



PANJIT International Inc.

**PANJIT**  
SEMI  
CONDUCTOR

# Chief Strategy Officer

Jasper Lee

APR. 2019

- About PANJIT
- New Team
- New Technologies
- Financial Info.



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# About PANJIT

# PANJIT Overview

TWSE : 2481 (2000 IPO)

Founded in 1986

Corporate Headquarters: Kaohsiung, Taiwan

Capital: \$124 Million USD

2018 revenue: \$334 Million USD

Approximately 3,000 employees worldwide

1 front-end fabrication sites

2 back-end manufacturing sites

ISO9001: 2015 Certified / IATF16949: 2016 / IECQ QC080000: 2012



## PANJIT GROUP



**PANJIT**  
Est. May 1986  
Product: Discrete  
Packaging & Testing

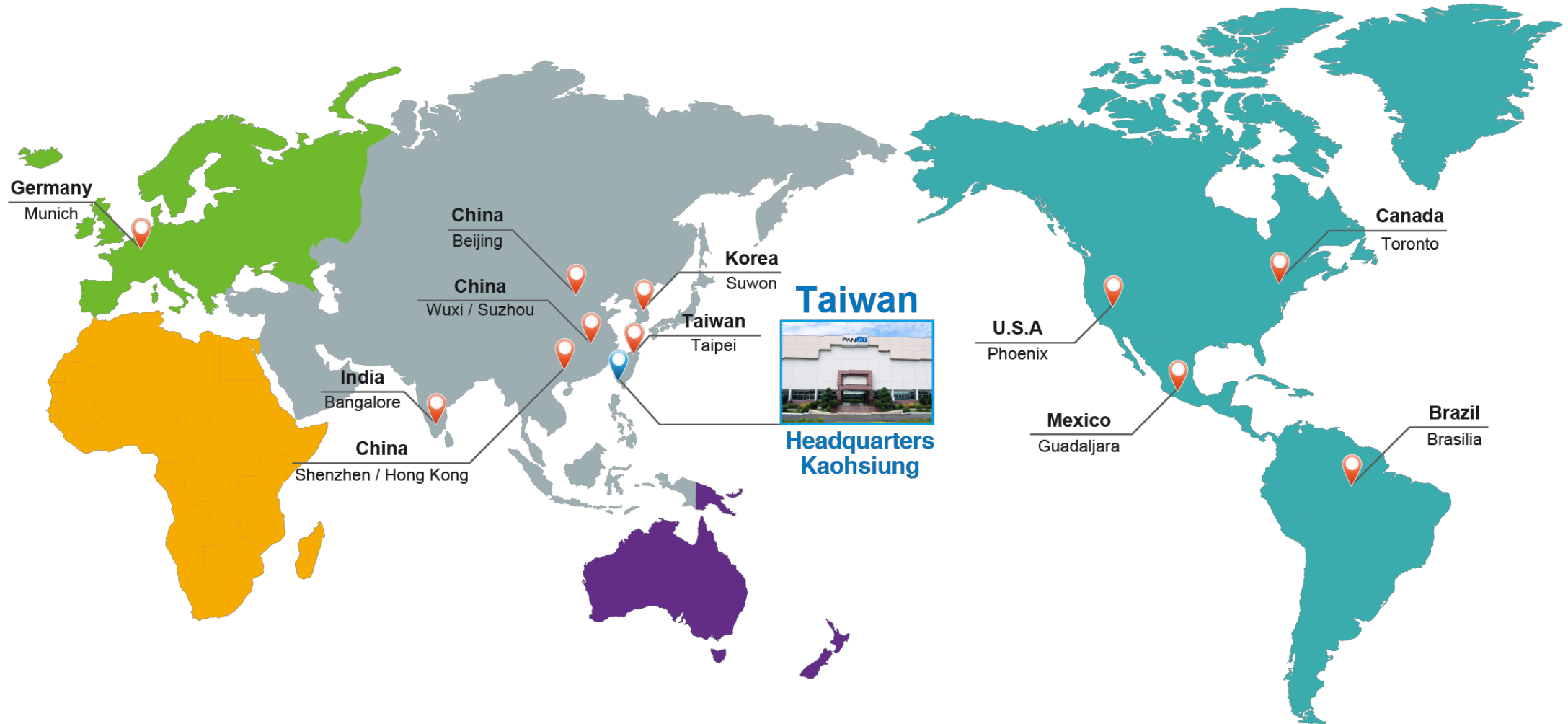


**PYNMAX**  
Est. Mar 2000  
Product: Wafer Foundry



**Sumnergy**  
Est. Jun 2017  
Product: BMS, Battery Pack

# PANJIT Sales sites

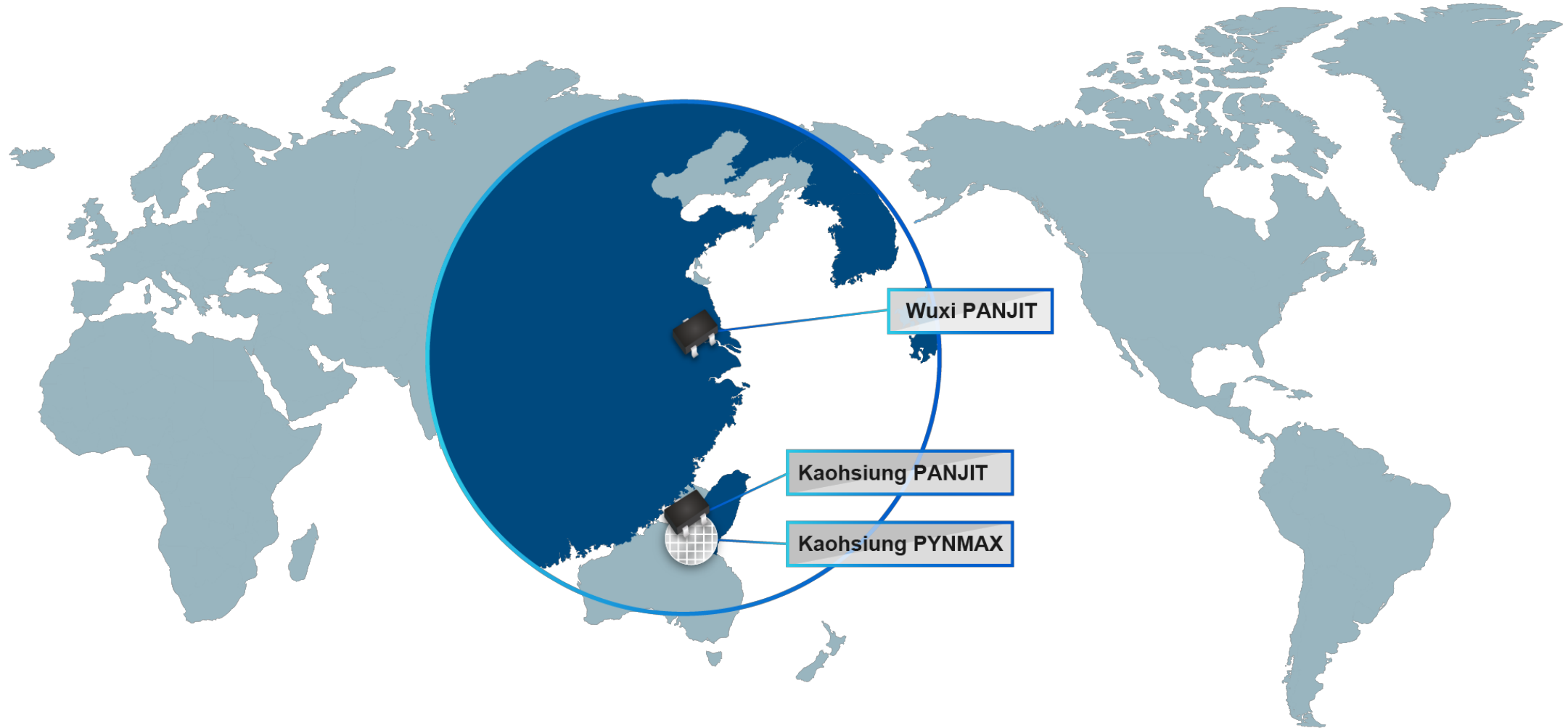


 **Headquarters**     **Sales Office**

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# PANJIT Manufacturing sites



**Front-End**



**Back-End**

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# PANJIT R&D Sites



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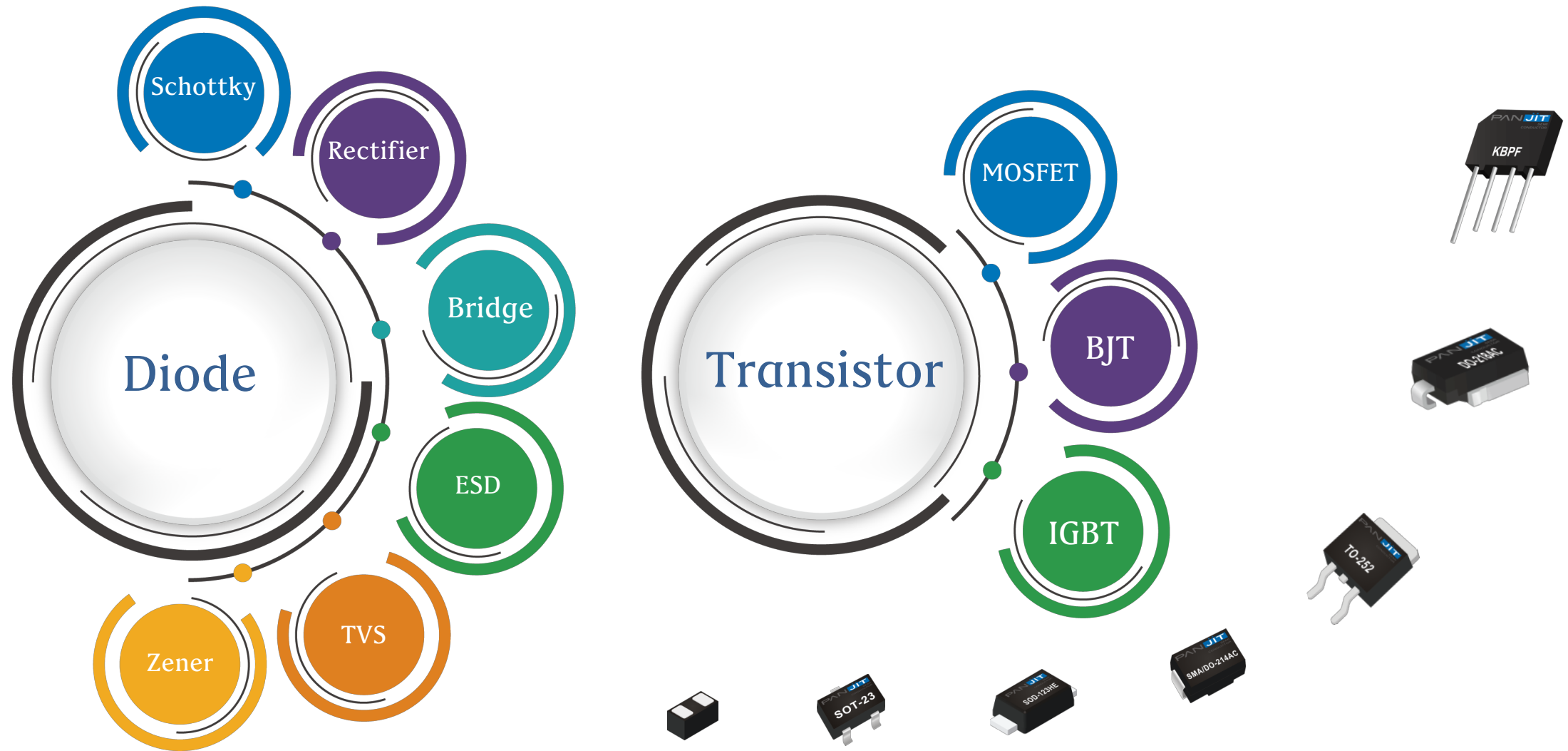


