AMPLE Electronic Technology Co., LTD
2020
Investor Conference

2020.11.18

ample
ELECTRONIC TECHNOLOGY

Disclaimer

- This presentation contains certain forward-looking statements that are based on current expectations and are subject to known and unknown risks and uncertainties that could cause actual results to differ materially from those expressed or implied by such statements.

- Except as required by law, we undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or herwise.

Outline

01.Company Overview

02.Core Technology and Competitive Advantage

03.Business Performance

Introduction

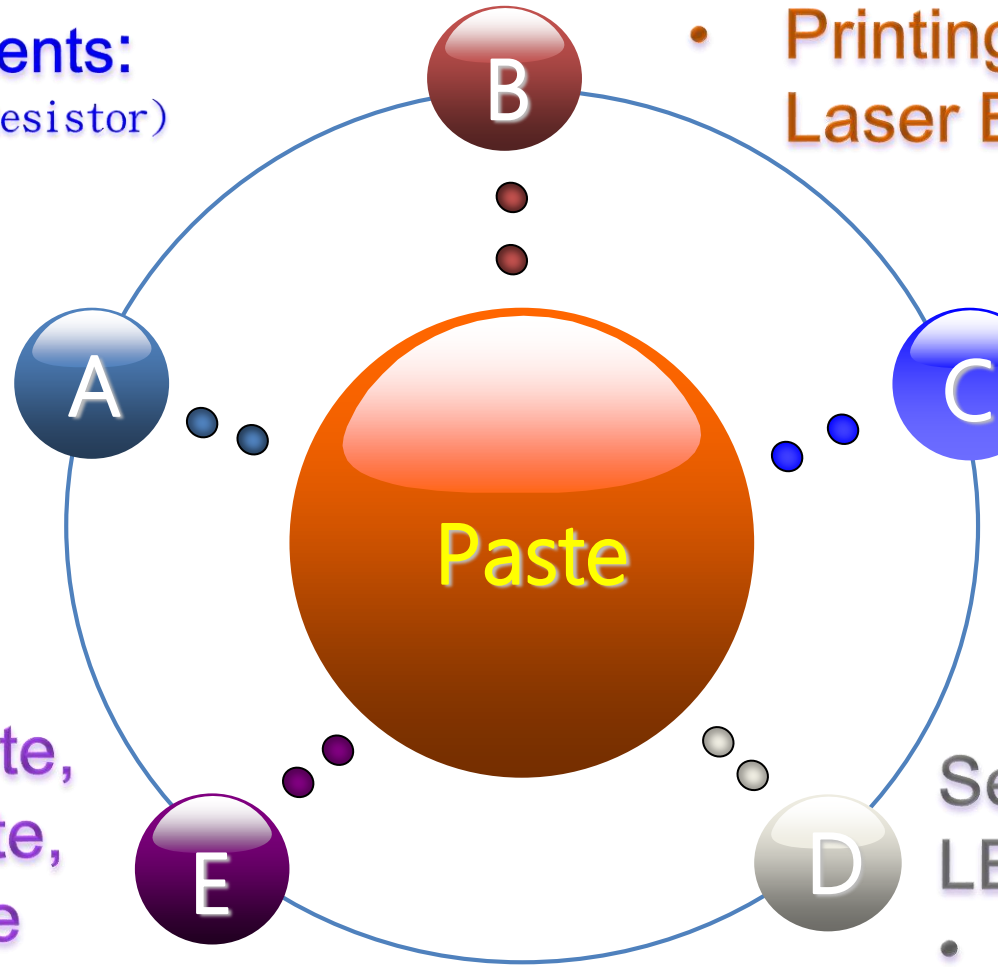
- Established: **June 8, 2007**
- Capital: **NTD 306,000,000**
- Main Products：**Conductive Paste**
- Location：
  No.32, Dayou 3rd St., Daliao Dist, Kaohsiung City, Taiwan

Milestones

2007	•Established “Ample Electronic Technology Co., Ltd.” Obtained authentication of ISO 9001, successfully developed conductive Ag paste applied to passive components •Marketing the world under our own brand "ample"
2008	• Developed silver paste for Patch Antenna、high-temperature conductive Copper paste applied to MLCC industry
2011	•Successfully developed Aluminum paste for Solar Cell •Purchased the factory building at No. 32, Dayou 3rd Street, Daliao District, Kaohsiung City
2013	• Public offering
2014	•Developed low-temperature cured silver paste applied to terminal electrode of mini molding choke and membrane switch for touch panel industries •Won the “2014 GOLDEN PEAK AWARD“
2015	•Won the “ THE 12TH GOLDEN TORCH AWARD“ •Listed on Emerging Stock Board
2017	•Obtained ISO 14001 certification
2018	•Won the "Rising Star Award“ & "National MSE Award of 2018".
2019	•IPO on 2019.03.21, Stock ID 4760 •Developed rear silver paste for Solar Cell

