

強茂集團

PANJIT International Inc.

Investor Relations

Accountability



Customer Focus



Mutual Trust and  
Collaboration



Innovation



Learning and  
Growth



- Introduce PANJIT
- Worldwide discrete market
- Consumer Electronic
- Automotive Market
- Research & development
- Q & A



## 無錫至極動能科技有限公司

### Sumnergy

Found Jun. 2017

Business Item :

BMS, Battery Pack

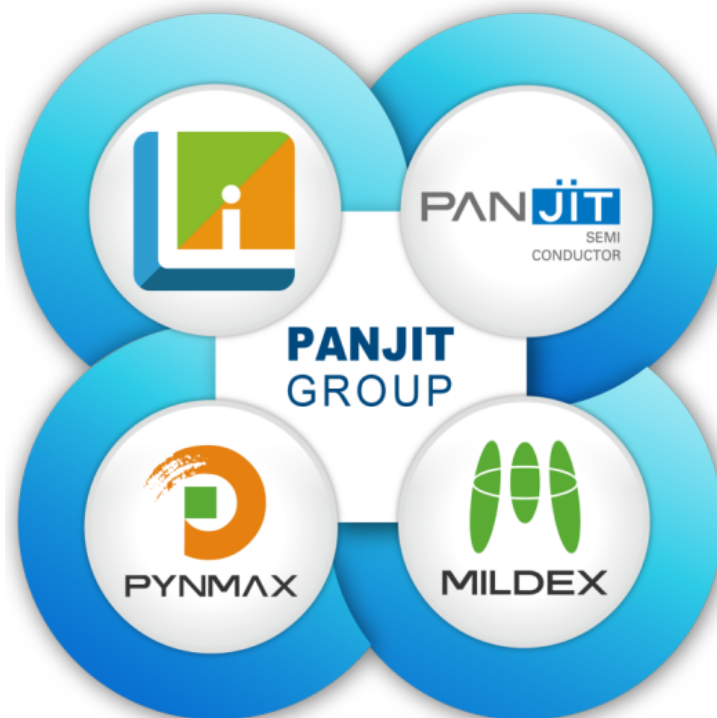
## 環茂科技股份有限公司

### PYNMAX

Found Mar. 2000

Business Item

Wafer Fabrication



## 強茂股份有限公司

### PANJIT

Found May. 1986

Business Item

Discrete Device、Package / test

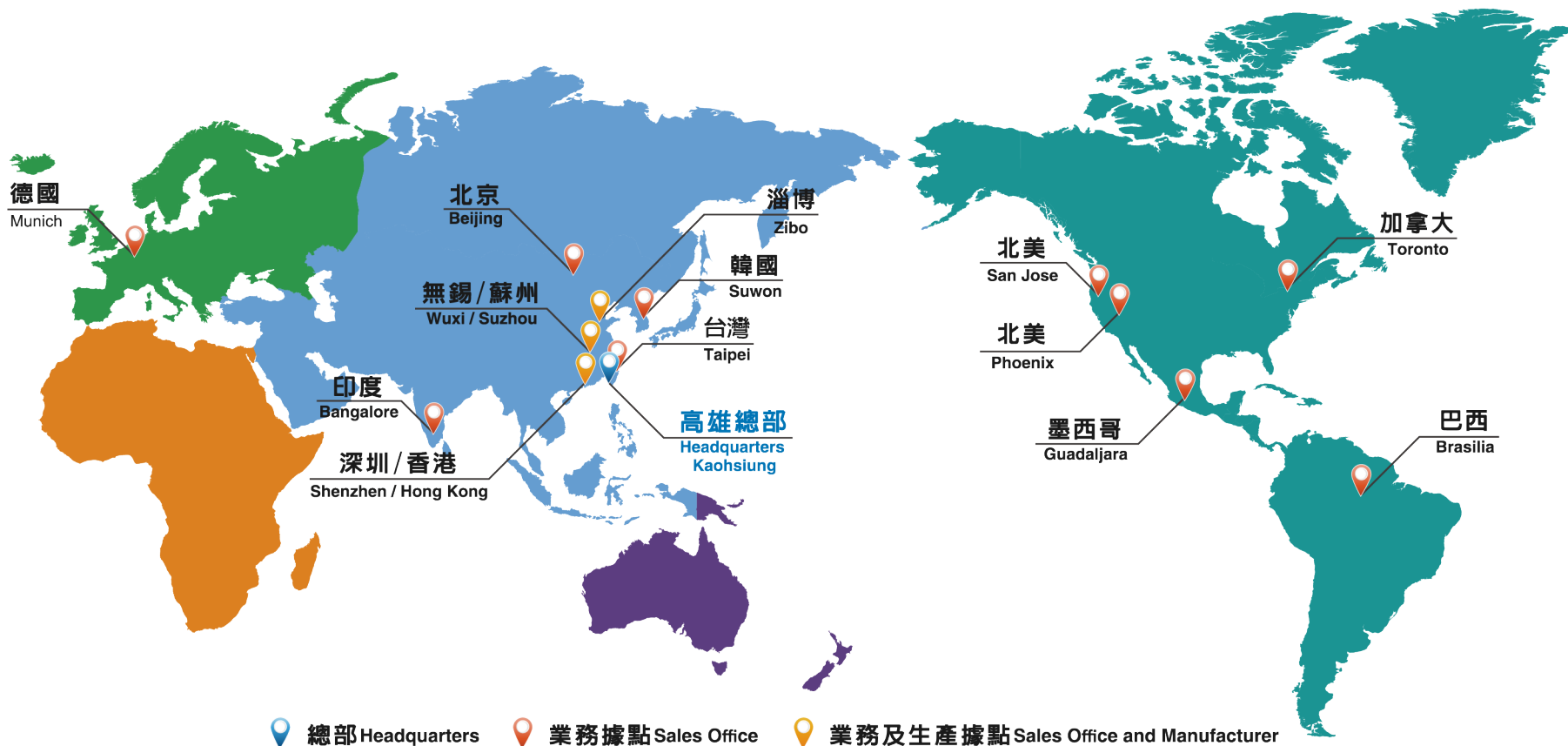
## 熒茂光學股份有限公司

### MILDEX

Found May. 2005

Business Item

Touch Panel ( Industry/ Military)



- Listed: TWSE : 2481 (IPO:2000)
- Headquarter : Kaohsiung, Taiwan
- Market Position
  - Global Diodes # 7
  - Discrete company in Great China # 1
- The Revenue
  - 2017 group revenue USD 391 Million, Operating profit USD 31 Million
  - Automotive segment USD 27 Million in 2017, Focusing in China Market.
  - Key account cover all major EMS, Automotive, Industry, LED and touch panel Client. Cover Taiwan, China, Korea, Japan, US and EMEA.