# PANJIT & PYNMAX



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# PANJIT Product Function



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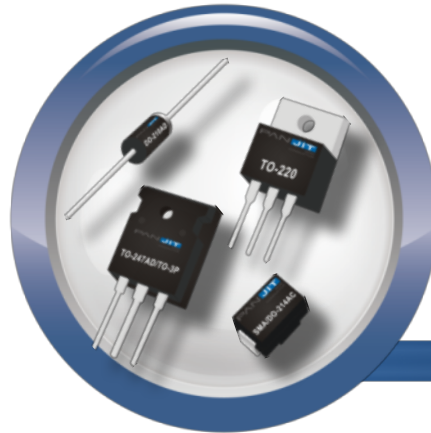
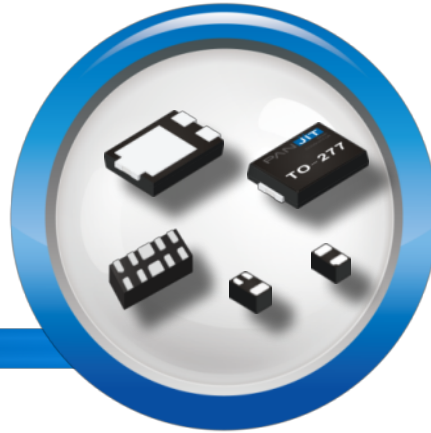
# Packaging & Testing

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## Gangshan

Package: Small Signal Devices

Capacity: 1,400 KK /month

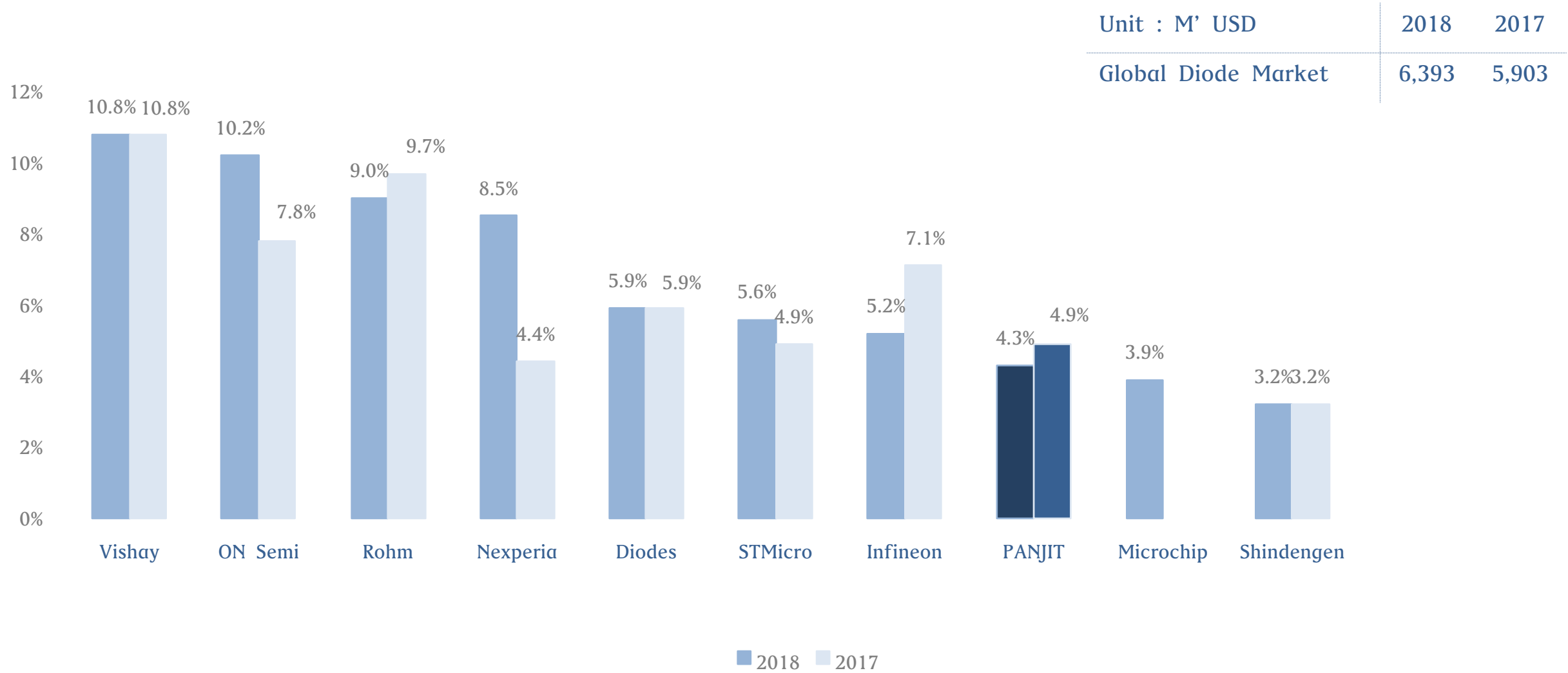


## Wuxi

Package: Power Package Devices

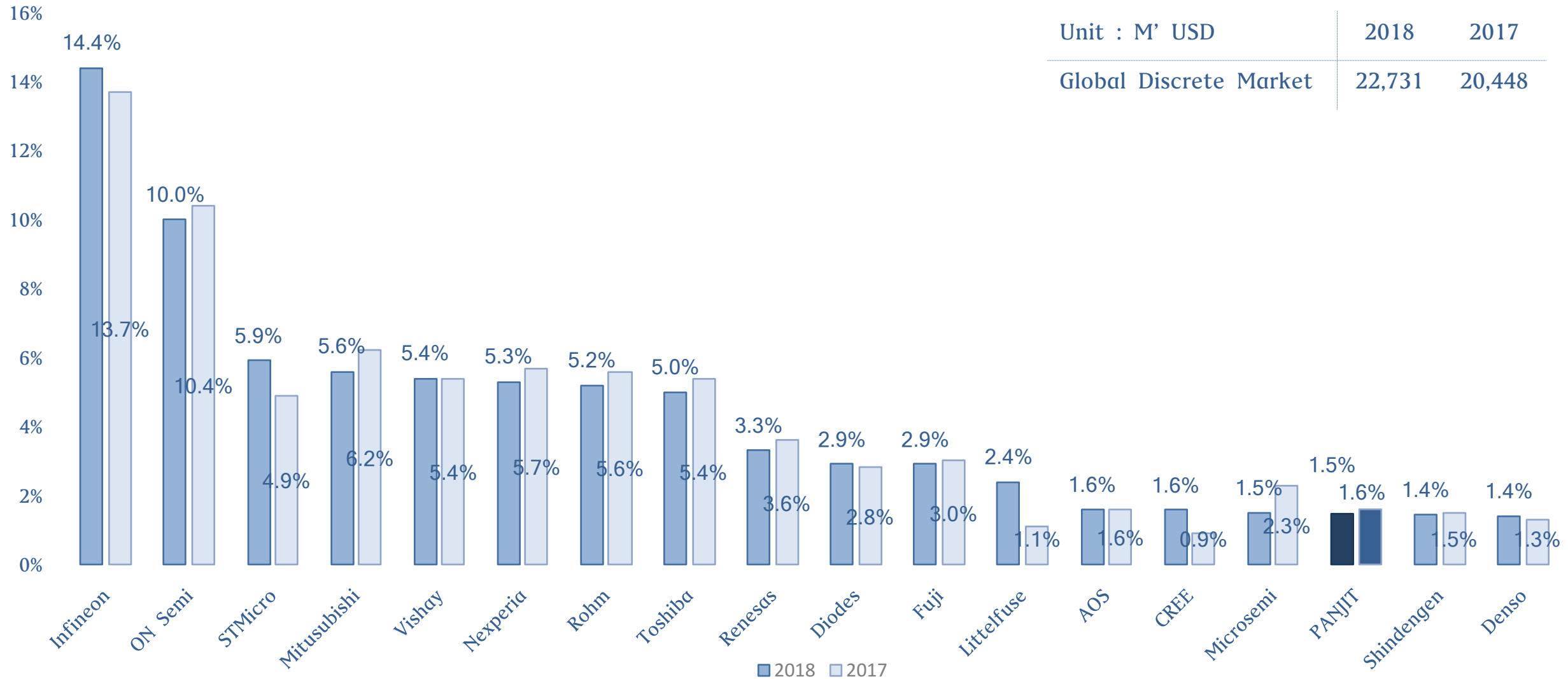
Capacity: 550 KK /month

# Global Diode Ranking & Market Share



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# Global Discrete Ranking & Market Share



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# 2018 results: growth momentum built, highlight

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Milestone	NTD 10 Bn Share price \$70
Profitable Growth	EPS 2.41, Capital reduction NTD 1 + Cash dividend NTD 0.5 Net working Capital 2018: 2,078 2017: 1,984
Customers.	Qualification Passed by Major Top 100 AU clients.
Transformation	Starting to globalize and promoting company brand. Diversifying Product with IGBT, MOSFET.

