

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

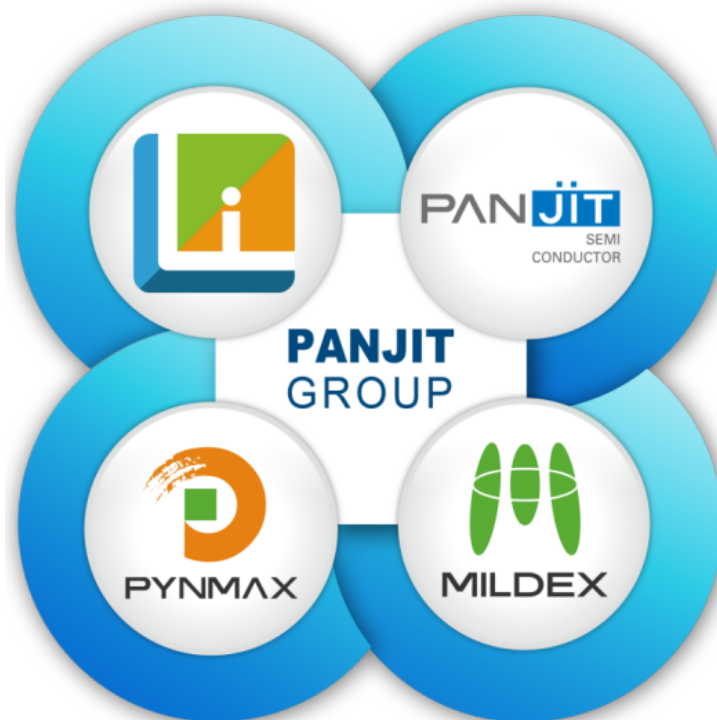
環茂科技股份有限公司

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

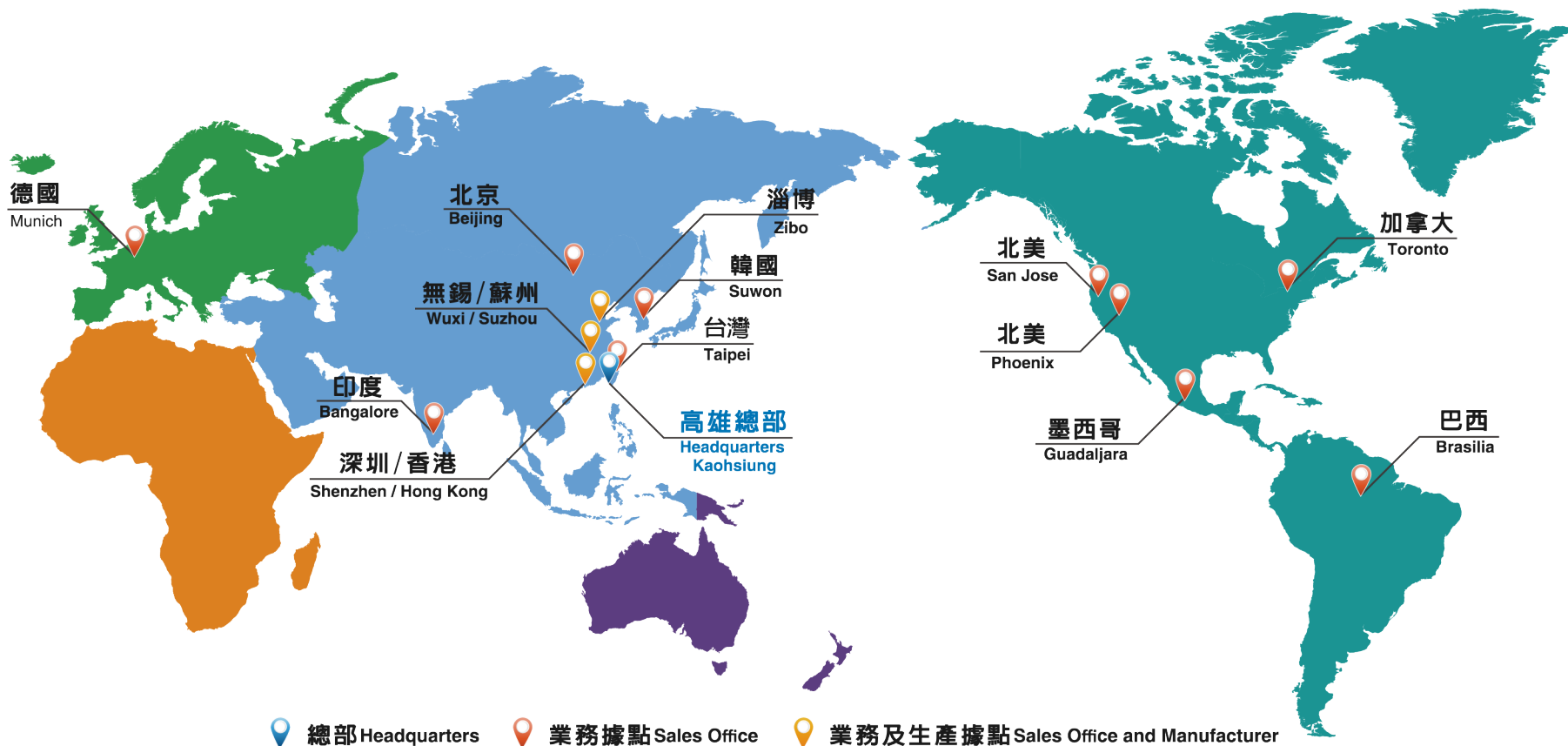
熒茂光學股份有限公司

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 Asia pacific # 1
- The Revenue
 - 2017 group revenue USD 397 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, US and EU.

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%	PANJIT	5%
8	Diodes	6%	STMicroelectronics	5%
9	PANJIT	5%	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%	PANJIT	2%
15	PANJIT	2%	Shindengen Electric	2%
16	Shindengen Electric	2%	Toyota	2%
17	Denso	1%	Denso	1%
18	IXYS	1%	IXYS	1%
	Others	22%	Others	21%

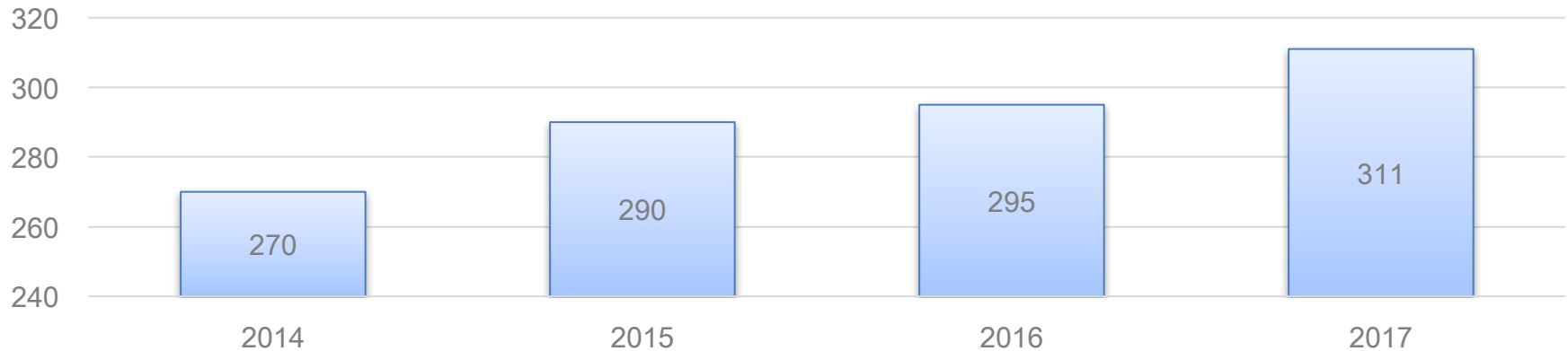
- Global Discrete (includes of Diode, MOSFET, GBT, and etc.) Sales Ranking: #14