# Global Diode Ranking

No.	2016		2017	
1	Vishay	10%	Vishay	11%
2	Rohm	9%	Rohm	10%
3	ON Semiconductor	7%	ON Semiconductor	8%
4	Microsemi	7%	Infineon Technologies	7%
5	Infineon Technologies	7%	Microsemi	7%
6	NXP	6%	Diodes	6%
7	STMicroelectronics	6%	<b>PANJIT</b>	<b>5%</b>
8	Diodes	6%	STMicroelectronics	5%
9	<b>PANJIT</b>	<b>5%</b>	Nexperia	4%
10	Semtech	4%	Good-ark	4%
	Others	33%	Others	33%

- Global Diode Sales Ranking: **#7** \* Diodes above 0.5 amps.  
Excluding RF diode




























# Global Discrete Ranking

No.	2016		2017	
1	Infineon Technologies	13%	Infineon Technologies	14%
2	ON Semiconductor	8%	ON Semiconductor	10%
3	NXP	8%	Mitshubishi	6%
4	Mitsubishi	6%	Nexperia	6%
5	STMicroelectronics	6%	Rohm	6%
6	Vishay	5%	Toshiba	5%
7	Toshiba	5%	Vishay	5%
8	Rohm	5%	STMicroelectronics	5%
9	Renesas Electronics	4%	Renesas Electronics	4%
10	Fuji Electric	3%	Fuji Electric	3%
11	Diodes	3%	Diodes	3%
12	Fairchild Semiconductor	2%	Microsemi	2%
13	Microsemi	2%	AOS	2%
14	Toyota	2%	<b>PANJIT</b>	<b>2%</b>
15	<b>PANJIT</b>	<b>2%</b>	Shindengen Electric	2%
16	Shindengen Electric	2%	Toyota	2%
17	Denso	1%	Denso	1%
18	IXYS	1%	IXYS	1%
	Others	22%	Others	21%

- Global Discrete (includes of Diode, MOSFET, GBT, and etc.) Sales Ranking: #14

Excluding RF diode

## IGBT Manufacturers Ranking by Voltage Range

	No.1	No.2	No.3	No.4	No.5
400V and Less			 Leading Innovation >>>	 life.augmented	
600-650V					 life.augmented
1200V					 life.augmented
1700V				<b>HITACHI</b>	
2500V-3300V				<b>HITACHI</b>	
4500V and More			<b>HITACHI</b>		 中国中车 CRRC

- The IGBT device industry is about to change. With a growing electric vehicle market, the power module is becoming an essentials of the value chain. After 2013, the Chinese market accounts for about one third of the global IGBT market, and the Chinese market is the key target for Panjit's future development.



# Financial Highlight

## Consolidated Balance Sheet

Unit: K' USD	2018 Q1	%	2017 Q1	%
Cash	55,902	8%	41,521	7%
Receivable	147,767	20%	113,134	18%
Stock	84,639	12%	59,916	10%
Total Asset	727,709	100%	627,632	100%
Short-term loans	76,012	10%	39,474	6%
Payable	75,050	10%	53,038	9%
Long-term loans	191,816	26%	194,559	31%
Total liabilities	459,054	63%	366,940	58%
Total equity	268,655	37%	260,692	42%
Net value of each share (NTD)	17.47		18.05	

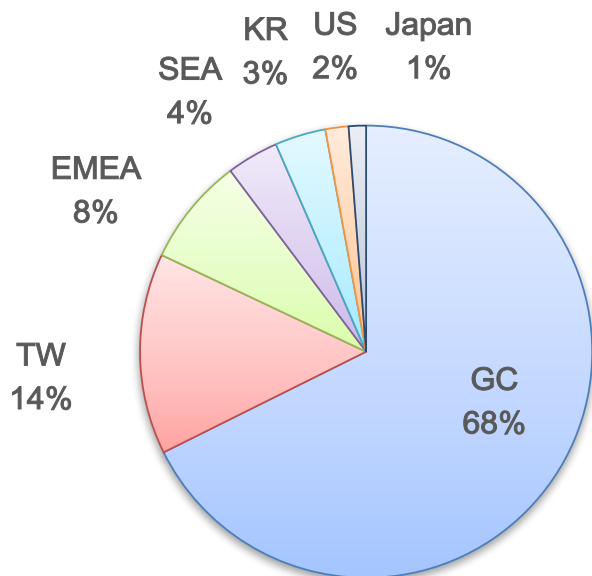
# Financial Highlight

## Consolidated Statements of Comprehensive Income

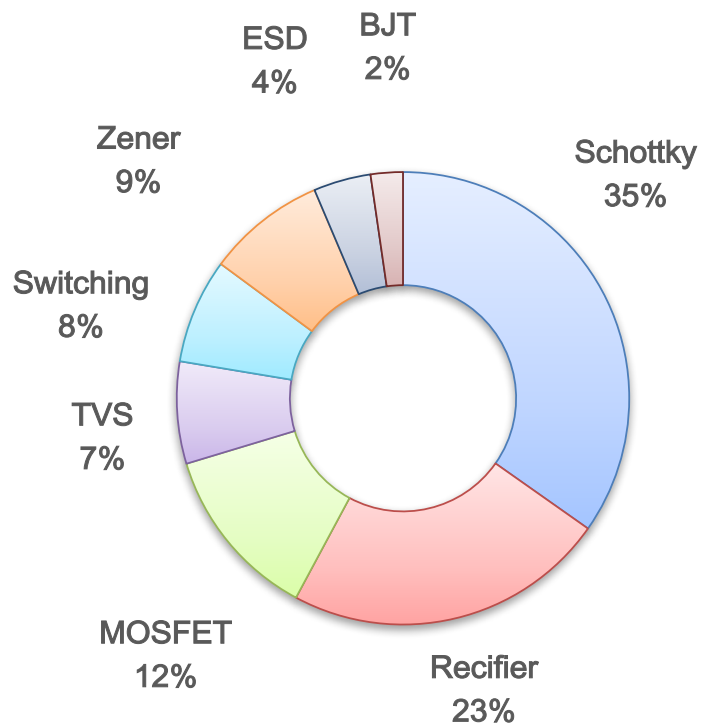
Unit: K' USD	2018 Q1	%	2017 Q1	%	Diff
Diode Div.	82,162	87%	65,541	70%	16,621
Touch Panel Div.	10,501	11%	22,113	24%	-11,612
Solar Div.	1,800	2%	5,146	6%	-3,346
other	17	0.0%	187	0%	-170
Net Revenue	94,480	100%	92,987	100%	1,493
Gross profit	21,852	23%	20,368	22%	1,484
Operating expenses	13,583	13%	13,816	15%	-233
Operating profit (loss)	8,269	10%	6,552	7%	1,717
Net profit (loss) before tax	8,641	9%	7,846	8%	795
Tax	1,521	2%	1,236	1%	285
Net profit (loss) after tax	7,120	8%	6,610	7%	510
EPS (NTD)	0.6		0.34		0.26

