

(688396)

2020 12 16

# IDM

(688396)

67.63

IDM  
IDM

MOSFET IGBT SBD FRD

52	/	72.95 / 32.38
A		249.04
A		1215.93
		16842.90
		82233.02

IC

48V/

90 / / 330 /  
200

10-20  
MCU IPM 2019 MCU  
12% IPM 7% 5G  
2023 GaN 70

Wind

—2021
2020-11-29
- 8
2020-11-01
IDM 2020-
10-20
- -
2020-09-18
- 688396
2020-07-29
-
2020-07-14

IGBT

MOSFET  
12

2017-2018 MOSFET PC 8  
CMOS

2020-2022 9.93 14.40 17.51  
83x 57x 47x “ ”



S0020520060001

021-51097188-

	2018	2019	2020E	2021E	2022E
( )	6270.80	5742.78	6884.80	8365.76	9788.60
%	6.73	-8.42	19.89	21.51	17.01
( )	429.44	400.76	993.05	1439.79	1750.93
(%)	511.02	-6.68	147.79	44.99	21.61
ROE %	10.35	7.39	9.86	12.61	13.39
	0.35	0.33	0.82	1.18	1.44
(P/E)	191.49	205.20	82.81	57.11	46.97

Wind

1.	IDM	.....	5	
1.1	IDM	.....	5	
1.2		.....	6	
1.3		.....	8	
1.4		.....	9	
1.5		.....	12	
1.5.1		.....	12	
1.5.2		.....	13	
1.5.3	IDM+	.....	14	
1.6		.....	14	
2.		.....	16	
2.1		.....	16	
2.1.1		.....	16	
2.1.2		.....	17	
2.2	AIOT	MEMS	.....	22
2.3			.....	25
2.3.1		PMIC MCU IPM	.....	25
2.3.2			.....	30
2.4			.....	35
2.4.1			.....	35
2.4.2			.....	38
3.		.....	40	
4.		.....	41	

1	.....	5	
2	2019H1	.....	6
3		.....	7
4		.....	7
5		.....	7
6		.....	7
7		.....	7
8		.....	8
9		.....	9
10		.....	9
11		.....	10
12		.....	13

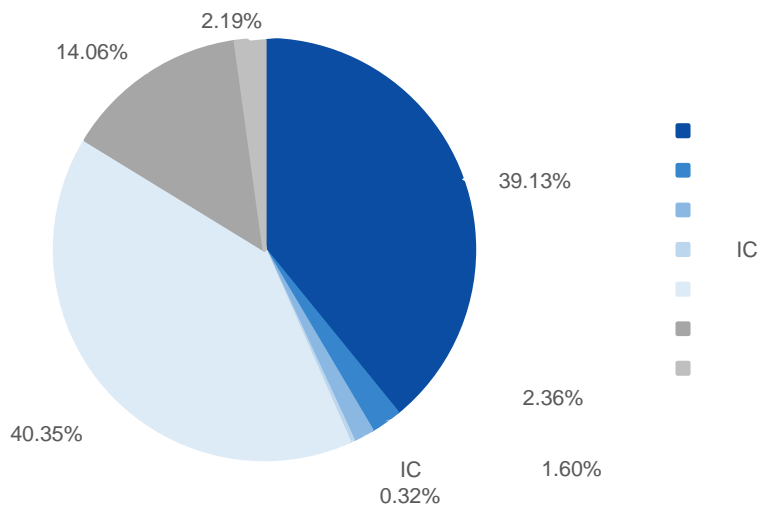
13	.....	13
14	IDM .....	14
15	.....	16
16	.....	16
17	.....	17
18	2019 .....	17
19	2018 .....	17
20	2016-2018 .....	17
21	.....	18
22	48V/ .....	18
23	/ .....	18
24	.....	19
25	.....	19
26	.....	19
27	.....	20
28	.....	20
29	.....	20
30	.....	21
31	.....	22
32	.....	22
33	.....	22
34	MEMS .....	23
35	MEMS .....	23
36	MEMS .....	23
37	2019 MEMS .....	24
38	2016-2021 MEMS .....	24
39	MEMS .....	24
40	.....	24
41	MEMS .....	25
42	.....	26
43	IC .....	26
44	IC .....	26
45	IC .....	27
46	.....	27
47	.....	27
48	MCU .....	28
49	2019 MCU .....	28
50	2019 MCU .....	28
51	2019 MCU .....	28
52	IPM .....	29
53	IPM .....	29