Excluding RF diode

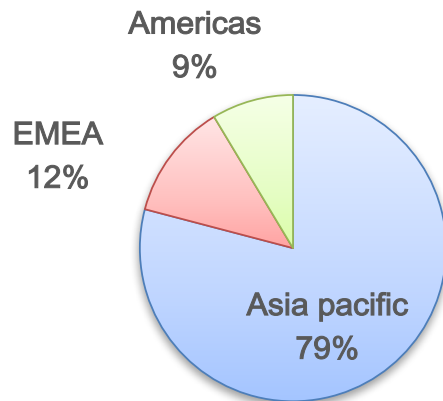
2017 Diode BU Revenue

Unit: M' USD

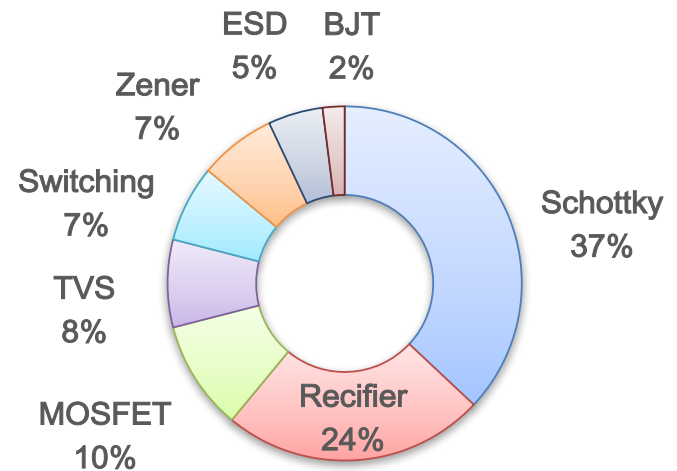
Revenue



by region

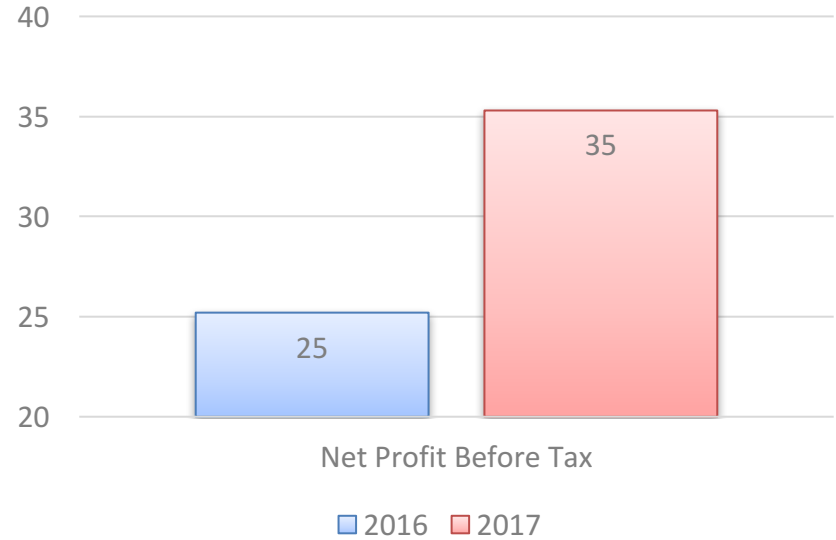
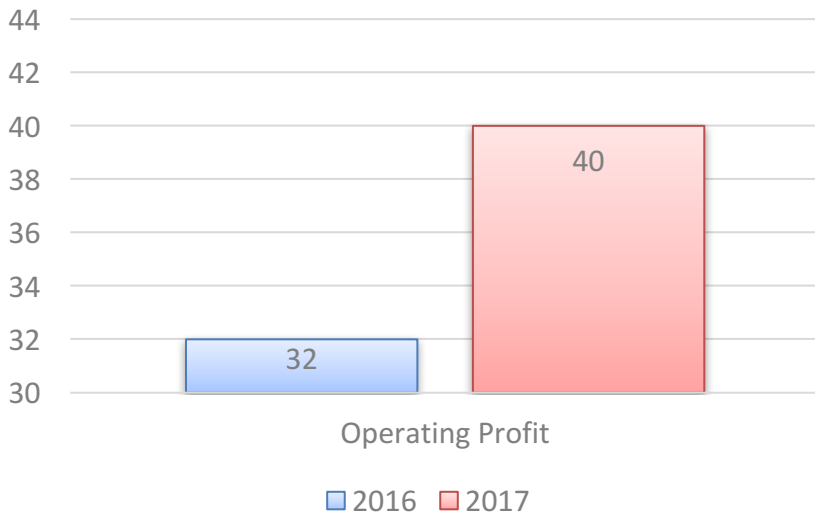
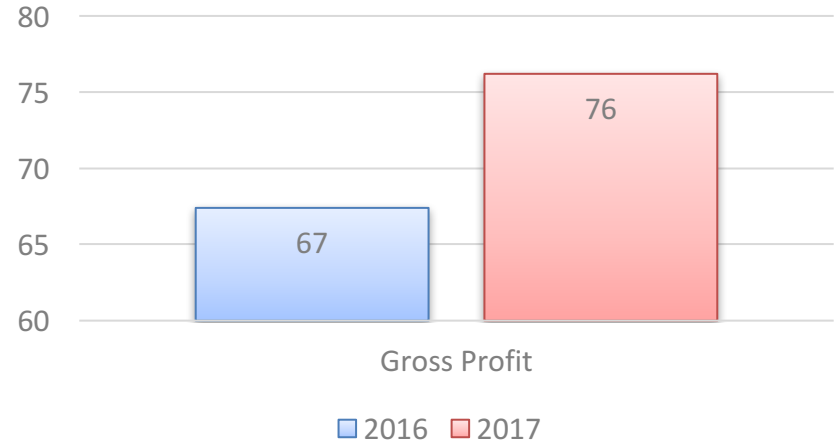
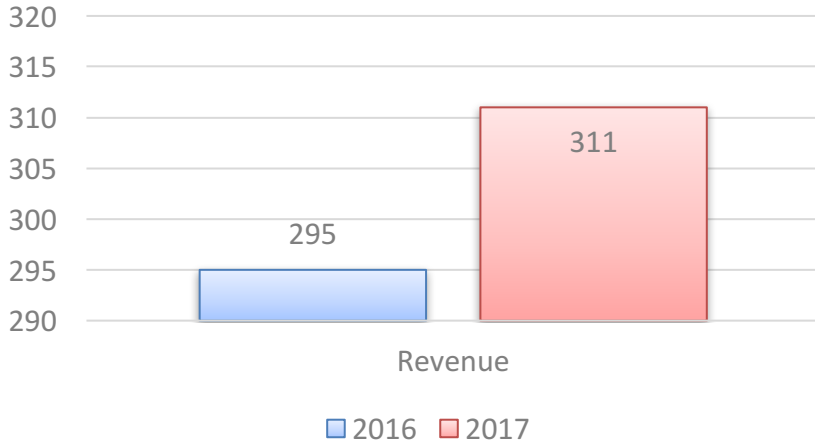


Function



Diode BU Financial Highlight

Unit: M' USD



Financial Highlight

Consolidated Balance Sheet

Unit: K' USD	2017	%	2016	%
Cash	32,234	4.9%	27,133	4.4%
Receivable	146,837	22.1%	136,323	22.0%
Stock	74,539	11.2%	57,777	9.3%
Total Asset	663,254	100.0%	620,068	100.0%
Short-term loans	59,591	9.0%	27,035	4.4%
Payable	78,512	11.8%	54,852	8.8%
Long-term loans	191,333	28.8%	191,859	30.9%
Total liabilities	420,254	63.4%	365,583	59.0%
Total equity	243,000	36.6%	254,485	41.0%
Net value of each share (NTD)	16.22		18.25	

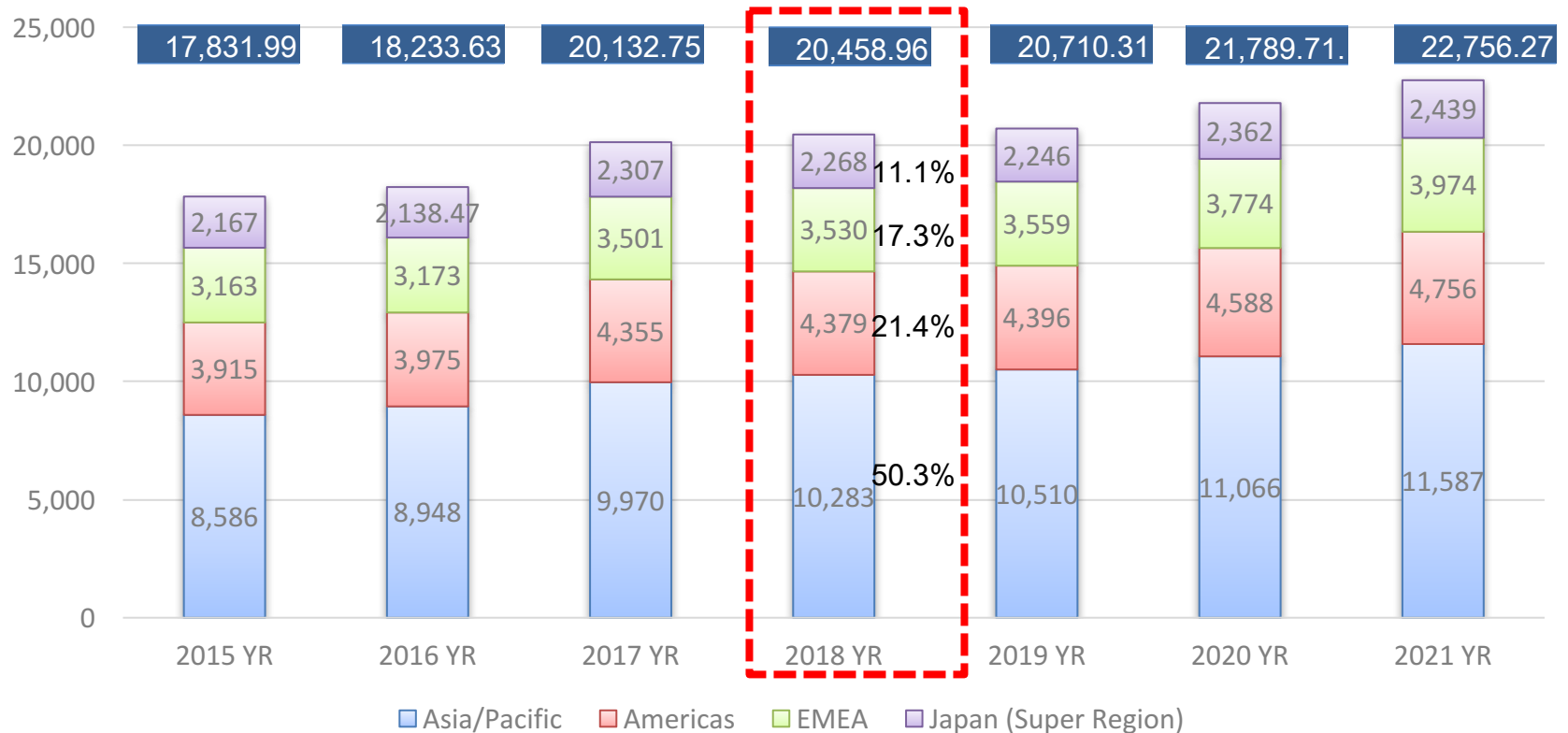
Financial Highlight

Consolidated Statements of Comprehensive Income

Unit: K' USD	2017	%	2016	%	Diff
Diode Div.	310,722	79.5%	280,171	70.4%	30,551
Touch Panel Div.	58,949	15.1%	74,388	18.7%	-15,439
Solar Div.	20,804	5.3%	44,920	11.3%	-24,116
other	228	0.1%	(1,398)	-0.4%	1,626
Net Revenue	390,703	100.0%	398,081	100.0%	-7,378
Gross profit	87,314	22.3%	80,317	20.2%	6,997
Operating profit (loss)	30,977	7.9%	24,300	6.1%	6,677
Net profit (loss) before tax	6,446	1.6%	29,820	7.5%	-23,374
Tax	12,116	3.1%	6,950	1.7%	5,166
Net profit (loss) after tax	(5,670)	-1.5%	22,869	5.7%	-28,539
EPS (NTD)	(0.92)		1.66		

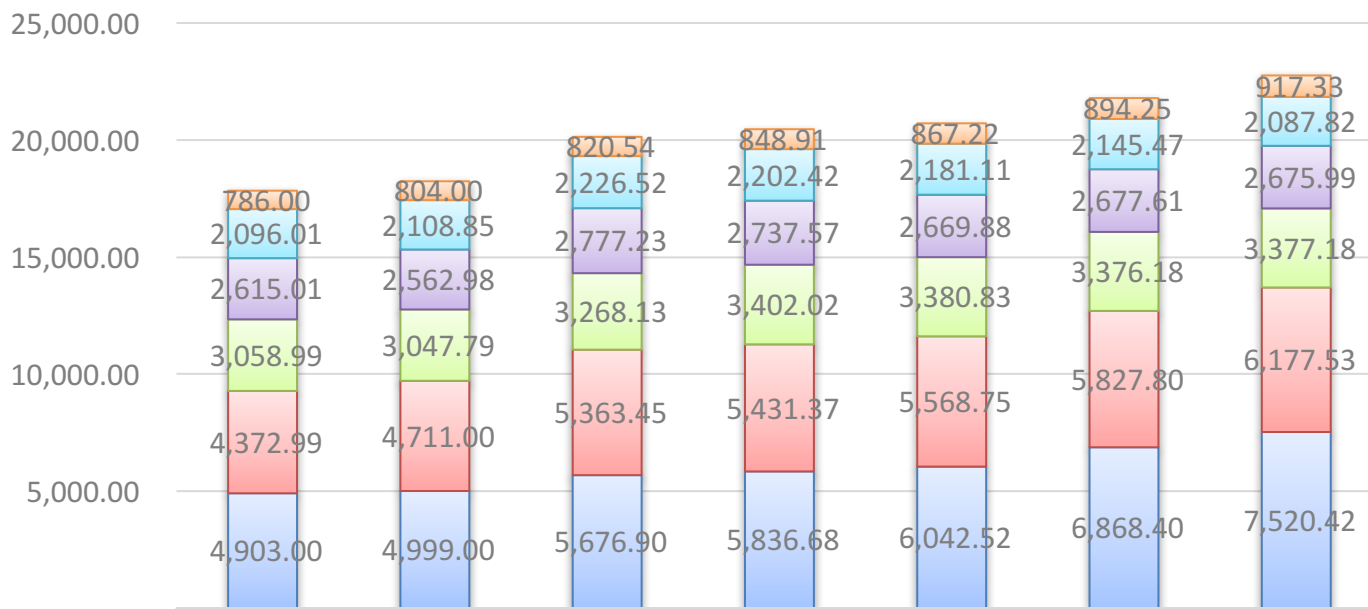
WW Discrete Semiconductor Forecast

Worldwide Discrete Semiconductor Forecast (by region, \$M)



