

# The Sustainable Growth of CWTC

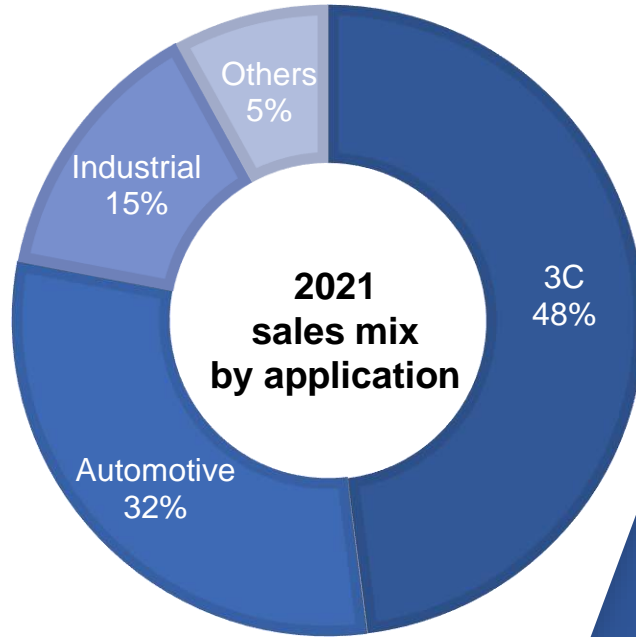
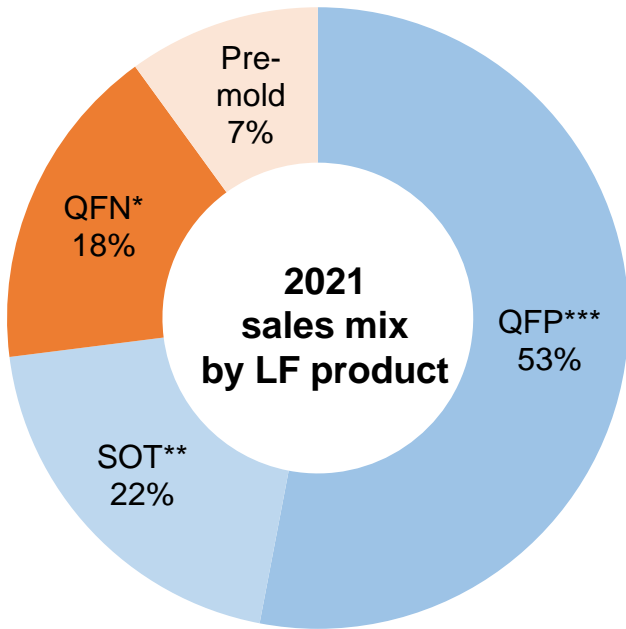
2022 Investor Presentation  
Canon Huang, Chairman of CWTC (6548 TT)

# Forward-looking Statement

Information included in this press release that are not historical in nature are "forward looking statements". CWTC cautions readers that forward looking statements are based on CWTC's reasonable knowledge and current expectations and are subject to various risks and uncertainties. Actual results may differ materially from those contained in such forward looking statements for a variety of reasons including without limitation, risks associated with demand and supply change, manufacturing and supply capacity, design win, time to market, market competition, industrial cyclicity, customer's financial condition, exchange rate fluctuation, legal actions, amendments of the laws and regulations, global economy change, natural disasters, and other unexpected events which may disrupt CWTC's business and operations. Accordingly, readers should not place reliance on any forward looking statements. Except as required by law, CWTC undertakes no obligation to update any forward looking statement, whether as a result of new information, future events, or otherwise.

# A Leading Lead Frame(LF) Solution Expert

- Ticker: 6548 TT
- Market Cap (Dec. 31<sup>st</sup>, 2021): US\$1.4bn
- Client Scope: Outsourcing Semiconductor Assembly & Testing (OSAT), Integrated Device Manufacturers (IDM) and IC Design



**30+ years**

LF experience

**US\$457mn**

2021 Total sales

**90+**

No. of global LF patents

**2,000+**

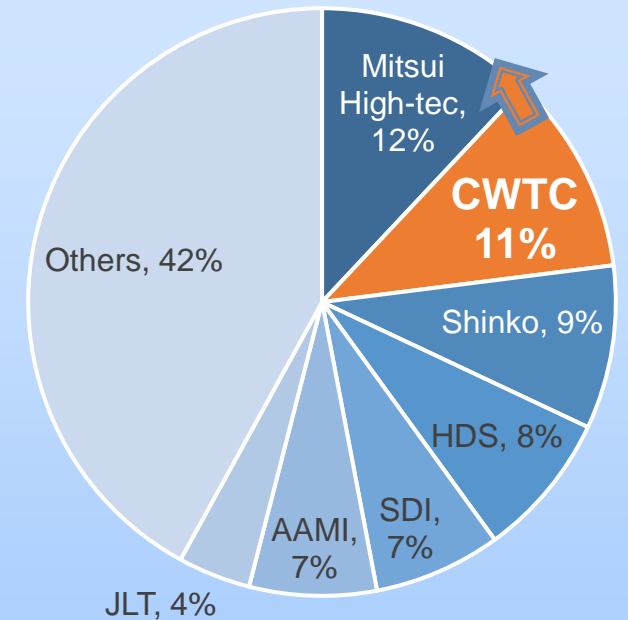
No. of global employees

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

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

# Target to Increase Market Share

2020E Global LF market shares\*



- Through **diversity in LF products and manufacturing process, early and disciplined LF investment**, CWTC will efficiently expand its capacity to pursue sustainable growth. CWTC targets to increase market share.
- CWTC targeted to be the IC LF **Spec. Definer**.
- After acquiring LF business from Sumitomo Metal Mining (5713 JP) in 2018. Through its plants in Taiwan, China and Malaysia, CWTC owns industry-leading manufacturing capabilities of stamping, etching and plating.

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

# Our Execution Plan

QFP

QFN

aQFN

Pre-mold

SOT



Stamping

Etching

Plating

Molding

**LF  
Diversity**

**Disciplined Investment**

# Agenda

**Lead Frame Diversity**

**Disciplined Investment**

**Our Commitments to Shareholders**

**Financial Performance**

A high-magnification, blue-tinted microscopic image of a lead frame. The image shows a complex, repeating pattern of rectangular frames with various electrical leads and connections. The text "Lead Frame Diversity" is overlaid in the center in a white, bold, sans-serif font.