02.Core Technology and Competitive Advantage

Applications of Conductive paste



Passive Components:
(Capacitor, Incuctor, Resistor)
- Ag paste
  Pd/Ag paste
  Cu paste
  Ni paste

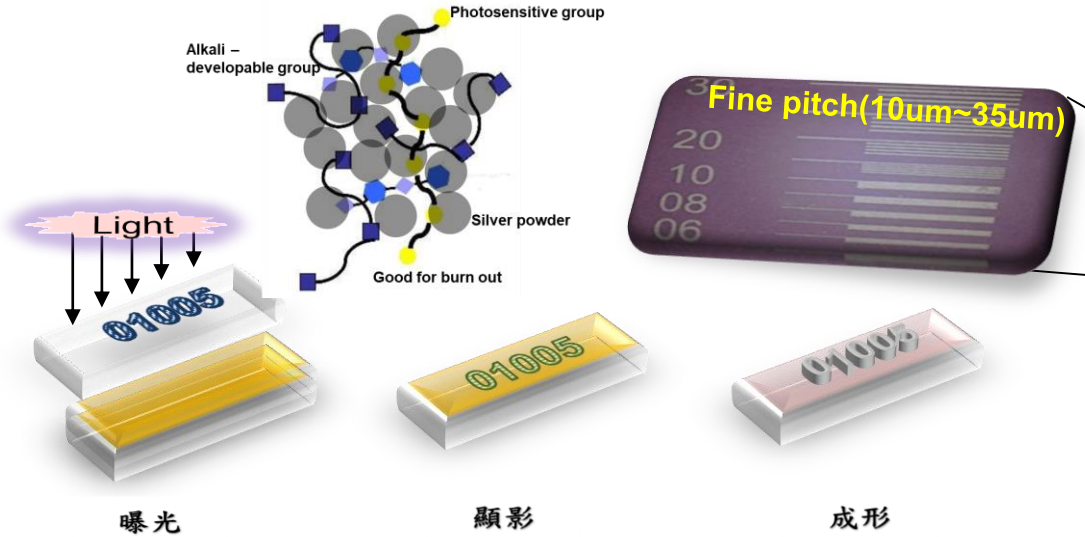
Touch Panel:
- Printing type
  Laser Etching type