# 2018 Q1 Discrete BU Revenue

Region

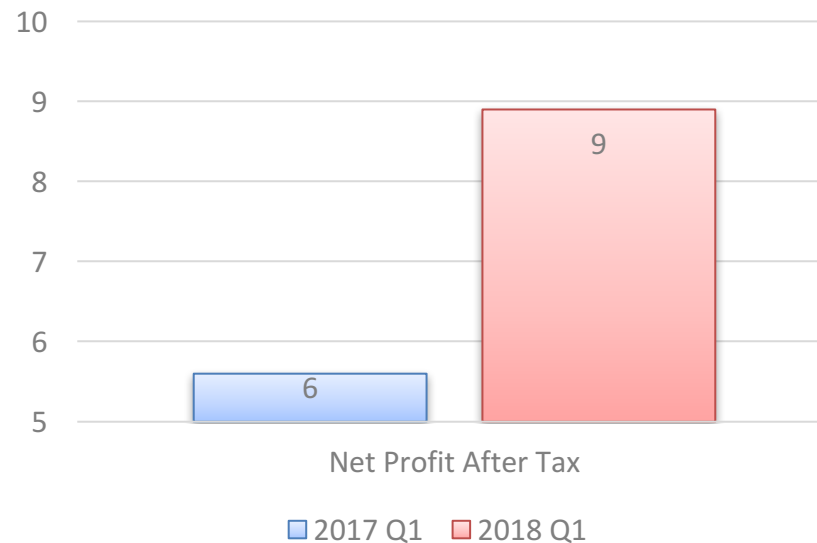
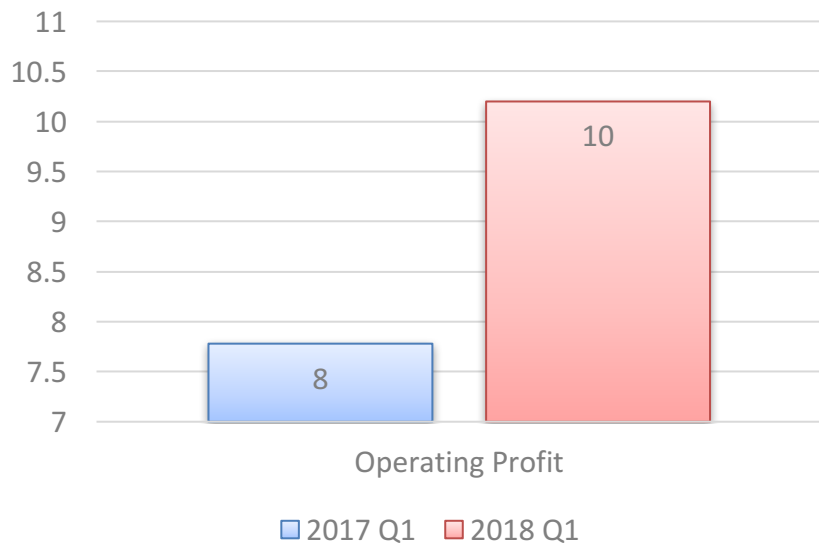
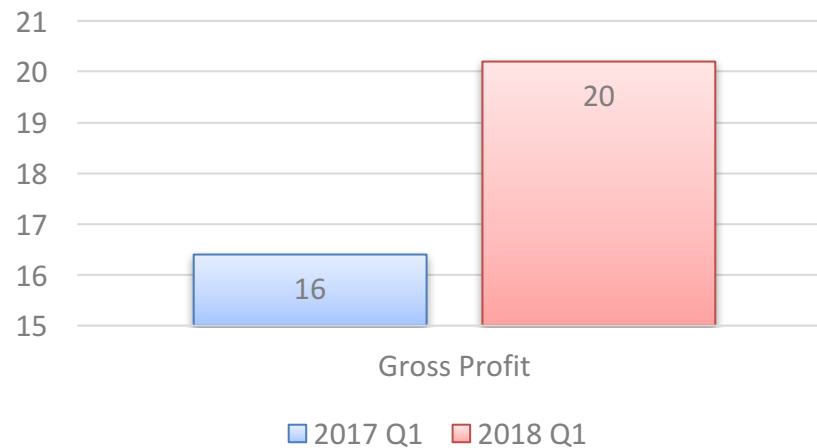
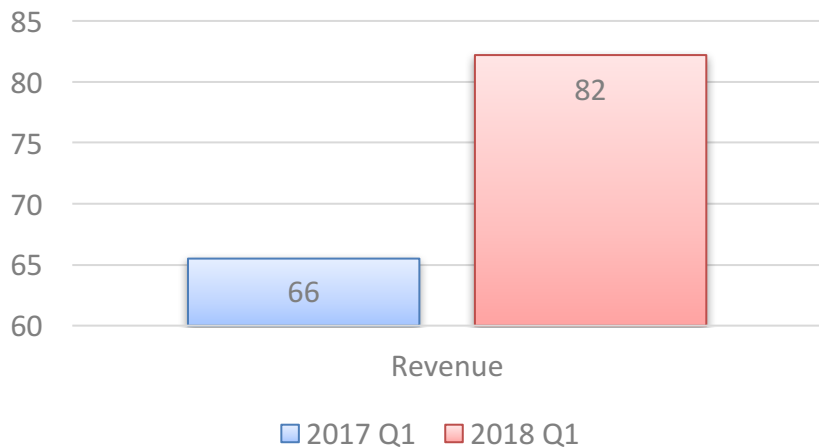