# Lead Frame Diversity

# Our LF Diversity to Drive Future Growth

## I. Application Diversity

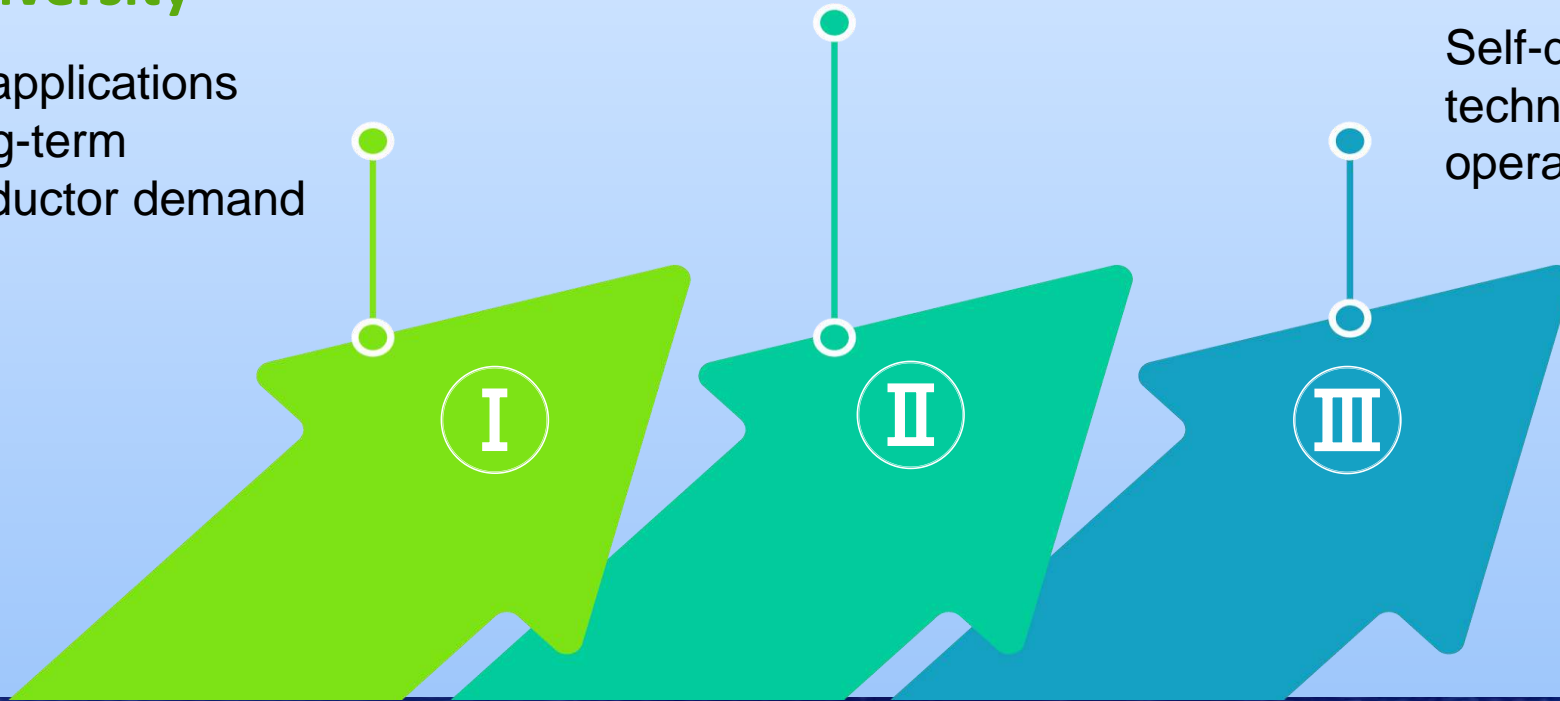
Multiple applications drive long-term semiconductor demand

