



# Sustainable Growth through QFN Reinvention

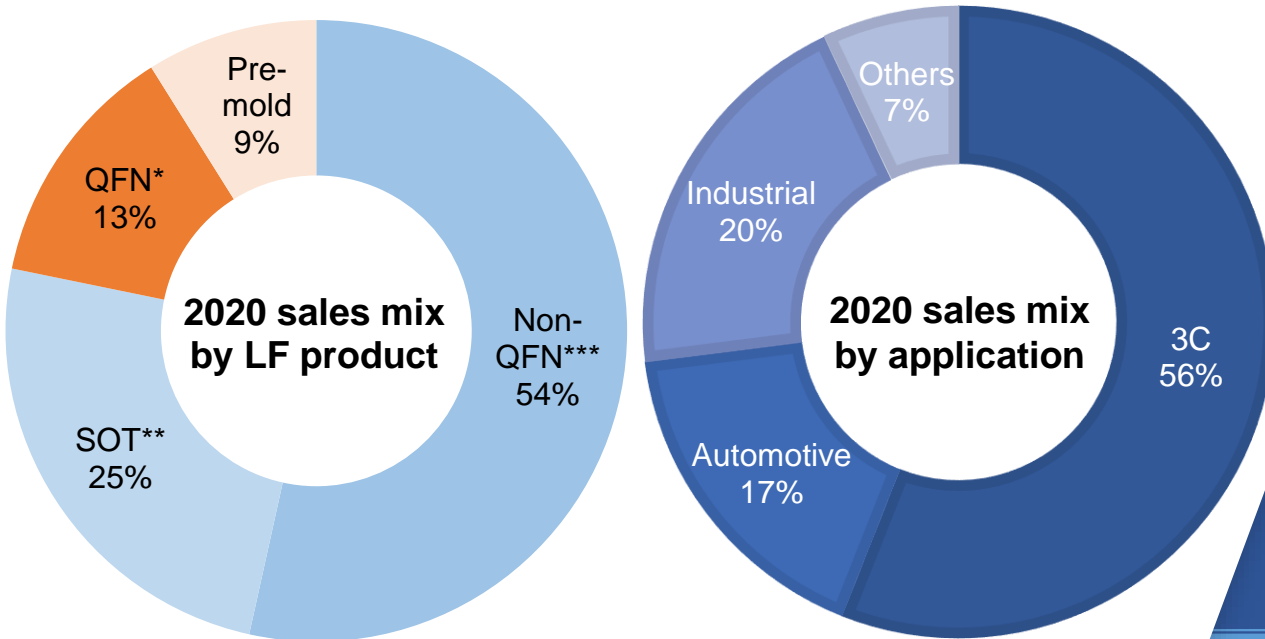
2021 Investor Presentation – IR  
Manager Mr. Richie Su (Tel: +886-2-8751-0696 Ext.206)

# Forward-looking Statement

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# A Leading LF Solution Expert Covering All Applications

- Ticker: 6548 TT
- Market Cap (February 28<sup>th</sup>, 2021): US\$890mn
- Taiwan No.1 and Global Top 2 IC Lead Frame (LF) Supplier
- Client Scope: Outsourcing Semiconductor Assembly & Testing (OSAT), Integrated Device Manufacturers (IDM) and IC Design



**30+ years** Lead frame experience

**US\$345mn** 2020 Total sales

**90+** No. of global LF patents

**1,800+** No. of global employees

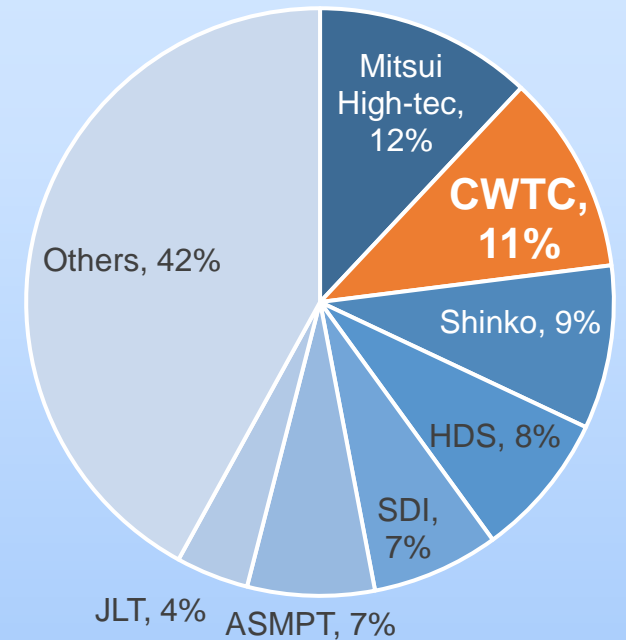
\*QFN: Quad-Flat No-Leads. \*\* SOT: Small-Outline Transistor.

\*\*\* Non-QFN includes SO, SOP, TSSOP, TSOP, COL, QFP, TQFP, LQFP and PDIP

# Target World's No.1 LF Supplier in Five Years

- Through **QFN reinvention**, CWTC will efficiently expand its capacity to pursue **sustainable growth**. With estimated **5-year sales CAGR 20%**, CWTC targets to become the world's largest IC LF supplier with **30% market share by 2025**.
- After acquiring LF business from Sumitomo Metal Mining (5713 JP) in 2018, CWTC is the world's top 2 IC LF supplier with 11% market share. Through its plants in Taiwan, Japan, China and Malaysia, CWTC owns industry-leading manufacturing capabilities of stamping, etching and electroplating.

2020E Global LF market shares\*



\*Source: Company data. Stock tickers: Mitsui High-tec: 6966 JP, Shinko: 6967 JP, HDS: 195870 KS, SDI: 2351 TT, ASMPT: 522HK, JLT: 5285 TT



