

688396.SH

IDM

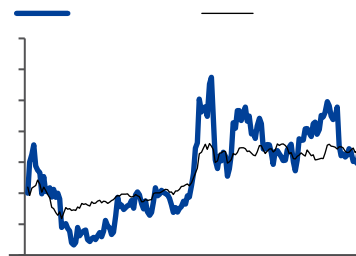
5G

MOSFET

12

8

12



2018A 2019A 2020E 2021E 2022E



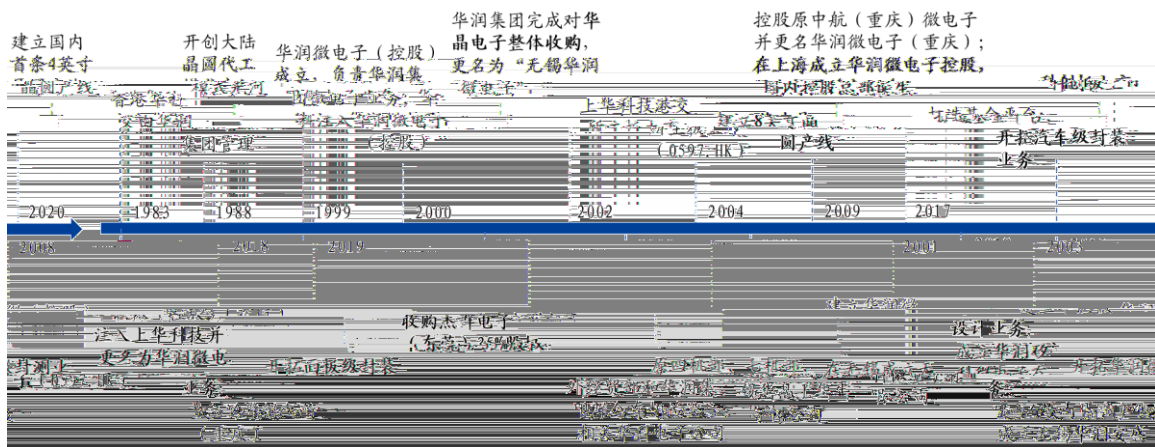


$\& \ddot{Y}ffG$

$\acute{O}\tilde{N}s\acute{U}(h\acute{o}^1$

IDM

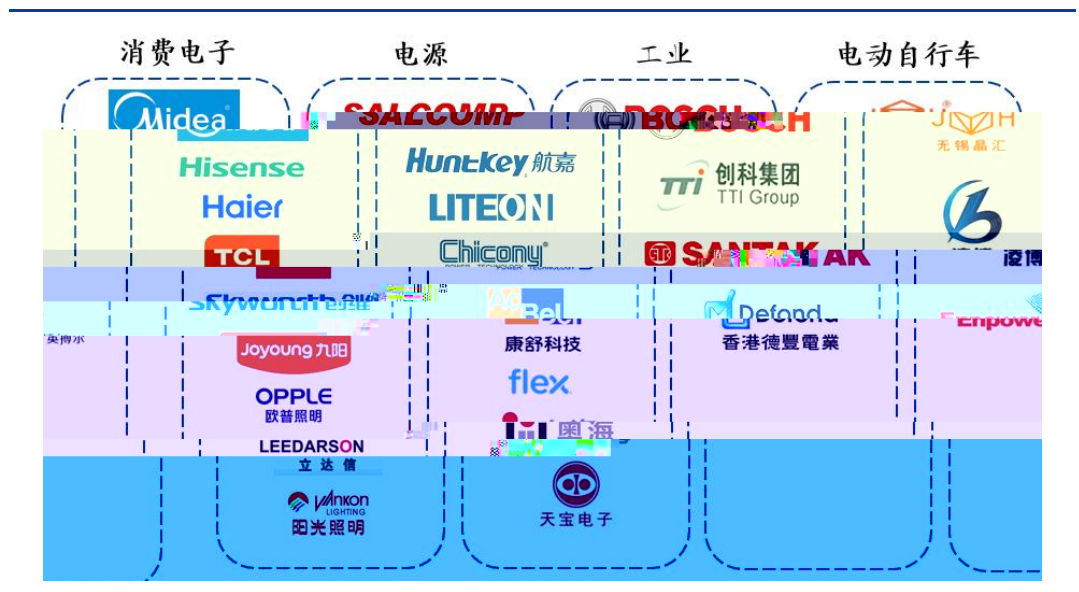
1.1