# 2019 Highlight

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New

R&D Centre : San Jose

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Technologies

Fab Tools upgrade 6" & 8"

Front-side fab foundry option settle-down (8")

In-house key toolset set-up for new tech development & mass production (8")

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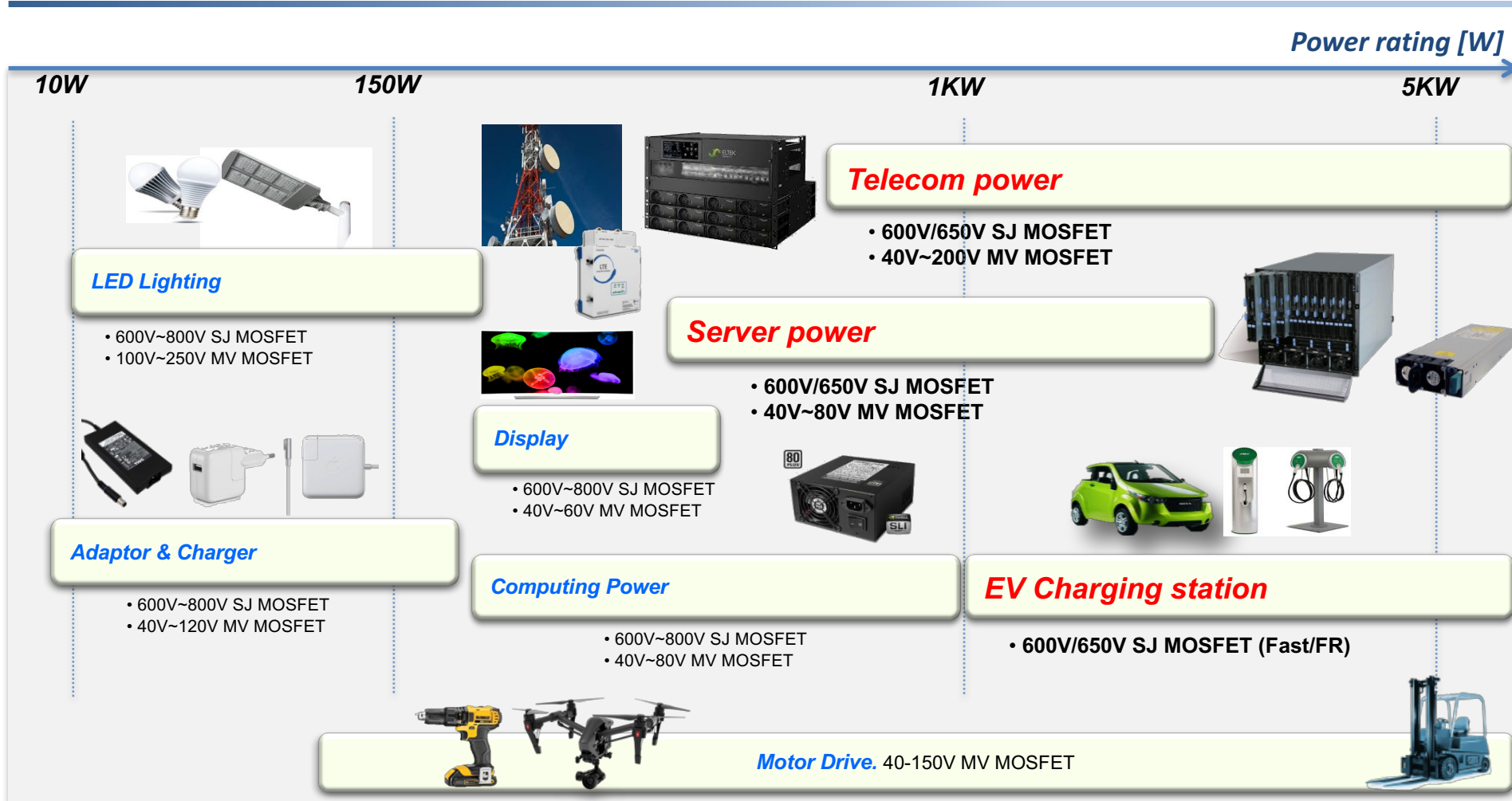
# New Team Introduction



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# New Technology MOSFET

# MV/HV MOSFET application



- Telecom power (TO220/F, TO247, D2PAK7L, PQFN56/88, TOLL)
- Server power (TO220/F, TO247, PQFN56/88, TOLL)
- EV Charging station (TO247, TOLL)

# MOSFET Package Trend

Alt Energy  
(EVC, Solar)



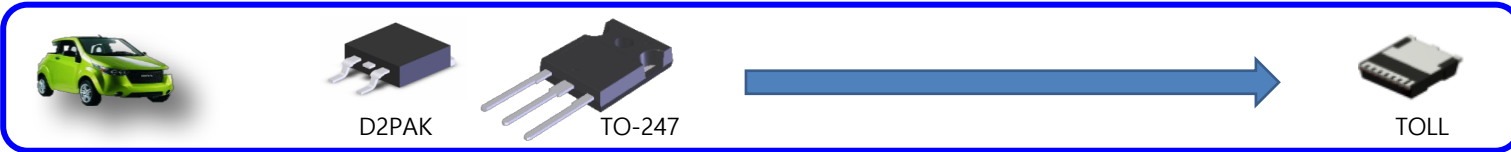
Cloud  
(Telecom)



Cloud  
(Server)



Auto  
(OBC)



Wireless



Consumer



**2023-**

TO247 Source Down

LFPAK 88 TO247 Source Down

LFPAK 88

**Potential Solutions**

LFPAK 56

LFPAK 88

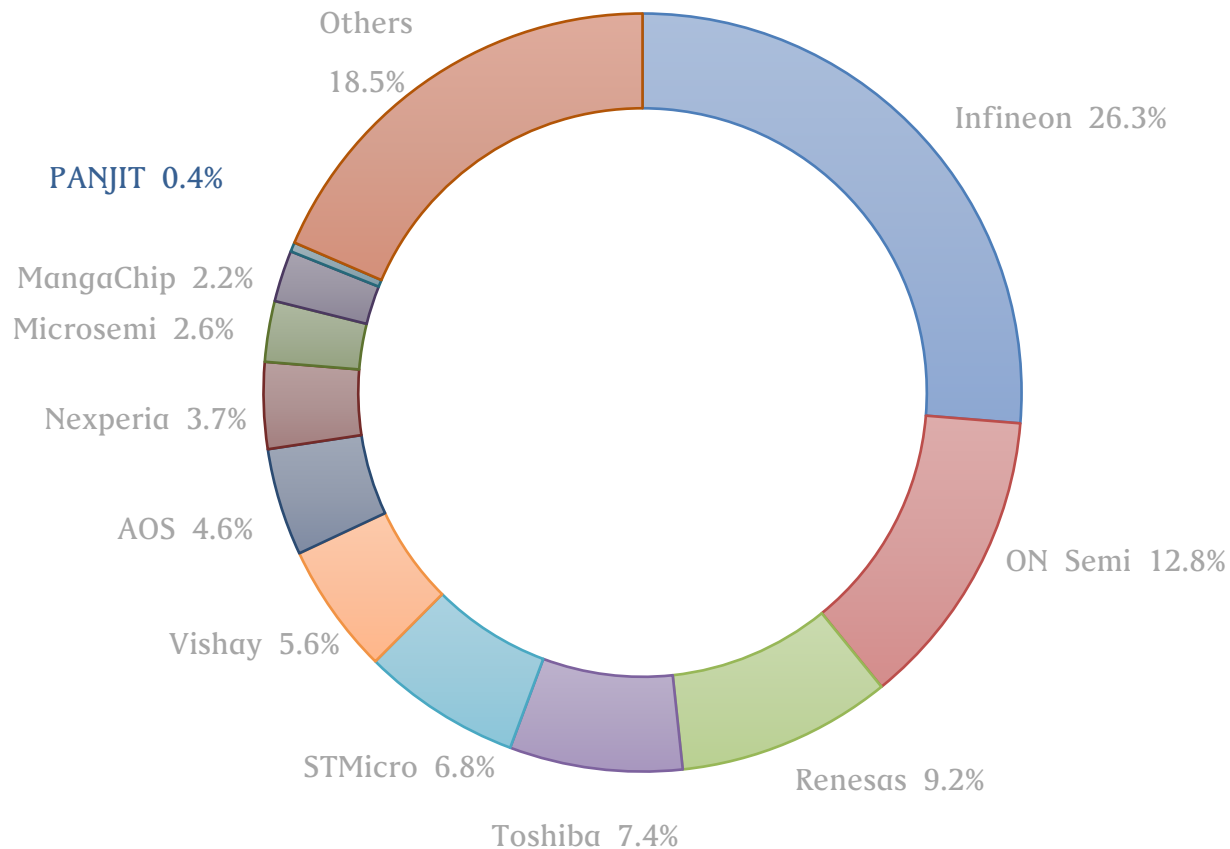
**PANJIT Plan: 2021-2022**

**2023-**

☐ Value = Power Density → Surface Mount

# MOSFET Market Share

2017 MOSFET Market share

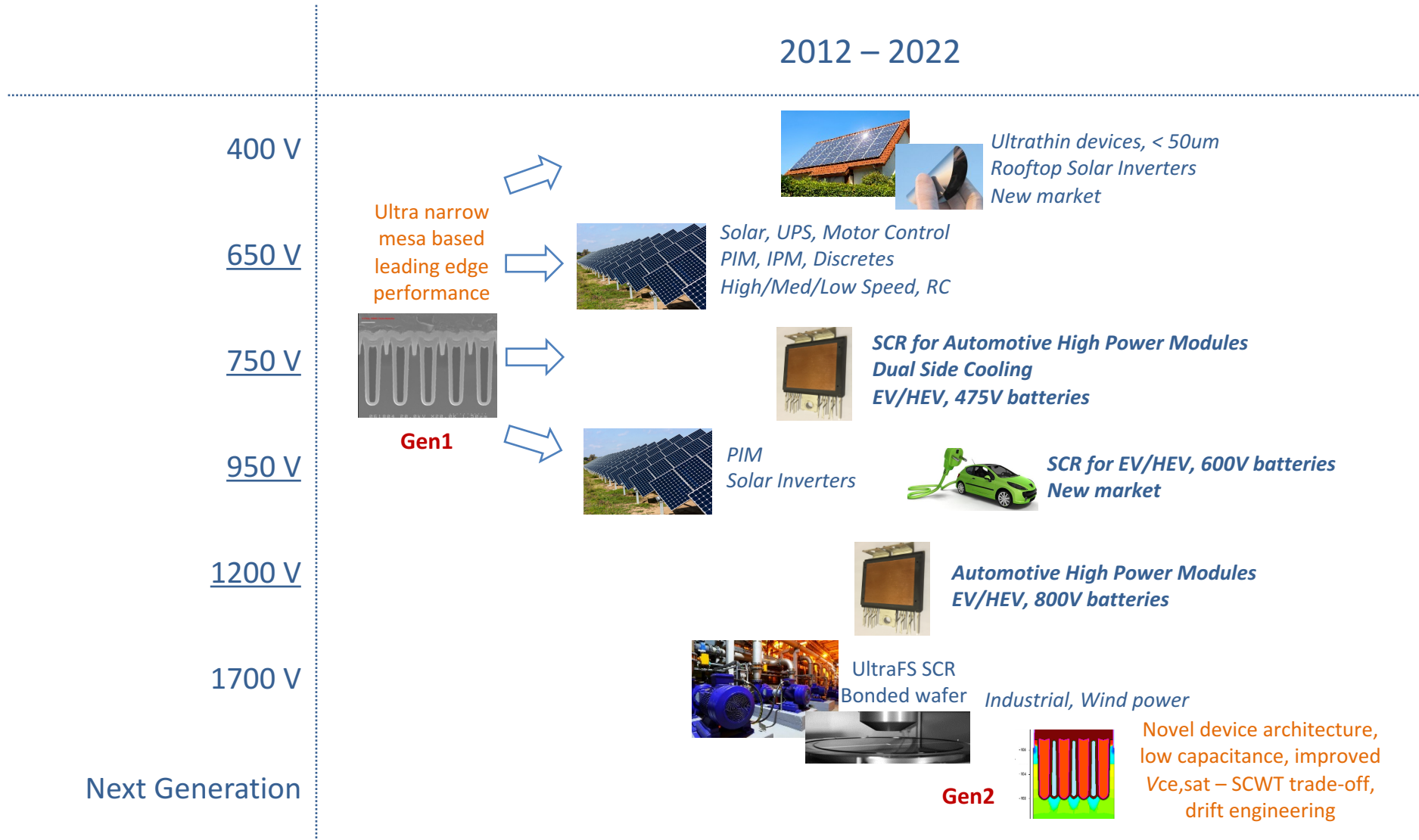


MOSFET Company	Market Share (%)	
	2016	2017
Infineon Technologies	26.0	26.4
ON Semiconductor	13.0	12.9
Renesas Electronics Corporation	9.0	9.2
Toshiba	7.4	7.4
STMicroelectronics	7.2	6.8
Vishay Intertechnology	5.8	5.6
Alpha and Omega Semiconductor	4.6	4.6
Nexperia	0.0	3.7
Microsemi	3.0	2.6
MagnaChip Semiconductor	2.2	2.2
<b>PANJIT</b>	<b>0.4</b>	<b>0.4</b>