Function



# 2018 Q1 Discrete BU Financial Highlights

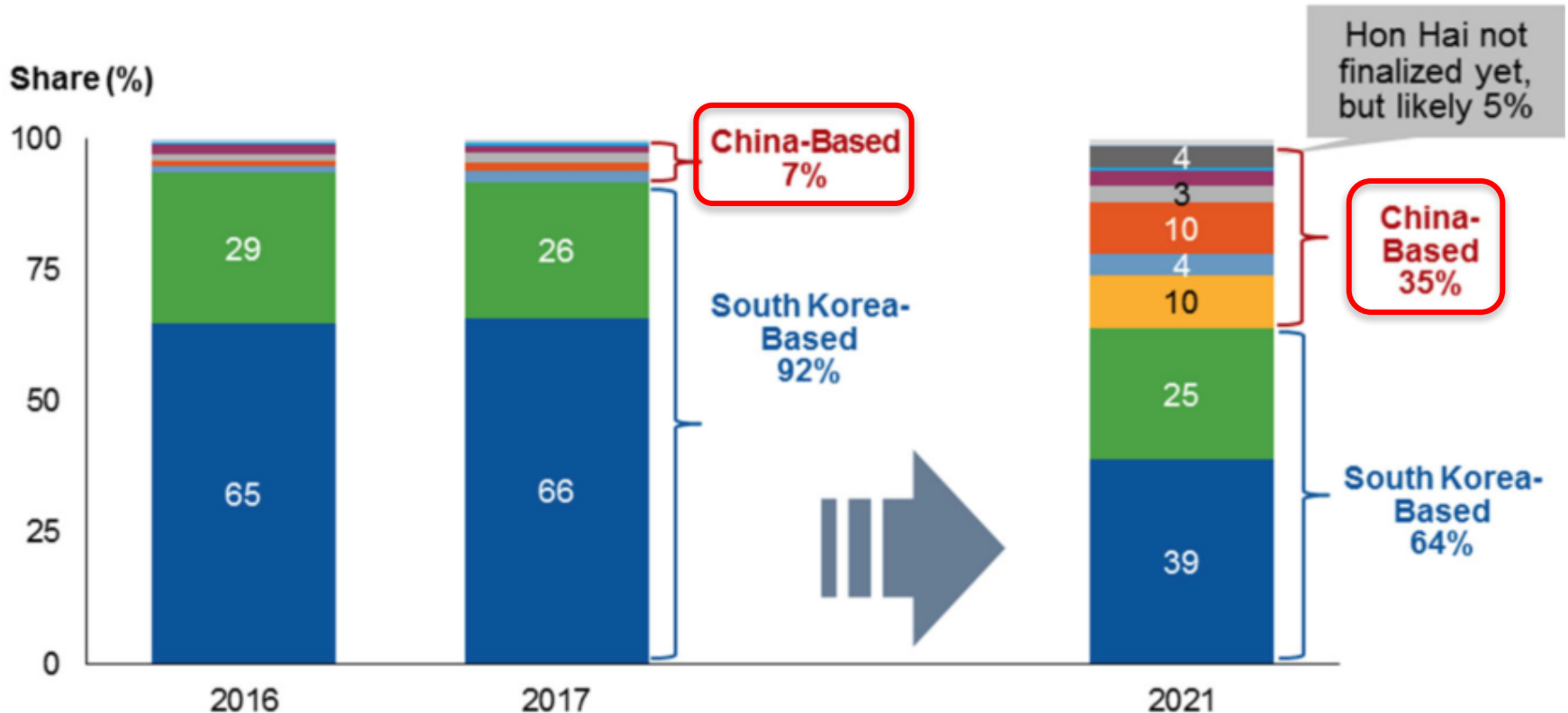
Unit: M' USD



# Consumer Electronic Market

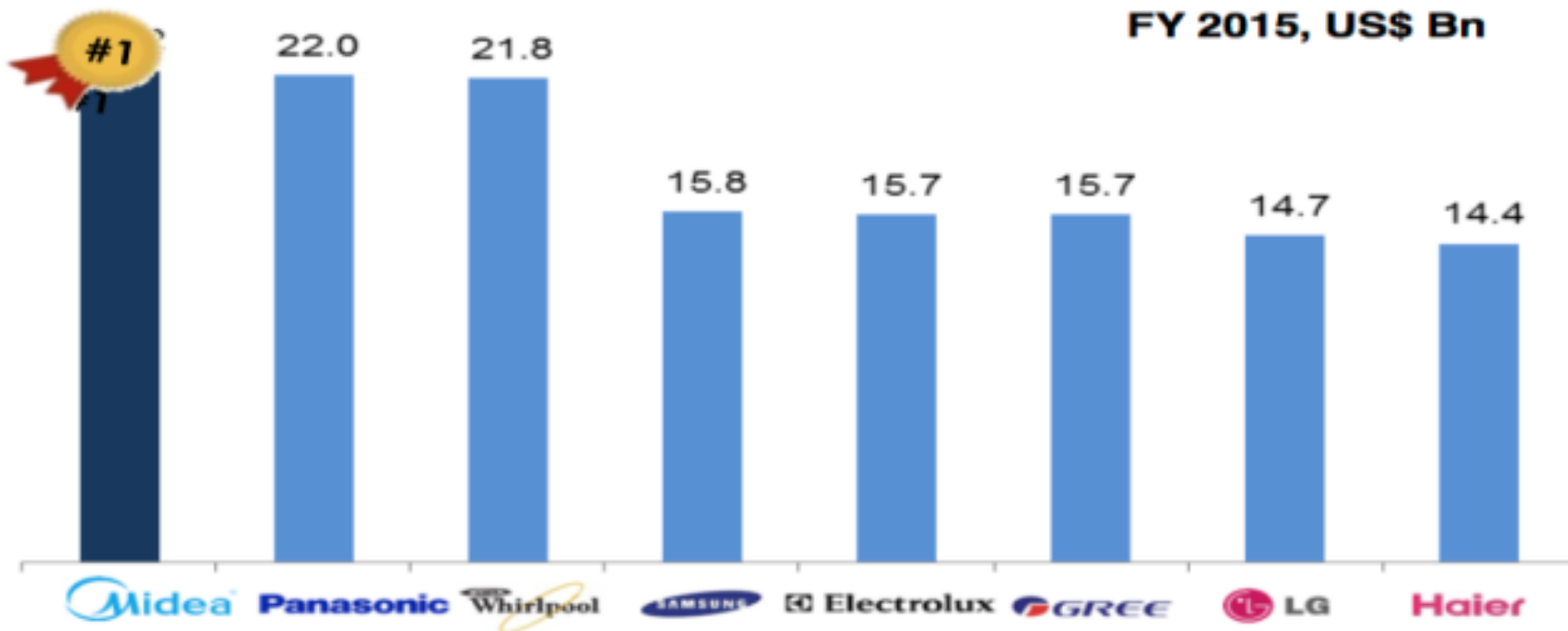
AMOLED Capacity Share by Maker, Worldwide, 2016-2021

■ SDC ■ LGD ■ LGD JV in China ■ Tianma ■ BOE ■ Visionox ■ EDO ■ Truly ■ CSOT ■ AUO ■ JDI



- Chinese AMOLED makers and foreigners relocating to China will be able to provide 35% worldwide AMOLED capacity by 2021

Global Consumer Appliances Player by Revenue



- The market for major household appliances is expected to reach \$28.1 billion by 2021. (Home Improvement Research Institute)