## II. Packaging Type Diversity

QFN, QFP & SOP are major IC packaging type in terms of no. of IC

## III. Manufacturing Process Strength

Self-developed technologies leads to our operation efficiency







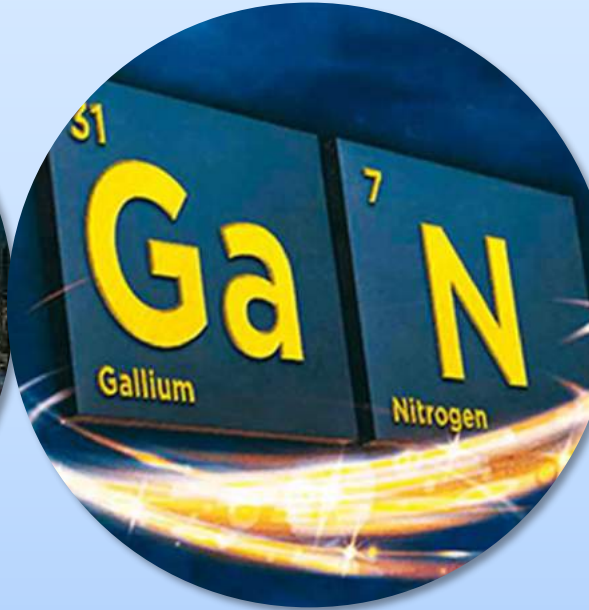
# Application Diversity



**Electrified Mobility**



**5G & WiFi  
Connectivity**



**III-V  
Semiconductor**



**Mini LED**

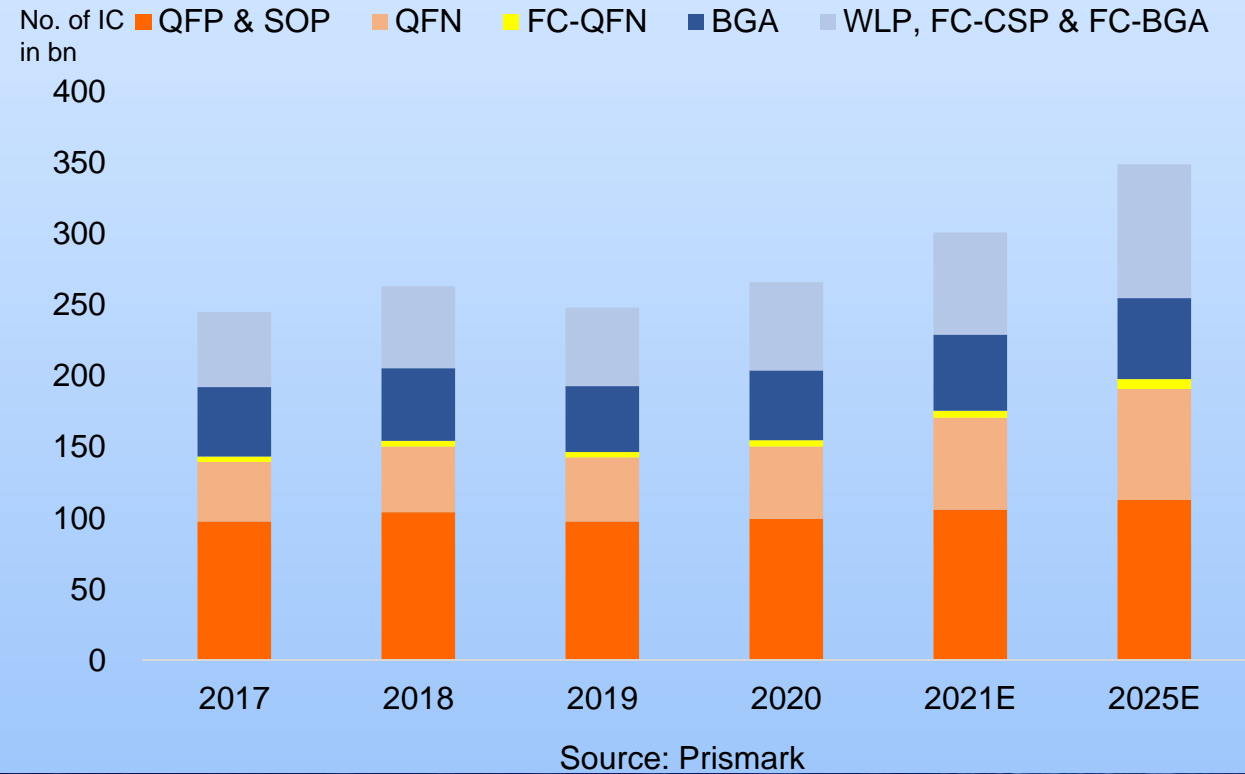
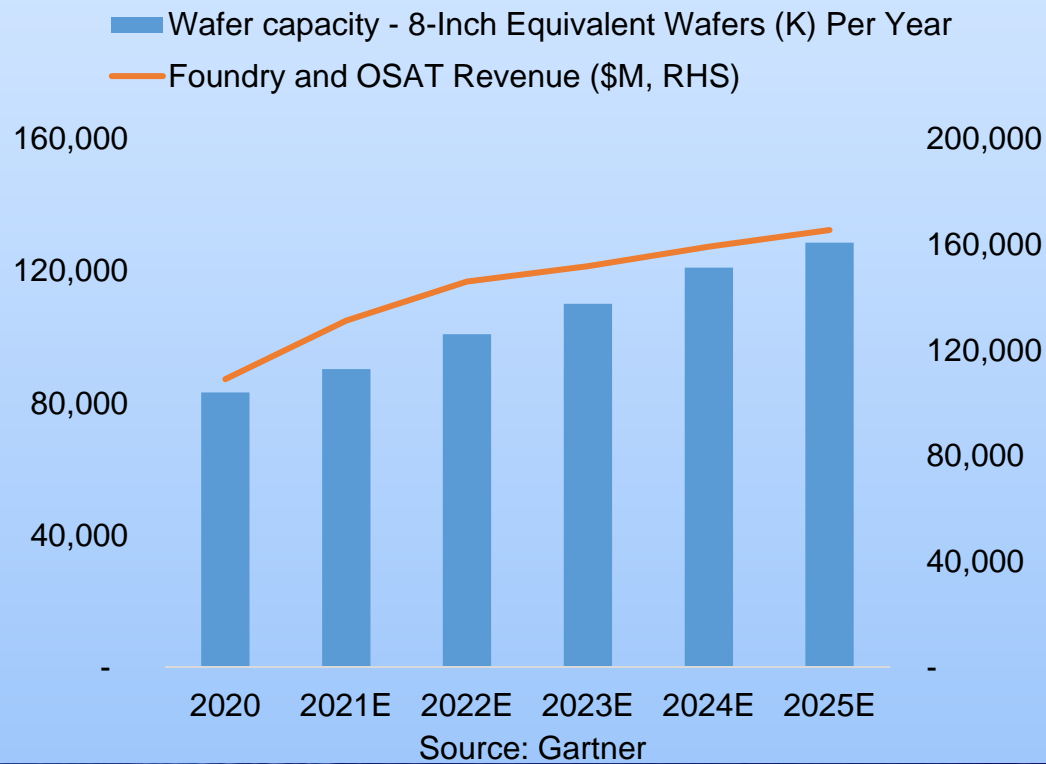
Various LF Spec. Requirement: No. of I/O, Form factor, Reliability, Thermal conductivity and Electrical performance



# Packaging Type Diversity

Wafer capacity expansion fuels industry's 9% CAGR. No. of IC will grow faster due to node migration, e.g. 65/40nm to 28/22nm.

Same with industry trend, we've seen growing QFP & QFN demand from global tier-one customers, including IDM, OSAT and IC design.





# Products Manufacturing Process

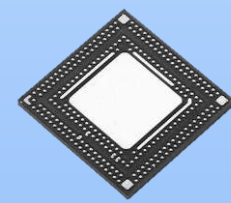
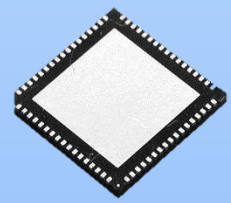
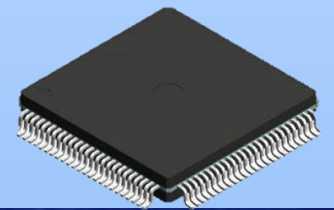
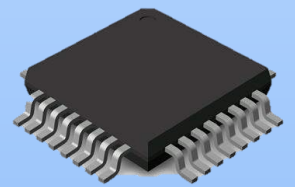
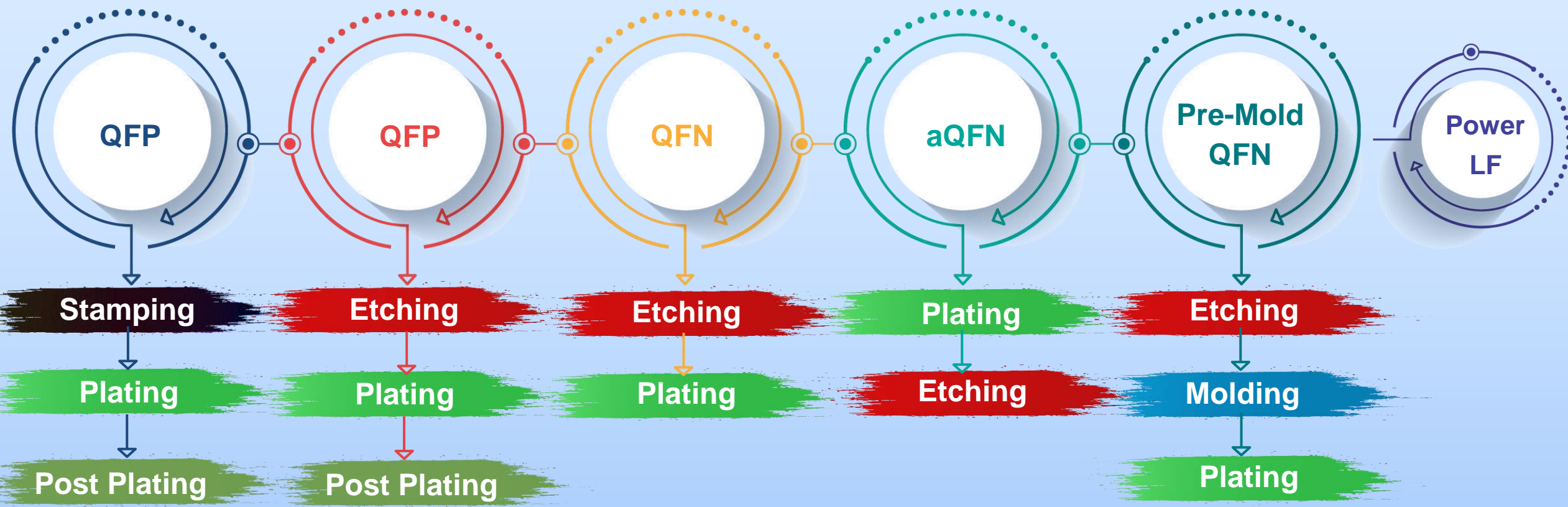