# Agenda

**QFN Reinvention**

**Sustainable Growth**

**Our Commitments to Shareholders**

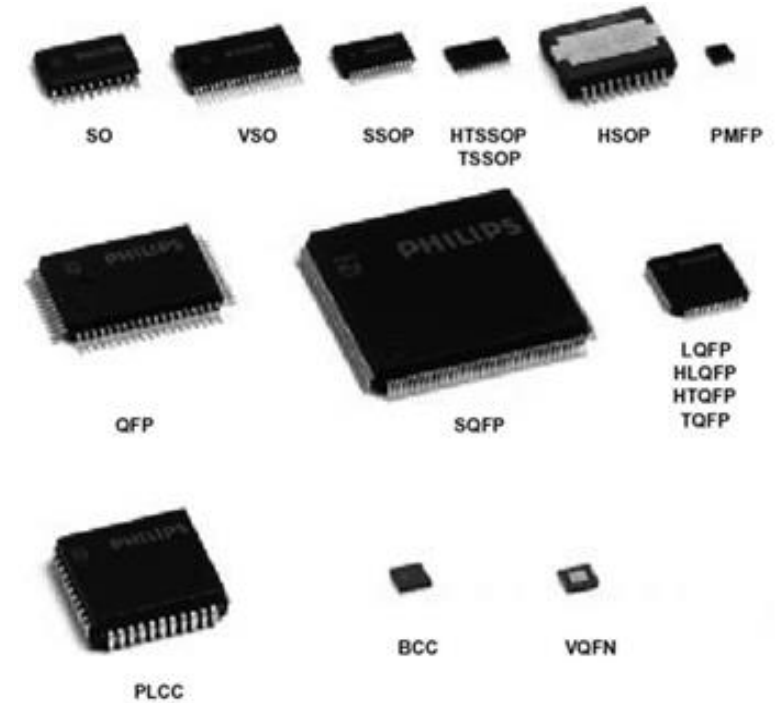
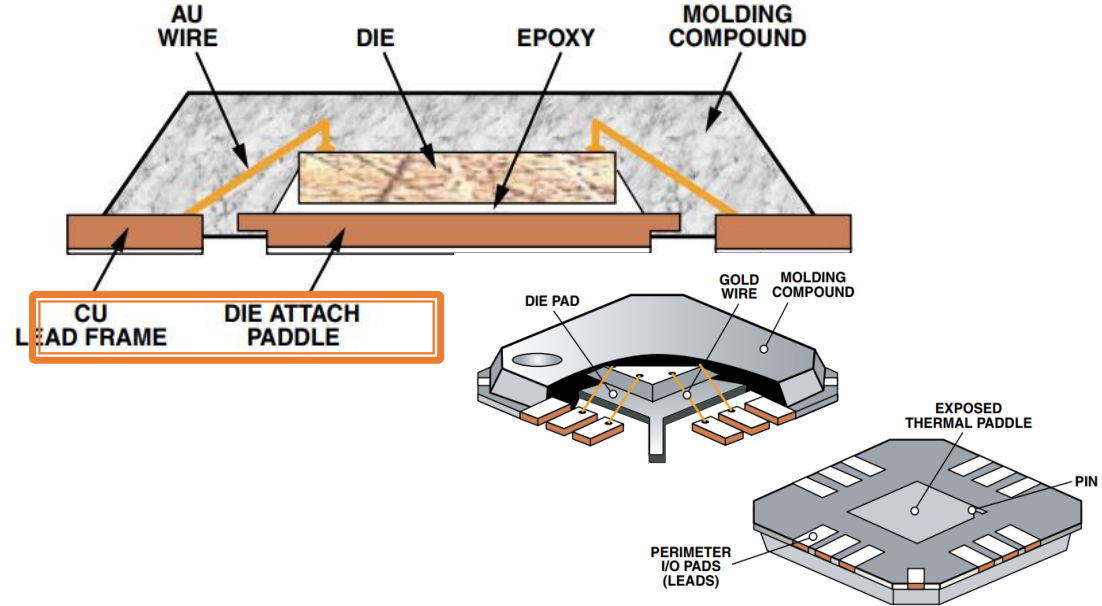
**Financial Performance**

# QFN Reinvention



# What is LF?

- LF is the **metal substrate** inside a chip package that carry signals from the die to the outside.
- LF is the interface between die and PCB, communicating signal input/output (I/O).
- By removing material from a flat plate of copper, LF are manufactured by two major processes: etching (for high I/O density with small footprint) or stamping (for less variety orders).
- There are more than dozens types of LF-based IC packages, each characteristic varying based on user requirements.



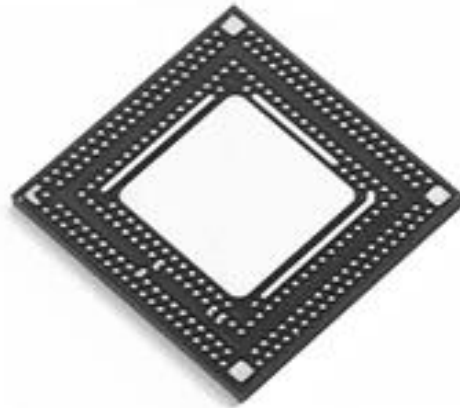
Source: Analog Device and ResearchGate

# What is QFN?

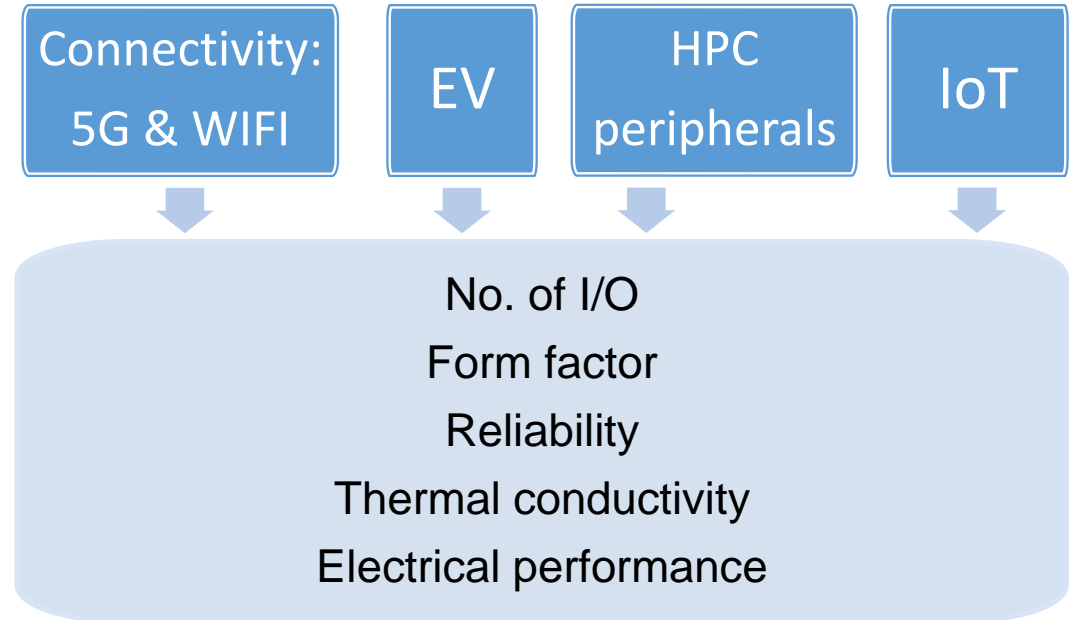
- As one type of LF-based packaging, QFN is a small sized “near chip scale” plastic encapsulated IC package.
- QFN is an ideal package for IC applications where **no. of I/O, size, weight, thermal and electrical performance** are important.