- In the next few years, the major demand side of the discrete semiconductor will still be the Asia-Pacific region, Its market size account for nearly 50%

WW Discrete Semiconductor Forecast



	2015 YR	2016 YR	2017 YR	2018 YR	2019 YR	2020 YR	2021 YR
■ Military/Civil Aerospace Electronics	786.00	804.00	820.54	848.91	867.22	894.25	917.33
■ Data Processing Electronics	2,096.01	2,108.85	2,226.52	2,202.42	2,181.11	2,145.47	2,087.82
■ Consumer Electronics	2,615.01	2,562.98	2,777.23	2,737.57	2,669.88	2,677.61	2,675.99
■ Communication Electronics	3,058.99	3,047.79	3,268.13	3,402.02	3,380.83	3,376.18	3,377.18
■ Automotive Electronics	4,372.99	4,711.00	5,363.45	5,431.37	5,568.75	5,827.80	6,177.53
■ Industrial Electronics	4,903.00	4,999.00	5,676.90	5,836.68	6,042.52	6,868.40	7,520.42

- Automotive and Industrial are the major demand for discrete from 2018-2021

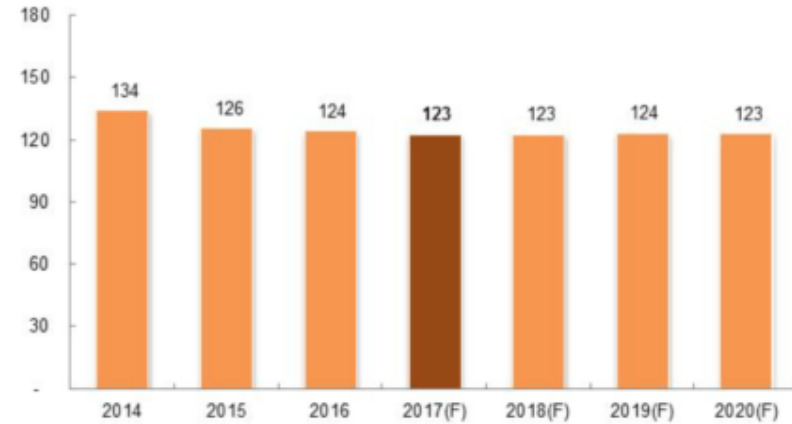
Consumer Electronic Market

Growth rate: 4%

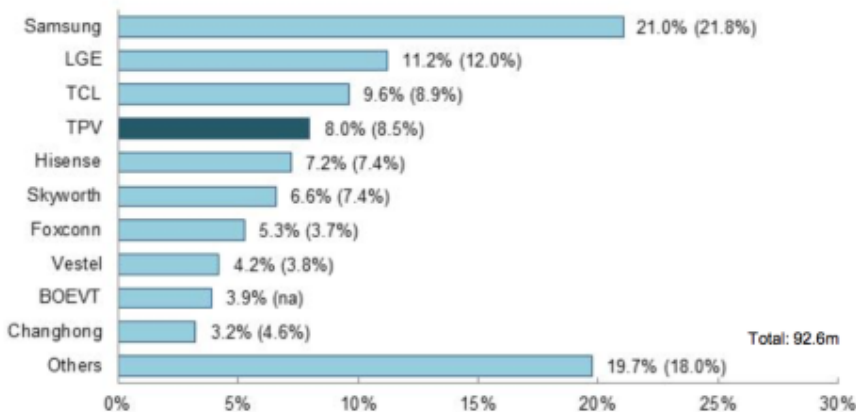
TV Global Shipment Forecast (Units M)



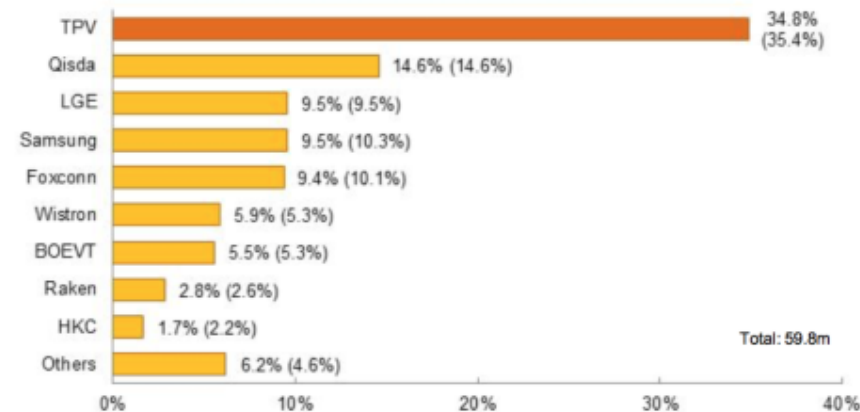
Monitor Global Shipment Forecast (Units M)