Photo: CWTC and ASE & Infineon

# Our Manufacturing Strength

## Stamping

- Self-developed tool and mold support all QFP and SOP LF, enable to produce “CWTC-only” items.
- High flexibility to switch different products to maximize throughput

## Etching

- Precise QFN half-etching technology to enhance efficiency
- **Highly-automated, customized and flexible** etching tools to share with QFP LF lines
- Industry leading **wastewater treatment technology**

## 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

## Molding

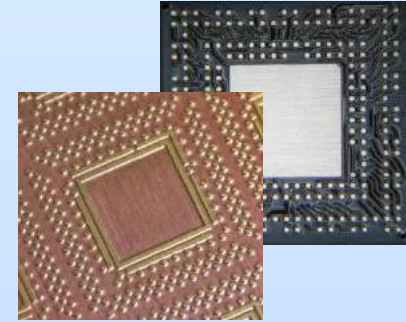
- Self-developed **molding process** to provide value-add to QFN LF
- **Increasing pricing power** for niche applications: Mini LED

# Our Technology Leadership



## Pre-mold QFN

- World's leading EME-filled QFN technology
- Excellent **thermal efficiency & rigidity**
- **Higher throughput** for IC, Mini LED back-light unit, sensor and MEMS
- Replacing entry-level organic substrate



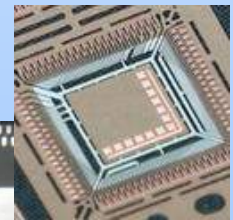
## aQFN

- No. of I/O: **100-500**
- World's leading exclusive QFN LF
- Replacing BGA
- TW Fab started production since 4Q21



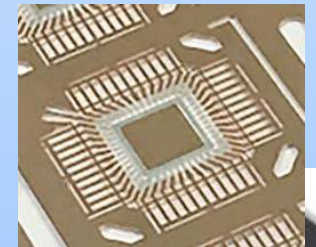
## QFN

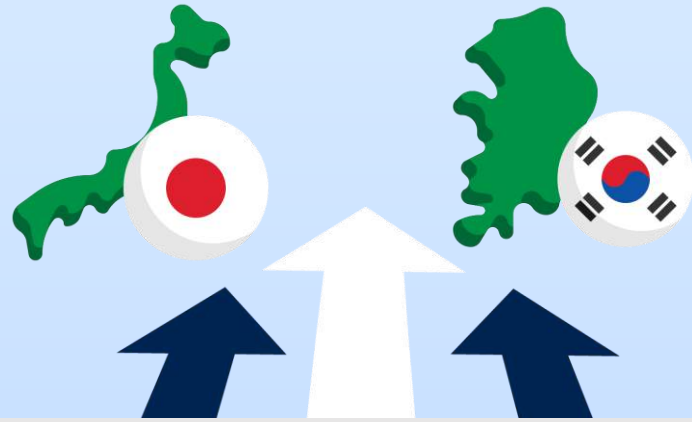
- No. of I/O: **32-180**
- Replacing SOP, co-exist with QFP and low-end BGA



## QFP

- No. of I/O: **32-256**
- Flexible capacity switch between stamping and etching
- Increasing demand from OSAT & IDM customers





**Japan & Korea Peers**

**Operation Efficiency**

**CWTC**

**Gaining LF Shares**

**LF Technology**



**China Peers**

# Disciplined Investment

# Capacity Expansion Milestone

- To meet robust demand from Vehicle Electrification, 5G/WIFI, MiniLED, and III-V Semiconductor...etc., we are ramping up etching capacity from 48mn/year by 2020, to 70mn/year by 2022. By 2025, we target to expand our etching capacity toward to 130mn/year.
- To answer rising QFP/SOP demand, we plan to expand stamping capacity by 4Q22.
- Our manufacturing process diversity enables our flexibility of switching etching capacity between QFN and QFP.

**48mn\*/year**

Increased capacity at existing TW and CN facilities

New TW fab:  
Construction started

**2020**

\*Annual capacity in strips.

**63mn/year**

(from planned 56mn/year)

Move JP tools to existing TW facilities

2Q21: Pilot production

4Q21: Mass production

**2021**

**70mn/year**

New TW facilities:

3Q22E: New TW fab construction complete

4Q22E: Tool move-in and pilot production

**2022E**

**130mn/year**

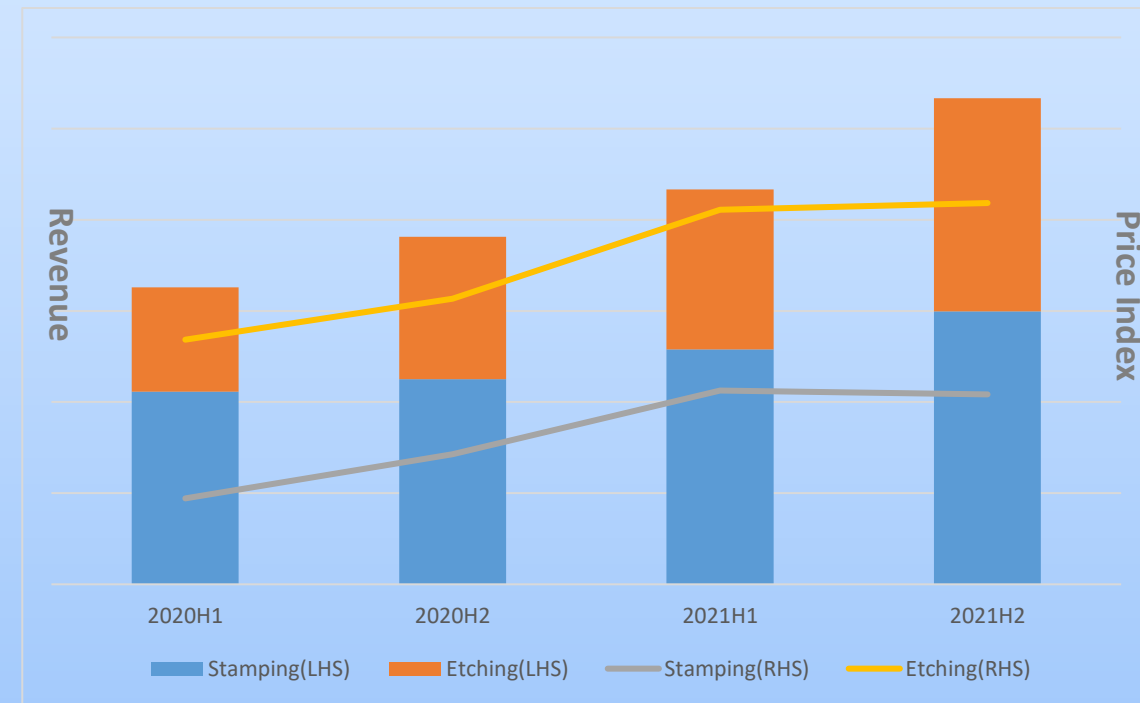
New capacity expansion across TW, CN and MY facilities