QFN LF



QFN IC package



Source: CWTC and ASE



# We Reinvented QFN to Drive Our Future Growth

## I. Packaging Type Reinvention

QFN would be the top 1 IC packaging type in terms of no. of IC

## II. Manufacturing Process Reinvention

Self-developed technologies leads to our highest efficiency in LF industry

## III. Application Reinvention

The most competitive full-QFN solutions for multiple applications

## IV. Client Service Reinvention

TW, CN and MY fabs to serve world's tier-one IC design, OSAT and IDM

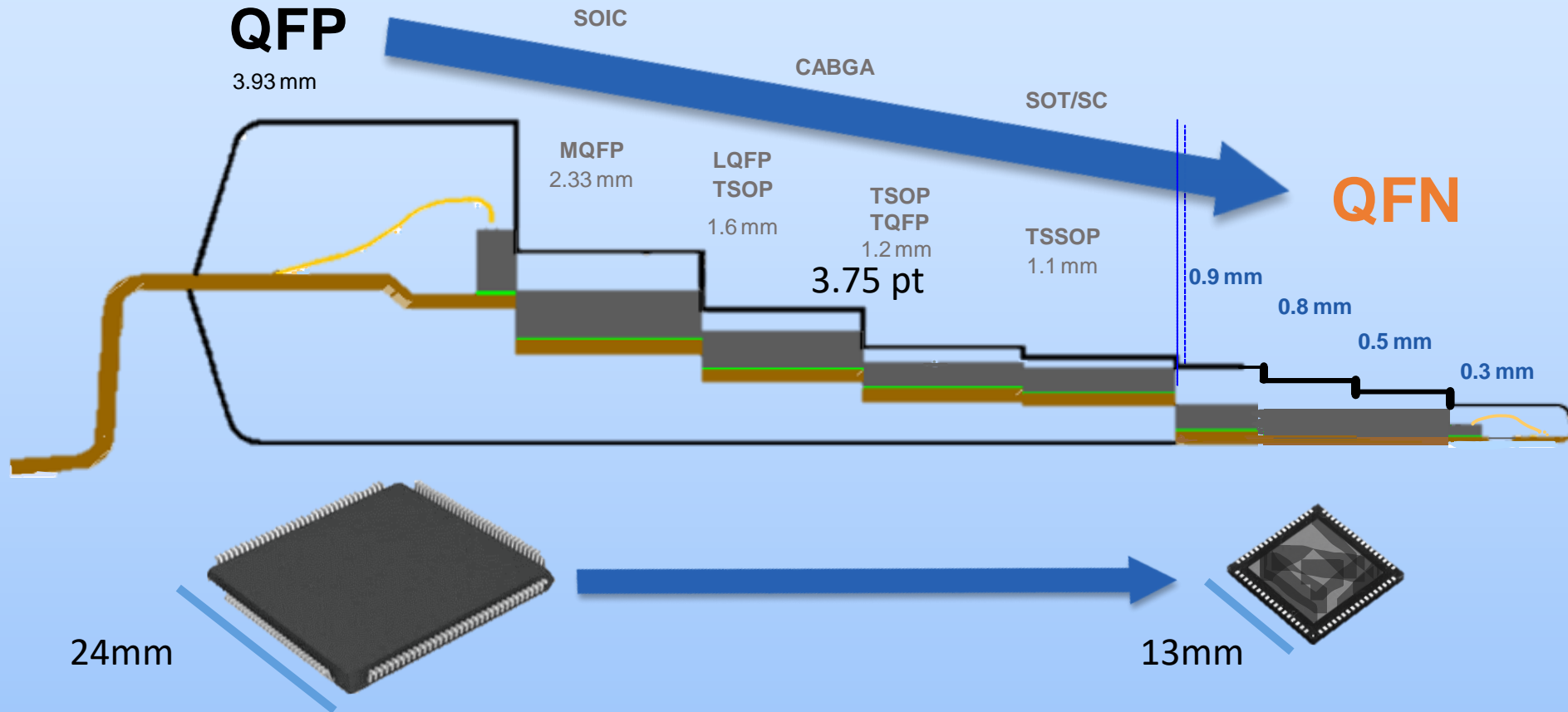
# I. Packaging Form Reinvention

*“QFN was invented in 1998. Now CWTC have reinvented QFN and expect it to dominate IC LF packaging since 2021.”*

- Canon Huang, CWTC Chairman

# QFN is the Answer for All IC LF Packaging

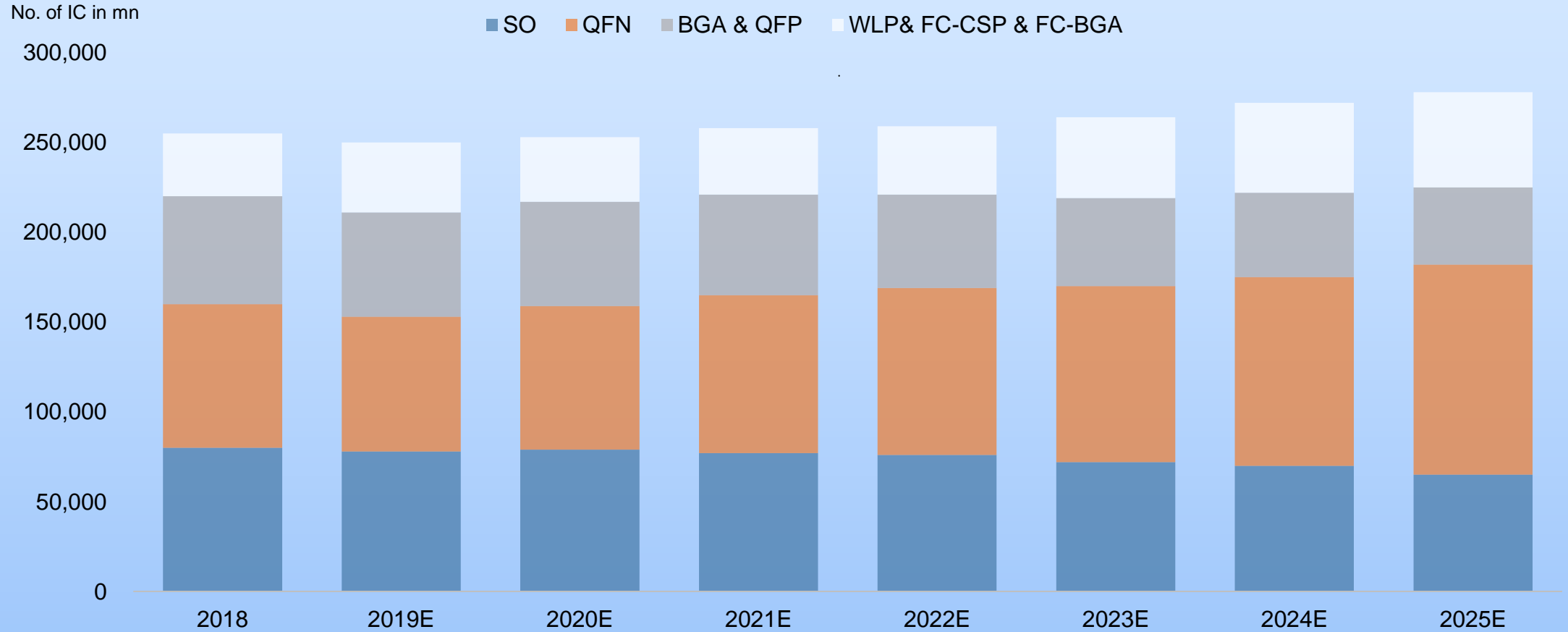
QFN is the best IC LF platform for **higher I/O**, **smaller form factor**, **better thermal conductivity** and **faster electrical signal transmission**.