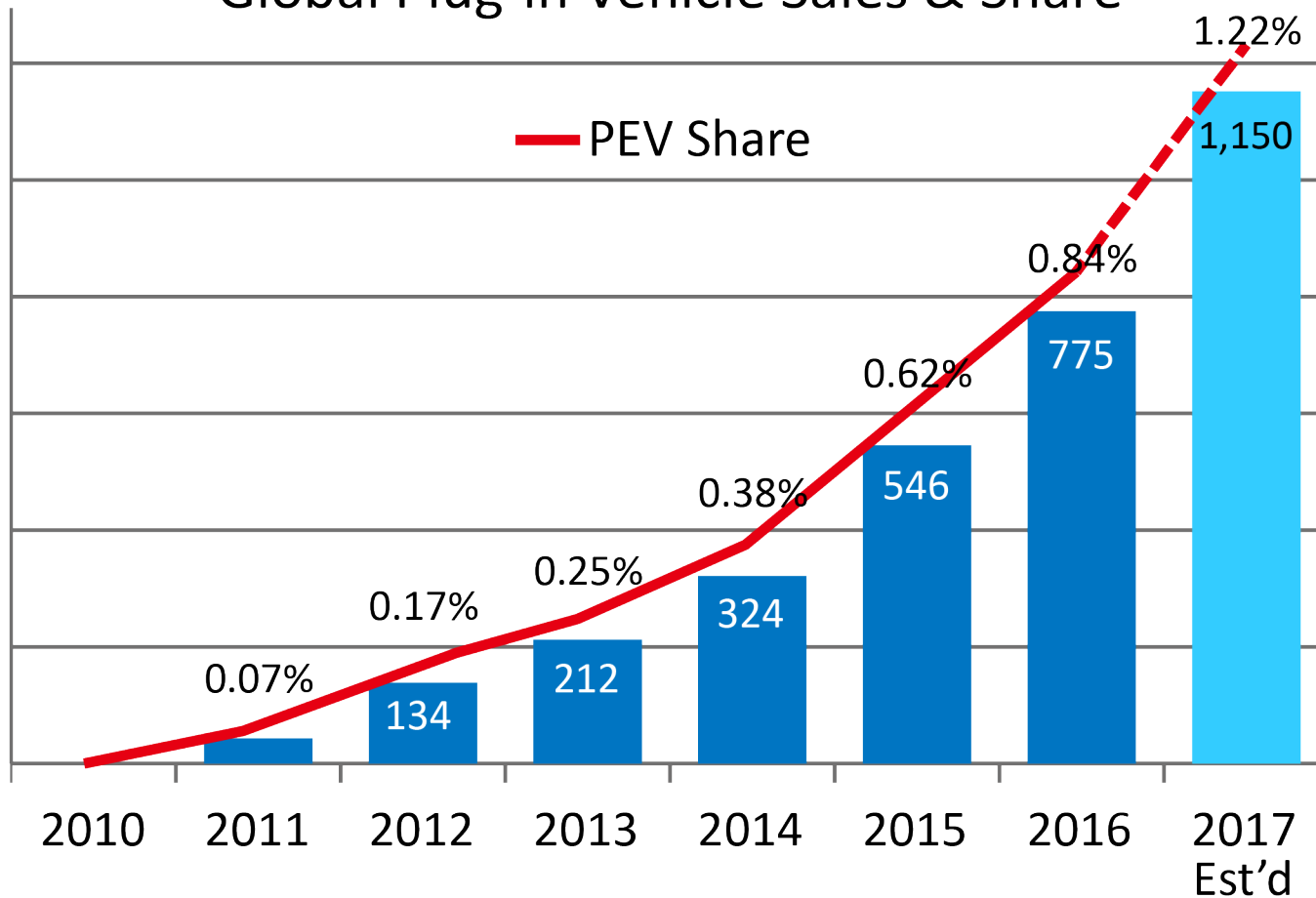
# Automotive Market



# Global EV Sales Volumes

## Global Plug-in Vehicle Sales & Share

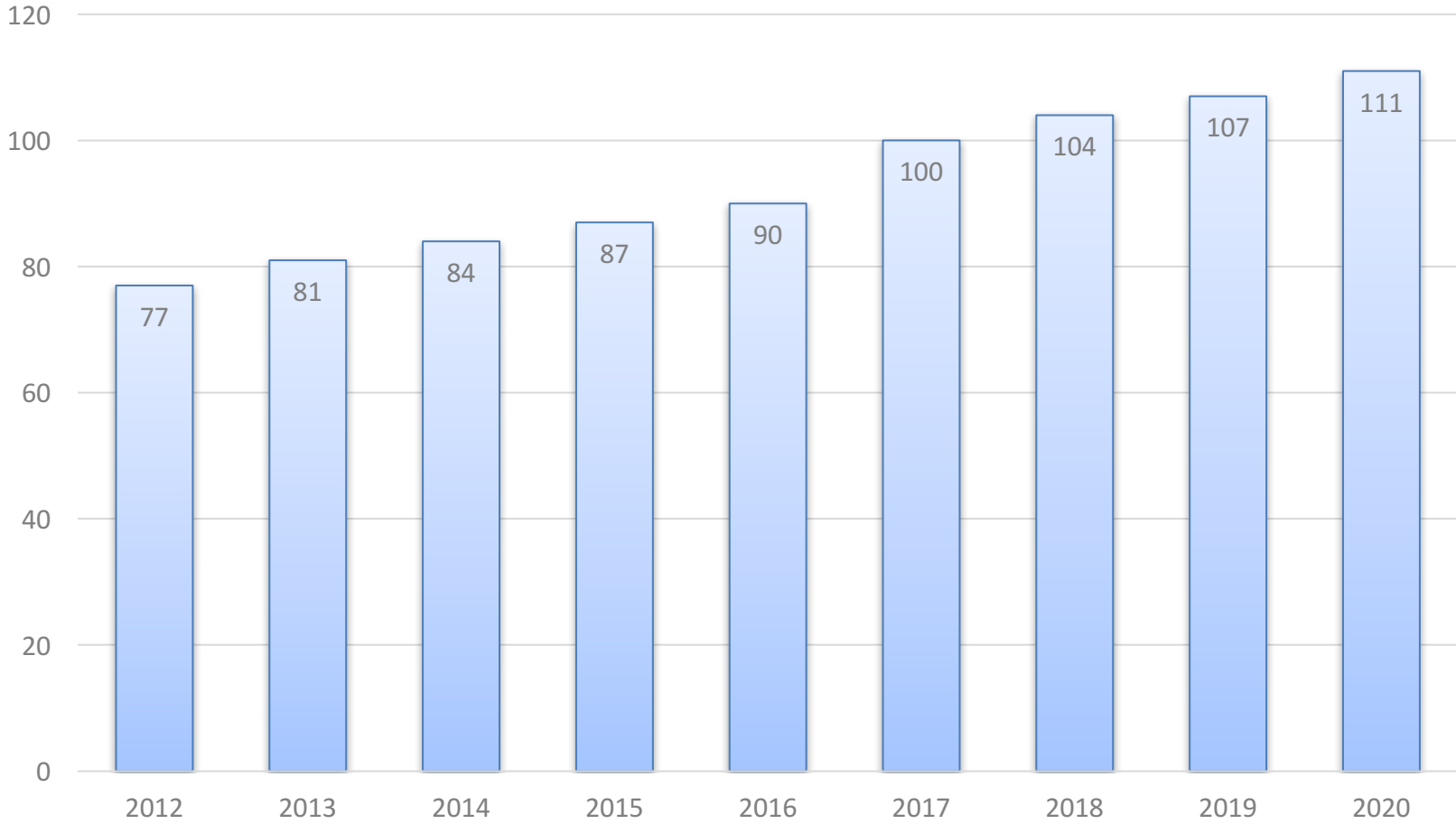
Unit : K



- The world's electric vehicle sales in 2017 will reach 1,150,000 units (48% growth compared to 2016), about 1.22% of the total car sales.

# Global Car Sales Volumes

Unit: Million



## ADAS

- APA
- LDWS/FCW
- BSD

## Body & Comfort

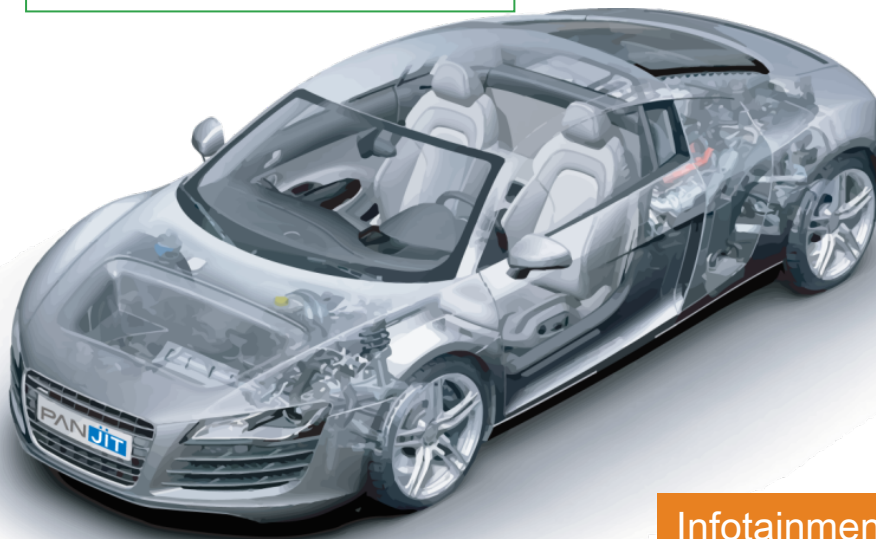
- Air conditioning