Worldwide LCD TV Manufacturer Share

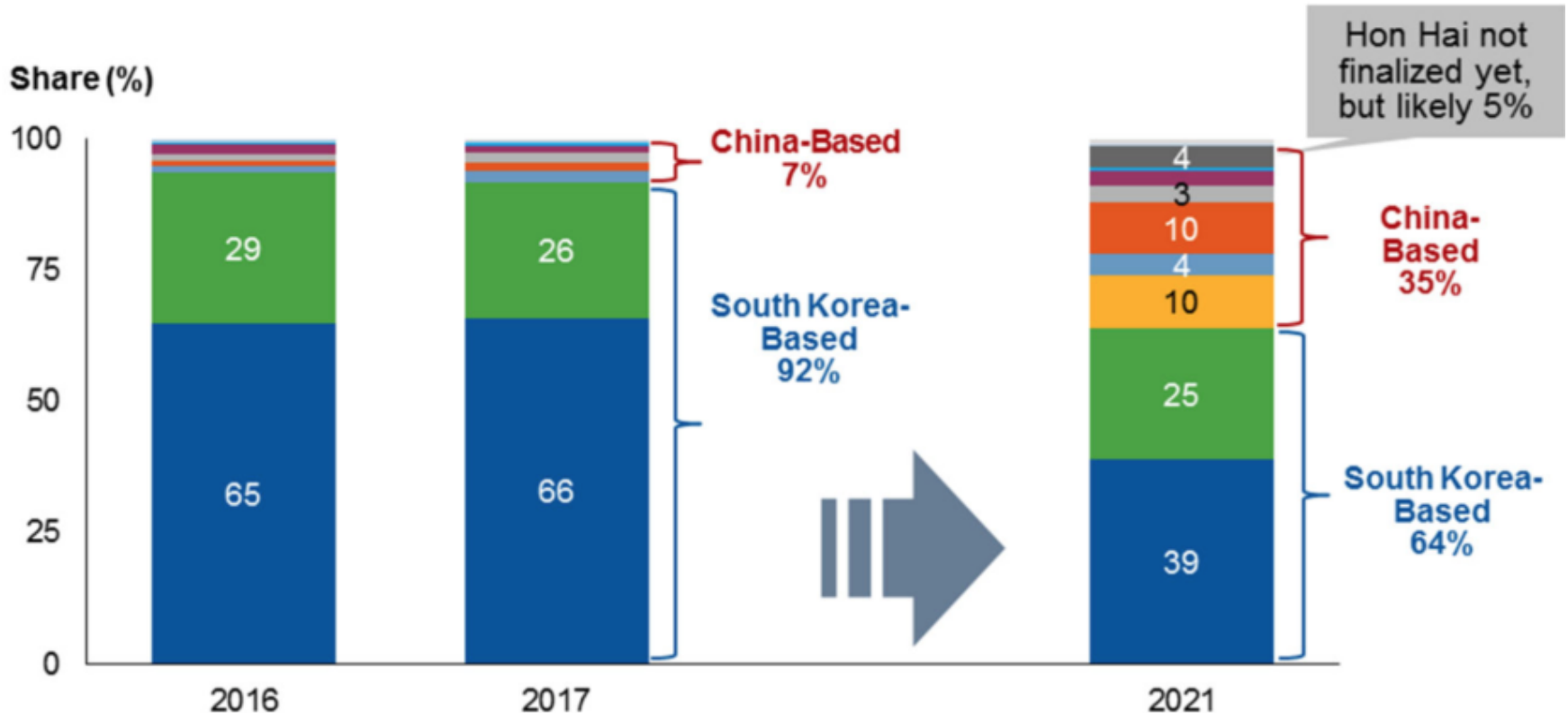


Worldwide Monitor Manufacturer Share



AMOLED Capacity Share by Maker, Worldwide, 2016-2021

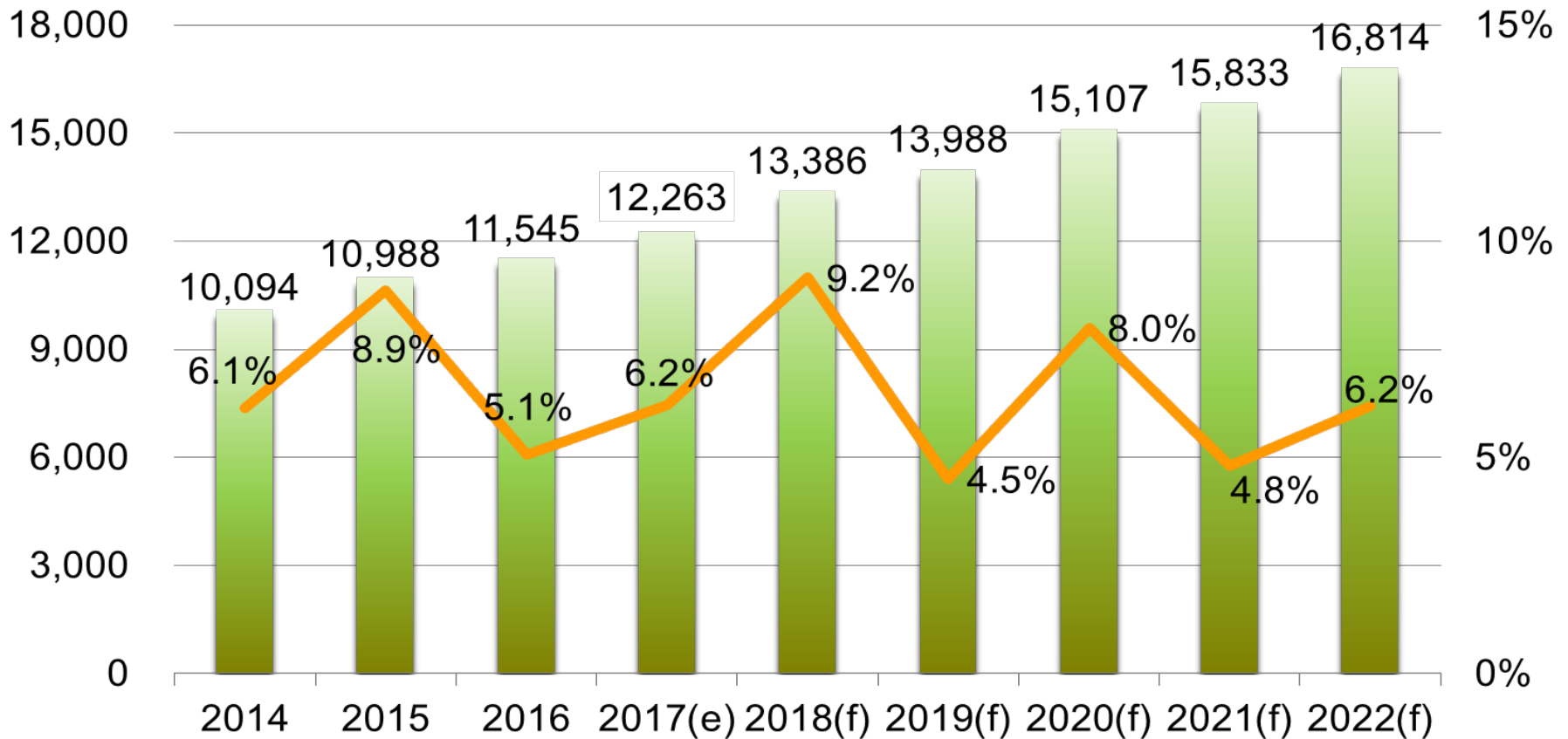
■ SDC ■ LGD ■ LGD JV in China ■ Tianma ■ BOE ■ Visionox ■ EDO ■ Truly ■ CSOT ■ AUO ■ JDI



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

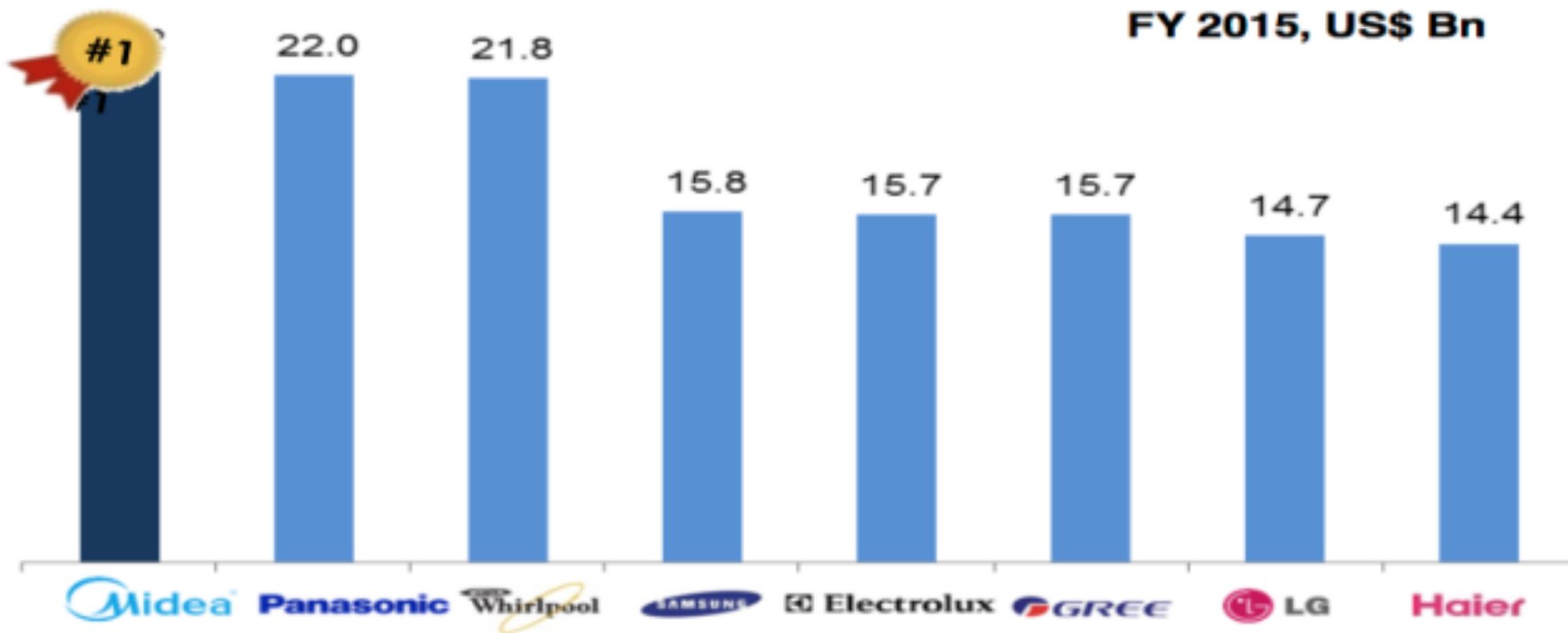
Unit: Thousand set

WW server shipment

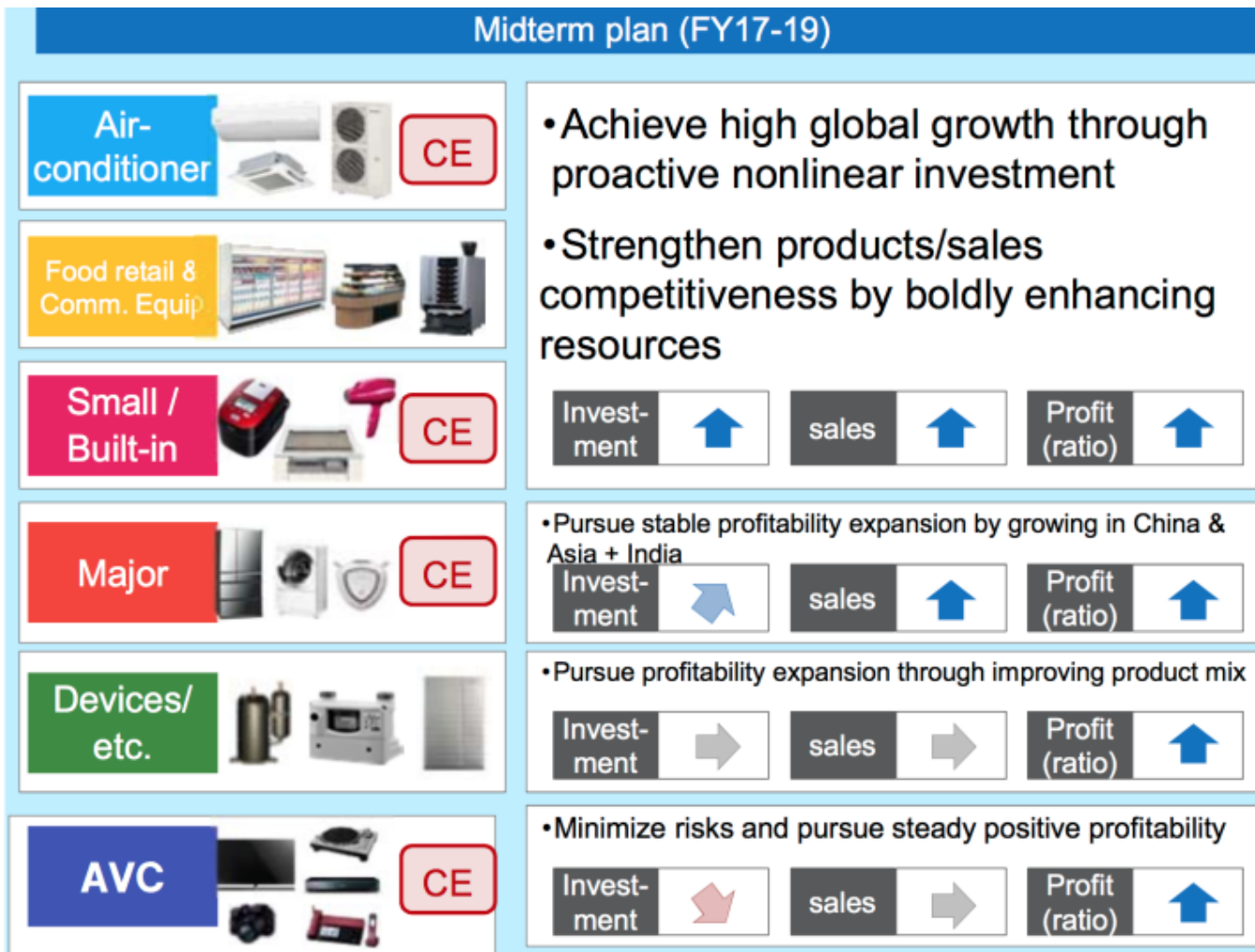


- The GAR for server shipment from 2017-2022 is 6.5%

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)