**2022E to 2025E**



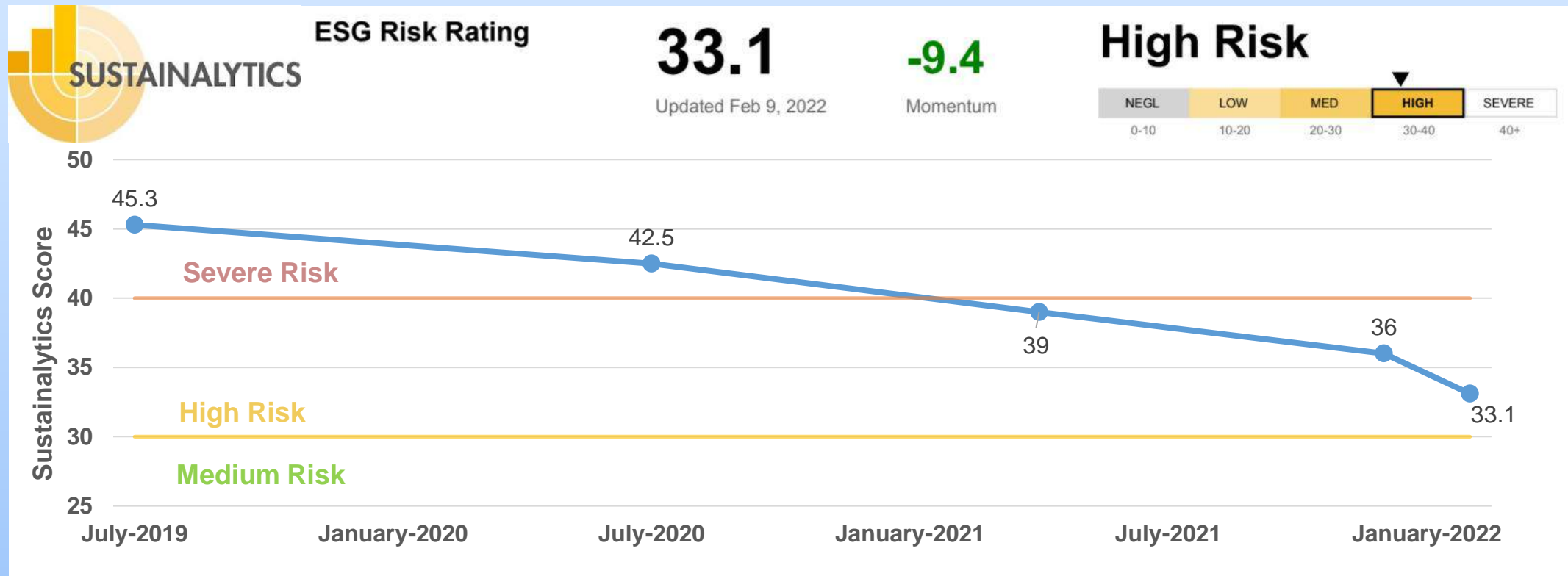
# Disciplined LF Pricing for Sustainable Growth

- Mainly driven by strong demand from Automotive and Industrial applications, we've increased LF price since 2021 while QFP LF pricing surged more than QFN LF.
- As IDM orders have long life cycle, we expect existing IDM orders to maintain a stable and healthy growth. Order visibility from our IDM clients has extended to 2023.
- Our discipline pricing strategy strengthened our long-term collaborations with clients, achieving our sustainable growth and enable us to define LF industry specification in the long-term.



# Our Ever-Improving ESG Performance

- Year over year improvement in our Sustainalytics ESG Score
- We expect further improvement into the medium risk category by 2022



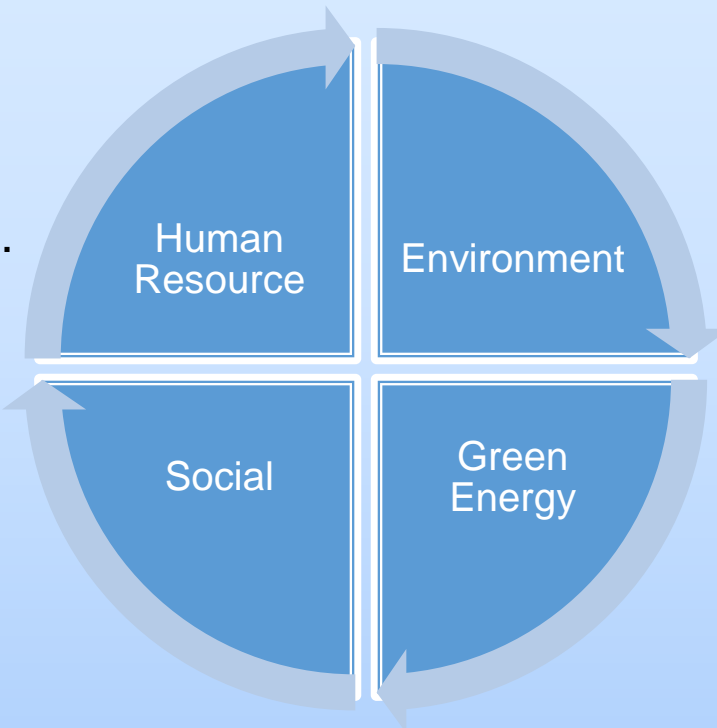
# We Pursuit Our Sustainable Growth in an Eco-friendly Approach

## Environment:

- Reclaimed water usage reached **20.6%** in 2021E vs 13.6% in 2019.
- **4%** of electricity demand at the new factory will be supplied from solar energy vs. existing factory of only 0.3%.

## Social:

- We are committed to complying with the Responsible Business Alliance (RBA), the Global e-Sustainability Initiative (GeSI), and also the Responsible Minerals Initiative (RMI).
- ESOP program transferred over **1,341,000** shares to employees
- Our new fab expect to create more than **150** new job opportunity.
- Stringent Environmental, Health, & Safety Policy across all of our Asia factories.