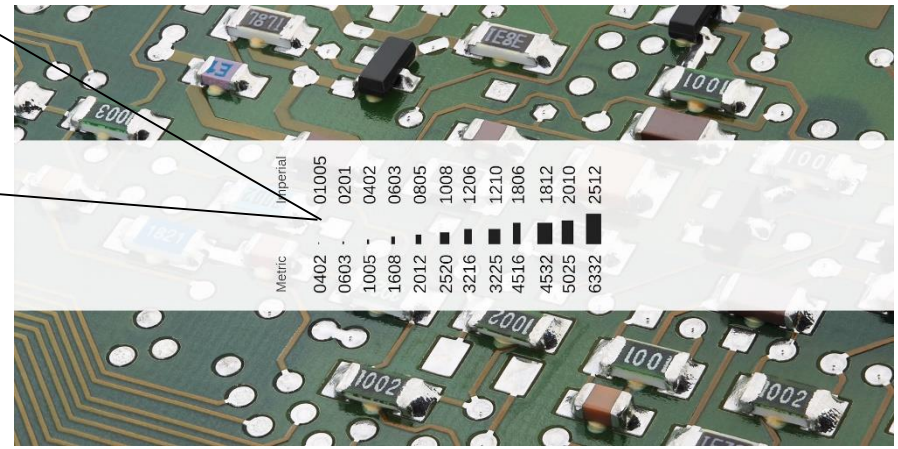
Membrane Switch:
- Ag paste

Solar Cell:
- Front Ag paste,
  Rear Ag paste,
  Rear Al paste

Semiconductor, LED Package:
- Ag paste

Lithography Metal Paste



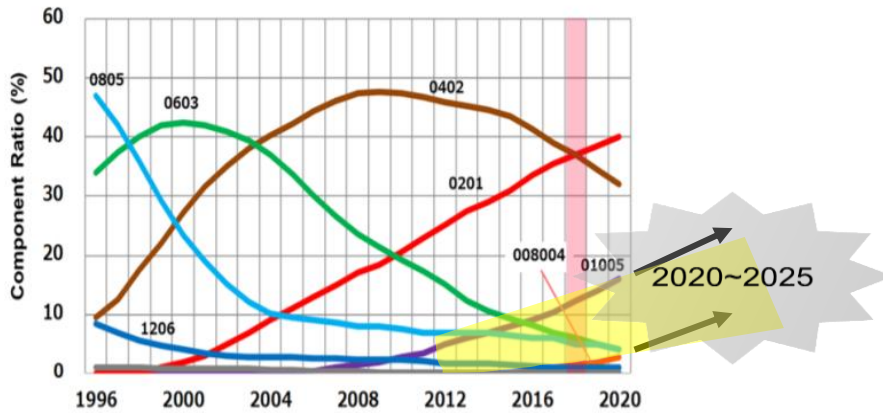


◆ **Product Features:**

Application in Fine pitch Inner layer electrode for smaller size component (01005).

- **Negative tone silver paste**
- **Design for alkaline developer**
- **Vertical sidewalls**
- **Near UV(350-405nm) Processing**
- **Application for High-Q Chip**

Under Development



□ **Production apacity shift to smaller size & High cap**

Reference form :Kitron's Electronic components market research report

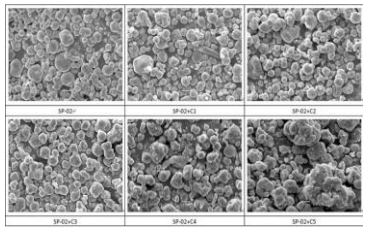
The technical trend and core of printable internal electrodes for multi-layer ceramic chip

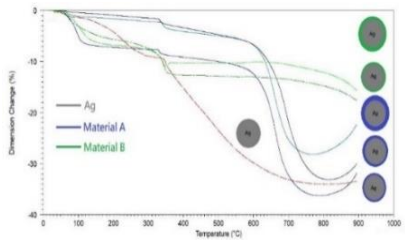
◆ Industrial trend: Performance requirements of terminals-Light、Thinner、Short、smaller

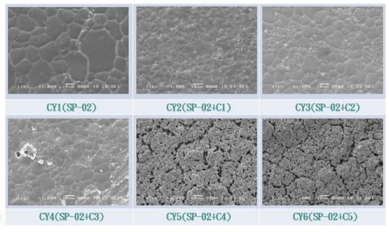
Chip size(mm)	~4532	0402	0201	01005
Line widths in printing	>150um	40~60um	30~40um	<30um
Manufacturing process	Screen printing			Photolithography

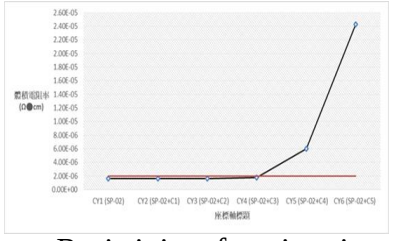
- The current trend of design requirements for thinner and smaller device, so the chip size is developing towards thinner. From the initial size of 4532 to 0402 small size, and even 0201 smaller size.

◆ Technical achievements

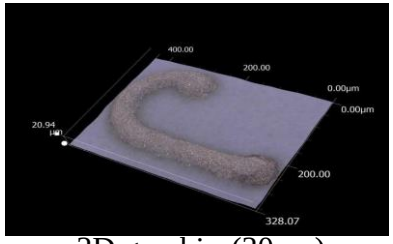




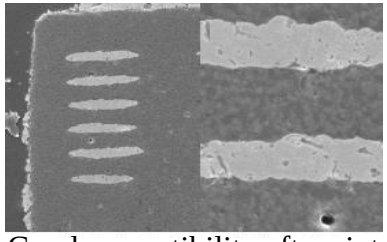




Resistivity after sintering



3D graphics(30um)



Good compatibility after sintering

◆ Core Technique

Organic material control and adjustment (Printing ability)

Surface modification of silver powder (Thermal Endurance)

Internal electrodes of microchip

- Major breakthroughs and achievements have been made in the surface modification of silver powder through Industry-Academic plan with NCKU and technical cooperation.
- **Organic material control and adjustment :** Improve printing ability through adjust molecular weight.、viscosity、additive. Finally used rheometer to experiments.
- **Surface modification of silver powder:** Through the surface coating of silver powder with different materials, establish TMA data analysis to observe the improvement of heat resistance and shrinkage behavior. Eventually meet the needs of Micro-lines(~30um).