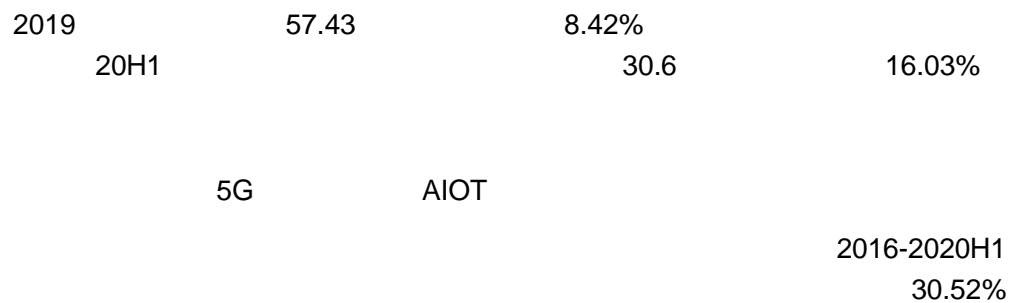


SBD		SBD	SBD	45V-150V
	200mA-30A			
FRD		200V-6500V		
AC/DC	AC/DC			
LED	IC	LED		
BMS	IC			
	IC	78 1117		100mA-1A
IC	IC			100W
	IC			
	IC	AB	D	
	5mW50W			

## 2 2019H1



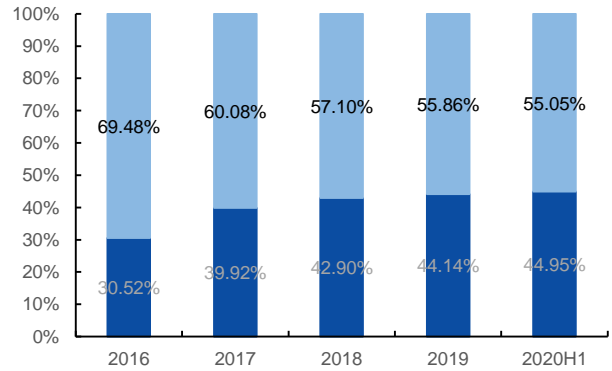
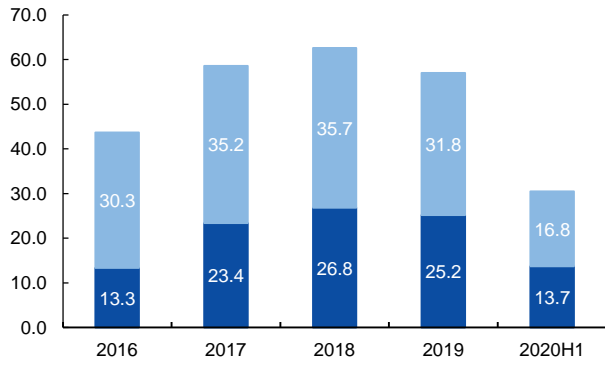
### 1.2