CWTC  
2020ESG  
Reports

# Our Commitments to Shareholders

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

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

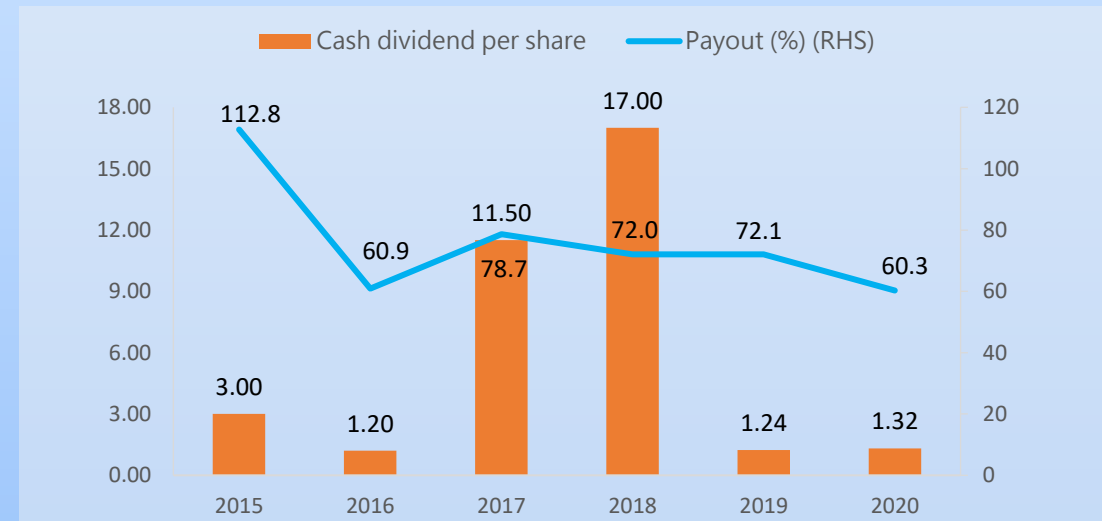
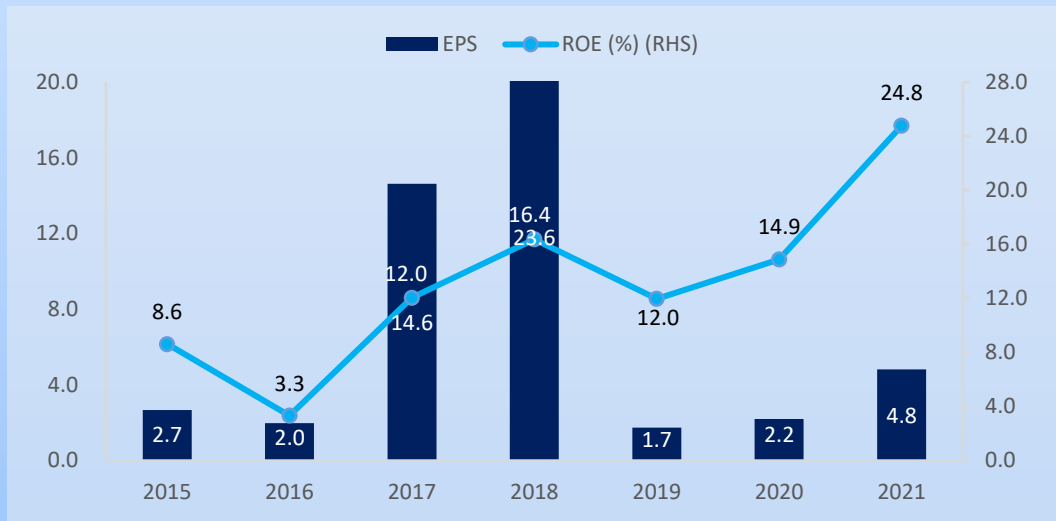
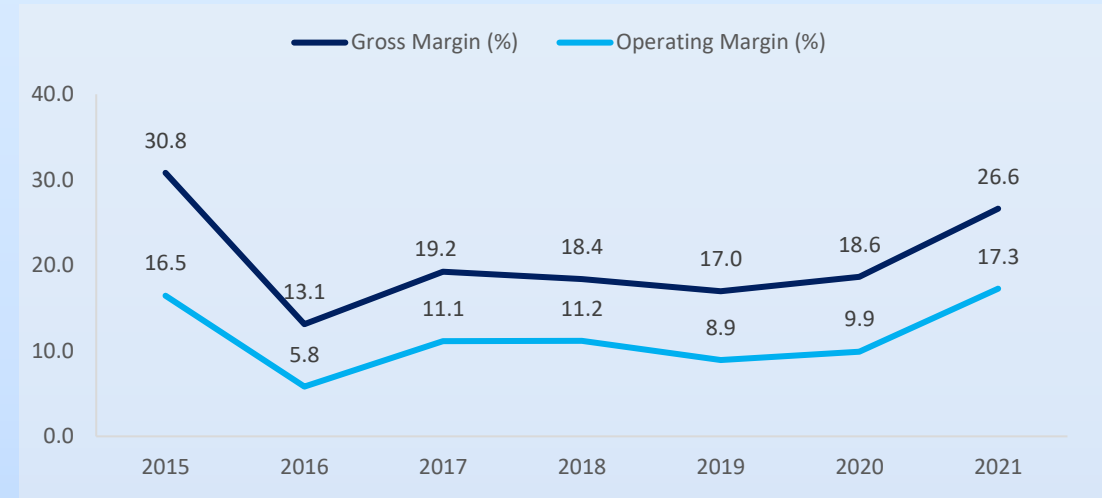
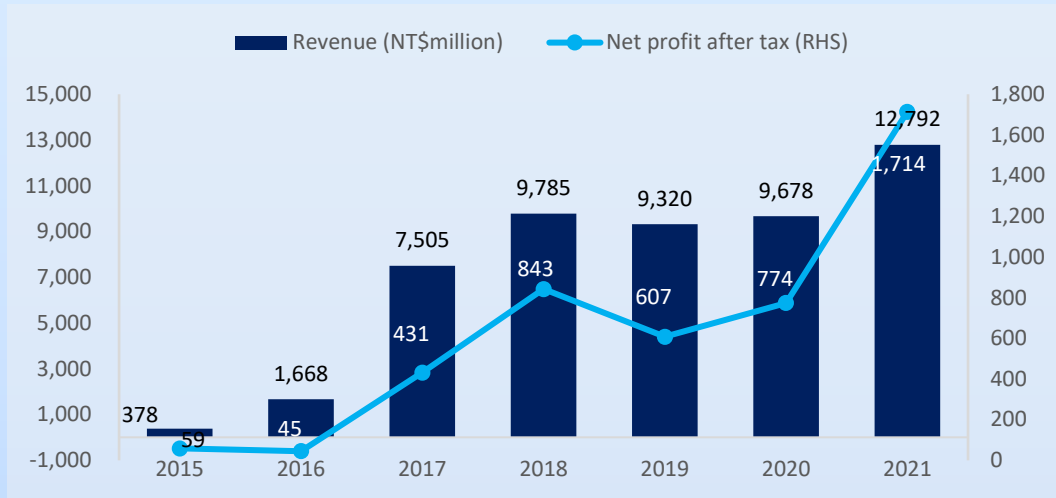
| 2021E-2025E | Capex-to-Sales ratio             | Capex Efficiency* |   | Sales CAGR                    | GP CAGR | FCF CAGR |
|-------------|----------------------------------|-------------------|---|-------------------------------|---------|----------|
| <b>CWTC</b> | <b>Mid-to-High single digit%</b> | <b>2~3x</b>       |  | <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