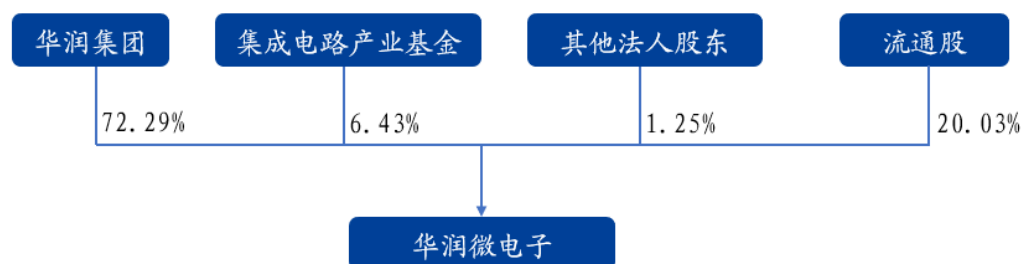
2019	MOS
16	7.5%

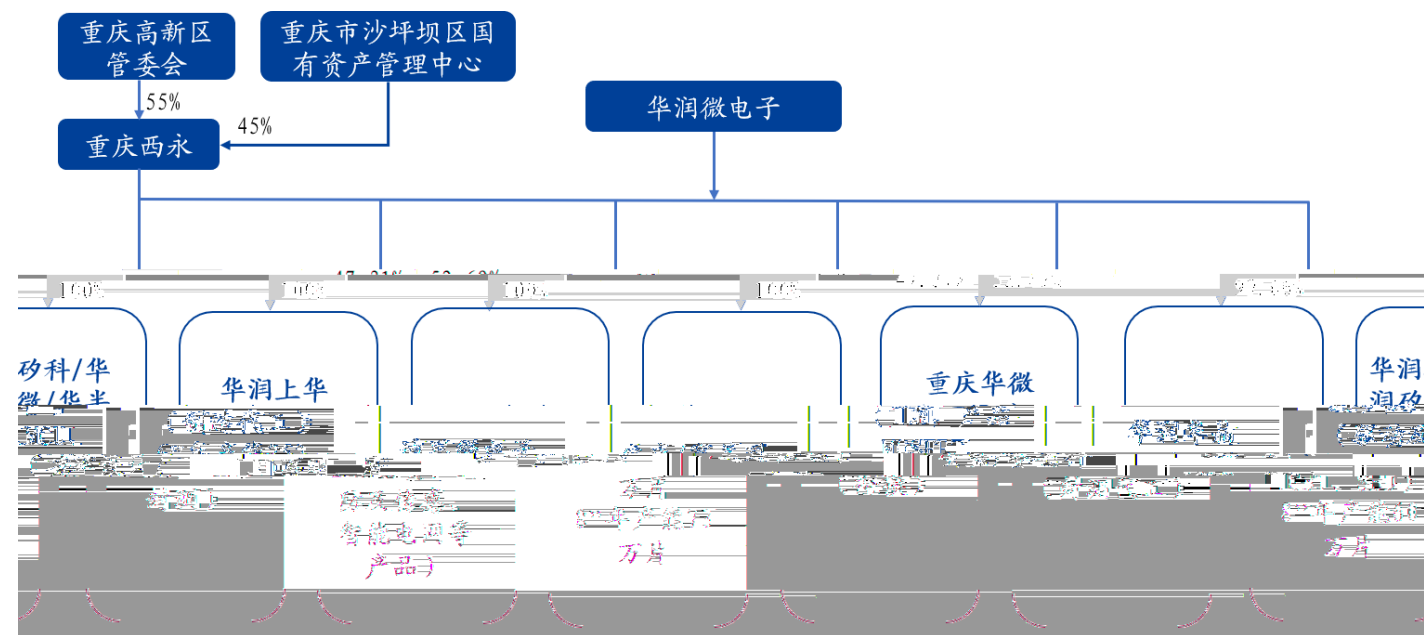
IC

2018

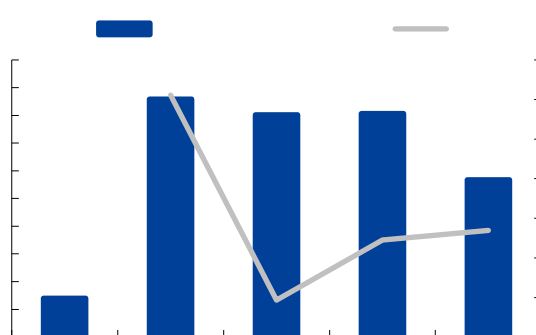
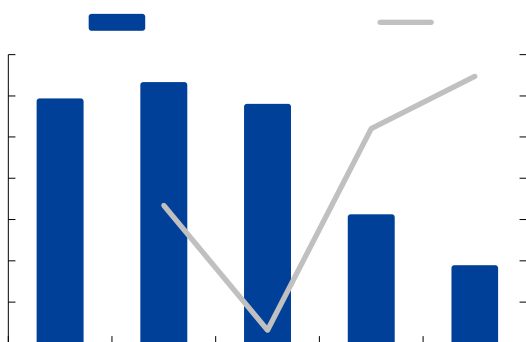


1.3

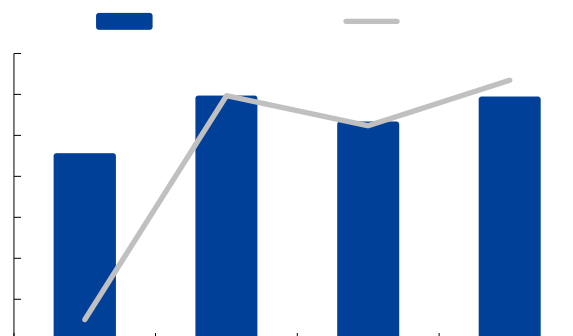
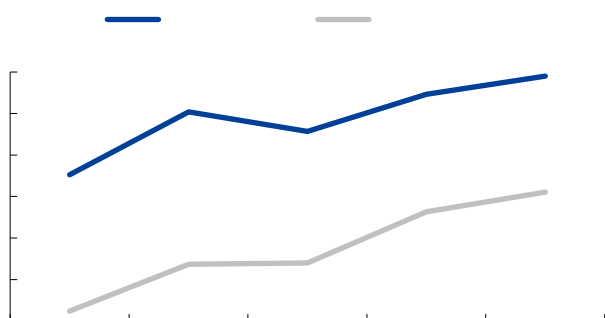