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# New Technology IGBT

# IGBT Technology to Applications

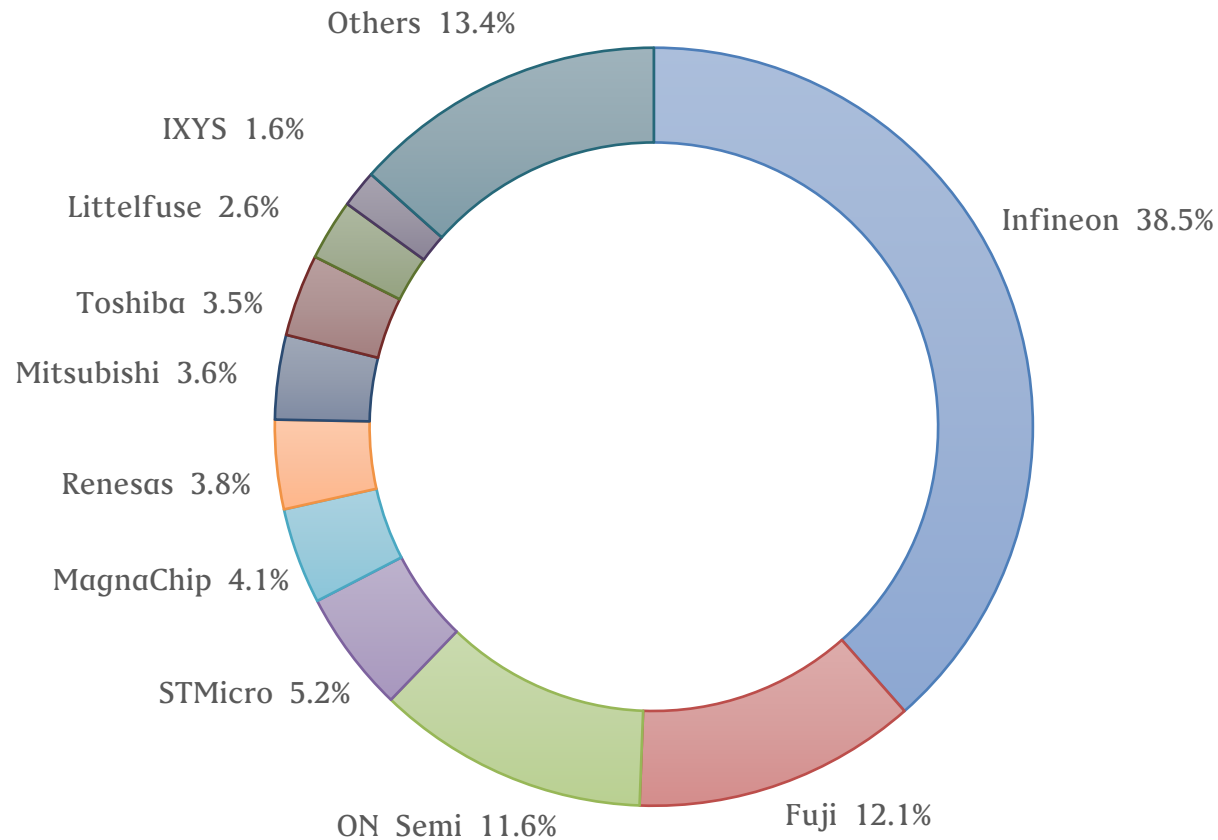


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# IGBT Market Share

2017 IGBT Market Share



IGBT Company	Market Share (%)	
	2016	2017
Infineon Technologies	36.5	38.5
Fuji Electric	14.8	12.1
ON Semiconductor	11.8	11.6
STMicroelectronics	4.2	5.2
MagnaChip Semiconductor	4.2	4.1
Renesas Electronics Corporation	3.8	3.8
Mitsubishi (inc. Powerex)	3.7	3.6
Toshiba	3.5	3.5
Littelfuse	4.1	2.6
IXYS	1.6	1.6

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# New Technology SiC



# SiC Diode Application Specific

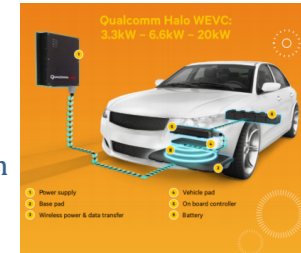


650V SiC Diodes (Fast)  
Power supplies/PFC  
Market share 2018: **60%**  
Key FOM:  $Q_c \times V_f$



650V/1200V SiC Diodes  
Hybrid inverter/Solar  
Market share 2018: **20%**  
Key FOM: Low reverse leakage,  
Moisture resistance, Module

1200V SiC Diodes  
Battery charger, OBC, Traction drives  
Market share 2018: 8%  
Key FOM: Surge capability, SMD package, Low  $R_{th}$



1200V SiC Diodes  
Industrial Drives, DCDC  
Market share 2018: 5%  
Key FOM: Robustness, Price,  
Excellent thermal package

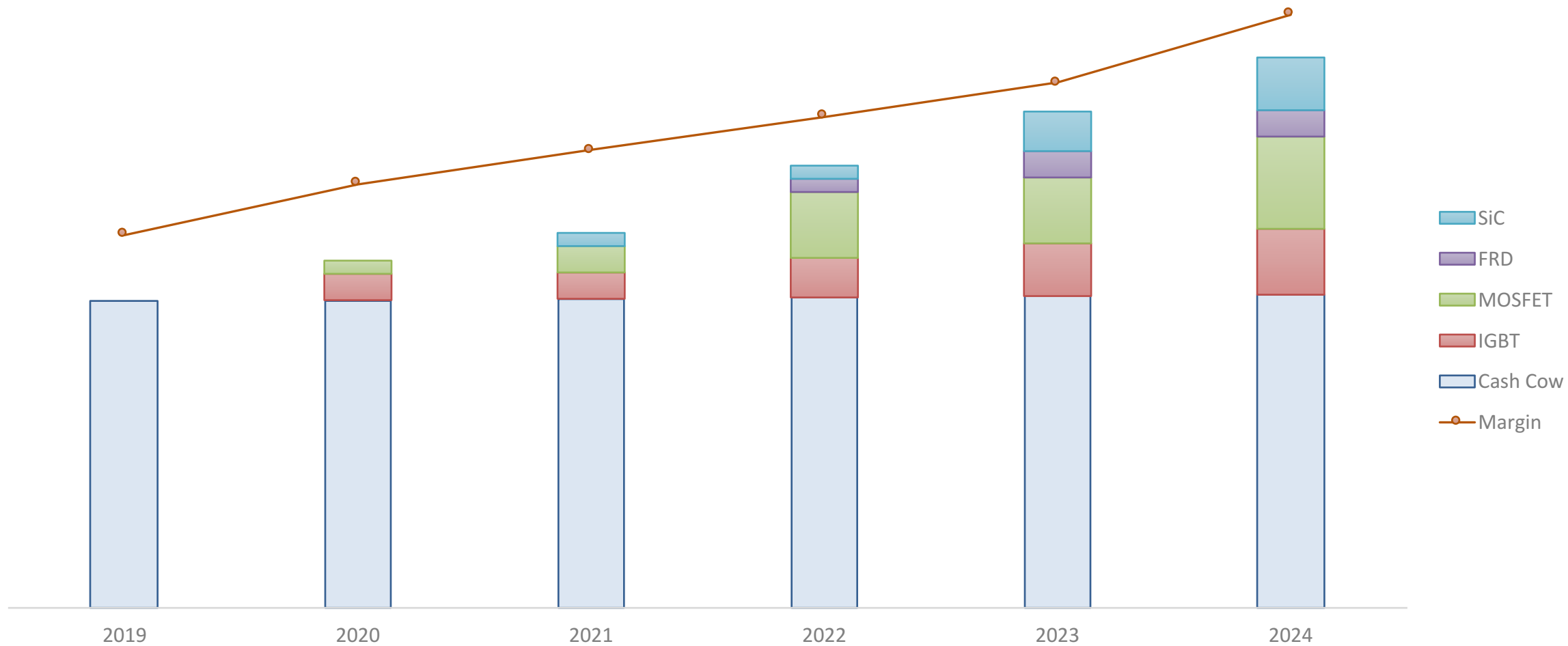


Simple part with diverse needs

1700V-3300V SiC Diodes  
Traction drives, HVDC systems  
Market share 2018: 5%  
Key FOM: Robustness, Leakage,  
Max die size/price



# Driver for next 5 years



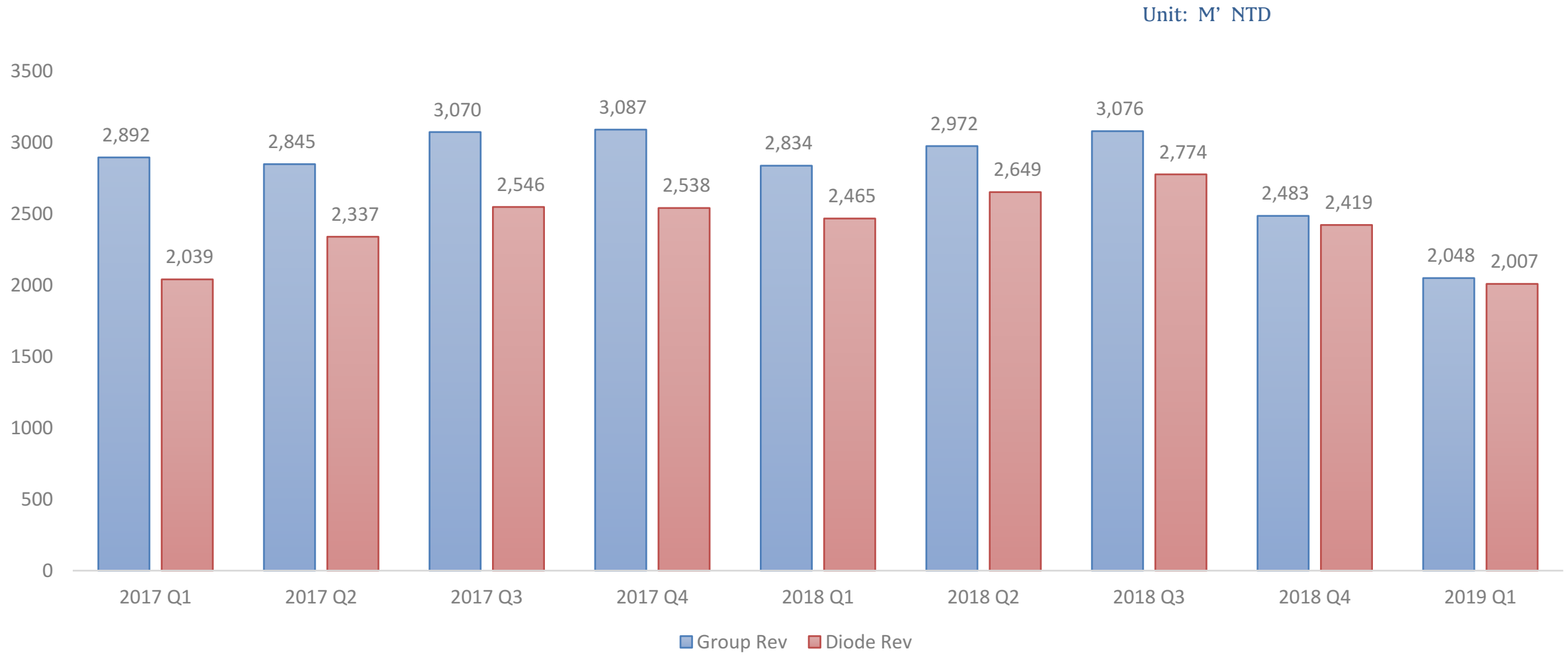
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# Financial Info