- Windshield wiper
- Seats
- Seat belt
- Car windows
- Sunroof
- Review mirror
- USB Charger

## Powertrain

- Start-stop system
- Engine Control Unit
- Electric Power steering wheel (EPS)

## Sensor

- Ultrasonic sensor
- Front/Rear Camera
- Millimeter Wave Radar
- Lidar



## Motor

- Cooling Fan
- Oil Pump
- Water Pump

## Lighting

- HID
- AFS
- DRL
- Interior Lamp
- Rear Lamp

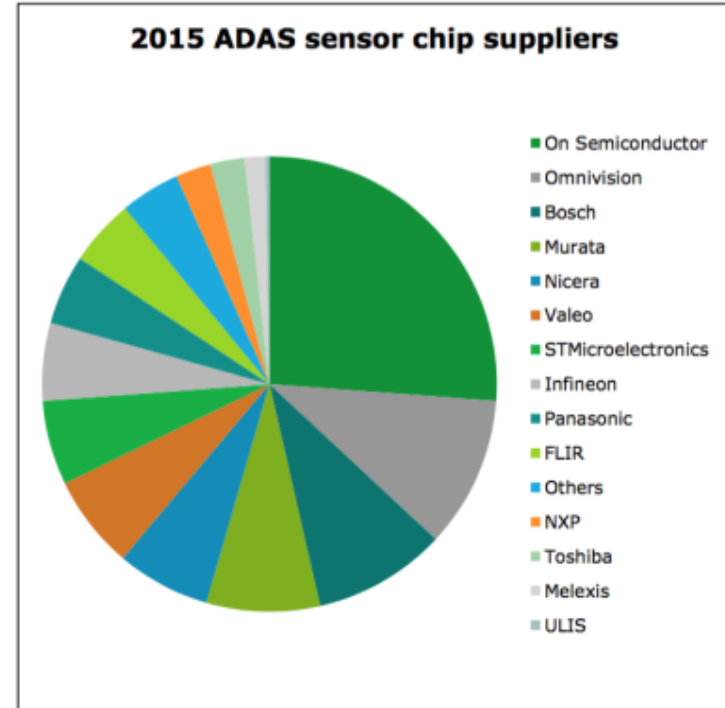
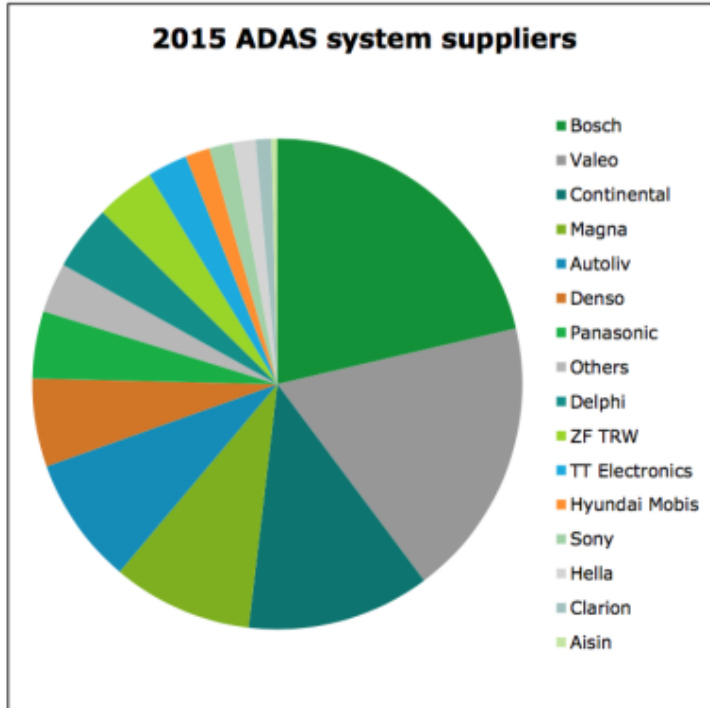
## xEV