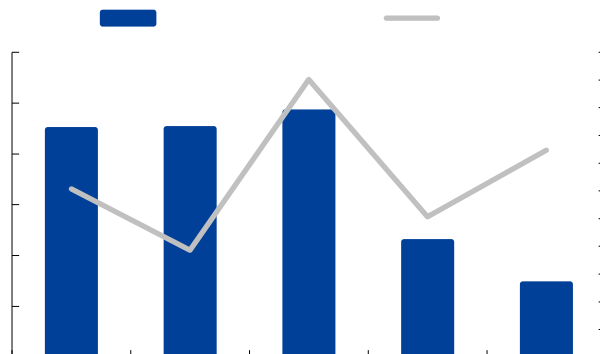
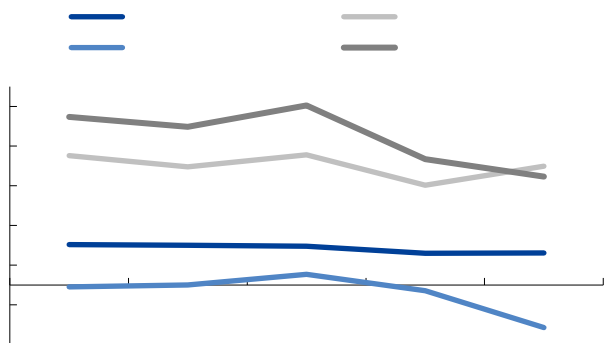


1.4



2019	2018	2017	2019	2018	2017	2019	2018	2017
25.2	26.8	23.4	44.1%	42.9%	39.9%	29.5%	34.0%	19.6%
31.8	35.7	35.2	55.9%	57.1%	60.1%	17.8%	18.6%	16.3%
57.0	62.6	58.6	100.0%	100.0%	100.0%	22.9%	25.2%	17.6%