# The Number of QFN-Packaging IC is Increasing

Same with industry trend, we've seen more global tier-one customers adopting QFN as their preferred IC packaging type, replacing SO, BGA and QFP.



Source: ITRI

## II. Manufacturing Process Reinvention

*“By reinvent QFN manufacturing, we define industrial specification to meet clients demand in the most efficient manner.”*

- Canon Huang, CWTC Chairman

# We Plan to Dominate QFN with Manufacturing Advantages

## Etching

- Precise QFN half-etching technology to enhance efficiency
- **Highly-automated, customized and flexible** etching tools to share with QFP LF lines
- No stamping tool cost and high copper utilization than QFP LF
- Industry leading **wastewater treatment technology**

Increase  
**33+%**  
efficiency

## Electro-Plating

- Self-developed **plating mask** process covering from high-end to low-end QFN
- High flexibility to switch different products.
- Self-developed photo-mask production line will be available in 2Q21

To cover **80%**  
high-end photo-  
mask plating QFN

## Pre-Mold

- Self-developed **molding process** to provide value-add to QFN LF
- **Increasing pricing power** for niche QFN applications: Mini LED

**4x~6x**  
ASP  
vs. QFN LF



# III. Application Reinvention

*“We’re ready to meet strong demand from 5G, EV, HPC/IoT and Mini LED. Our Full QFN product portfolio cover 80% of IC I/O requirement.”*

- Canon Huang, CWTC Chairman

# We Reinvent QFN for Various Applications



Connectivity: 5G & WIFI



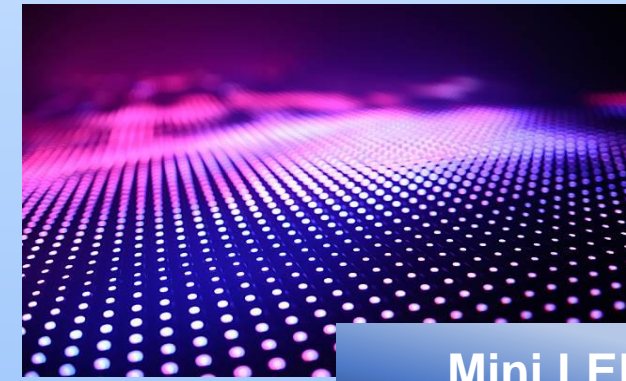
High-Performance PC (AI) Peripherals



Electric Vehicle (EV)



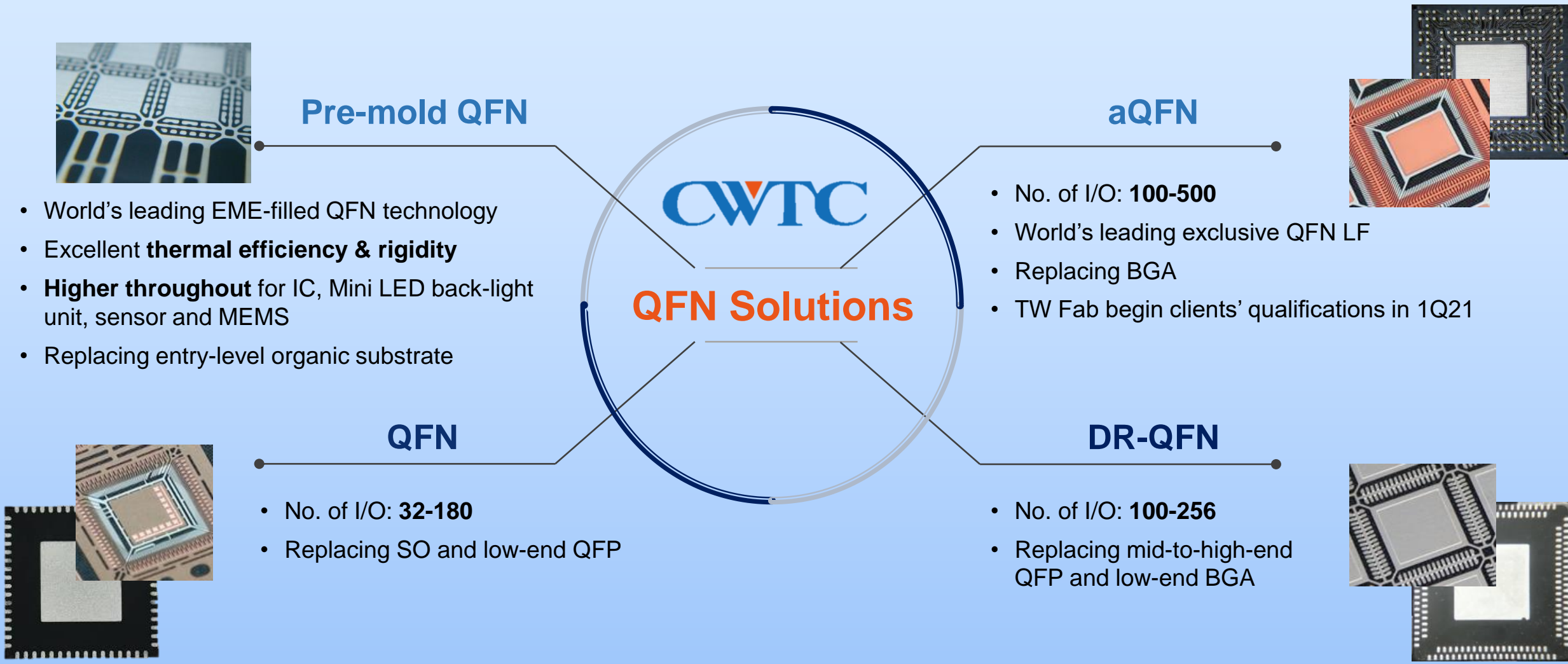
Industrial (IoT)