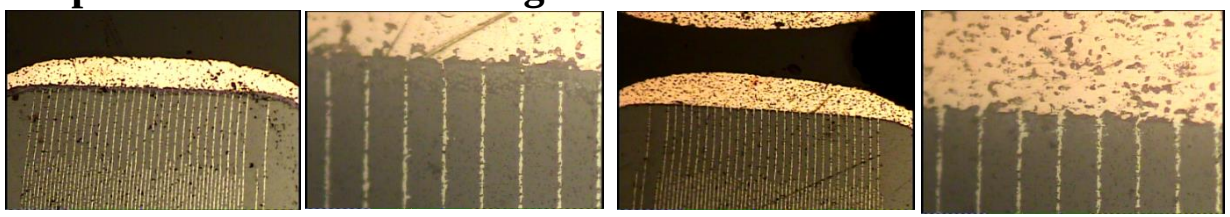
High-Temperature Sintered Copper Paste for MLCC Outer Electrode

◆ Industry Trends :

ITEM	Miniature	Small size	Normal	Big size
	PC65751	PC6199	PC6088	PC6100
Curing temp. (℃)	870~890	830~850	850~890	850~890
Size range(inch)	01005	0201	0402~0805	1206~1812
Advantage	Ni penetration	Tin spray	Pin hole、Tin spray Bending、TC crack	
產業趨勢	←		→	

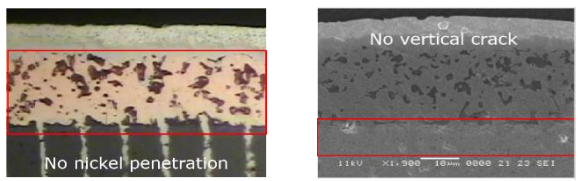
◆ Technical Achievements :

- **Lead-free zinc oxide glass frit diffusion control technology prevents vertical cracking issues**

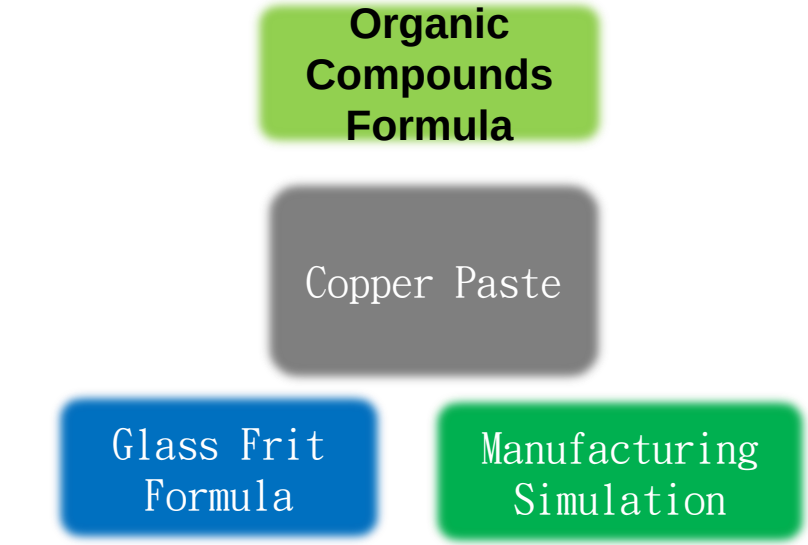


*No Diffusion Control: ZnO Diffusion around 10~15um *Ample Diffusion Control: ZnO Diffusion around <5um

- **Glass frit formula increases acid resistance and anti-nickel permeability**



◆ Core Technology :



- **Organic Compounds Formula: Produces excellent dipping flatness and low dipping loss.**
- **Glass Frit Formula: Increases acid resistance of organic vehicles and maintains binding capability, which leads to better anti-nickel permeability and crack prevention.**

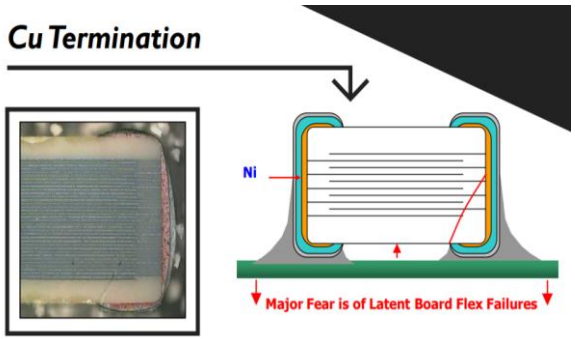
Low temperature cure Pastes for Terminal Electrodes