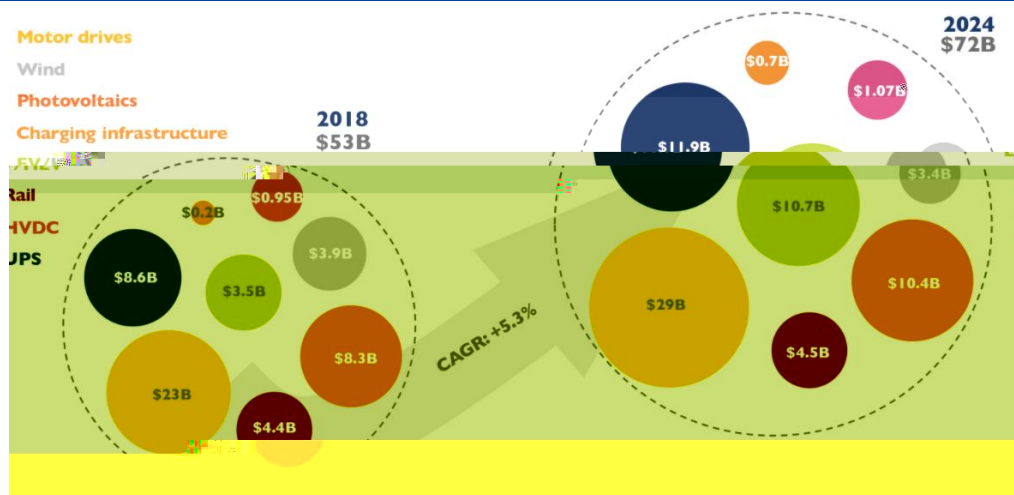




Yole 2018

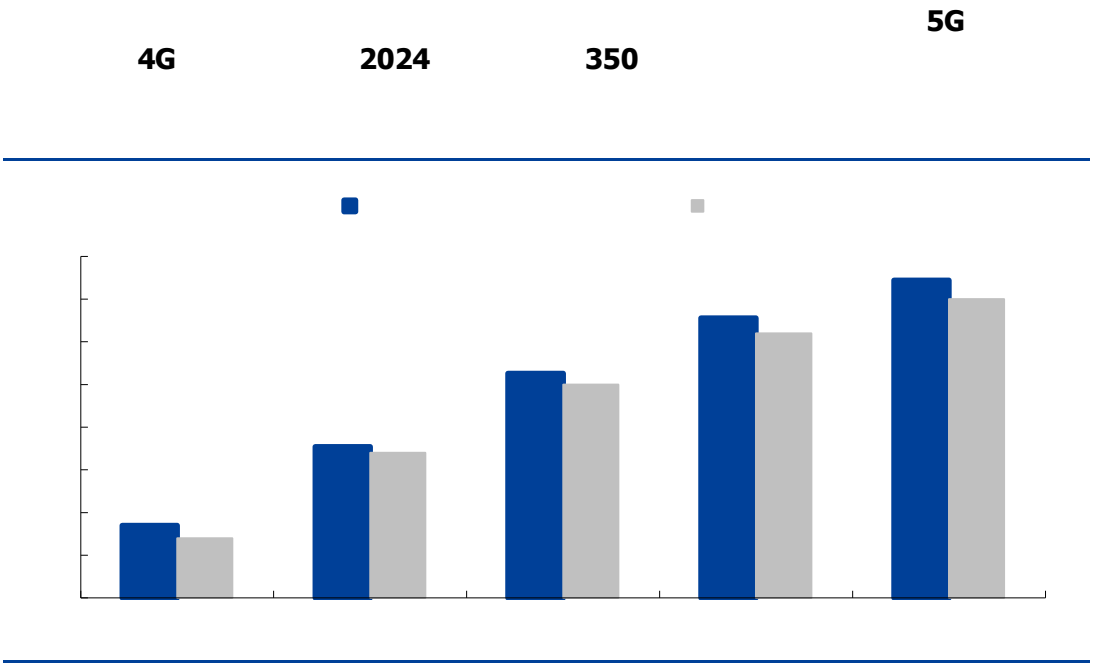
2.1 5G

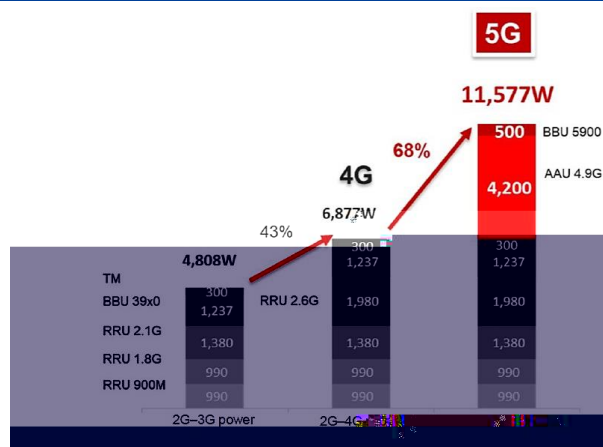




2.1.2 5G

5G			5G	



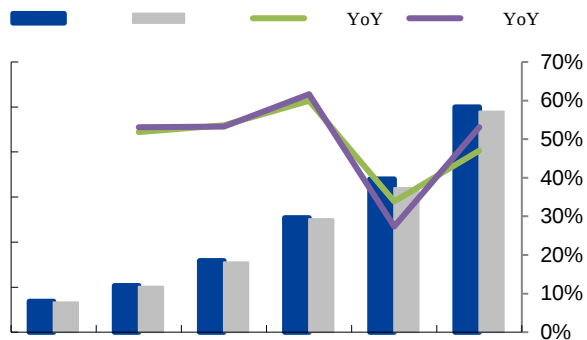
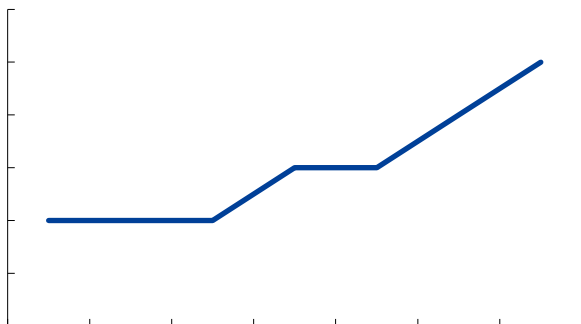


2.2

IBGT

MOS

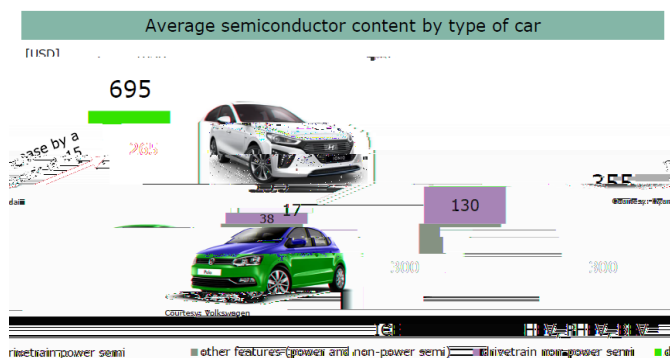
2011	8000	2017	79.4
2.7%		2012-2020	2020
500	200		