# Results summary

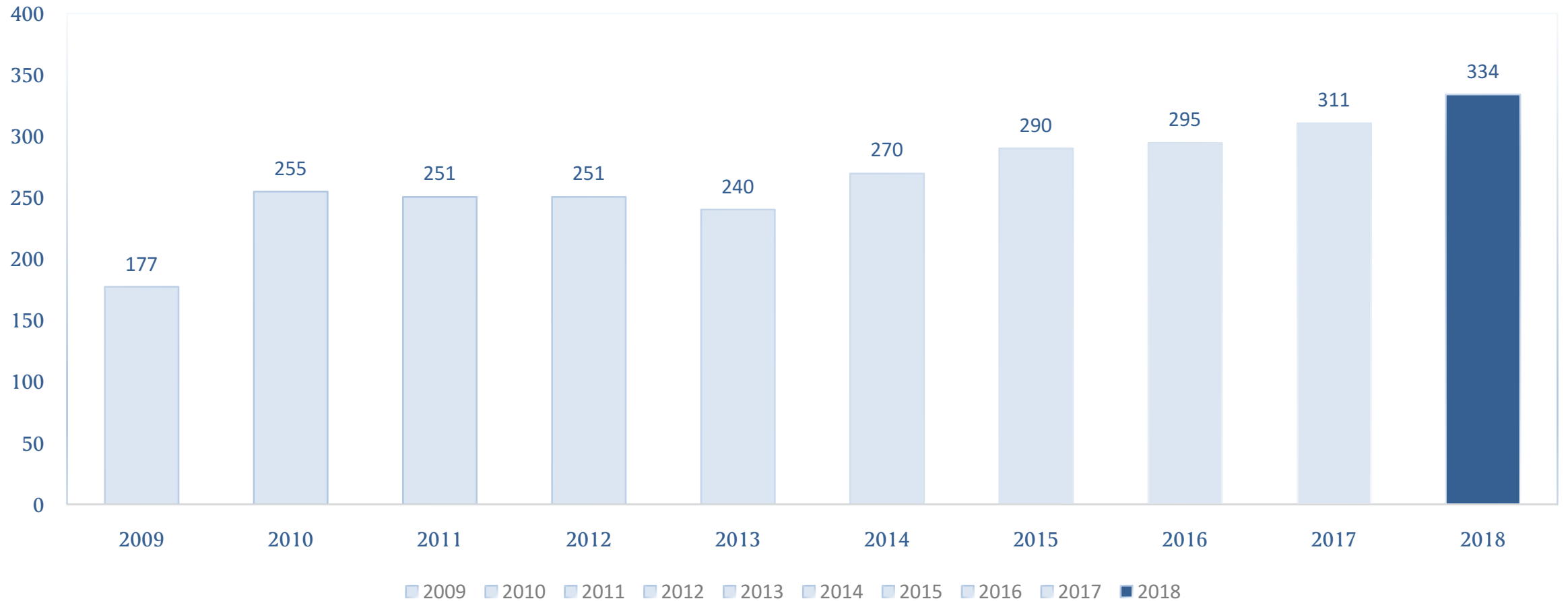
	Revenues	Gross Margin	EBITA & Margin	EPS	Cash Flow from Operating Activities
FY 2018	NTD 11.3Bn	22.3%	NTD 9,780.6 Mn 86.1%	NTD 2.41  + 360%	NTD 1,835 Mn
2019 Q1	Revenues  NTD 2 Bn		EBITA & Margin  NTD 1,743.6 Mn 85.15%		Cash Flow from Operating Activities NTD 466 Mn

# PANJIT Group Rev & Semiconductor BU Rev



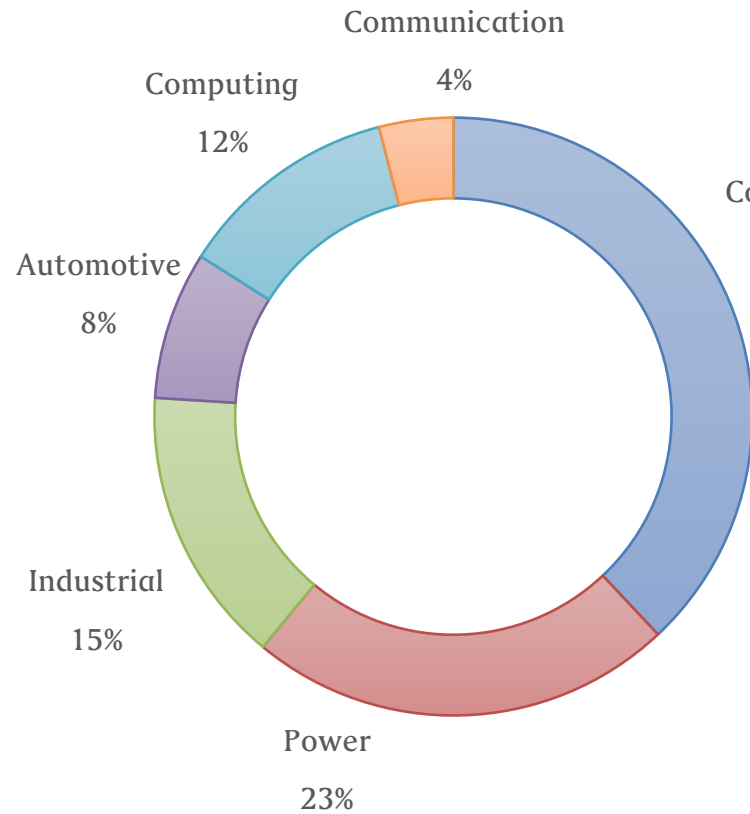
# Semiconductor BU Revenue.