44.95%  
22.31% MOSFET  
49.90%  
2020H1  
21.43% IGBT

3

4



Wind

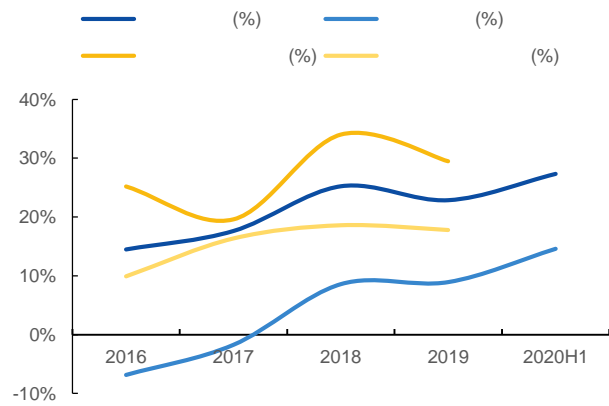
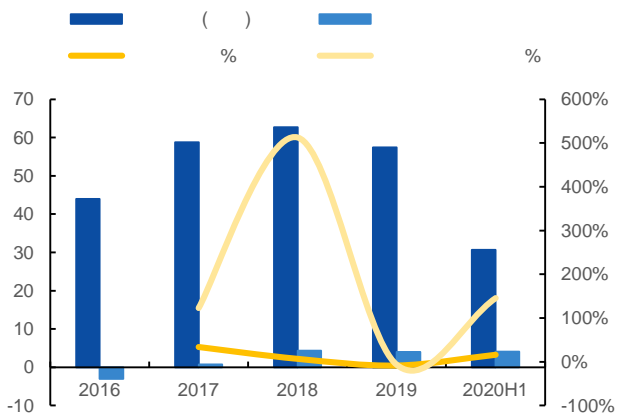
Wind