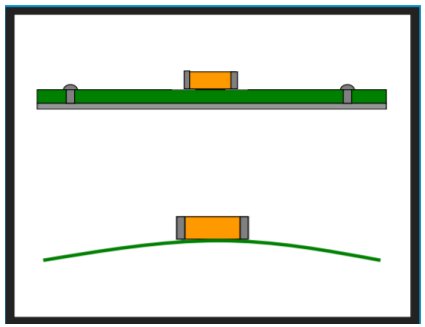
◆ Application Trend :

Industrial Electronics | Consumer Electronics | Wearable Devices | Automotive Electronics

What happens if the board flex is coming from any other known cause?

- ICT pin induced board flexure
- Board flexure occurring during PCB assembly into fixtures / cases etc.
- Insertion / removal of PCBs from connectors etc.
- PCB thermal expansion / contraction causing mechanical damage to the MLCC.



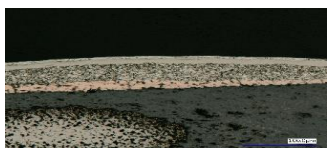


Reference from AVX Company :Flexisafe MLCC Termination Device Analysis Report

◆ Product Features : Used for terminal electrodes of passive components for surface mounting, such as resistors, MLCCs and inductors.

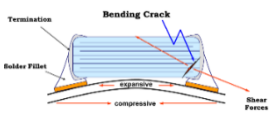
- **Good Dipping Flatness**

- **Nickel Electroplatable**



- **High Bending Resistance**

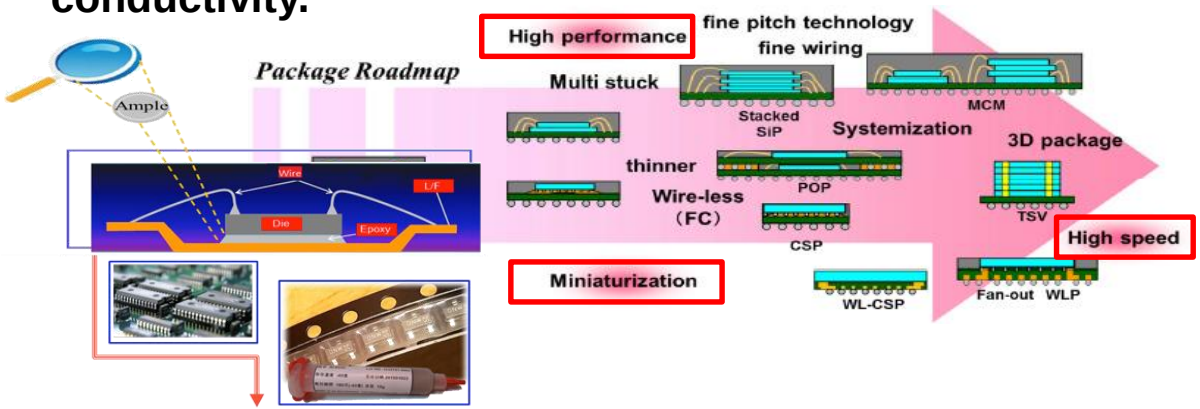
Item	EP9130	Reference (without epoxy termination)
bending	> 10mm	2~3mm



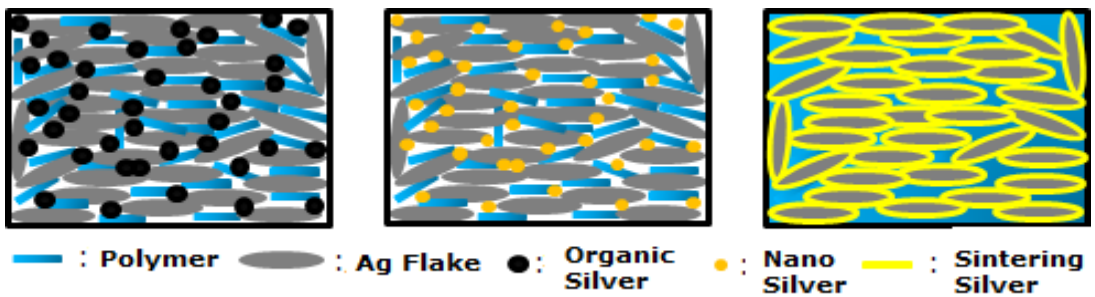
- *IEC 60068-2-21 : Speed < 0.5mm/sec ,Stop on 10 sec,△R25/R25 ≦5%*