# 2015-2021 Income Statement

| NT\$m                           | 2015        | 2016         | 2017         | 2018         | 2019         | 2020         | 2021          | YoY (%)      |              |             |              |             |              |
|---------------------------------|-------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|-------------|--------------|-------------|--------------|
|                                 |             |              |              |              |              |              |               | 2016         | 2017         | 2018        | 2019         | 2020        | 2021         |
| <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>12,792</b> | <b>340.8</b> | <b>350.0</b> | <b>30.4</b> | <b>-4.7</b>  | <b>3.8</b>  | <b>32.2</b>  |
| Gross Profit                    | 117         | 219          | 1,444        | 1,802        | 1,581        | 1,805        | 3,406         | 87.7         | 559.6        | 24.8        | -12.3        | 14.2        | 88.7         |
| Operating Expenses              | - 54        | - 122        | - 607        | - 708        | - 748        | - 845        | - 1,196       | 124.5        | 397.9        | 16.5        | 5.7          | <b>12.9</b> | <b>41.6</b>  |
| <b>Operating Profit</b>         | <b>62</b>   | <b>97</b>    | <b>837</b>   | <b>1,094</b> | <b>833</b>   | <b>960</b>   | <b>2,210</b>  | <b>55.6</b>  | <b>763.1</b> | <b>30.7</b> | <b>-23.9</b> | <b>15.3</b> | <b>130.1</b> |
| Pretax Income                   | 76          | 232          | 1,071        | 1,206        | 899          | 966          | 2,249         | 204.9        | 362.6        | 12.6        | -25.4        | 7.5         | 132.7        |
| Tax Expenses                    | - 17        | - 24         | - 251        | - 354        | - 280        | - 176        | - 511         | 36.4         | 955.8        | 40.9        | -20.8        | -37.3       | 190.8        |
| <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>1,714</b>  | <b>-23.1</b> | <b>858.0</b> | <b>95.5</b> | <b>-27.9</b> | <b>27.4</b> | <b>121.5</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>4.81</b>   | <b>-25.9</b> | <b>642.1</b> | <b>61.4</b> | <b>-92.7</b> | <b>27.3</b> | <b>119.6</b> |
| <b>Key Financial Ratios (%)</b> |             |              |              |              |              |              |               |              |              |             |              |             |              |
| Gross Margin                    | 30.8        | 13.1         | 19.2         | 18.4         | 17.0         | 18.6         | 26.6          |              |              |             |              |             |              |
| 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          | 17.3          |              |              |             |              |             |              |
| Effect Tax Rate                 | 23.0        | 10.3         | 23.4         | 29.3         | 31.2         | 18.2         | 22.7          |              |              |             |              |             |              |
| Net Margin                      | 15.5        | 2.7          | 5.7          | 8.6          | 6.5          | 8.0          | 13.6          |              |              |             |              |             |              |



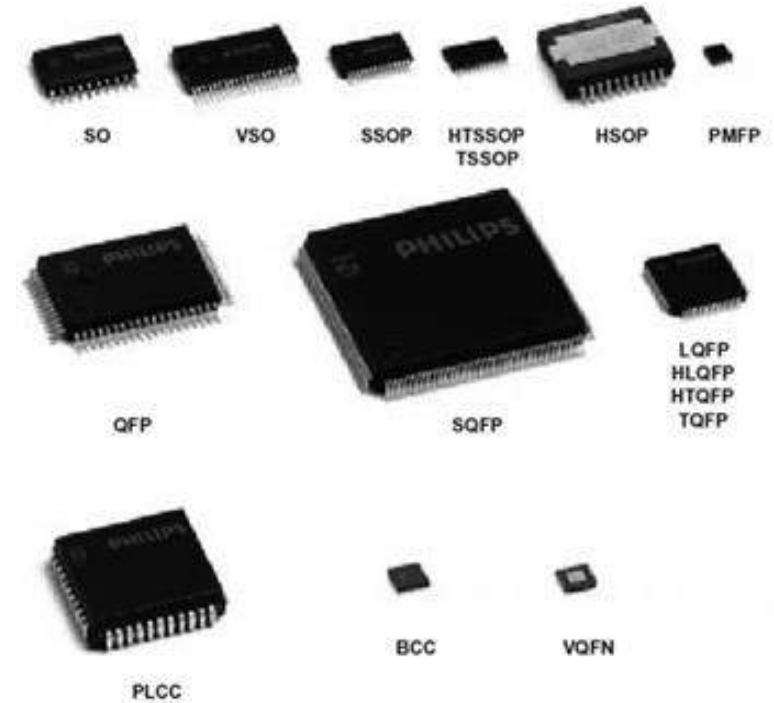
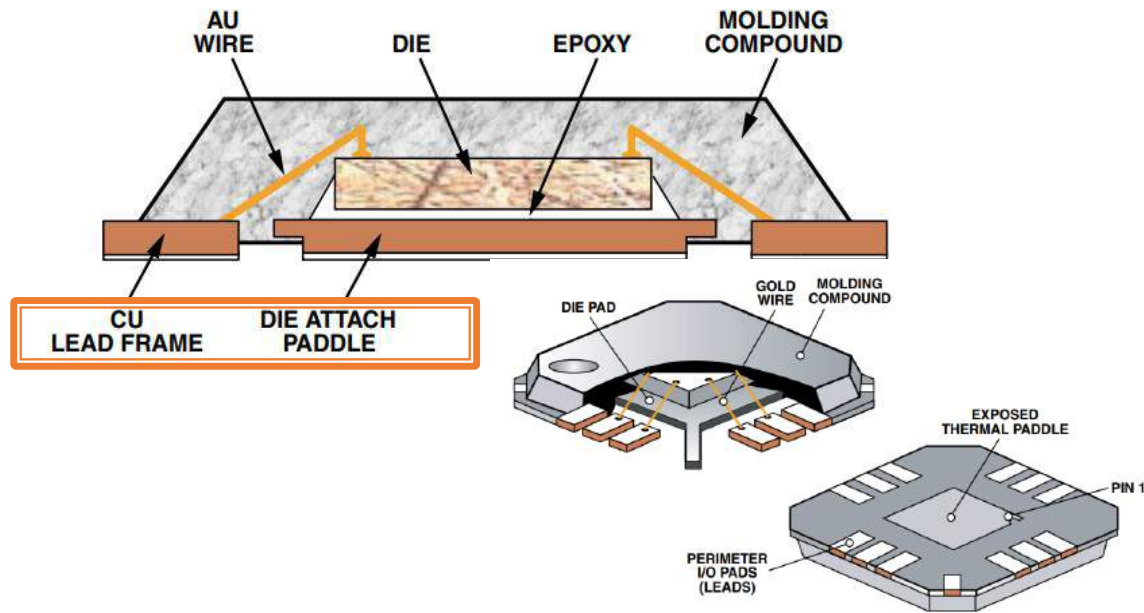
# 2015-2021 Balance Sheet