2016-

2018  
22.8%  
2.36% 20H1  
2019  
27.3%

5

6

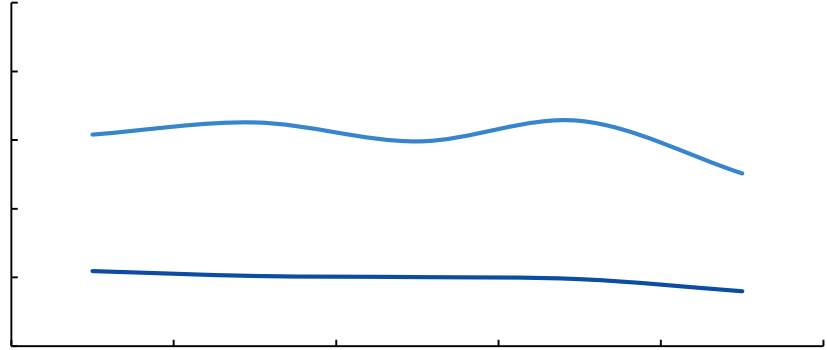


Wind

Wind

7-8%  
2019H1  
2020H1  
7.33%  
5.4%

7



Wind

1.3



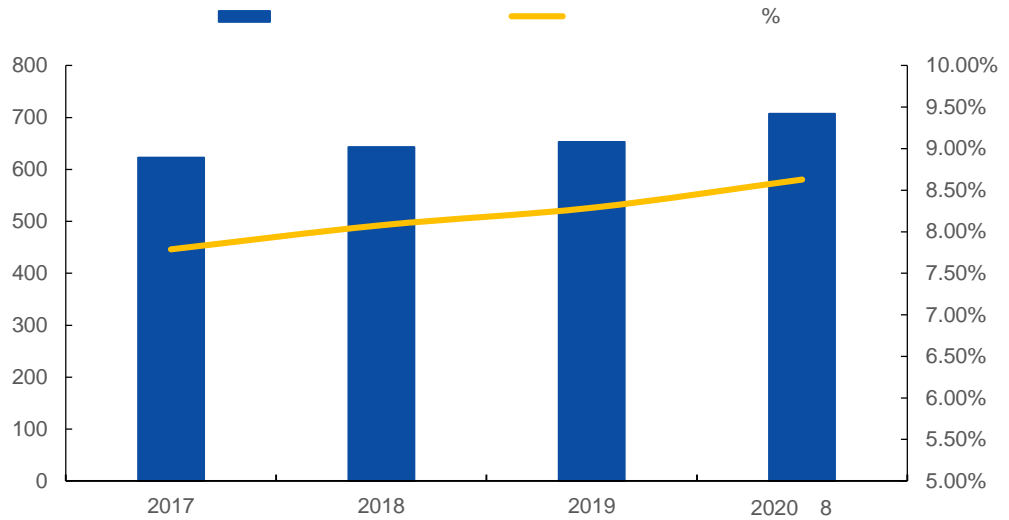
8

IC





11



Wind

2

2019 6

								MEMS	IPM	48		
								MOS	IGBT	SBD/FRD	123	
ASIC	MCU	SOC	IC	,	MCU	ASIC			177			
								BCD	MEMS	anal og	CMOS	154
								QFP	QFN	3D	IPM	54
										8		
										28		
								IC	BMS	AC-DC	44	
										5		
										641		

SBD

BCD

3

/

MOS

FOM

MOSFET

VDMOS

UIS

EMI

MOS

500V		SOI-BCI		43,640,800	2,785,300	6.4%
20-30V DrMOS		20-30V DrMOS		PC	20,000,000	0 0.0%
AC-DC Fly-back		USBPD		LED		20,000,000 0 0.0%
GaN		GaN		39,480,000	745,100	1.9%
0.11	BCD	BCD	BCD	PMIC	subPMIC	78,750,000 2,766,100 3.5%
MEMS		FC QFN, LGA		550,000,000	332,805,780	60.5%
32		MCU		15,000,000	1,273,300	8.5%
200V		200V		42,000,000	1,534,200	3.7%
MOS		4500V VDMOS		10,000,000	432,244	4.3%
				4,500,000	390,756	8.7%

2020

## 1.5

### 1.5.1

2016-2019H1

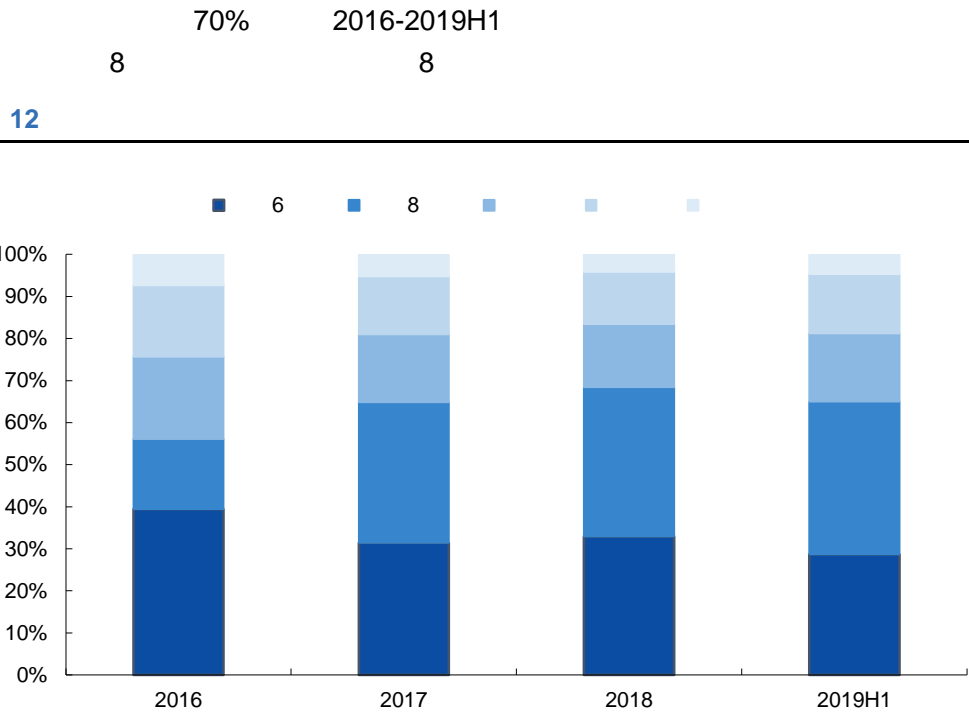
20%

15%

#### 5 2019H1

(			
	9724.23	9%	0.2548
	6354.22	6%	0.1674
SK Siltron Co Ltd	3293.99	3%	0.0868
SUMCO Corporation	2379.01	2%	0.0627
	2298.79	2%	0.0571
	24050.24	22%	