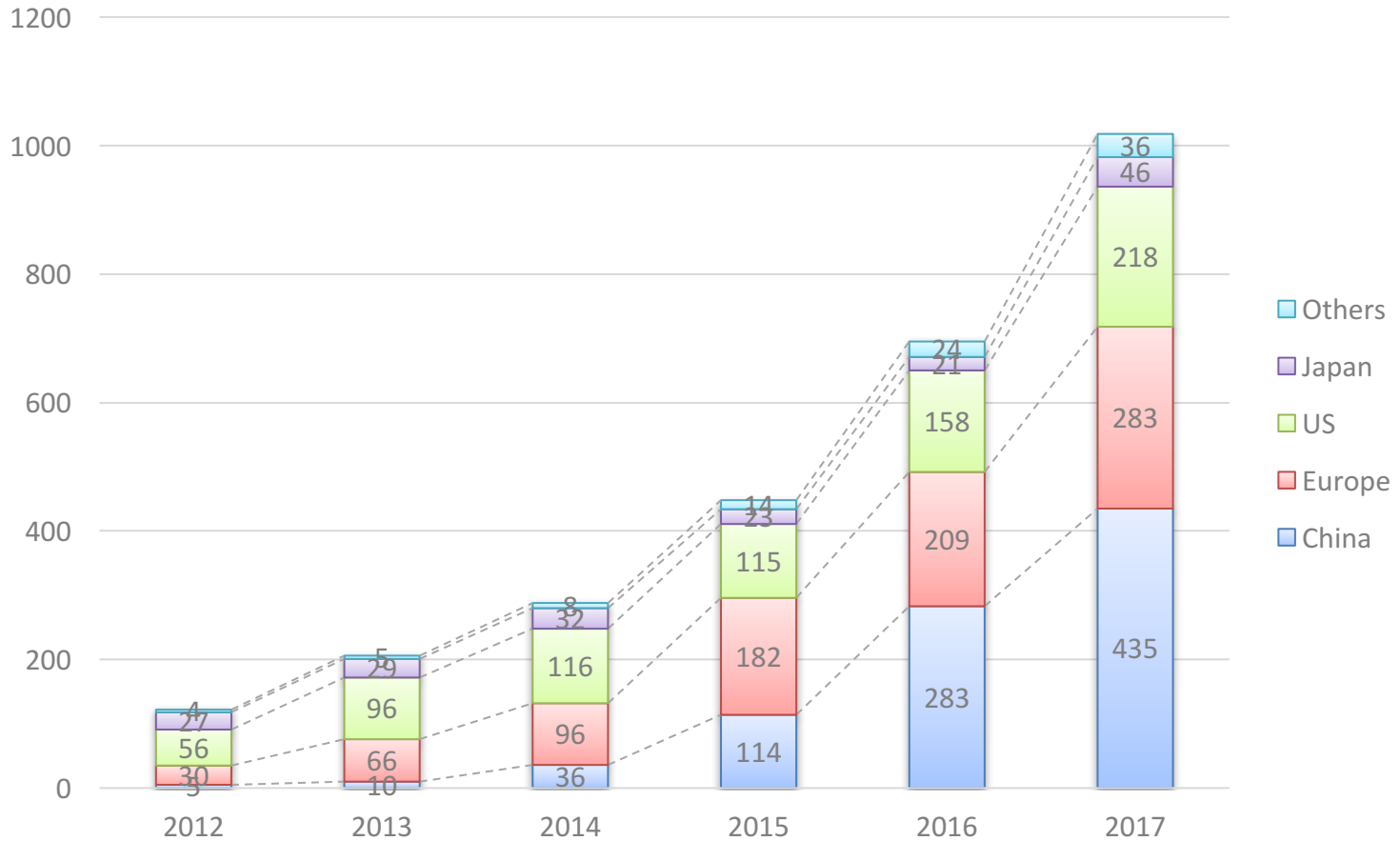


- Focusing on good business areas

Automotive Market

Global EV Sales Ranking

2012-2017 Global EV Sales by Region

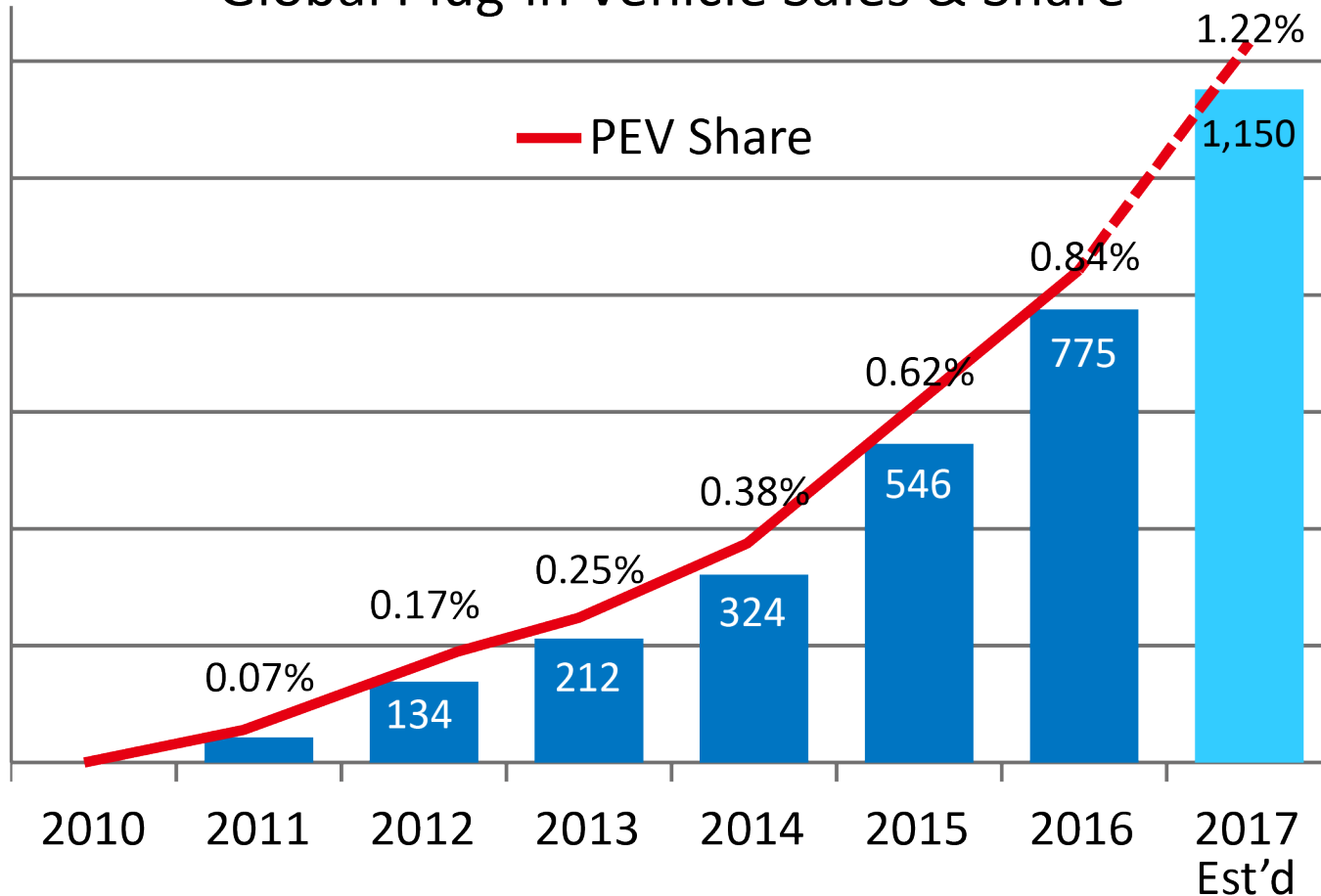


Electric vehicles include pure electric vehicles and plug-in hybrid vehicles

China market deducts low speed and commercial EV models

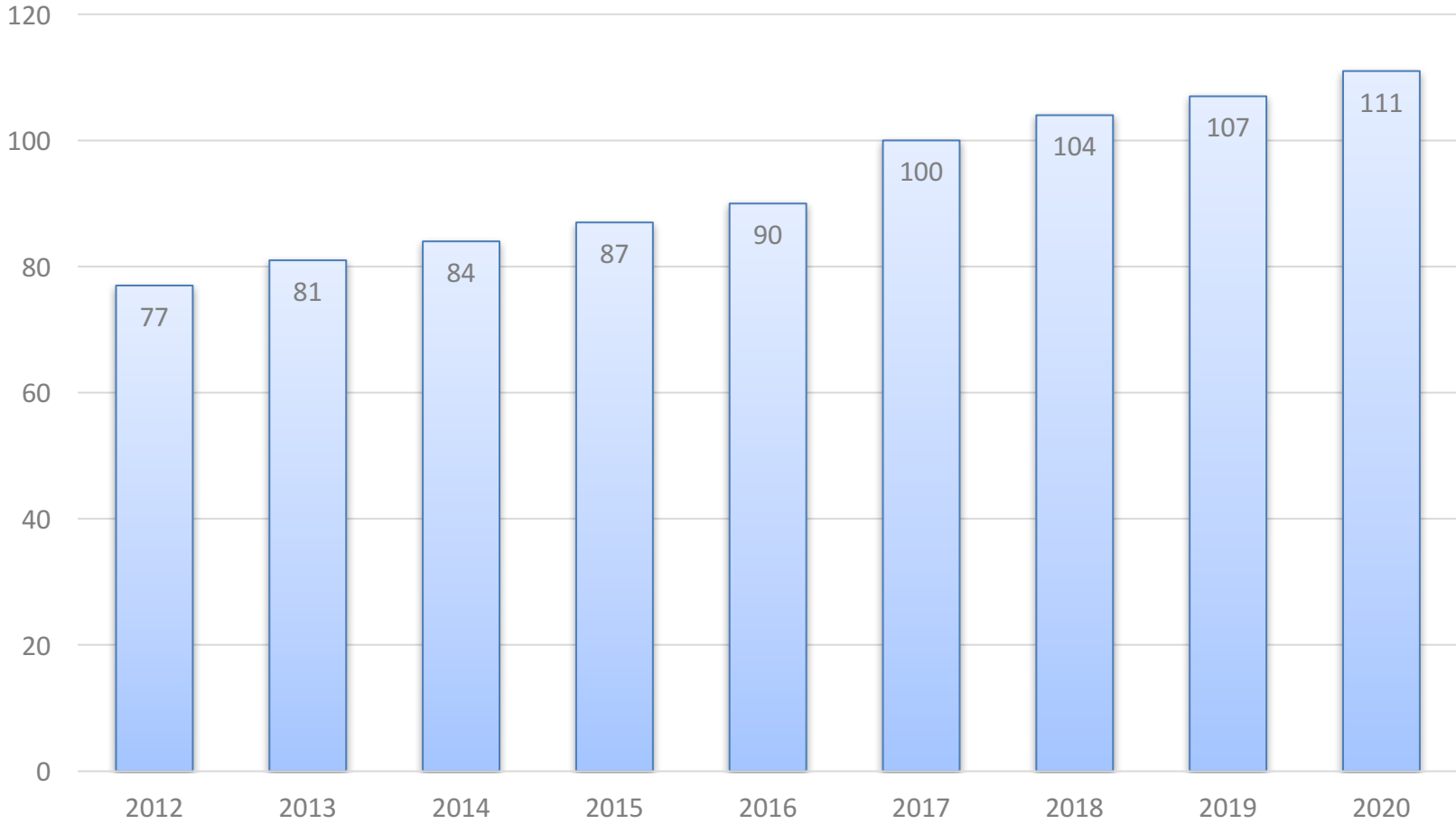
Source : BNEF、Car Manufacturers、DIGITIMES Research, 2018/2

Global Plug-in Vehicle Sales & Share



- 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.