			355	/
	695			
			17	/
265	15			

34

35

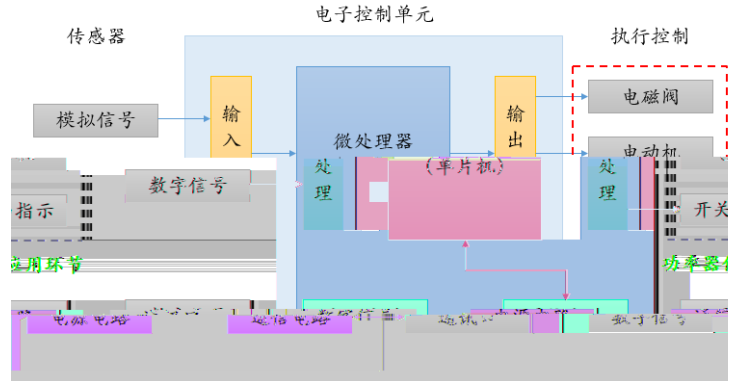
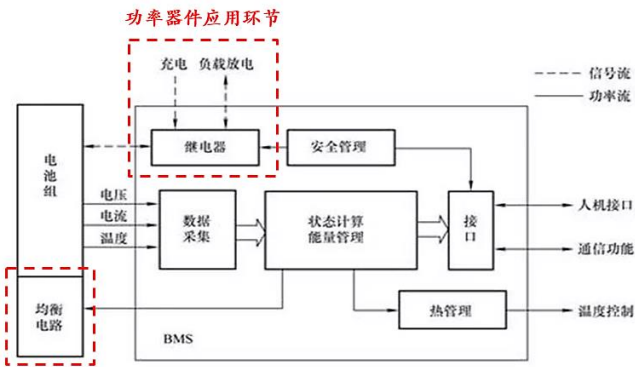
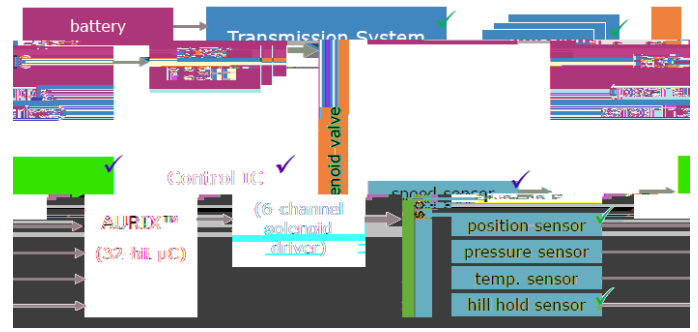
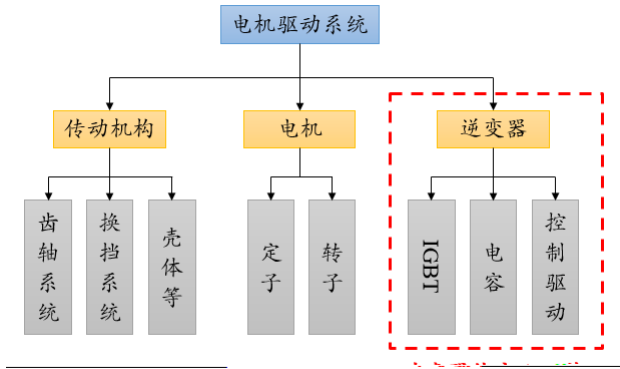


36

	SSV	Mild HEV	Full HEV	PHEV with EREV	EV BEV/FCV
/	MOSFET 1.5-10kw 3.5kw				
DC/DC			MOSFET 1.5-3kw 2.25kw		
		MOSFET/IGBT 5-20kw 15kw	IGBT 20-150kw	70kw	
			IGBT 20-40kw	30kw	
OBC +				MOSFET 3-6kw	
				IGBT 10-40kw	
	3.5kw	17.25kw	52.25kw	56.75-102.5kw	
NE					

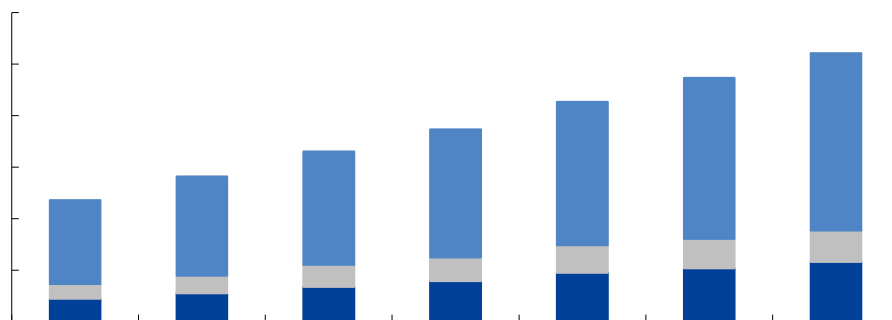
IGBT

SiC MOSFET



EV/HEV

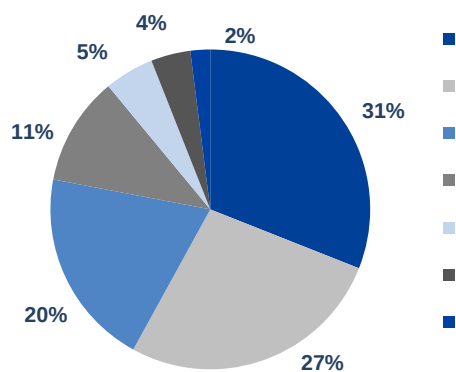
		EV/HEV			
Yole	2017	BEV	2.2	2023	
		22%	5.8	HEV	
2017	8.1	2023	17.2	CAGR	43.4%



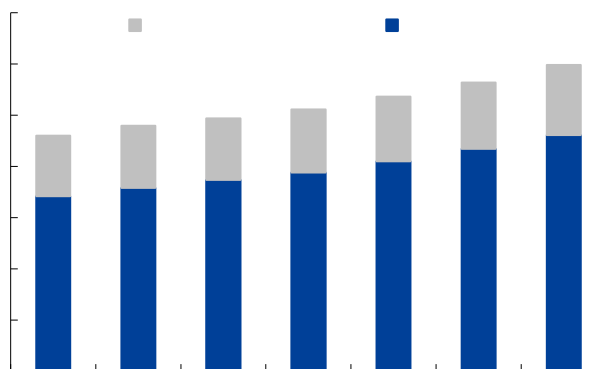
IGBT

IGBT
 2018 IGBT
 31% HIS Markit 2017 IGBT
 IGBT 50 2020-2025 47.9 Yole 2019
 CAGR 5%