2019  
TOPCO SCIENTIFIC Co., Ltd.



1.5.2

13

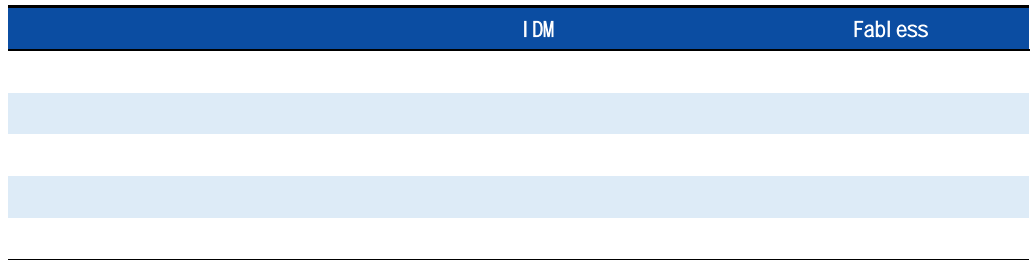
产品终端代表性客户

代工服务代表性客户

1.5.3IDM+



6 IDM Fabless



14 IDM

**IDM模式在功率半导体行业中的优势**

IDM模式经营的企业在研发与生产各环节的积累会更为深厚，更利于技术的积淀和产品群的形成与升级，从而增强市场竞争力、建造壁垒。

1.6

	42		8	2020	3	IPO
42		15	8			6
			3			
50						
	3		42		38	

## 5G AIOT

7

8	150,000.00	150,000.00	25,797.19	17.20%
IPO	60,000.00	60,000.00	0	0.00%
42	30,000.00	30,000.00	12,696.68	42.32%
	60,000.00	60,000.00	15,998.83	26.66%
50	420,000.00	380,000.00	0	0.00%
	120,000.00	120,000.00	0	0.00%

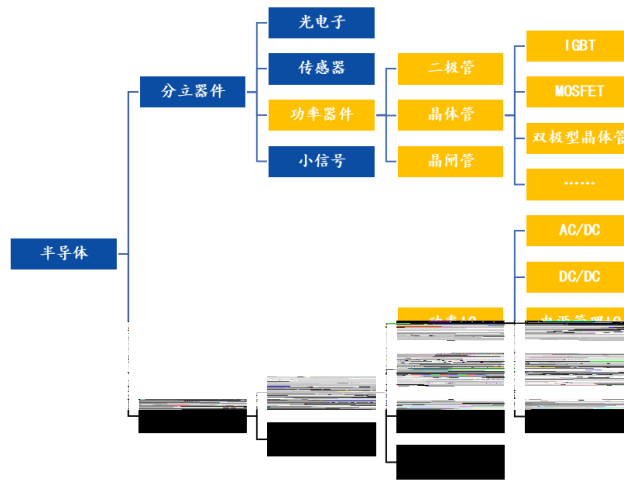
## 2.