The technical trend and core of silver paste for IC packaging

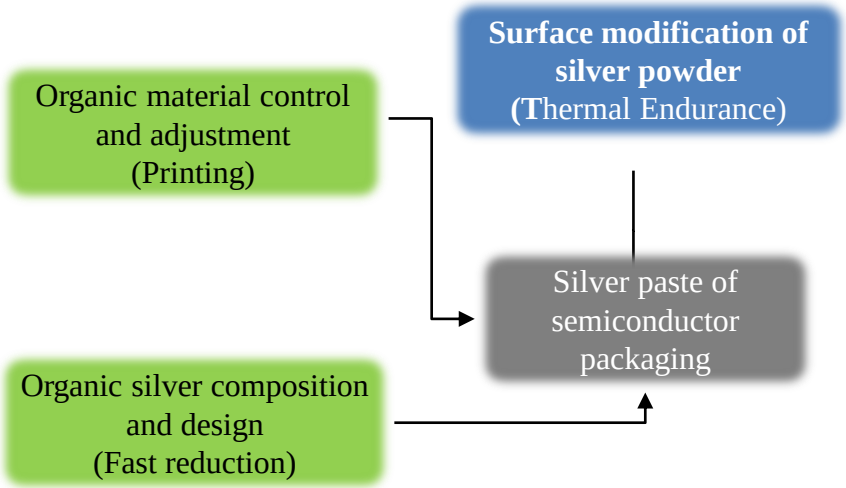
◆ **Industrial trend: IC packaging leads to miniaturization, high-power, and high-density packaging, resulting in a relatively increase in the heat generated by the operation of the chip. Above it is imperative to improve the thermal conductivity.**

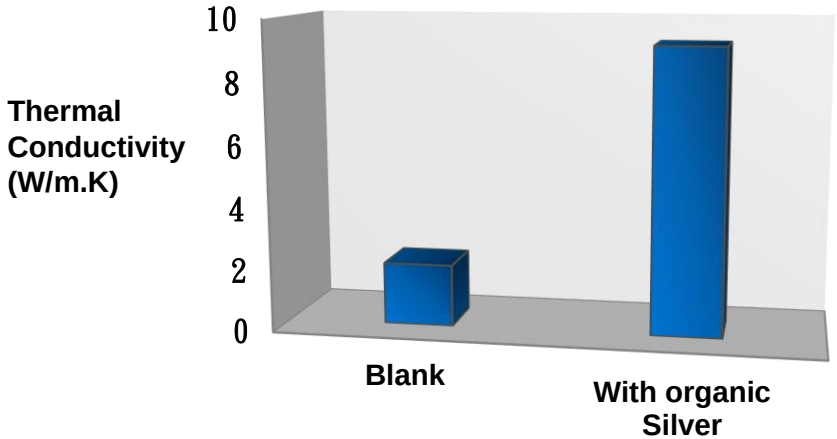


◆ **Technical achievements: The addition of organic matter can increase heat transfer by 4 times. As the organic matter is reduced to nano-silver and melted, a connection is formed between the silver powder to form a thermal conductivity path.**



◆ Core Technique





● **A major breakthrough in organic synthesis has been achieved in the industry-academic cooperation with NSYSU.**

R&D expenses invested

Year	2017	2018	2019	2020 Q1~Q3
R&D expenses accounted for revenue ratio	4%	5%	5%	3%
Revenue	612,787	713,249	589,199	849,660