Mini LED



# Full QFN Solutions Covering More than 80% of IC Applications





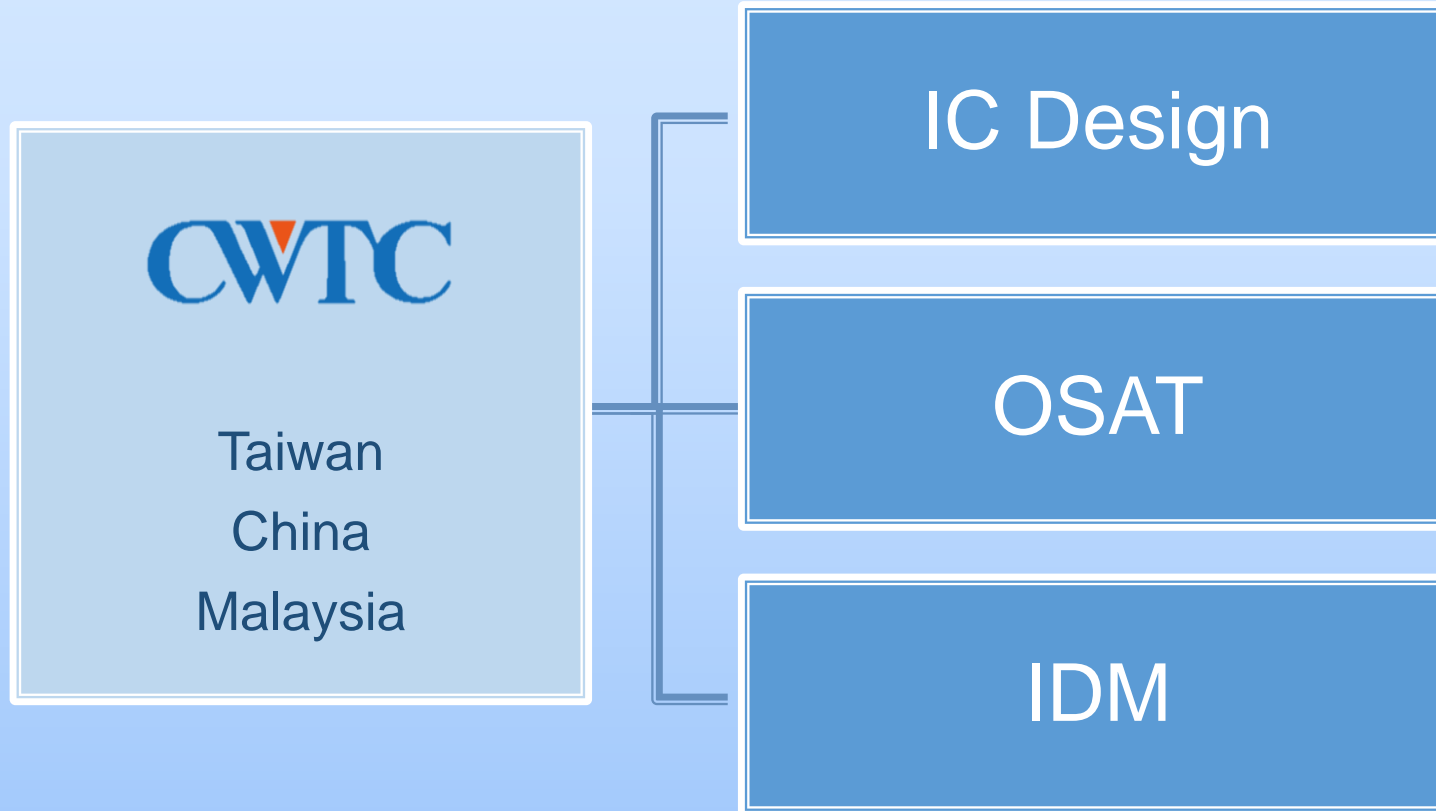
## IV. Client Service Reinvention

*“Our Taiwan, China and Malaysia factories provide real-time services for global tier-one IC design, OSAT and IDM customers.”*

- Canon Huang, CWTC Chairman

# We Have the Most Extensive Client Coverage

Our Asia factories are at the hub of global semiconductor supply chain. We provide industry-leading IC LF to serve more than 50 global tier-one clients.