2018 IGBT



IGBT



Yole

IGBT

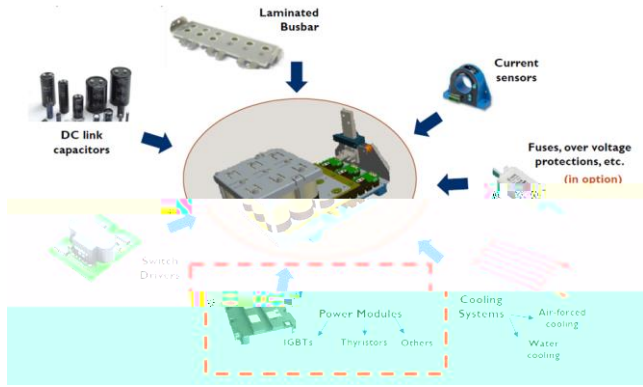
50%

IGBT IGBT

IGBT

IGBT
 / (DC/AC)

44



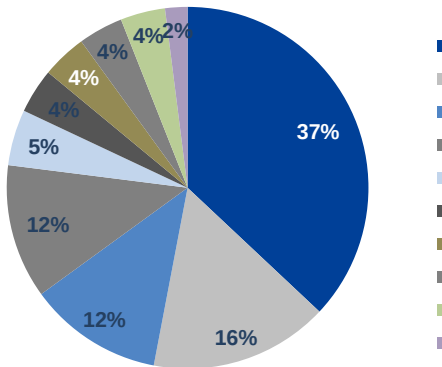
IGBT

IGBT

36

96

46

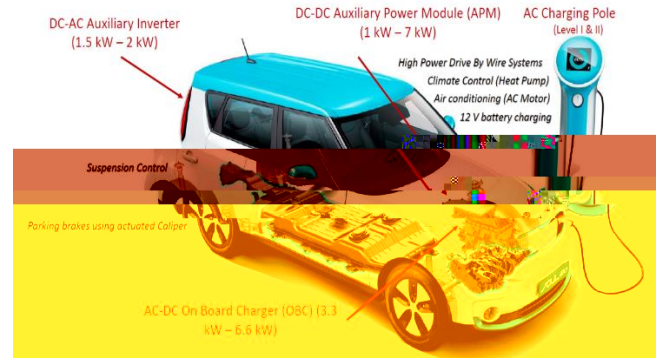


MOSFET

MOSFET

45

IGBT



15~20%

40%

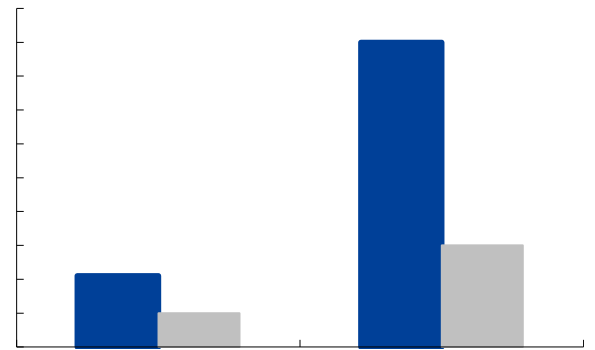
5%

IGBT
Model X
650

20%
132 IGBT

47 2025

IGBT



Trendforce

IGBT

Trendforce