Unit: Million



ADAS

- APA
- LDWS/FCW
- BSD

Body & Comfort

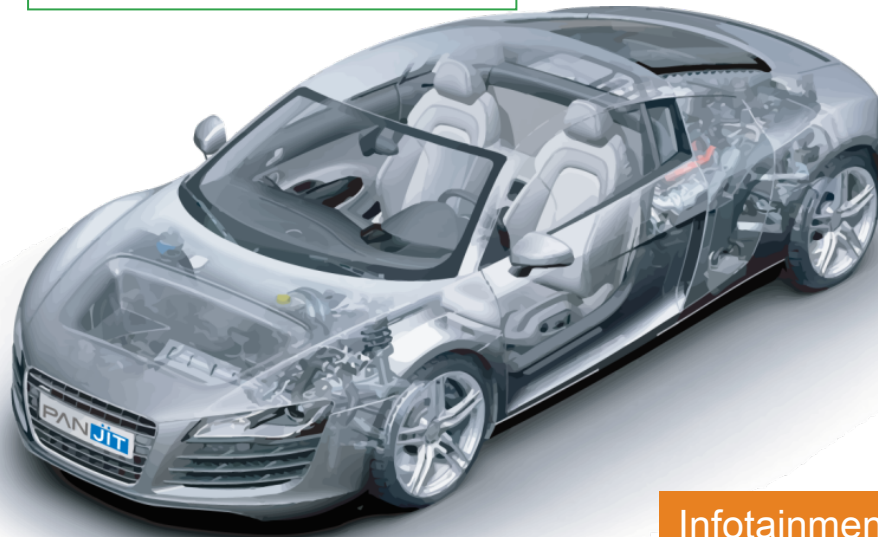
- Air conditioning
- Windshield wiper
- Seats
- Seat belt
- Car windows
- Sunroof
- Review mirror
- USB Charger

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

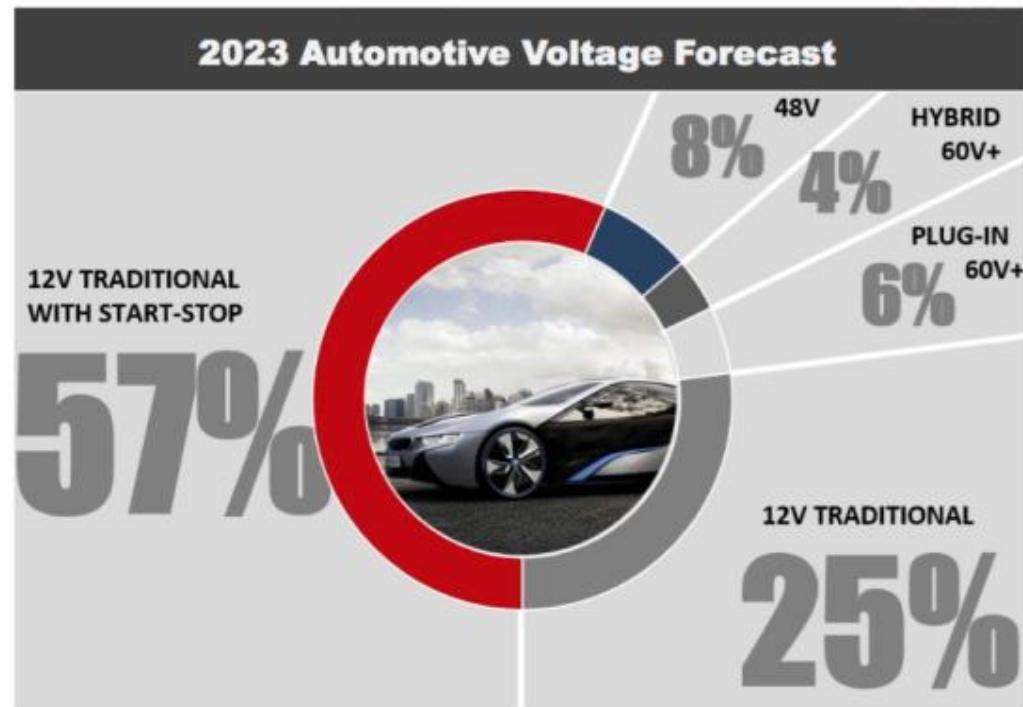
xEV

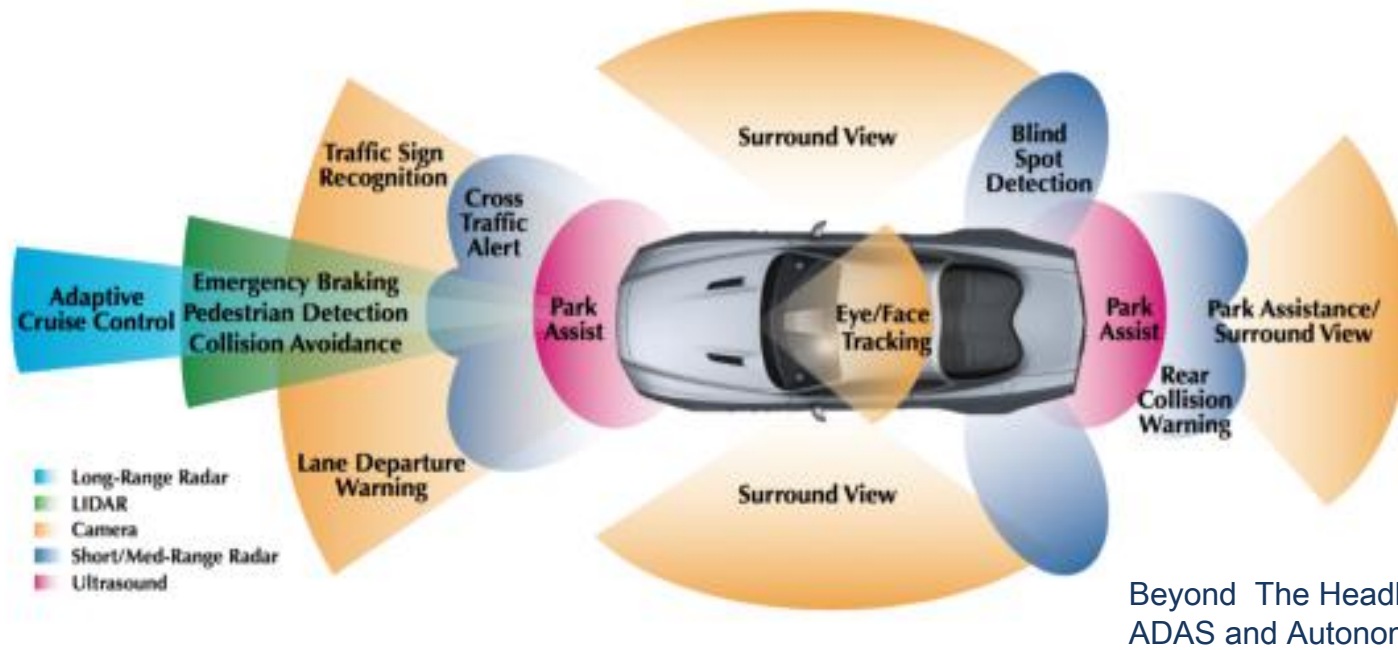
- EV/HEV pilot system
- Battery Management System (BMS)

Infotainment/Instrument

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

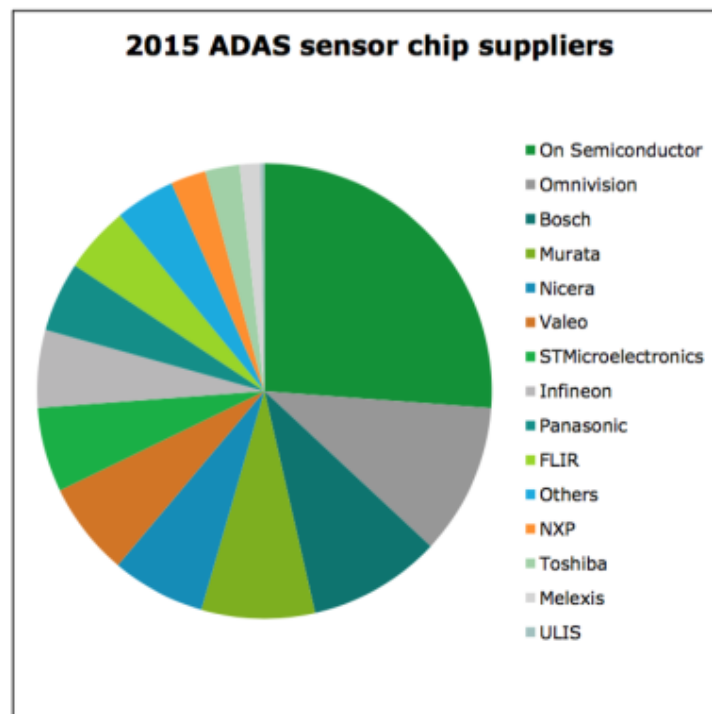
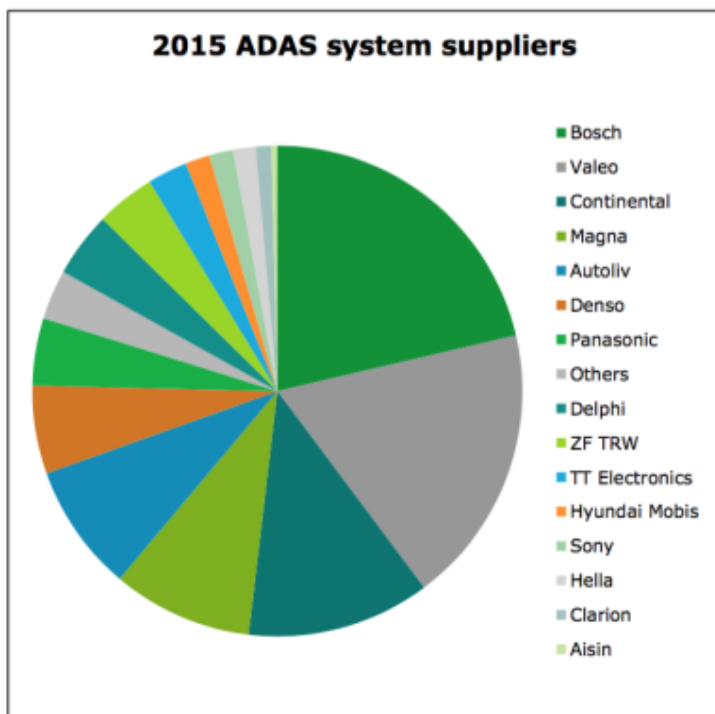
- E-Systems product portfolio is scalable across the full spectrum of vehicle voltage levels – 12V to High Power
- Market trends support growth in both 12V and High Power applications
- 48V and other high voltage electrical systems are expected to grow rapidly, reaching 18% of the market by 2023 from less than 5% today
- While the majority of vehicles will remain on a 12V system, growth in 48V and other high voltage systems represents incremental content per vehicle





- Multiple cameras being used on cars
- New sensors such as Radar, LiDAR and ultra sonic are being used to enhance the features for ADAS
- Sensing systems are also used for in-car monitoring driving analysis, and car security

- 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

1 Industry Growth¹

- > Global light vehicle production remains robust and is expected to reach production levels of 101 million vehicles by 2020
- > China continues to grow more rapidly than other major markets (4.2% CAGR), albeit at a lower but more sustainable rate than in past years

■ China LV Sales (mm of units)