Outline

02.Core Technology and Competitive Advantage

Balance Sheets 2017～2020Q3

In Thousands of New Taiwan Dollars

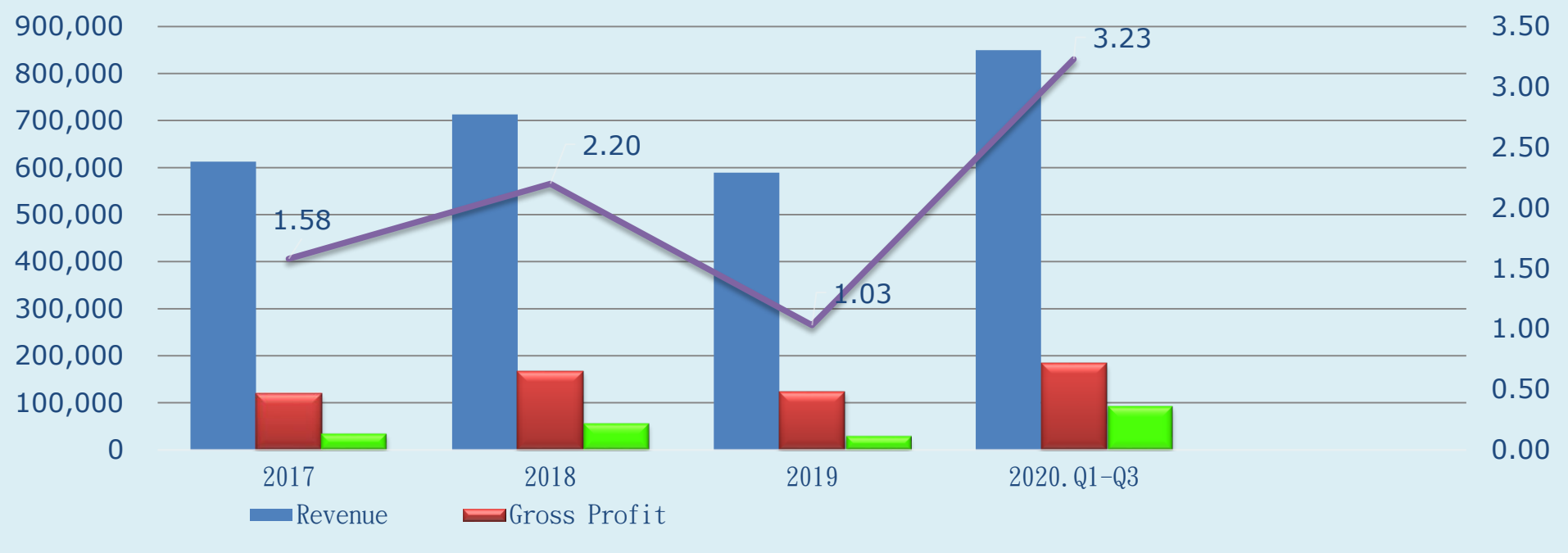
Year	2017		2018		2019		2020.Q3	
	Amount	%	Amount	%	Amount	%	Amount	%
Cash and cash equivalents	110,633	16	96,170	12	87,164	11	95,643	9
Other current assets	372,761	53	445,222	56	450,797	58	705,445	68
Non-current assets	214,634	31	254,555	32	250,601	31	243,092	23
Total non-current assets	698,028	100	795,947	100	788,562	100	1,044,180	100
Current Liabilities	278,137	40	332,111	41	295,162	38	362,382	35
Non-current liabilities	32,921	4	30,697	4	26,189	3	141,638	13
Total liabilities	311,058	44	362,808	45	321,351	41	504,020	48
Capital stock	251,516	36	257,935	33	295,000	37	306,000	29
Other equity interest	135,454	20	175,204	22	172,211	22	234,160	23
Total equity	386,970	56	433,139	55	467,211	59	540,160	52
Total liabilities and equity	698,028	100	795,947	100	788,562	100	1,044,180	100

Statements of Comprehensive Income -2017~2020Q3

In Thousands of New Taiwan Dollars

Year	2017		2018		2019		2020Q1~Q3	
	Amount	%	Amount	%	Amount	%	Amount	%
Revenue	612,787	100%	713,249	100%	589,199	100%	849,660	100%
Gross Profit	119,524	20%	166,951	24%	123,650	21%	184,046	22%
Operating Incomes	41,954	7%	67,890	10%	39,299	7%	115,599	14%
EBIT	42,168	7%	70,718	10%	37,030	6%	115,256	14%
Net Income	34,086	6%	56,040	8%	29,427	5%	92,278	11%
EPS	1.58		2.20		1.03		3.23	