IGBT
2018-2025 8
IGBT

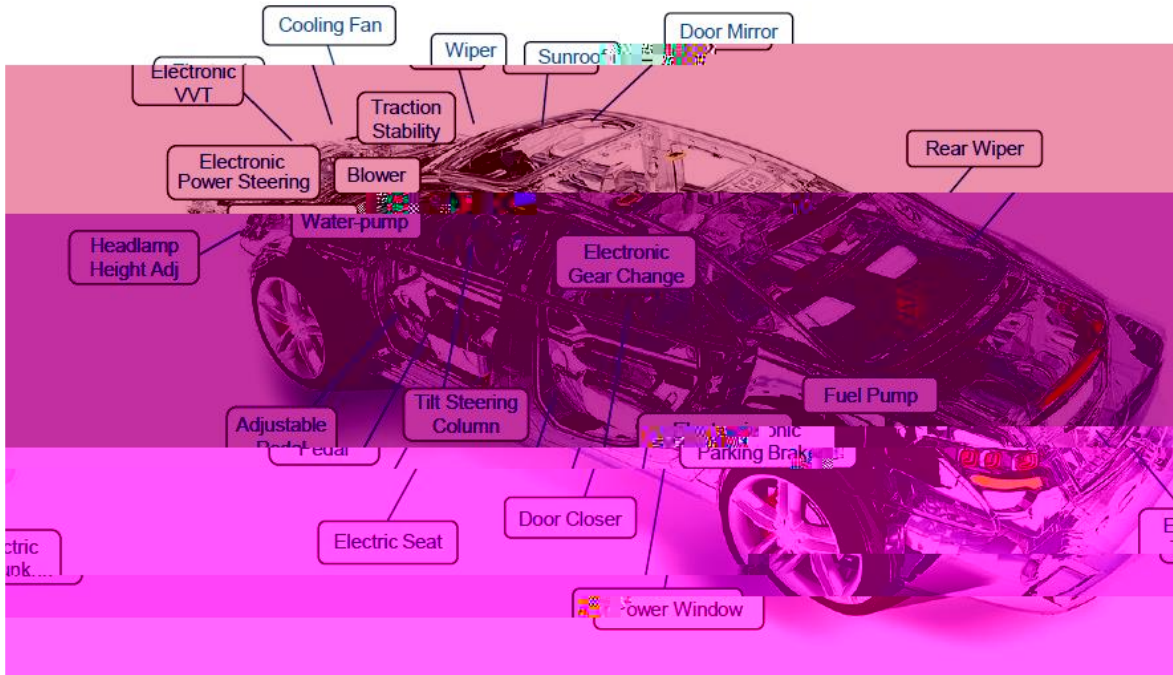
2025 900
100 8

IGBT 210
2025 300

IGBT MOSFET

IGBT
MOSFET

IGBT 1000V 350A

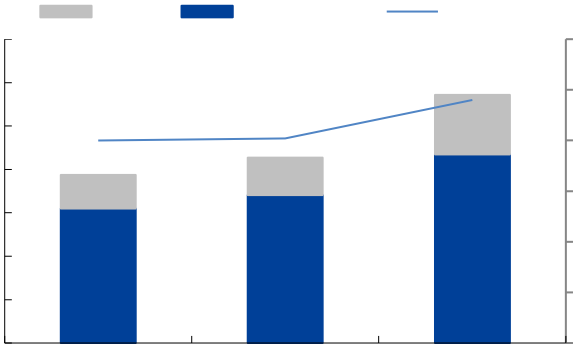
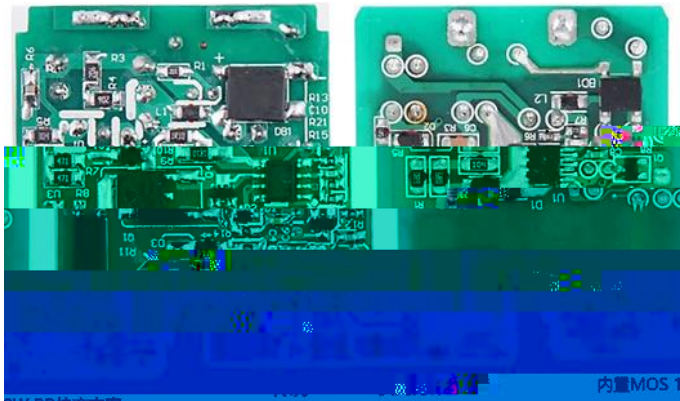


Didodes

2.3

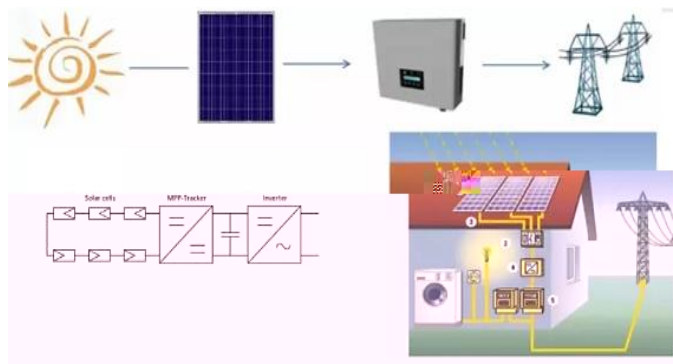
MOSFET

				iPhone 12	
	BCC Research	2017			85.49
20%	2022		27.4		24%
	MOSFET	MOS			
	MOS		MOS		