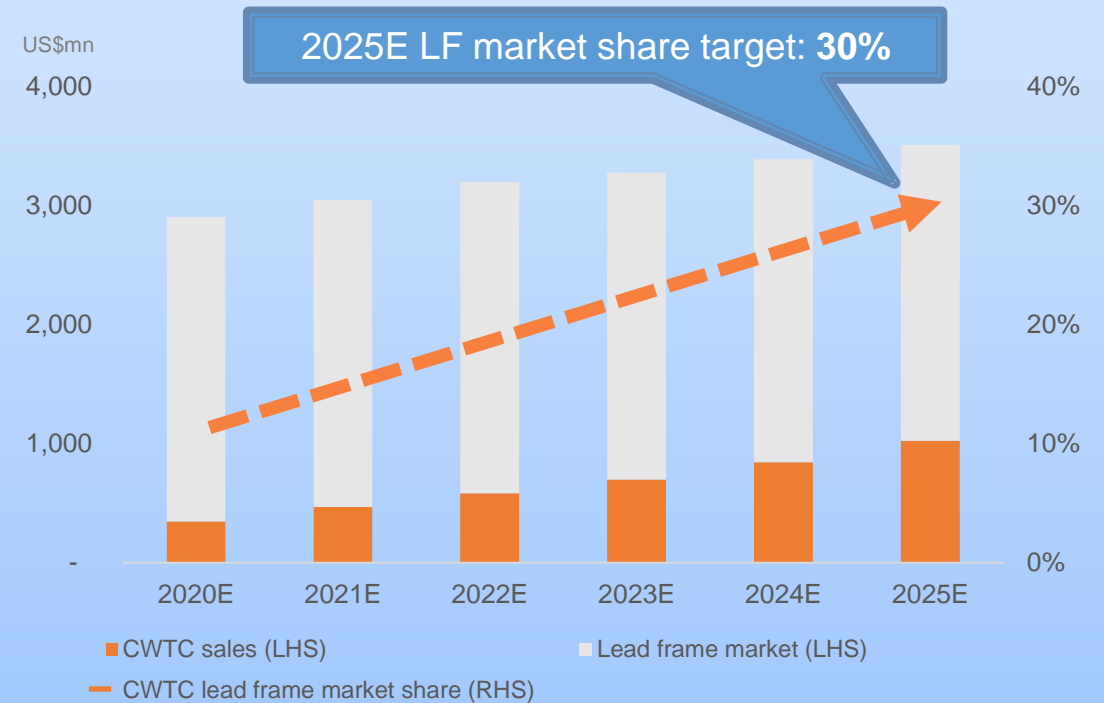
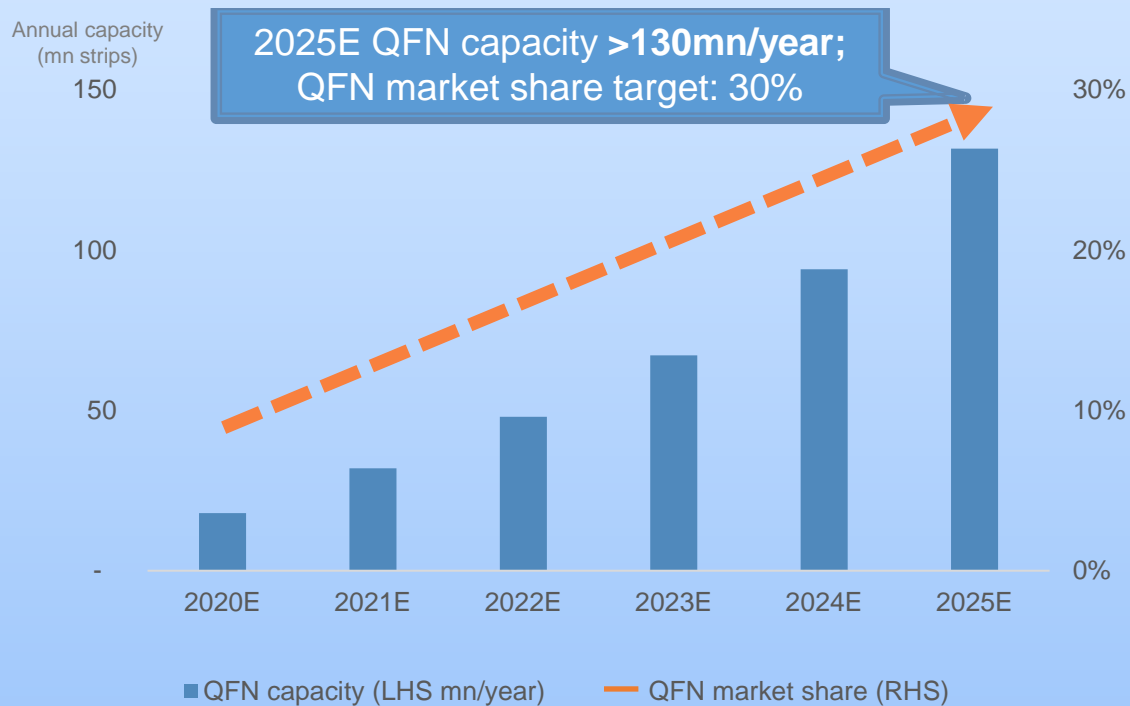
A close-up, blue-tinted photograph of a microchip or integrated circuit. The chip's surface is covered in intricate patterns of circuitry, including various pads, traces, and a central square component. The lighting creates highlights and shadows, emphasizing the three-dimensional nature of the chip's features.

# Sustainable Growth



# Our Capacity Expansion Leads to Market Share Gain

- QFN capacity: we plan to expand QFN capacity from 18mn units/year, 2020, to more than 130mn units/year, 2025.
- Increasing market share: we target to increase CWTC's QFN market share from 10% in 2020 to 30% in 2025 while our LF market share would increase from 11% to 30%.



# Capacity Expansion Milestone

- To meet robust demand from 5G, AI, EV and IoT applications, we plan to ramp up QFN capacity from 18mn/year, 2020, to 50mn/year, 2022. By 2025, we plan to further expand QFN capacity to 130mn/year.

**18mn\*/year**

Increased capacity at existing TW and CN fabs

New TW fab:  
Construction started

**2020**

**32mn/year**

Move JP tools to existing TW fab

2Q21E: Pilot production

3Q21E: Mass production

**2021E**

**50mn/year**

New TW fab:

3Q22E: New TW fab construction complete

4Q22E: Tool move-in and pilot production

**2022E**

**130mn/year**

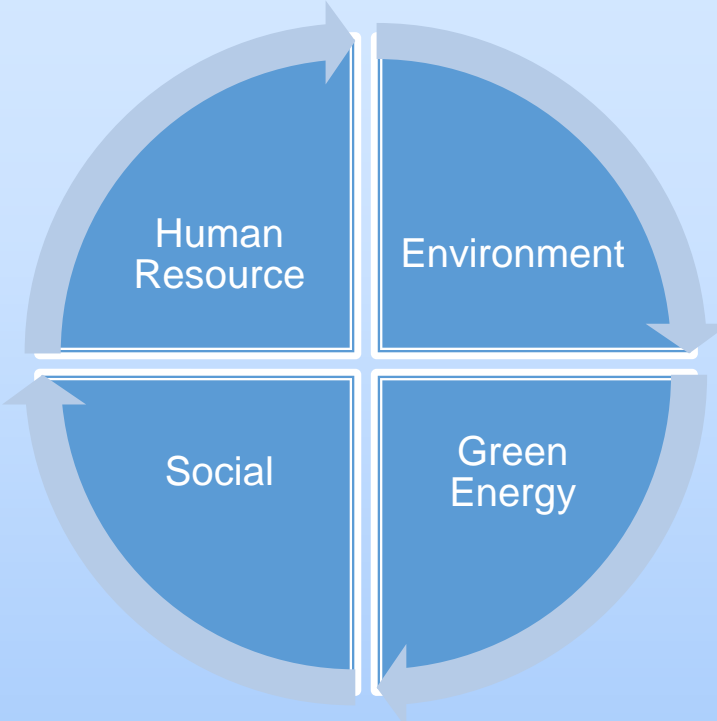
New capacity expansion across TW, CN and MY factories

**2022E to 2025E**

\*Annual capacity in units

# We Pursuit Our Sustainable Growth in an Eco-friendly Approach

- Environment:  
Increasing recycled water usage from 13.6% in 2019 to **16%** in 2021E.
- Green Energy: 4% electricity of new factory will come from solar energy vs. existing factory only 0.3%.
- Social: We committed to complying with the Responsible Business Alliance (RBA) and the Global e-Sustainability Initiative (GeSI), including the Responsible Minerals Initiative (RMI).
- Human Resource: Our new fab would create more than **150** of job opportunity. We implement ESH standard across our Asia factories.








# Our Commitments to Shareholders

# We Aim to Produce the Highest Return in the IC Manufacturing Industry

Through efficient investment in capex and QFN reinvention, we expect to outgrow the semiconductor manufacturing industry and deliver an ROE in excess of 20% from 2021E to 2025E.