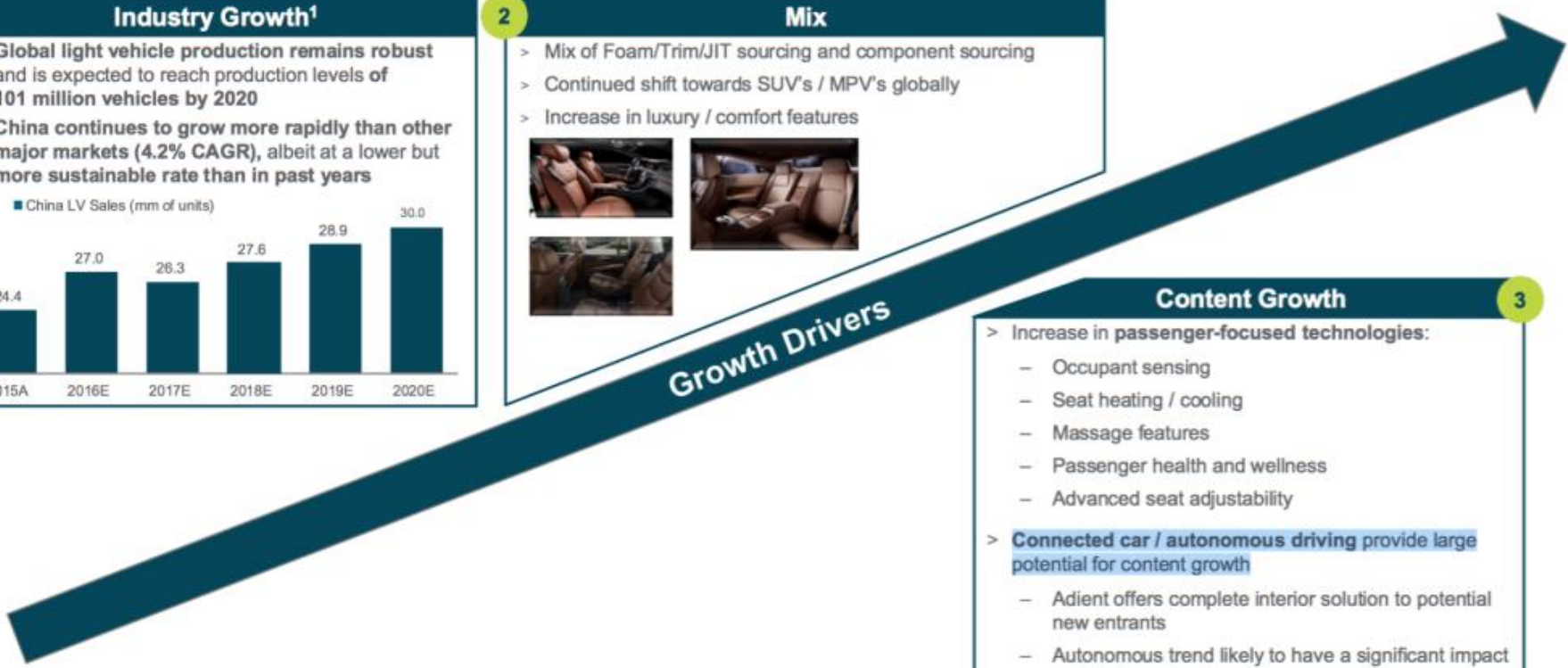
2 Mix

- > Mix of Foam/Trim/JIT sourcing and component sourcing
- > Continued shift towards SUV's / MPV's globally
- > Increase in luxury / comfort features



3 Content Growth

- > Increase in passenger-focused technologies:
 - Occupant sensing
 - Seat heating / cooling
 - Massage features
 - Passenger health and wellness
 - Advanced seat adjustability
- > **Connected car / autonomous driving provide large potential for content growth**
 - Adient offers complete interior solution to potential new entrants
 - Autonomous trend likely to have a significant impact on interior content

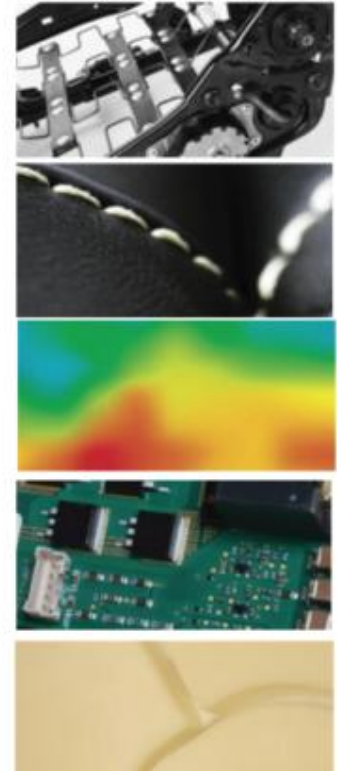


- Seating – growth market



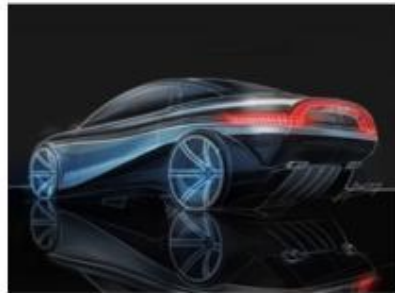
Unique competitive advantage for Lear

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





Headlamps



Signal Lamps

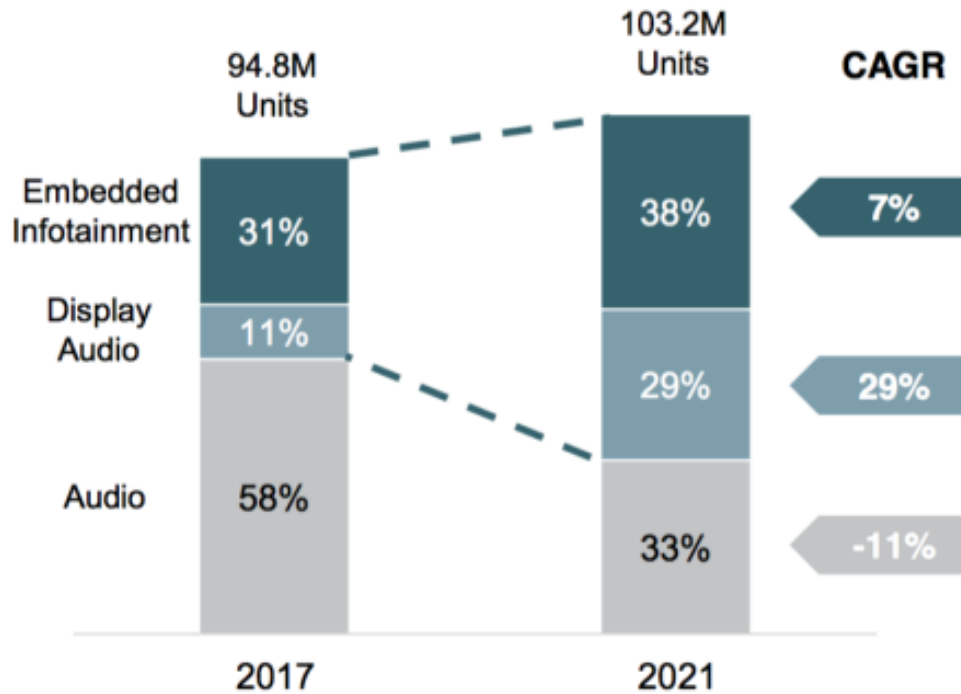


Electronics



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

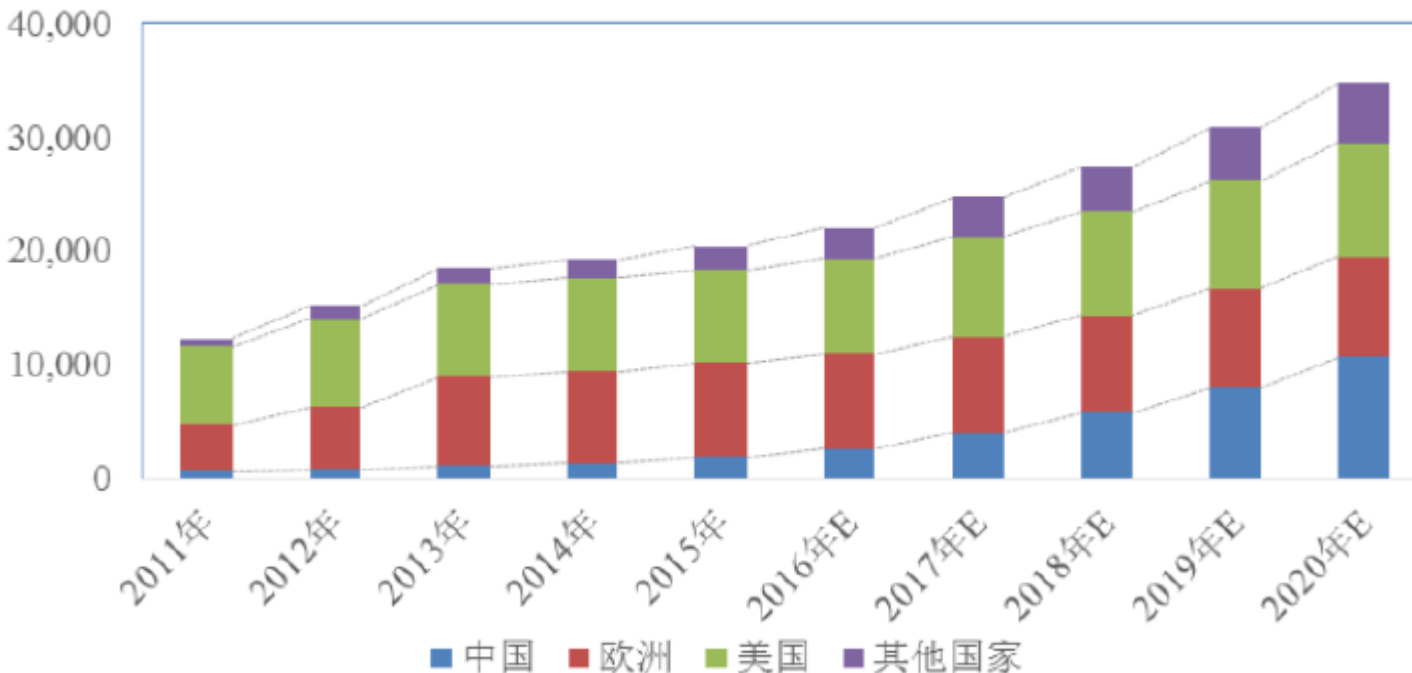
- Open development of AI based autonomous solution
- Complete suite of hardware and software tools for rapid development
- Launch technology platform at CES 2018