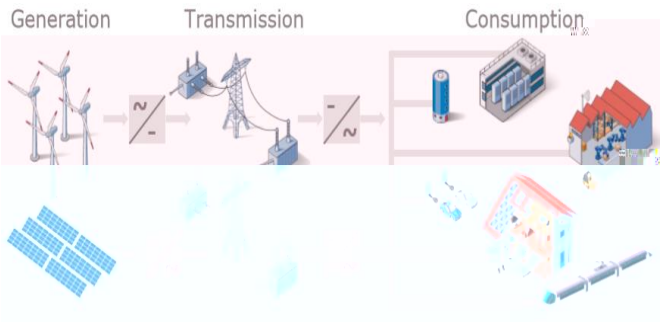
15%-30%

55



56

IGBT



BP 2018 Energy Outlook

IGBT		CRH3		4	
32	IGBT	IGBT	128	IGBT	
		10		3300	
IGBT		10	20	3300	IGBT
		15			

3.1

/

4-6

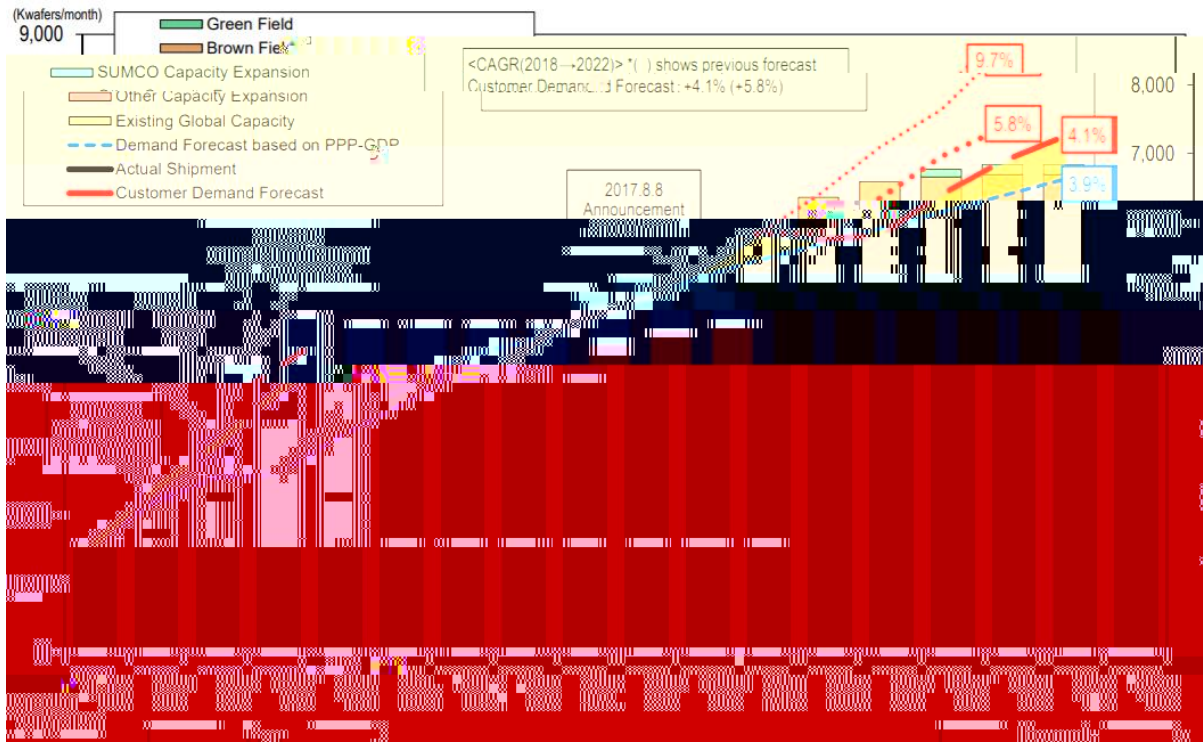
raw wafer

10%

12

8

SUMCO	2019
	DRAM
NAND	
23	200 /



SUMCO

8

8

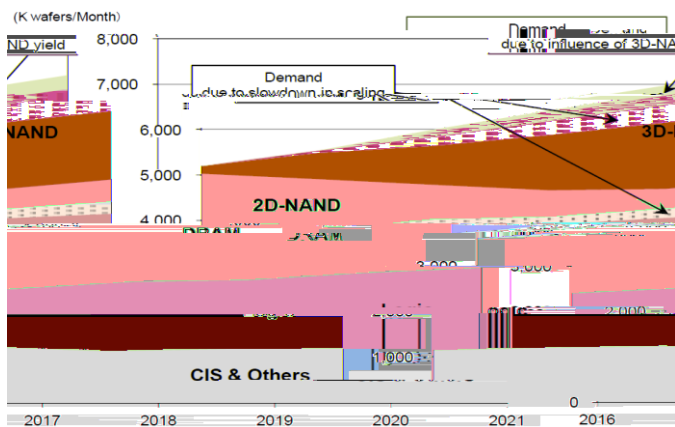
CIS PMIC Nor Flash

IC
MEMS

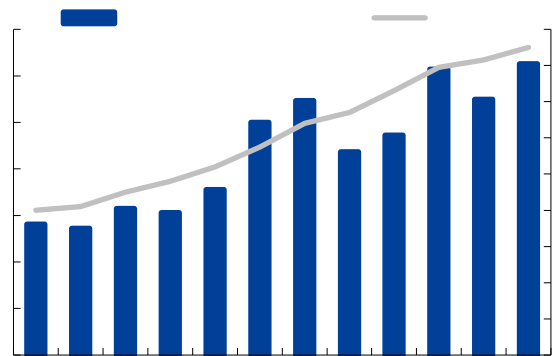
59 12

60 12

2020-2023



Semico



AnySilicon

8

6

12

8

MEMS

1990

2007

8

12

12

IC Insights

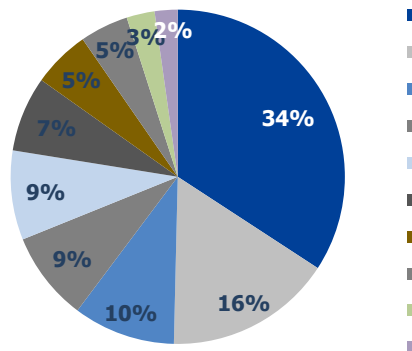
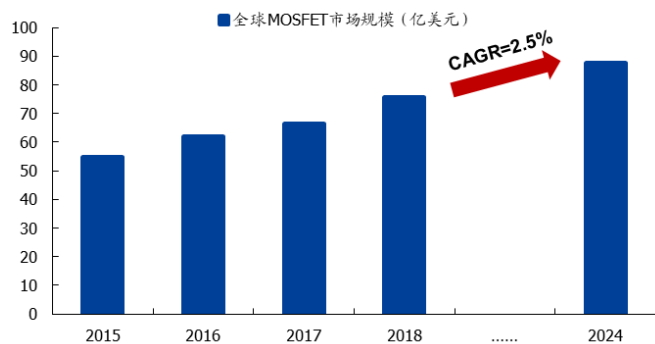
12

2009-2017

87

CAGR 2.5%
 62.8% TOP1

MOSFET
 27.7%



PMIC CIS IC Nor Flash 8 MOSFET 8

2017 MOSFET 2017 MOSFET
 8-12 MOSFET 2019 MOSFET 12 MOSFET
 16 MOSFET 20 MOSFET 2020 MOSFET

4.1 IDM

	PE-TTM	PB