| NT\$m                       | 2015       | 2016         | 2017         | 2018         | 2019          | 2020          | 2021          | YoY (%)      |               |             |             |             |             |
|-----------------------------|------------|--------------|--------------|--------------|---------------|---------------|---------------|--------------|---------------|-------------|-------------|-------------|-------------|
|                             |            |              |              |              |               |               |               | 2016         | 2017          | 2018        | 2019        | 2020        | 2021        |
| <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>14,842</b> | <b>188.2</b> | <b>290.1</b>  | <b>7.6</b>  | <b>7.7</b>  | <b>15.4</b> | <b>22.0</b> |
| Cash                        | 246        | 618          | 2,131        | 2,304        | 3,076         | 2,502         | 3,796         | 151.4        | 244.7         | 8.1         | 33.5        | -18.7       | 51.7        |
| AR & NR                     | 135        | 523          | 1,825        | 1,927        | 2,003         | 2,114         | 2,858         | <b>288.2</b> | <b>248.6</b>  | <b>5.6</b>  | <b>4.0</b>  | <b>5.5</b>  | <b>35.2</b> |
| Inventories                 | 56         | 81           | 1,267        | 1,437        | 1,296         | 1,437         | 2,196         | 45.6         | 1456.6        | 13.4        | -9.8        | 10.9        | 52.9        |
| Fixed Assets                | 308        | 324          | 2,318        | 2,441        | 2,210         | 2,252         | 2,475         | <b>5.1</b>   | <b>615.4</b>  | <b>5.3</b>  | <b>-9.5</b> | <b>1.9</b>  | <b>9.9</b>  |
| <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>6,430</b>  | <b>141.0</b> | <b>1229.0</b> | <b>16.3</b> | <b>20.4</b> | <b>21.2</b> | <b>-4.6</b> |
| AP & NP                     | 34         | 180          | 957          | 1,019        | 1,148         | 1,105         | 1,337         | <b>423.6</b> | <b>430.7</b>  | <b>6.5</b>  | <b>12.6</b> | <b>-3.8</b> | <b>-</b>    |
| <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>8,412</b>  | <b>196.8</b> | <b>152.2</b>  | <b>0.8</b>  | <b>-3.6</b> | <b>8.8</b>  | <b>55.0</b> |
| <b>Key Financial Ratios</b> |            |              |              |              |               |               |               |              |               |             |             |             |             |
| A/R Turnover Days           | 97.9       | 71.0         | 56.3         | 69.0         | 75.9          | 76.6          | 70.0          |              |               |             |             |             |             |
| Inventory Turnover Days     | 65.8       | 17.1         | 40.0         | 61.0         | 63.5          | 62.5          | 69.7          |              |               |             |             |             |             |
| A/P Turnover Days           | 43.0       | 26.7         | 33.8         | 44.6         | 50.4          | 51.5          | 21.2          |              |               |             |             |             |             |
| Cash Conversion Days        | 120.7      | 61.4         | 62.6         | 85.4         | 89.0          | 87.5          | 118.4         |              |               |             |             |             |             |
| ROE (%)                     | 8.6        | 3.3          | 12.0         | 16.4         | 12.0          | 14.9          | 24.8          |              |               |             |             |             |             |
| ROA (%)                     | 7.3        | 2.9          | 7.5          | 8.9          | 6.0           | 6.8           | 12.7          |              |               |             |             |             |             |

# Appendix

# What is Lead Frame (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.



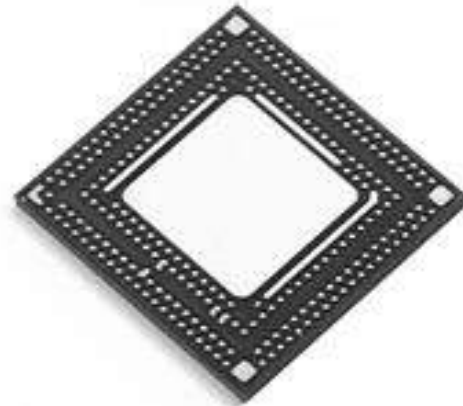
Source: Analog Device and ResearchGate

# What is QFN?

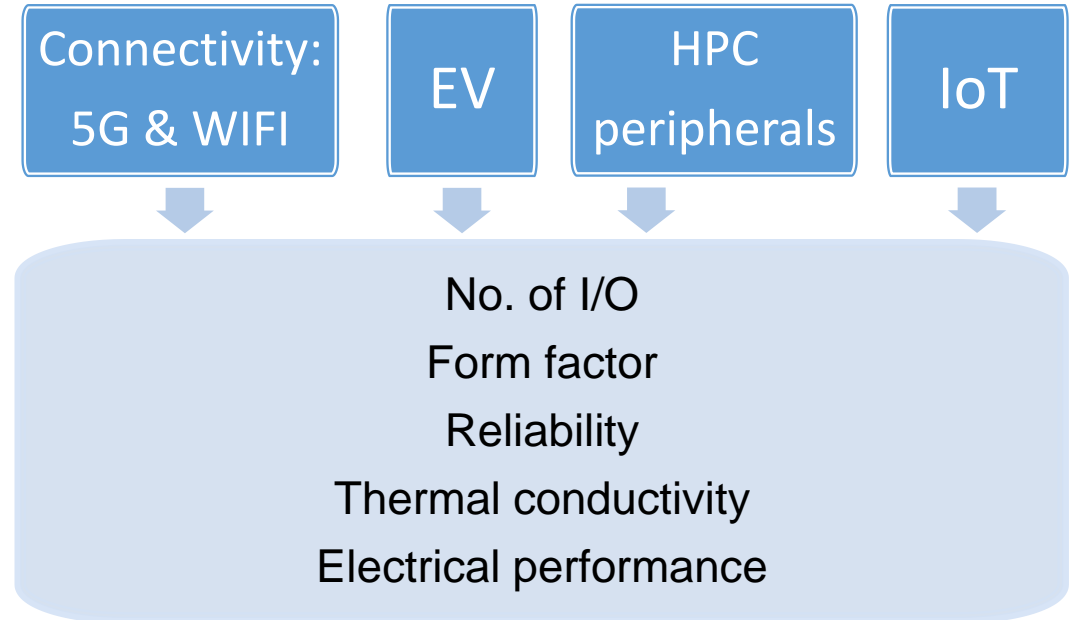
- As one type of LF-based packaging, QFN is a small sized “near chip scale” plastic encapsulated IC package.
- QFN is an ideal package for IC applications where **no. of I/O, size, weight, thermal and electrical performance** are important.



QFN LF



QFN IC package



Source: CWTC and ASE

# 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