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

2011-2020年全球及主要国家轻型车TPMS产品OEM市场需求量情况

单位：万个



数据来源：根据 OICA 数据推算

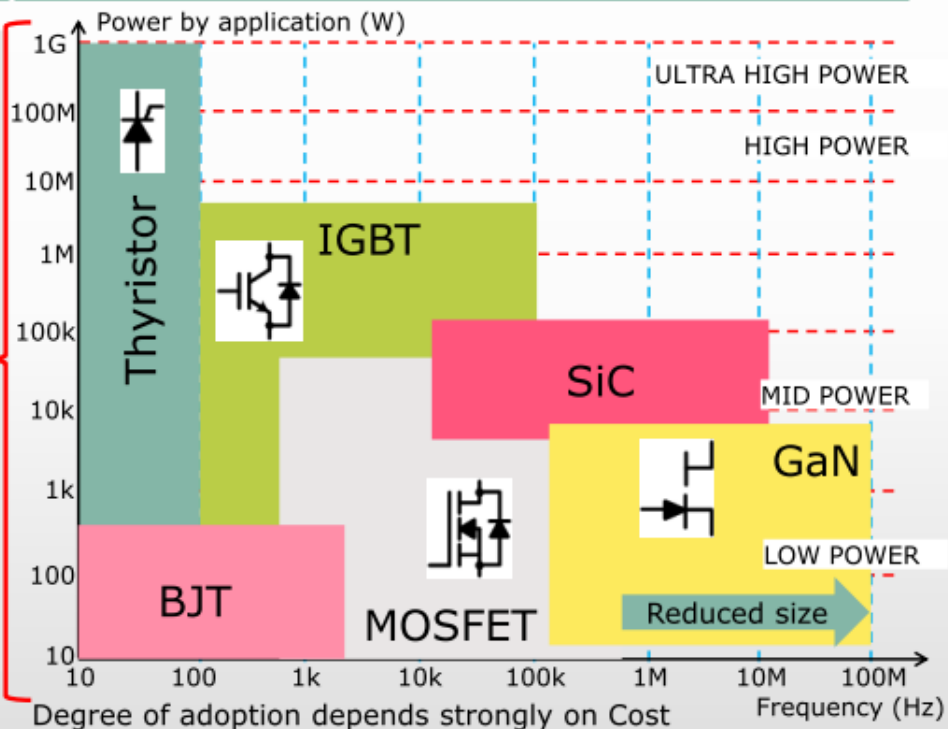
- According to OCIA, the TPMS shipment in the OEM market will be 348 Million. Among of all region, the Chinese market demands the most.

Research & Development

Application

Future Scenario Power Electronics

- > HVDC
- > HC-supplier
- > Large drives
- > Ships
- > Locomotives
- > Large solar plants
- > Trams, buses
- > Electric cars
- > On-roof PV
- > Small drives
- > Air conditioner
- > Robotics
- > Washing machine
- > SMPS
- > Chargers/Adapters



Report covers































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

Detailed discussion of

- Market Drivers
- Key Metrics
- Trends
- Challenges

	Field	Application
Automotive		Hybrid Electric and Electric Vehicle Power and Chargers
Industrial Products		Avionics and Marine Propulsion, Heavy Vehicles, Induction Heating, Welding
UPS		Data Center, Hospital, Industry
Motor System		Commercial Motor Drive, Industrial Applications (Fans, HVAC, Pumps...)
Consumer Goods		Camera, Consumer, Lighting, White Goods
PV, Railway, Wind Power		Inverter, Micro Inverter Train, Metro and Subway Powertrain

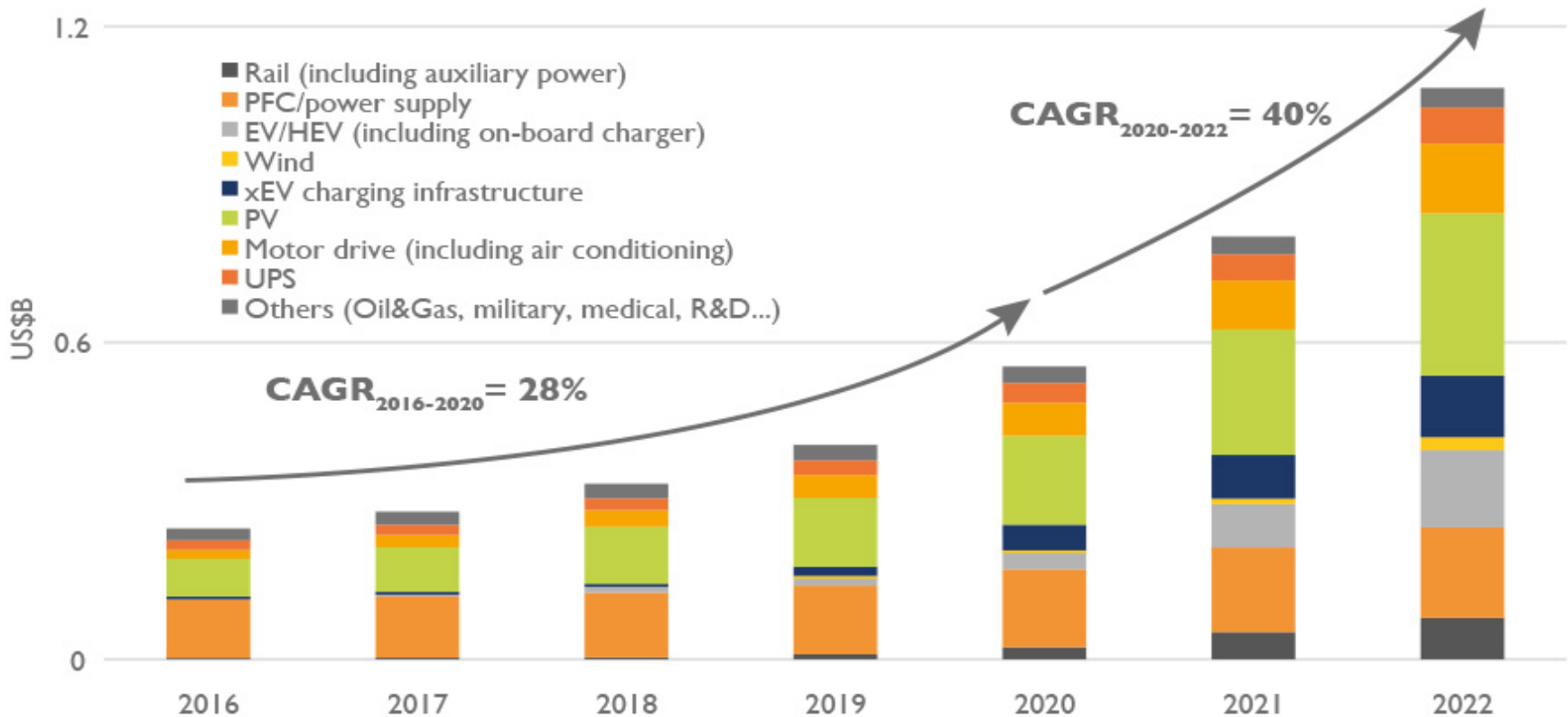
IGBT Manufacturers Ranking by Voltage Range

	No.1	No.2	No.3	No.4	No.5
400V and Less					
600-650V					
1200V					
1700V					
2500V-3300V					
4500V and More					

- 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.

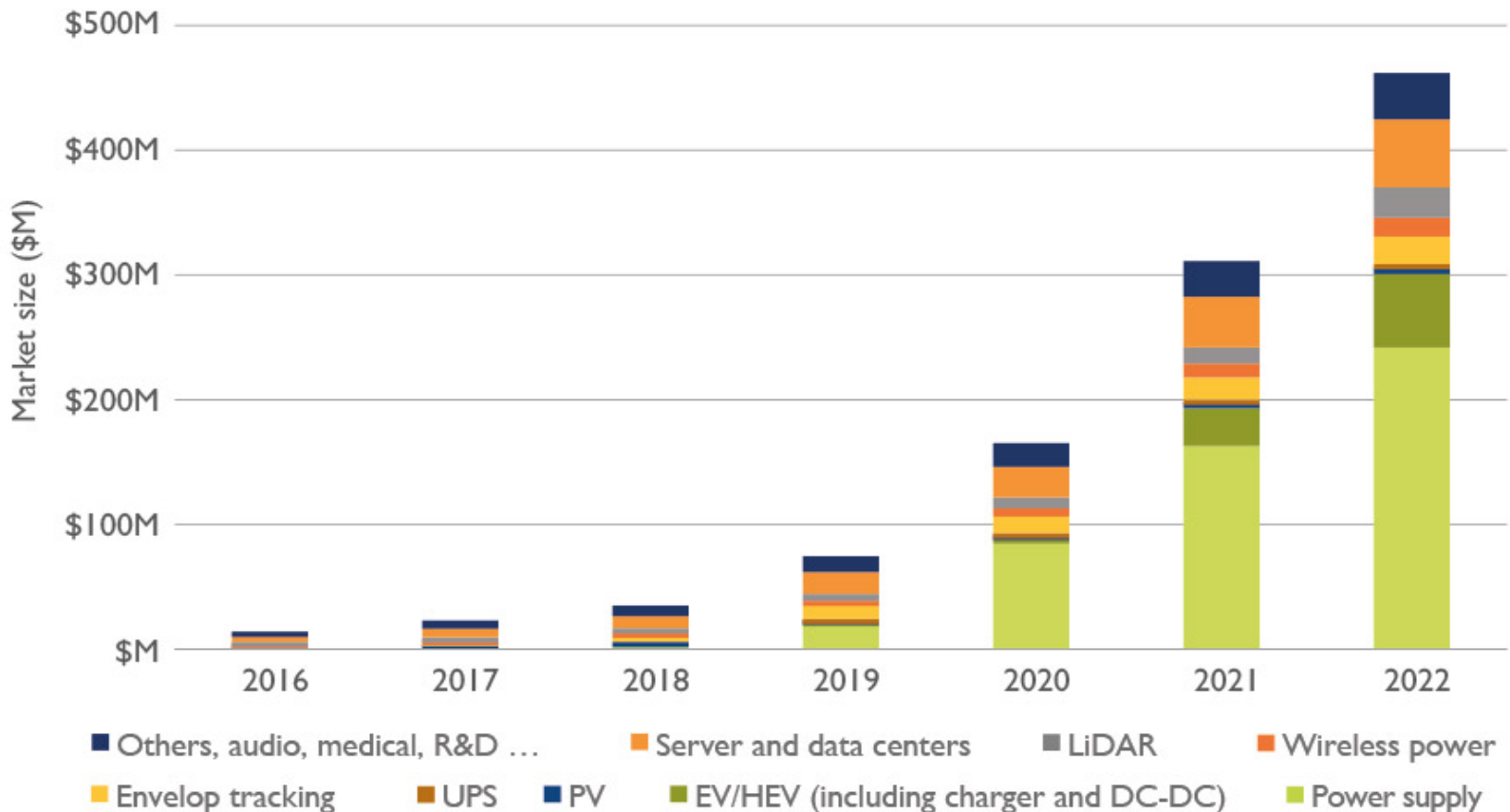
SiC device market size split by application

(Source: Power SiC: Materials, Devices, Modules, and Applications report, Yole Développement, August 2017)



GaN power device market size split by application (\$M)

(Source: Power GaN 2017: Epitaxy, Devices, Applications, and Technology Trends 2017 report, Yole Développement, October 2017)



Questions & Answers