- EV/HEV pilot system
- Battery Management System (BMS)

## Infotainment/Instrument

- Analog / Digital audio player
- Navigation device
- E-Mirror
- Event data recorder(EDR)
- Dashboard

- More than 50% of ADAS systems are supplied by 4 companies
- > More than 50% of Sensors supplied in ADAS systems are manufactured by 4 companies with the largest CIS sensor company not in the top 10

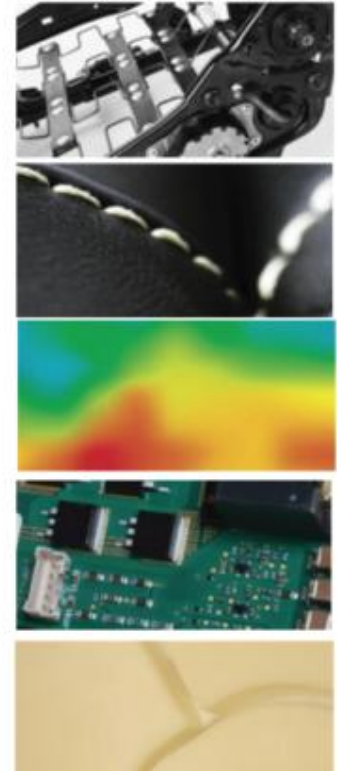


\*includes image sensors, radar transceivers, ultrasonic and infrared sensors



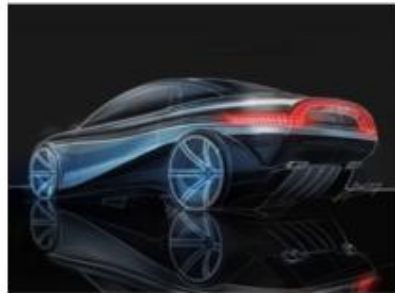
Unique competitive advantage for Lear

	<b>2017 Estimated Market Size</b>	<b>Lear Share</b>
<b>SEAT STRUCTURES</b>	<b>\$19.9B</b>	<b>9%</b>
<b>SEAT COVERS</b>	<b>\$11.6B</b>	<b>17%</b>
Leather ✓	\$3.8B	30%
Fabric	\$2.6B	17%
<b>SEAT COMFORT</b>	<b>\$1.8B</b>	<b>N/A</b>
Heat / Cool ✓	\$1.0B	
Lumbar / Massage	\$0.8B	
<b>SEAT ELECTRONICS</b> ✓	<b>\$2.3B</b>	<b>9%</b>
<b>FOAM</b>	<b>\$6.4B</b>	<b>6%</b>





**Headlamps**



**Signal Lamps**



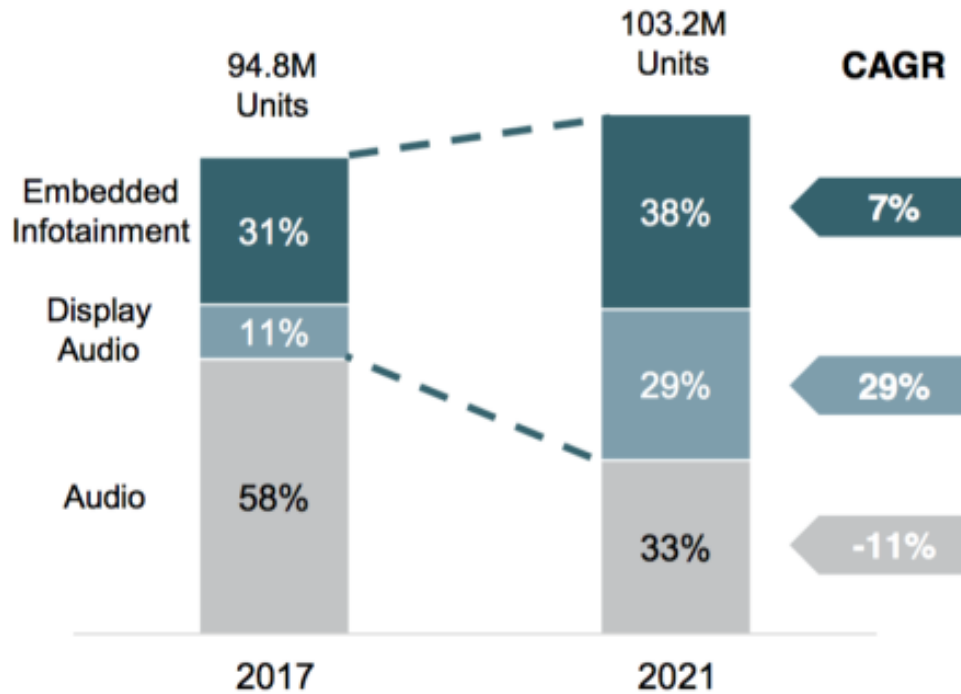
**Electronics**



**2 Wheeler Lighting**



## Audio/Infotainment Market Trends



- Display Audio with CarPlay and Android Auto is fastest-growing segment
- HTML5 and Android expected to be key technologies for Embedded Infotainment
- Audio systems remain relevant in emerging market



**SmartCore™**

- Drives ECU consolidation and reduces cost to OEMs
- First tier 1 to deliver solution launching in early 2018
- Four OEM customers adopting this technology



**Infotainment Solutions**

- Developer friendly platform using HTML5 enables third-party applications
- AllGo acquisition complements display audio capabilities
- Highly secure and over the air upgradeable