2020E-2025E	Capex-to-Sales ratio	Capex Efficiency*		Sales CAGR	GP CAGR	FCF CAGR
<b>CWTC</b>	<b>Mid-to-High single digit%</b>	<b>2~3x</b>	 <p><b>Capex Efficiency and QFN reinvention</b></p>	<i>Above Industry Average</i>		
Foundry	36%	0.4x		14%	14%	12%
OSAT	11%	1.0x		7%	8%	24%

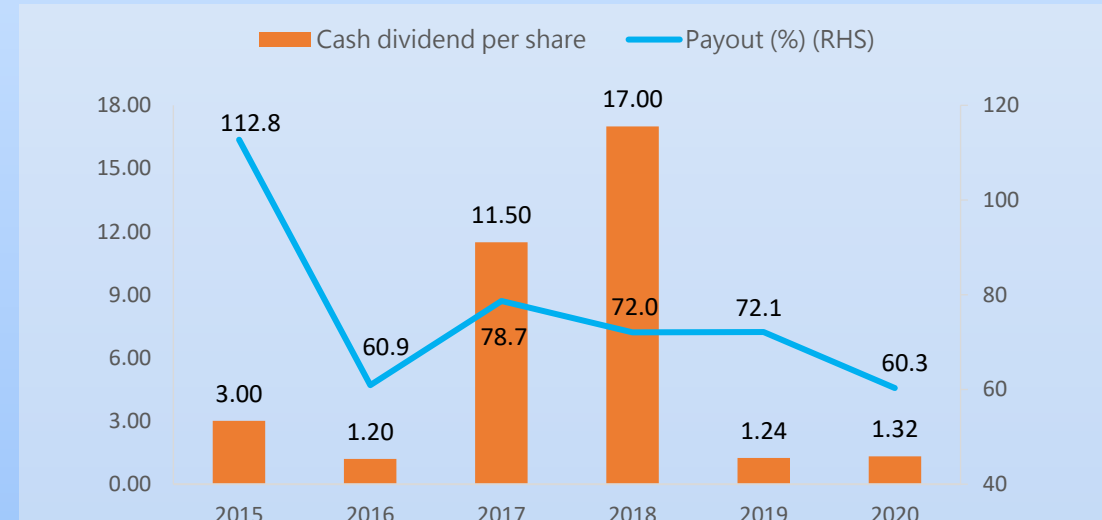
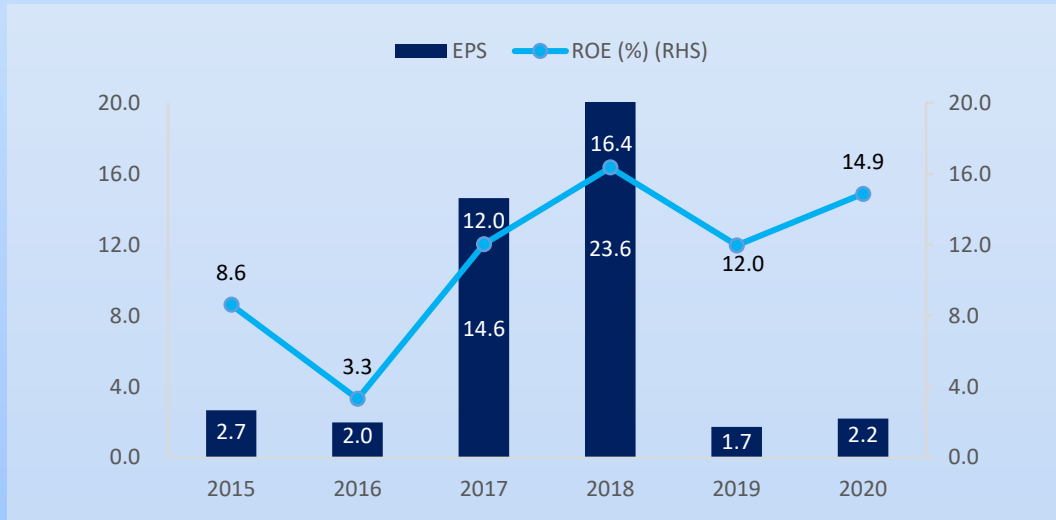
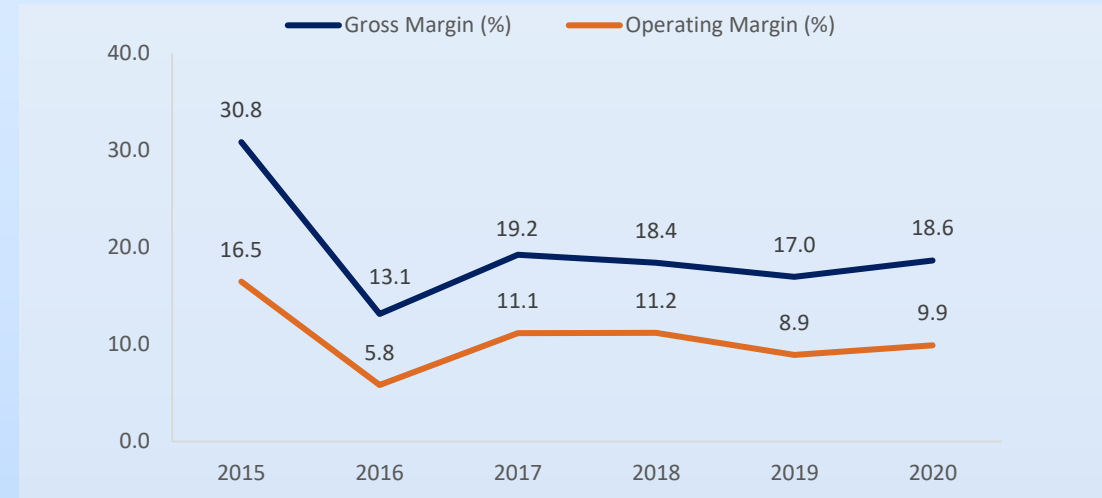
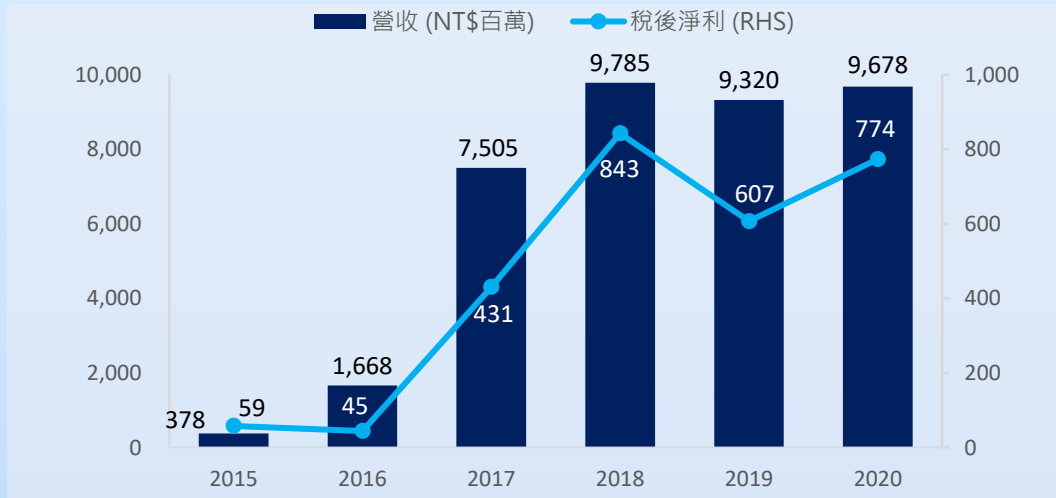
\* Capex efficiency: Additional sales in year N+1 / capex in year N

Source: Bloomberg and Gartner. Foundry including TSMC, UMC, VIS while OSAT includes ASE, Powertech, KYEC, Chipbond, ChipMOS and Greatek

# Financial Performance



# Robust Financial Performance



\*Since Sep. 9<sup>th</sup>, 2019, CWTC changed the par value of stock from NT\$10 to NT\$1. The EPS and dividend are one-tenth of the original numbers.

