.3	11.4%	98.6	12.6%
4	Semtech	58.6	7.7%	60.3	7.7%
5	ST Microelectronic:	55.0	7.2%	53.5	6.9%
6	Infineon	42.4	5.6%	45.6	5.9%
7	ROHM	43.3	5.7%	39.4	5.1%
8	Littelfuse	39.1	5.1%	37.1	4.8%
	Others	141.4	18.6%	148.0	19.0%
	Total	760.0		779.6	

Source: OMDIA

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⚡ 歷年營業額



Record High of 2021

148 Millions

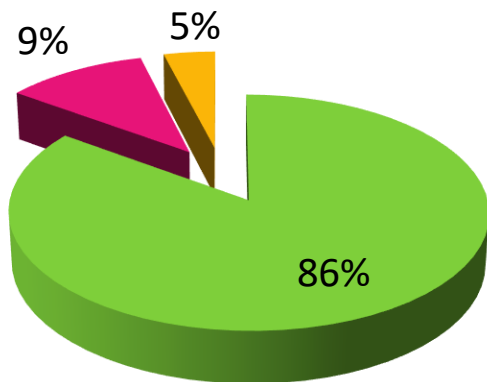
But Reduced @ 2022

94 Millions

2023 Q1

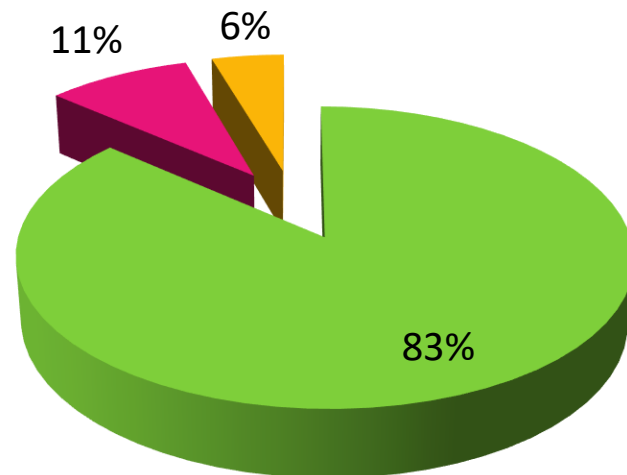
20 Millions

⚡ 營收分佈



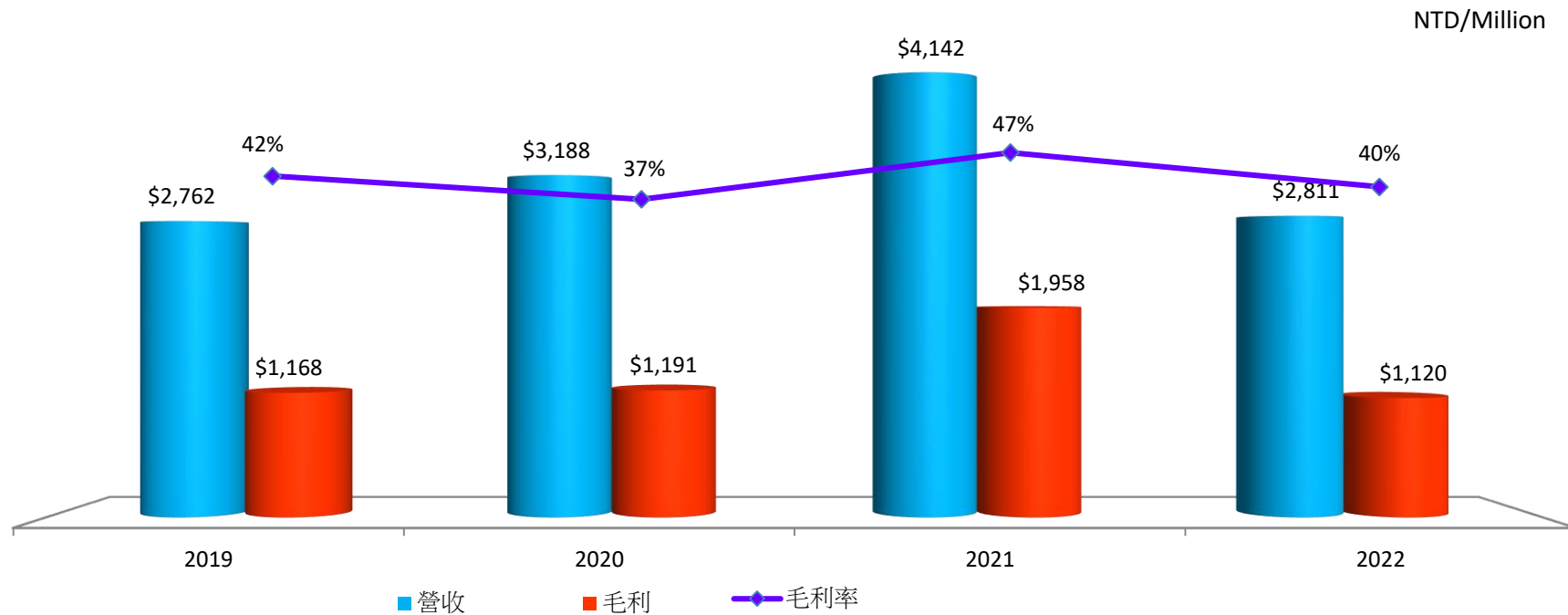
2021

- Consumer
- Industrial
- Automotive