Unit: M' USD

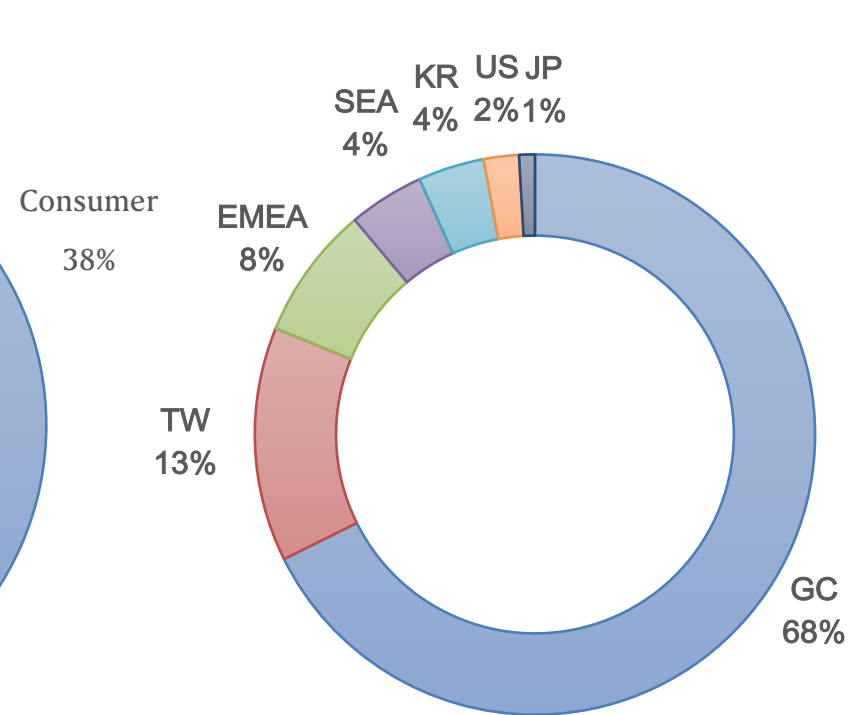


# 2018 Semiconductor BU Revenue Break down

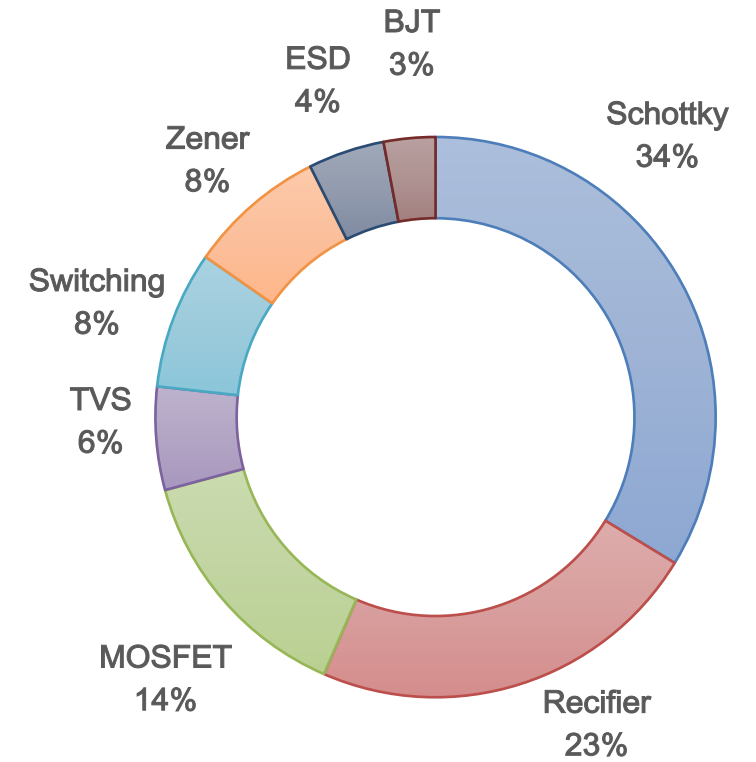
## Application



## Regional

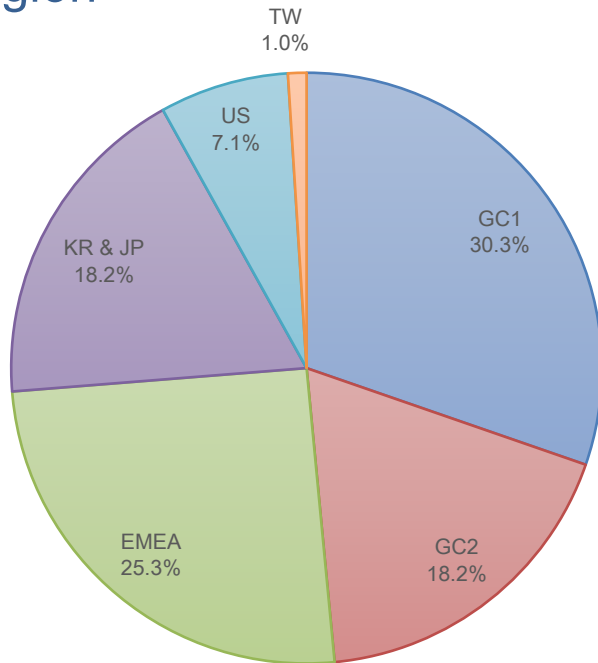


## Function

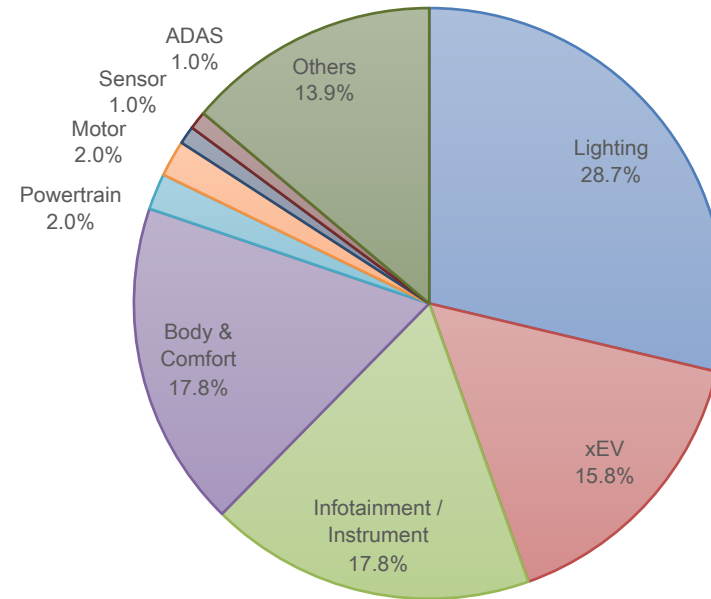


# PANJIT Automotive 2018 Revenue breakdown

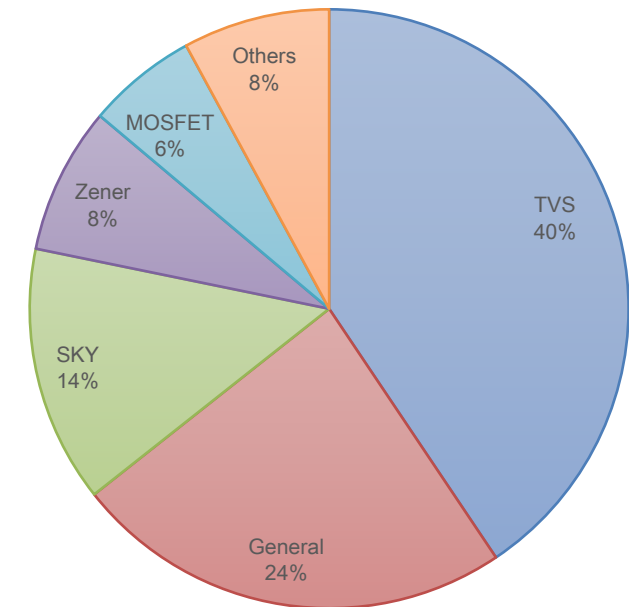
## Region



## System



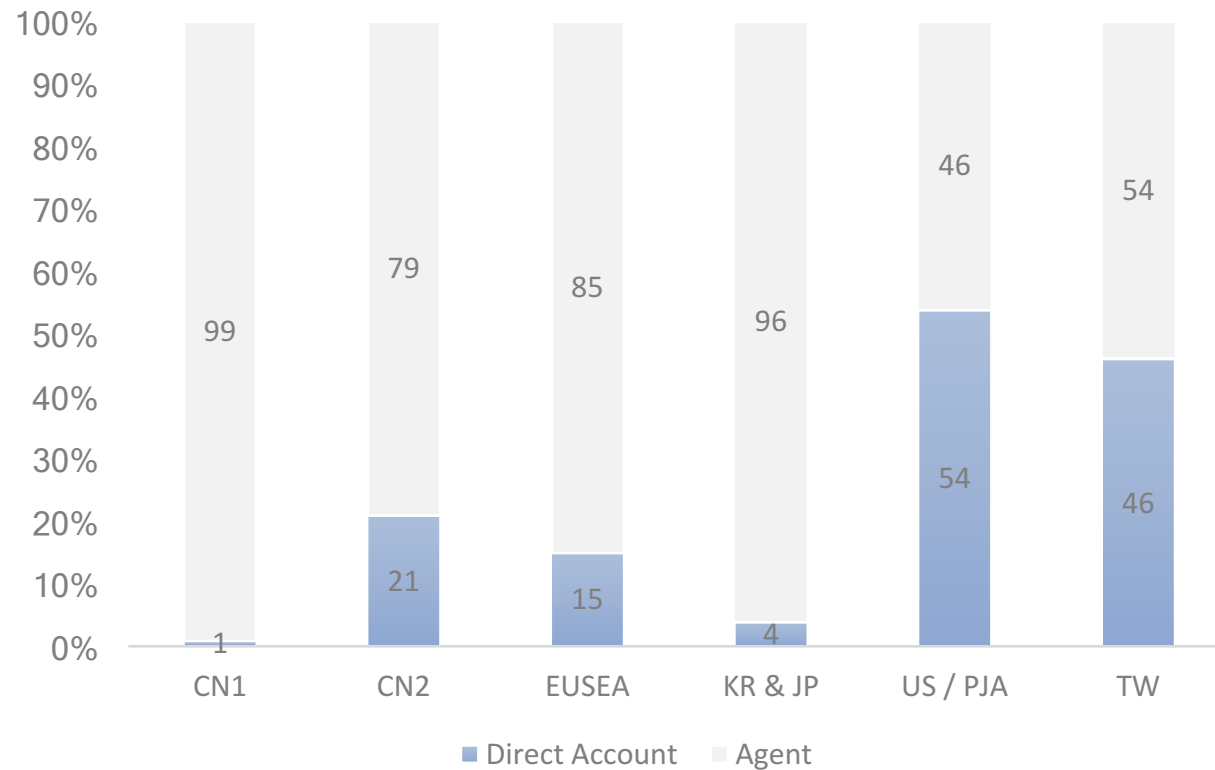
## Function



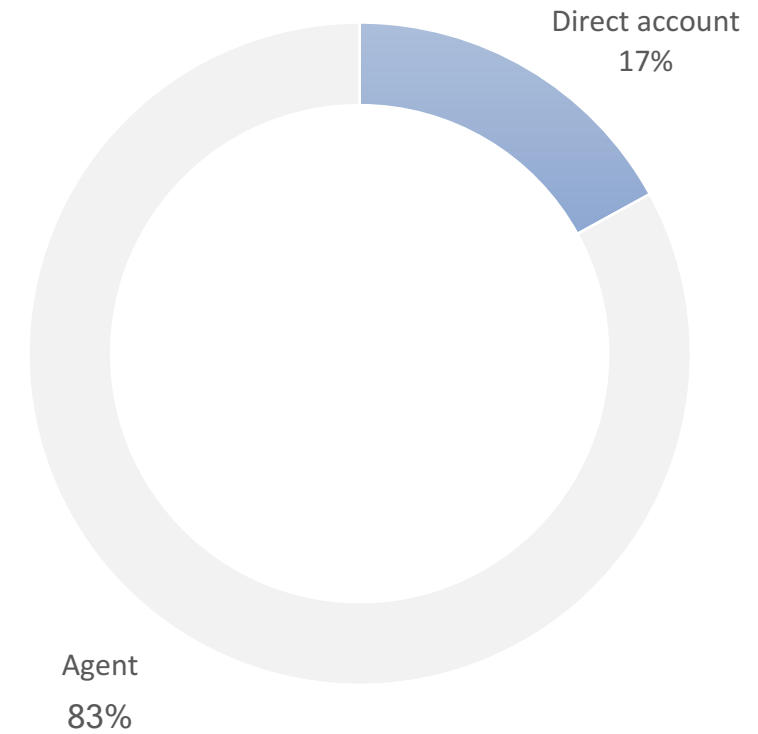


# PANJIT Automotive Market Channel - 2018

## AU 2018 Sales Channel by region

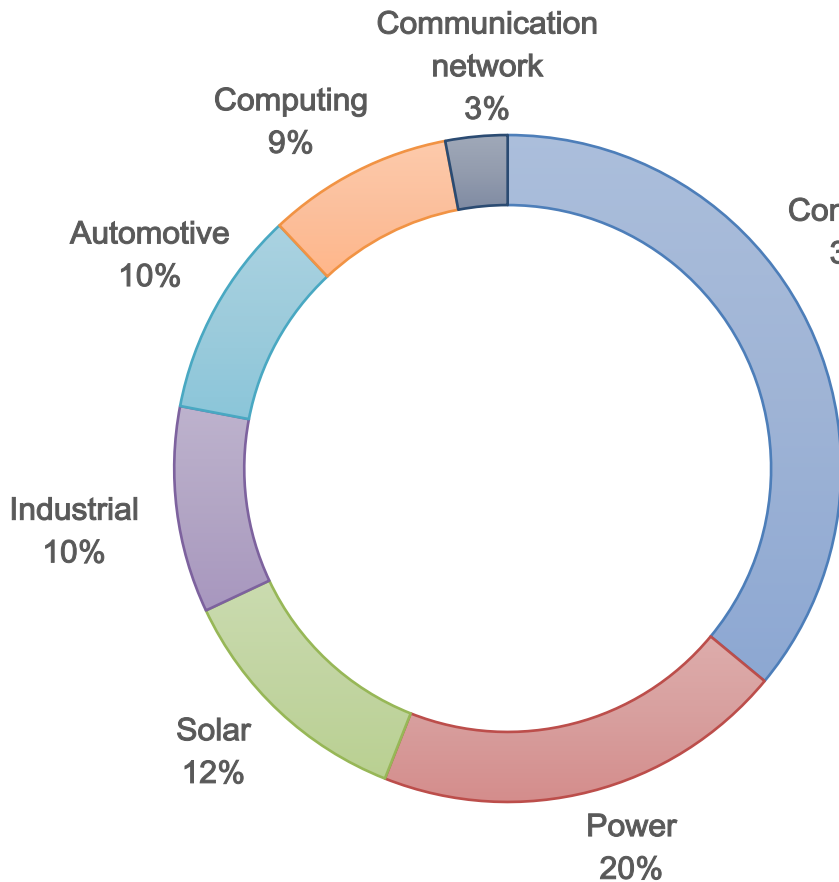