**Autonomous Driving**

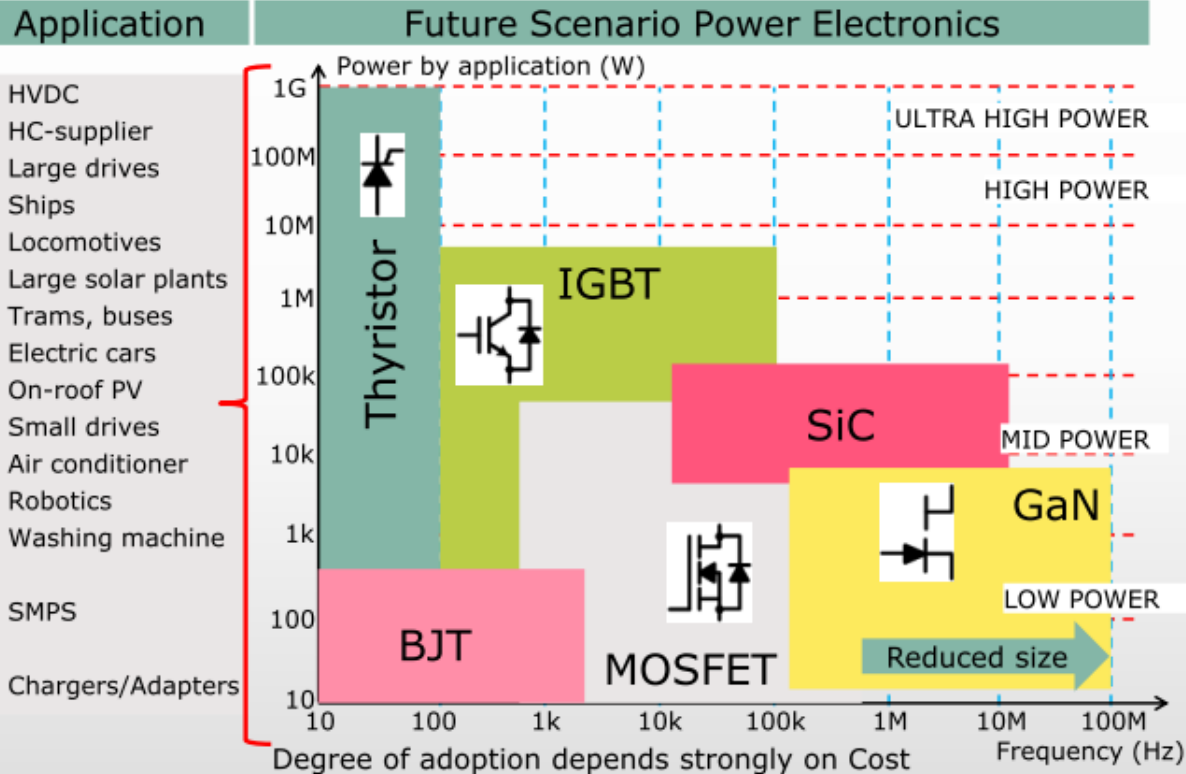
- Open development of AI based autonomous solution
- Complete suite of hardware and software tools for rapid development
- Launch technology platform at CES 2018





- Tire pressure monitoring system (TPMS)
- Cars are all equipped with 4 TPMS

# Research & Development



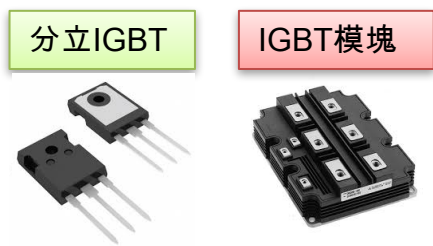
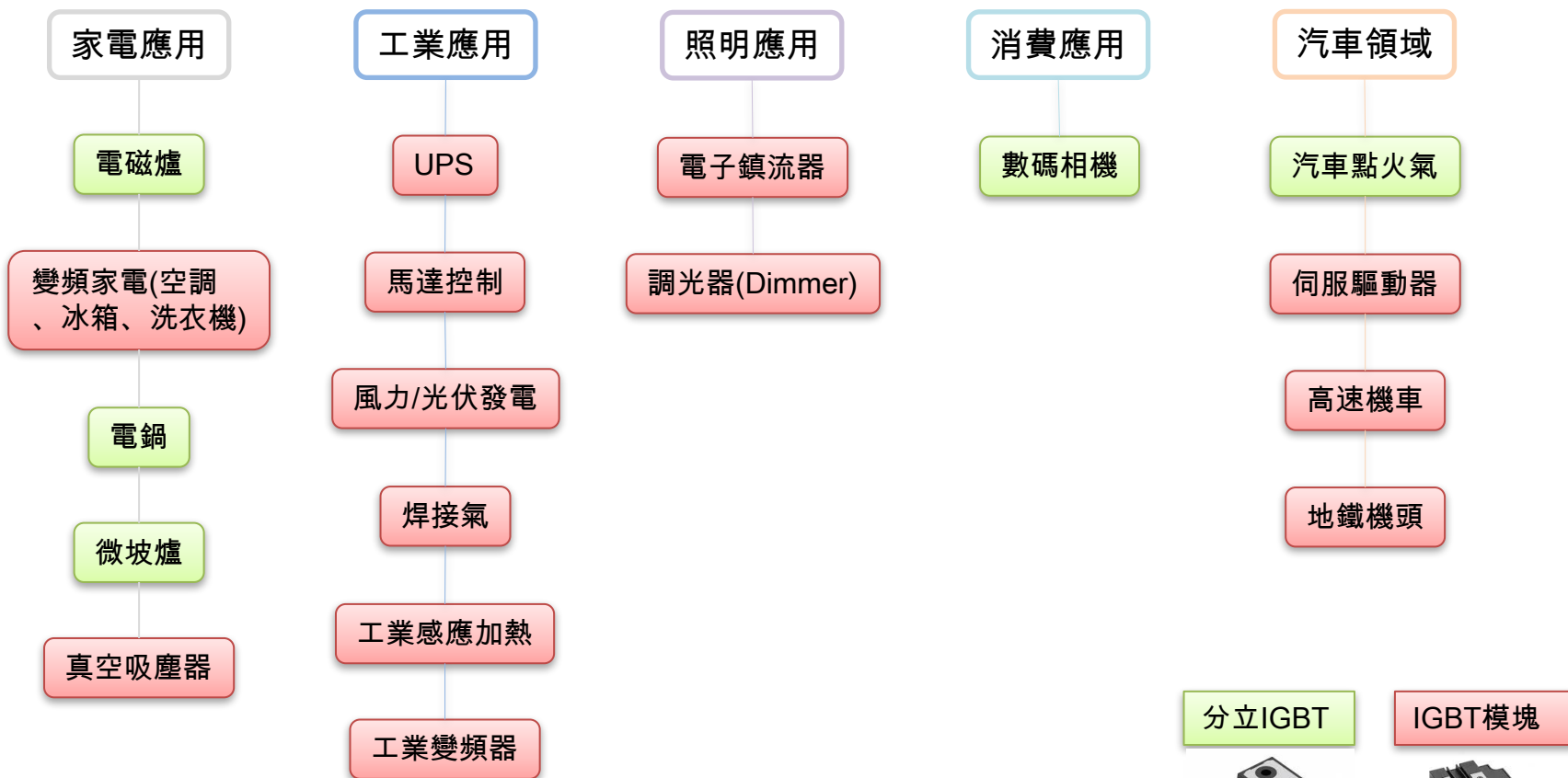
## Report covers

- IGBTs
- MOSFETs
- GaN
- SiC
- Controllers
- Passives

## Detailed discussion of

- Market Drivers
- Key Metrics
- Trends
- Challenges

## IGBT 應用範圍



# Questions & Answers