2022

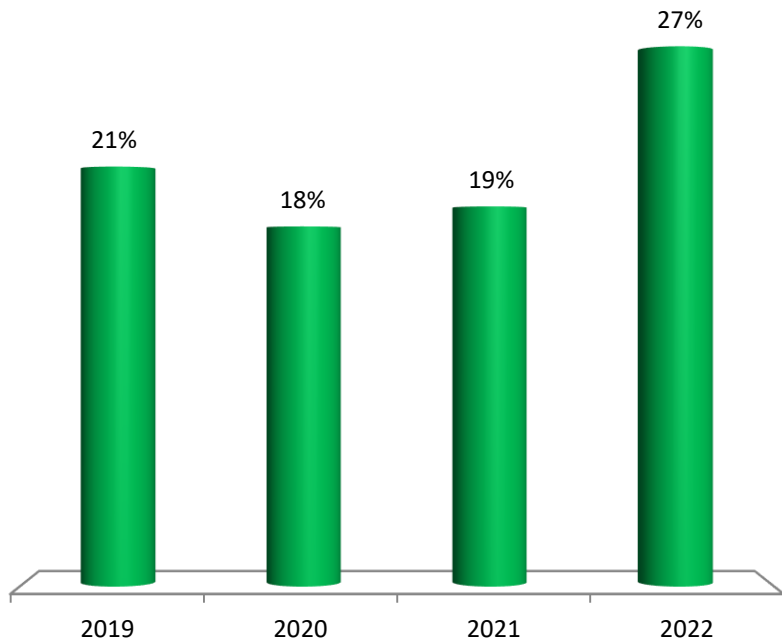
⚡ 毛利



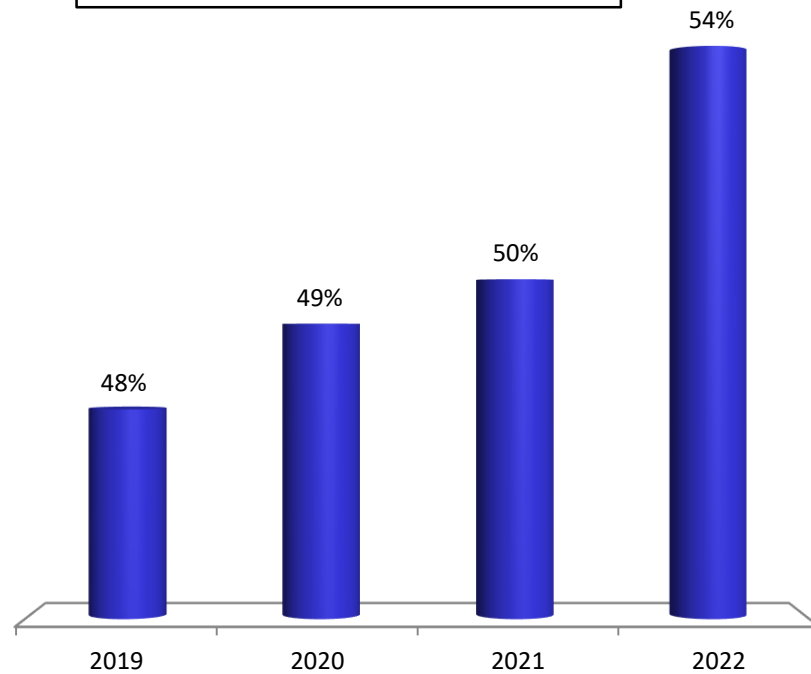


營業費用

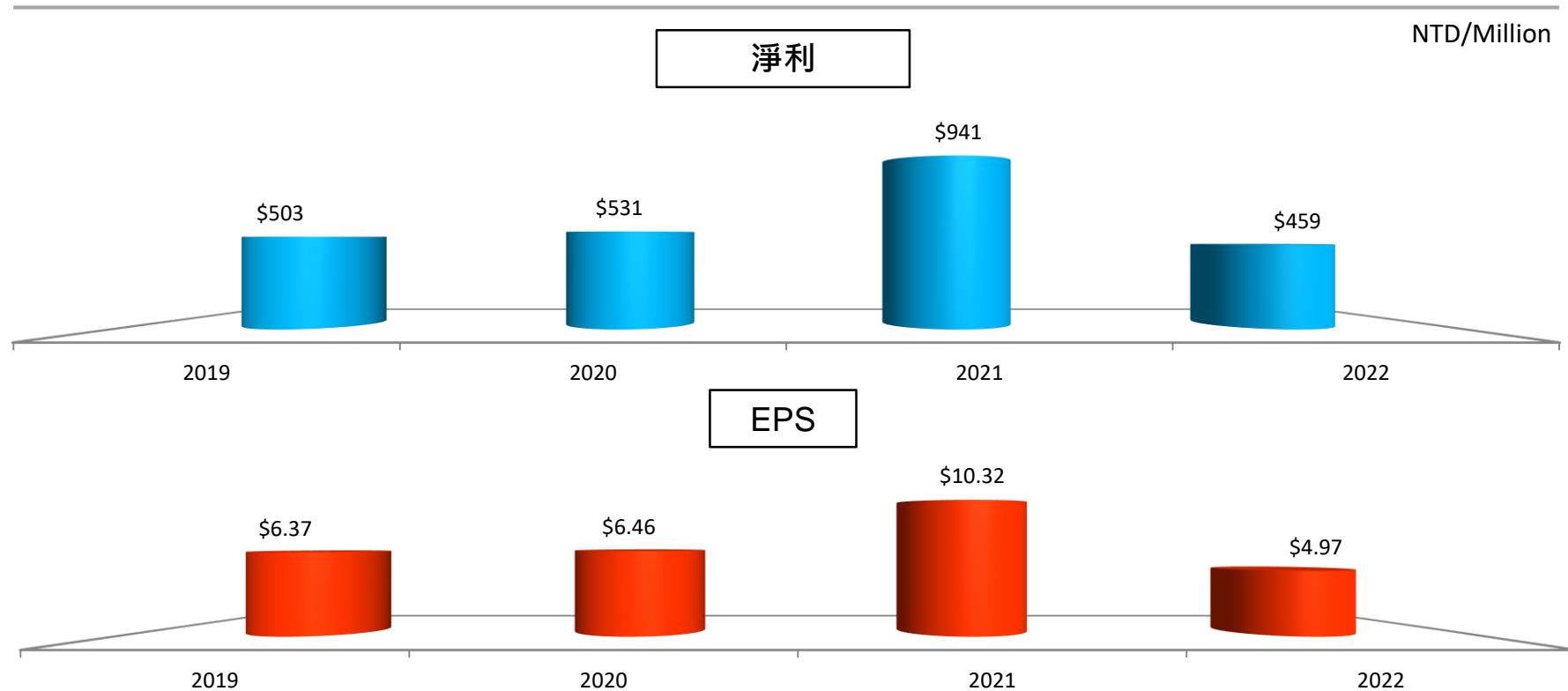
營業費用佔營業收入比重



研發費用佔營業費用比重



⚡ 淨利與EPS



⚡ 損益表(YoY)

	2022	2021	YoY
營業收入	\$2,811	\$4,142	-32%
營業毛利	\$1,120	\$1,958	-43%
營業費用	\$765	\$817	-6%
營業淨利	\$355	\$1,141	-69%
營業外收(支)	\$167	-\$22	-859%
稅前淨利	\$522	\$1,119	-53%
所得稅費用	\$90	\$197	-54%
稅後淨利	\$432	\$922	-53%
歸屬母公司稅後淨利	\$459	\$941	-51%
基本每股盈餘	\$4.97	\$10.32	-52%

NTD/Million



資產負債表

NTD/Million

	2019/12/31		2020/12/31		2021/12/31		2022/12/31	
	Amount	%	Amount	%	Amount	%	Amount	%