# 2015-2020 Income Statement

NT\$m	2015	2016	2017	2018	2019	2020	4Q20	YoY (%)					
								2016	2017	2018	2019	2020	4Q20
<b>Revenue</b>	<b>378</b>	<b>1,668</b>	<b>7,505</b>	<b>9,785</b>	<b>9,320</b>	<b>9,678</b>	<b>2,685</b>	<b>340.8</b>	<b>350.0</b>	<b>30.4</b>	<b>-4.7</b>	<b>3.8</b>	<b>9.9</b>
Gross Profit	117	219	1,444	1,802	1,581	1,805	556	87.7	559.6	24.8	-12.3	14.2	24.1
Operating Expenses	- 54	- 122	- 607	- 708	- 748	- 845	- 250	124.5	397.9	16.5	5.7	12.9	10.3
<b>Operating Profit</b>	<b>62</b>	<b>97</b>	<b>837</b>	<b>1,094</b>	<b>833</b>	<b>960</b>	<b>306</b>	<b>55.6</b>	<b>763.1</b>	<b>30.7</b>	<b>-23.9</b>	<b>15.3</b>	<b>38.3</b>
Pretax Income	76	232	1,071	1,206	899	966	275	204.9	362.6	12.6	-25.4	7.5	25.5
Tax Expenses	- 17	- 24	- 251	- 354	- 280	- 176	- 100	36.4	955.8	40.9	-20.8	-37.3	68.3
<b>Net Income to Parent</b>	<b>59</b>	<b>45</b>	<b>431</b>	<b>843</b>	<b>607</b>	<b>774</b>	<b>170</b>	<b>-23.1</b>	<b>858.0</b>	<b>95.5</b>	<b>-27.9</b>	<b>27.4</b>	<b>9.5</b>
<b>Basic EPS (NT\$)</b>	<b>2.66</b>	<b>1.97</b>	<b>14.62</b>	<b>23.60</b>	<b>1.72</b>	<b>2.19</b>	<b>0.48</b>	<b>-25.9</b>	<b>642.1</b>	<b>61.4</b>	<b>-92.7</b>	<b>27.3</b>	<b>9.1</b>
<b>Key Financial Ratios (%)</b>													
Gross Margin	30.8	13.1	19.2	18.4	17.0	18.6	20.7						
Operating Expense Ratio	14.4	7.3	8.1	7.2	8.0	8.7	9.3						
Operating Margin	16.5	5.8	11.1	11.2	8.9	9.9	11.4						
Effect Tax Rate	23.0	10.3	23.4	29.3	31.2	18.2	36.3						
Net Margin	15.5	2.7	5.7	8.6	6.5	8.0	6.3						

\*Since Sep. 9<sup>th</sup>, 2019, CWTC changed the par value of stock from NT\$10 to NT\$1. The new EPS is one-tenth of the original one.

# 2015-2020 Balance Sheet

NT\$m	2015	2016	2017	2018	2019	2020	YoY (%)				
							2016	2017	2018	2019	2020
<b>Total Assets</b>	<b>809</b>	<b>2,333</b>	<b>9,100</b>	<b>9,788</b>	<b>10,544</b>	<b>12,164</b>	<b>188.2</b>	<b>290.1</b>	<b>7.6</b>	<b>7.7</b>	<b>15.4</b>
Cash	246	618	2,131	2,304	3,076	2,502	151.4	244.7	8.1	33.5	-18.7
AR & NR	135	523	1,825	1,927	2,003	2,114	288.2	248.6	5.6	4.0	5.5
Inventories	56	81	1,267	1,437	1,296	1,437	45.6	1456.6	13.4	-9.8	10.9
Fixed Assets	308	324	2,318	2,441	2,210	2,252	5.1	615.4	5.3	-9.5	1.9
<b>Total Liabilities</b>	<b>124</b>	<b>299</b>	<b>3,970</b>	<b>4,617</b>	<b>5,558</b>	<b>6,738</b>	<b>141.0</b>	<b>1229.0</b>	<b>16.3</b>	<b>20.4</b>	<b>21.2</b>
AP & NP	34	180	957	1,019	1,148	1,105	423.6	430.7	6.5	12.6	-3.8
<b>Total Equity</b>	<b>685</b>	<b>2,034</b>	<b>5,130</b>	<b>5,171</b>	<b>4,986</b>	<b>5,426</b>	<b>196.8</b>	<b>152.2</b>	<b>0.8</b>	<b>-3.6</b>	<b>8.8</b>
<b>Key Financial Ratios</b>											
A/R Turnover Days	97.9	71.0	56.3	69.0	75.9	76.6					
Inventory Turnover Days	65.8	17.1	40.0	61.0	63.5	62.5					
A/P Turnover Days	43.0	26.7	33.8	44.6	50.4	51.5					
Cash Conversion Days	120.7	61.4	62.6	85.4	89.0	87.5					
ROE (%)	8.6	3.3	12.0	16.4	12.0	14.9					
ROA (%)	7.3	2.9	7.5	8.9	6.0	6.8					



# Glossary

- SO/SOP: Small Outline and Small Outline Package
- TSSOP: Thin Shrink Small Outline Package
- TSOP: Thin Small Outline Package
- COL: Chip-n-Lead
- QFP: Quad Flat Package
- SQFP: Small Quad Flat Package
- TQFP: Thin profile Quad Flat Package
- LQFP: Low profile Quad Flat Package
- PDIP: Plastic Dual In-line Package
- PLCC: Plastic Leaded Chip Carrier
- VSO: Very Small Outline Package
- PMFP: Plastic Micro Flat Package
- BCC: Bump Chip Carrier
  
- QFN: Quad Flat No-lead
- DRQFN: Dual Row Quad Flat No-Lead Package
- aQFN: advanced Quad Flat No-lead
- VQFN: Very Thin Quad Flat No-lead Package