Operating Results- Income Statement



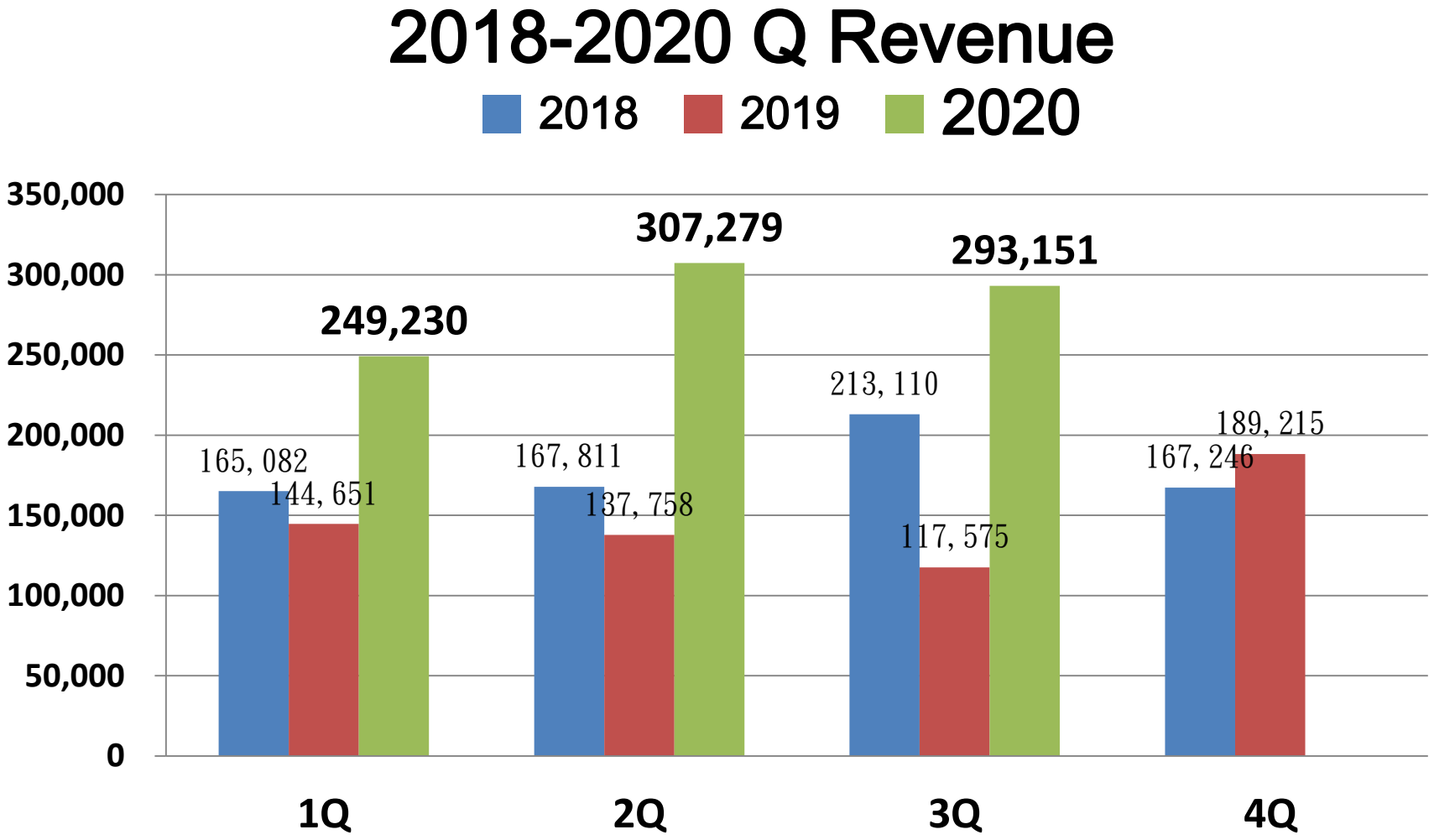
單位：新台幣仟元

Item \ Year	2017	2018	2019	2020.Q1～Q3
Revenue	612,787	713,249	589,199	849,660
Gross Profit	119,524	166,951	123,650	184,046
Net Income	34,086	56,040	29,427	92,278
EPS	1.58	2.20	1.03	3.23

Statements of Comprehensive Income -YoY

Year	2020.Q3	2020.Q2	2020.Q1	2020.Q1~Q3	2019.Q1~Q3	YoY
Revenue	293,151	307,279	249,230	849,660	399,984	112.42%
Gross Profit	60,663	71,554	51,829	184,046	83,899	119.37%
Operating Incomes	40,202	46,971	28,426	115,599	20,777	456.38%
EBIT	38,186	44,052	33,018	115,256	22,240	418.24%
Net Income	30,835	35,028	26,415	92,278	17,497	427.39%
EPS	1.08	1.27	0.96	3.23	0.62	420.97%

3Q20 Revenue YoY 149.33%



Dividend Policy

Year	2016	2017	2018	2019
EPS (NT$)	1.34	1.58	2.20	1.03
Dividends (NT$)	0.80	0.90	1.40	1.20
Dividend Payout Ratio(%)	59.70%	56.96%	63.64%	116.50%

Vision

凱歌長奏盛名揚

勤奮開拓質優良