現金及約當現金	\$ 1,319	38 %	\$ 1,229	27 %	\$ 1,846	29 %	\$ 1,926	34 %
應收帳款	\$ 678	19 %	\$ 707	16 %	\$ 1,085	17 %	\$ 277	5 %
存貨	\$ 301	9 %	\$ 470	10 %	\$ 490	8 %	\$ 474	8 %
總資產	\$ 3,505	100 %	\$ 4,533	100 %	\$ 6,339	100 %	\$ 5,701	100 %
負債	\$ 860	24 %	\$ 888	20 %	\$ 2,095	33 %	\$ 1,503	26 %
股東權益	\$ 2,645	76 %	\$ 3,645	80 %	\$ 4,244	67 %	\$ 4,198	74 %

總結

晶焱一貫的發展策略：

- 產品開發以滲透到每一個電子產品為目標，不停歇的產品開發步調。
- 業務拓展以滲透到所有應用領域及全球市場為目標，不停歇的同步拓展步調。
- 生產管理以跟供應商共存共榮為目標，不停歇的品質管制、成本控制、及產能開發步調。
- 提供客戶有效的解決方案、無虞的供貨服務、合理的價格、以增加客戶的產品競爭力為終極目標。
- 成為可以永續發展的企業。

2022年的衰退主因來自全球市場的下行影響，上述發展策略仍屬有效，會繼續貫徹執行，以迎接市場復甦時的成長機會。