## Sales Channel

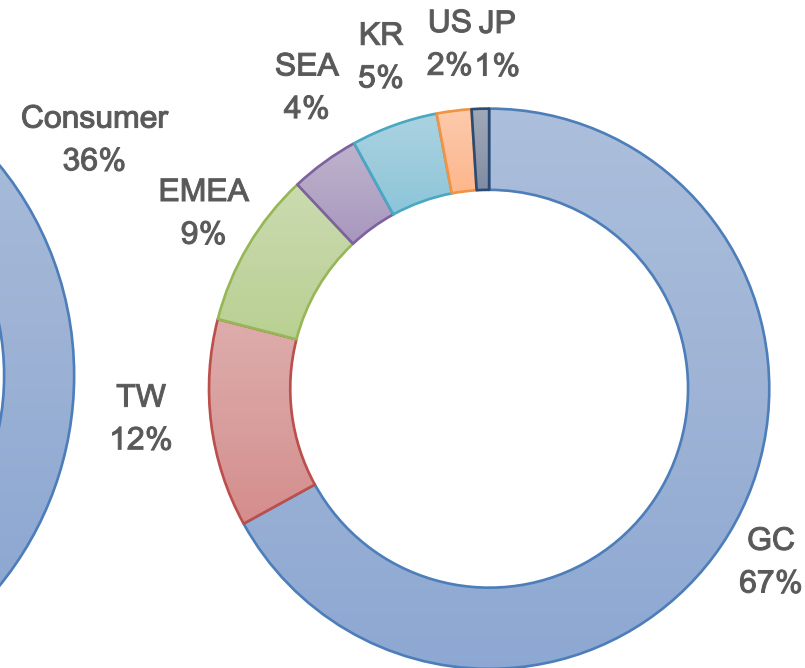


# 2019 Semiconductor BU Q1 Revenue Break down

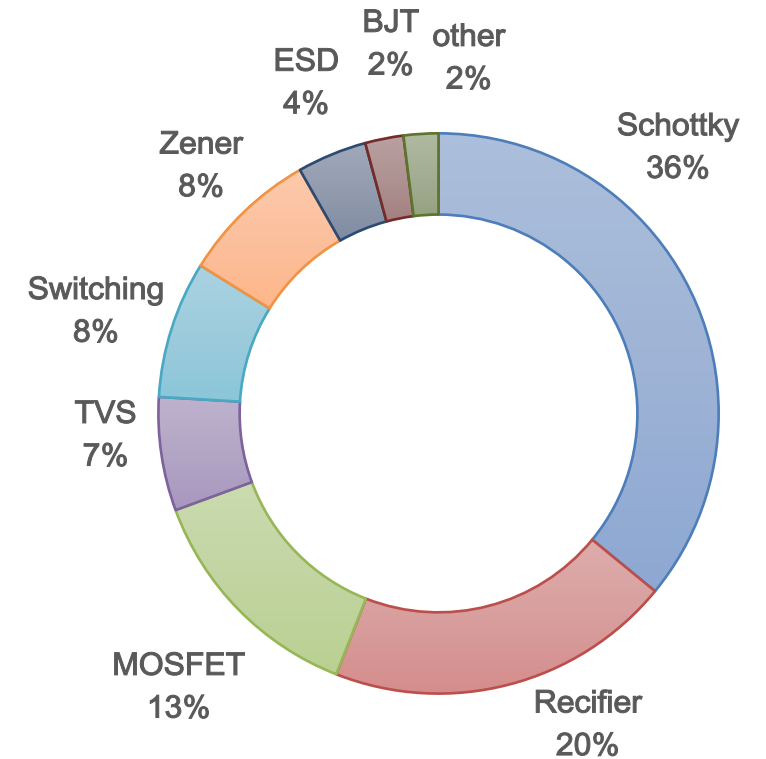
## Application



## Regional

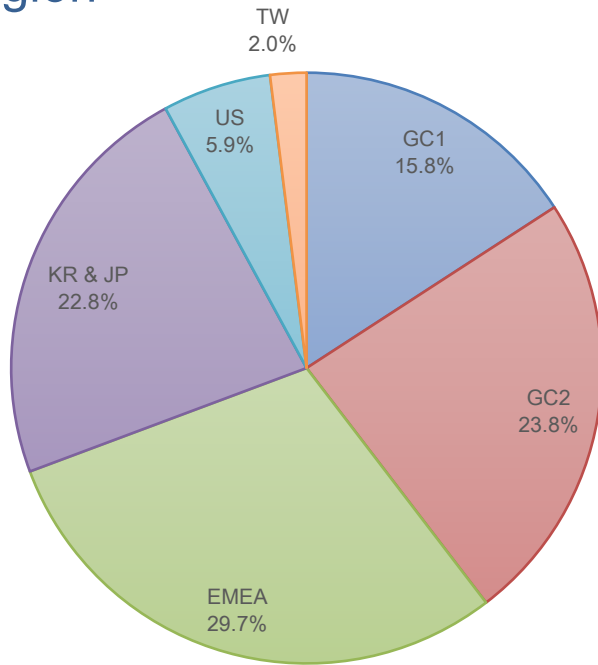


## Function

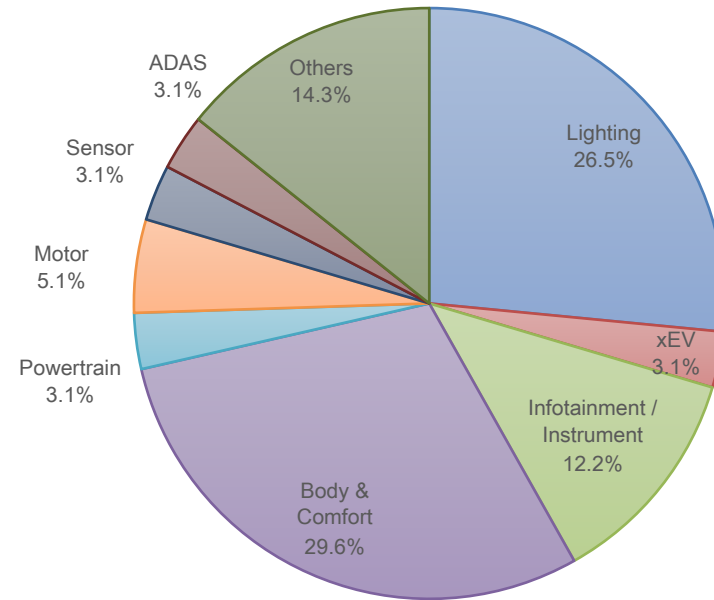


# PANJIT Automotive 2019 YTD Revenue breakdown

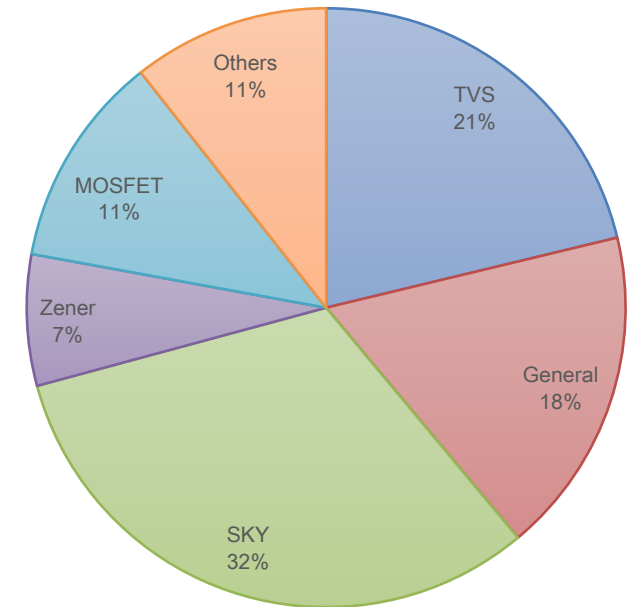
## Region



## System

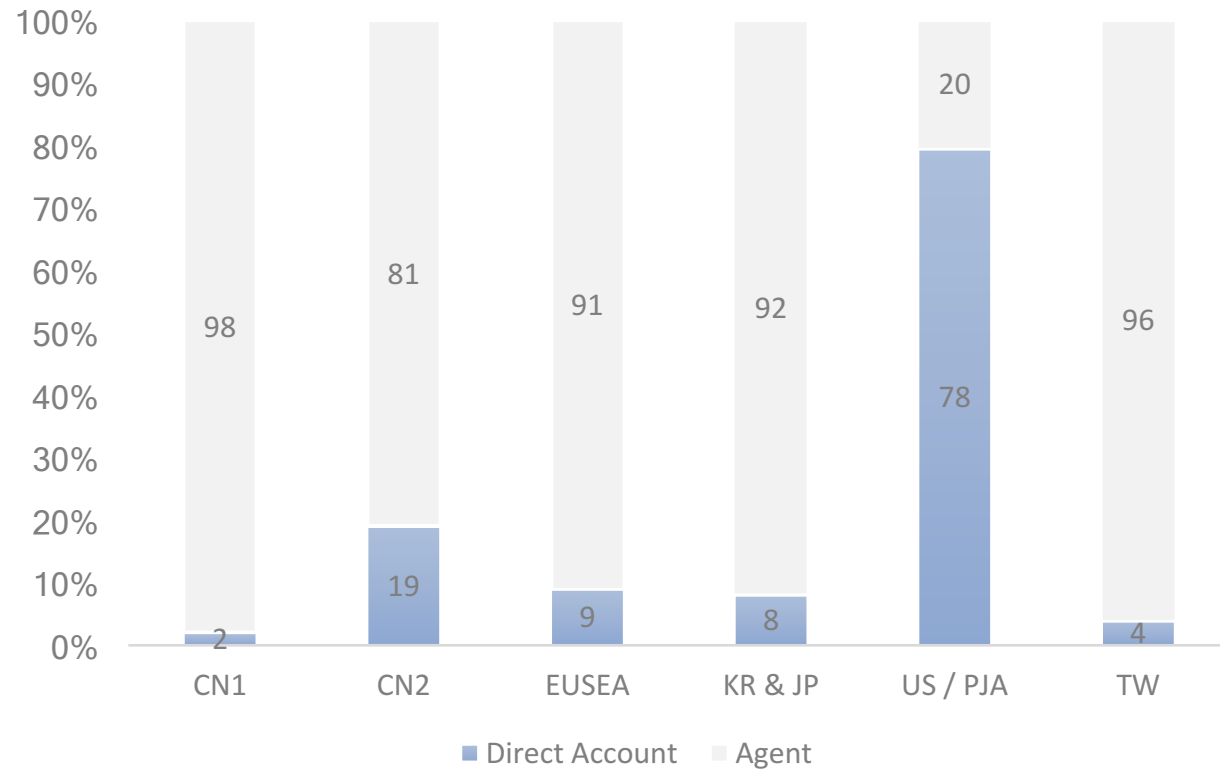


## Function

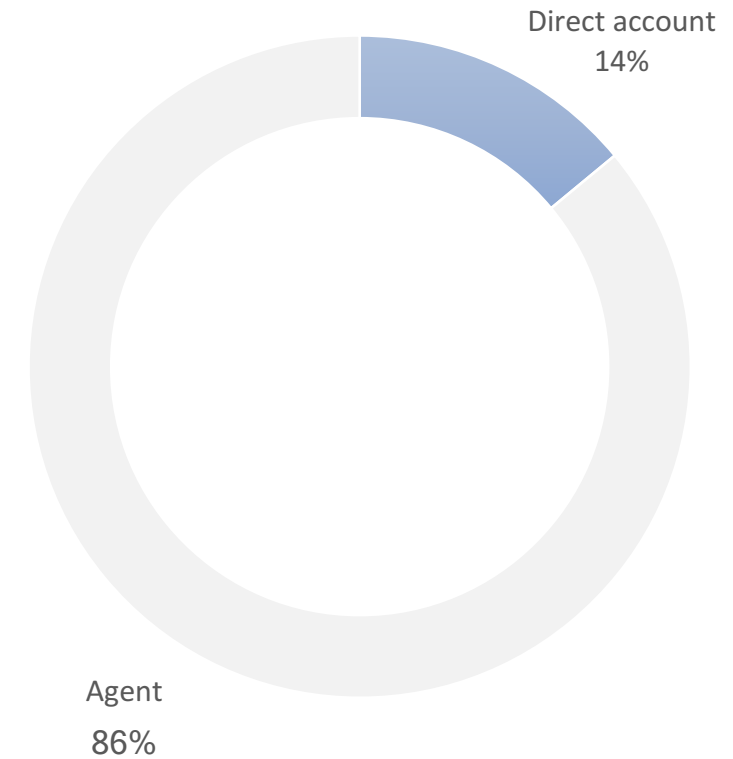


# PANJIT Automotive Market Channel – 2019 YTD

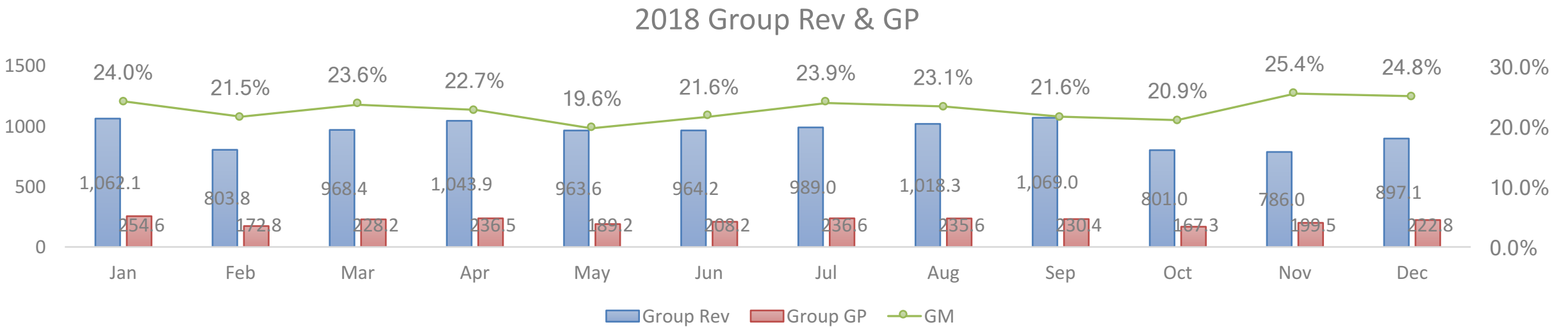
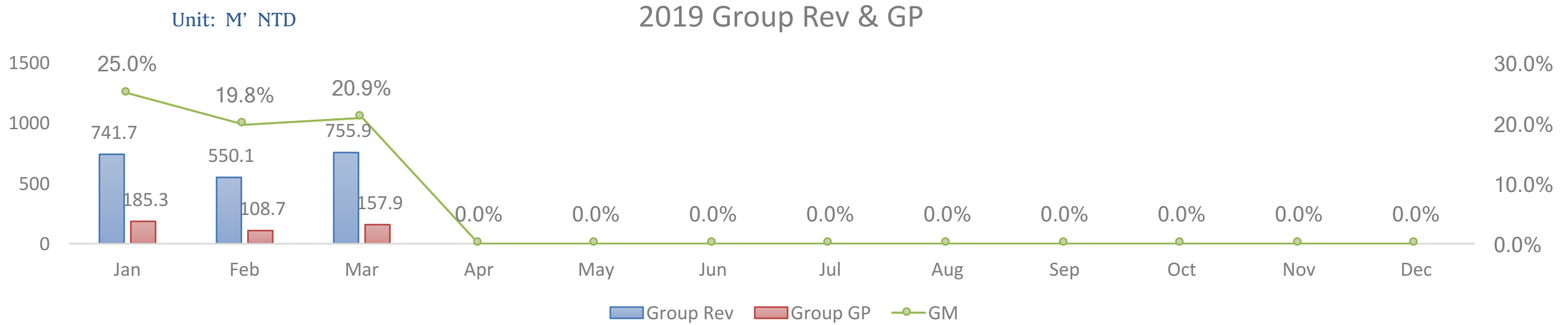
## AU 2019 YTD Sales Channel by region



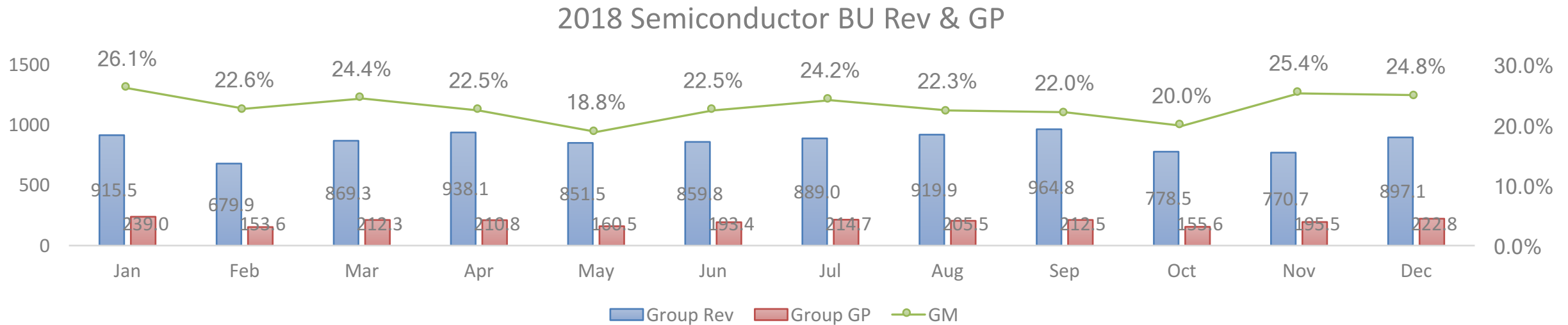
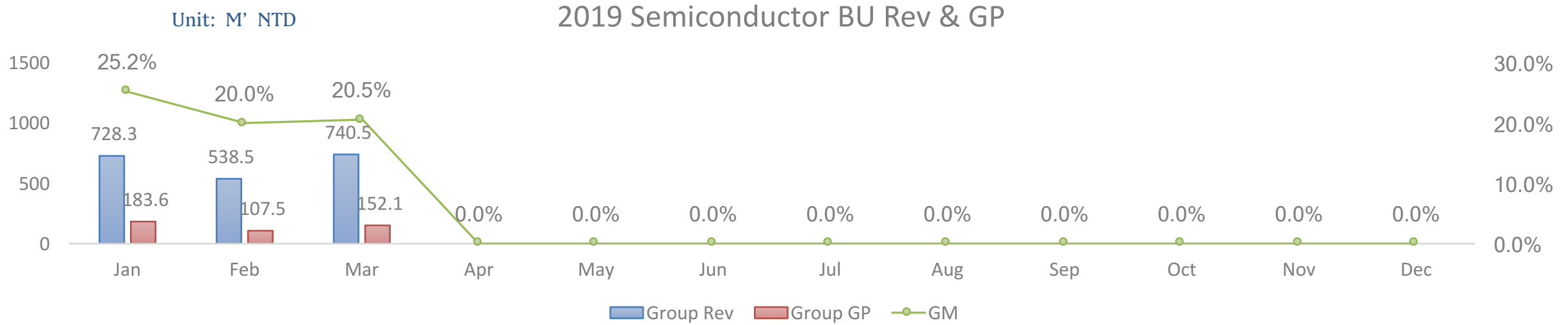
## Sales Channel



# PANJIT Group 2019 & 2018 - Rev & GP

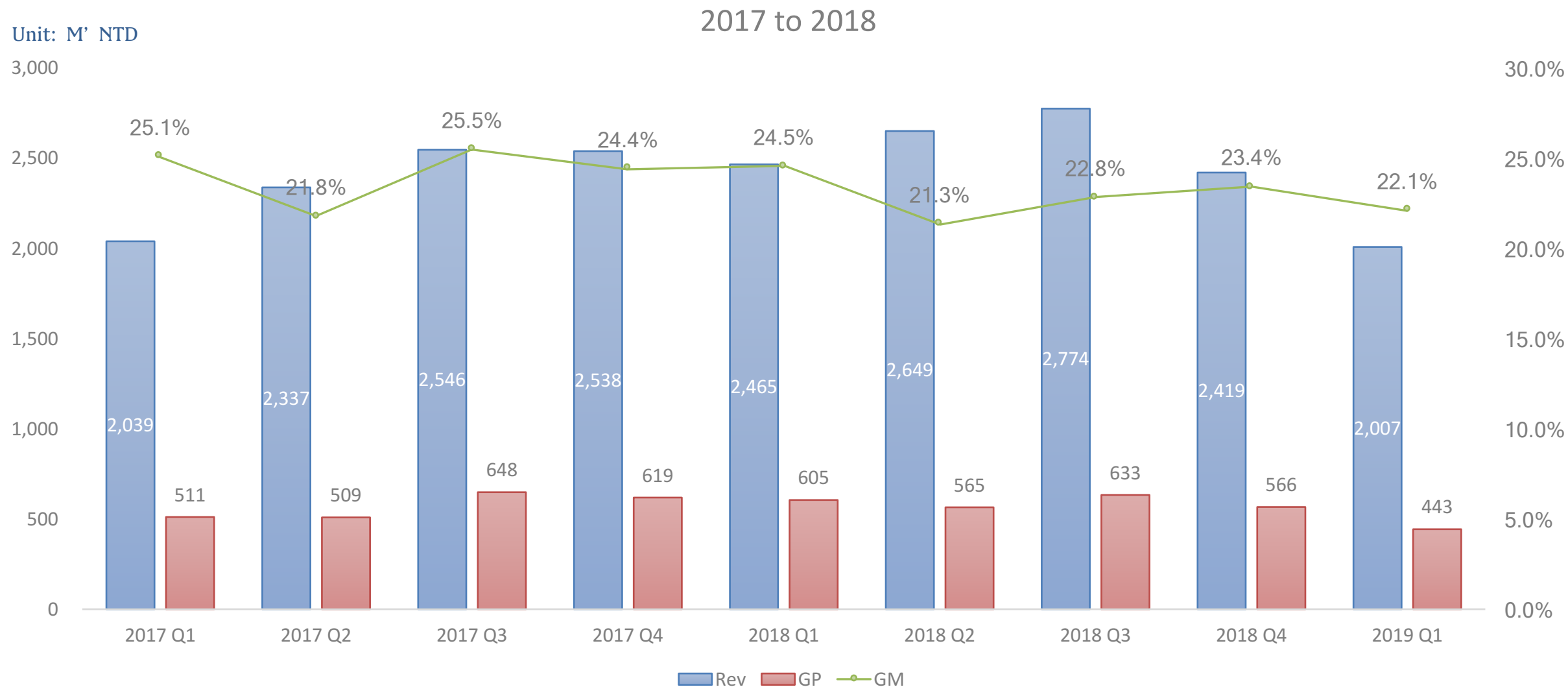


# PANJIT Semiconductor BU 2019 YTD & 2018 - Rev & GP



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# PANJIT Semiconductor BU 2017-2018 seasonal Revenue



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