### 2.1

#### 2.1.1

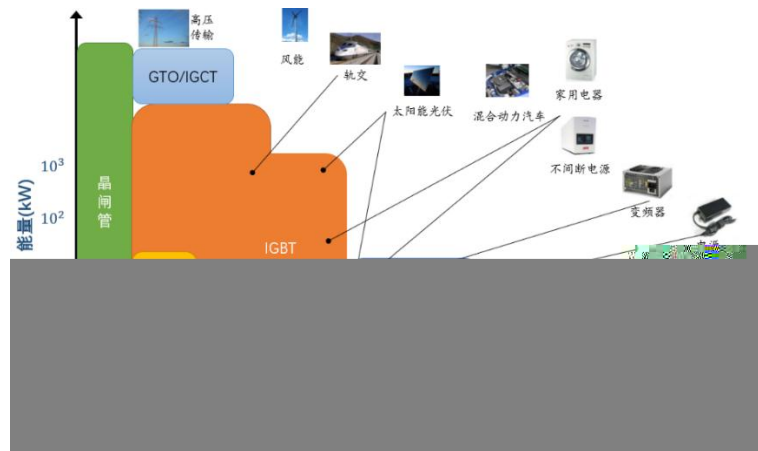
### IC

15



/

16



Yole

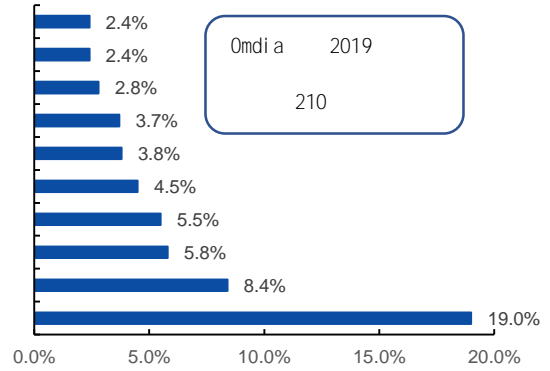
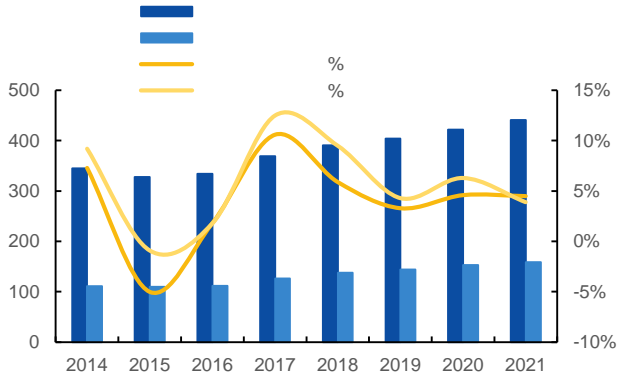


2019  
IC 404  
210  
60%  
IHS Markit 144  
Omdia 2019

19% 58.3%

17

18 2019



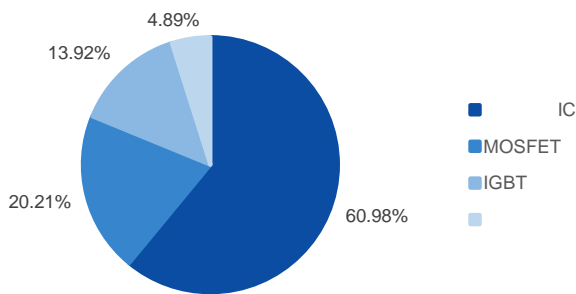
IHS

Omdia

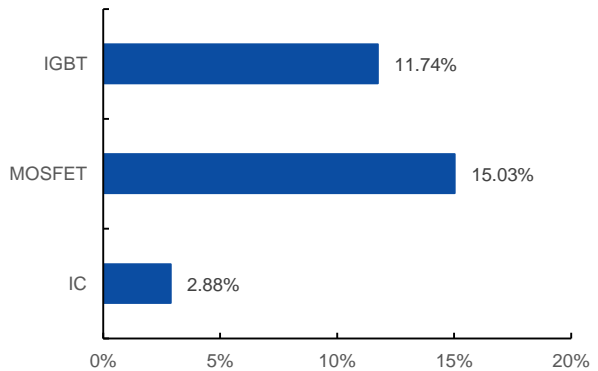
PMIC MOSFET IGBT 2018  
60.98% 20.21% 13.92% MOSFET IGBT  
2016-2018 15% 12%

19 2018

20 2016-2018



IHS



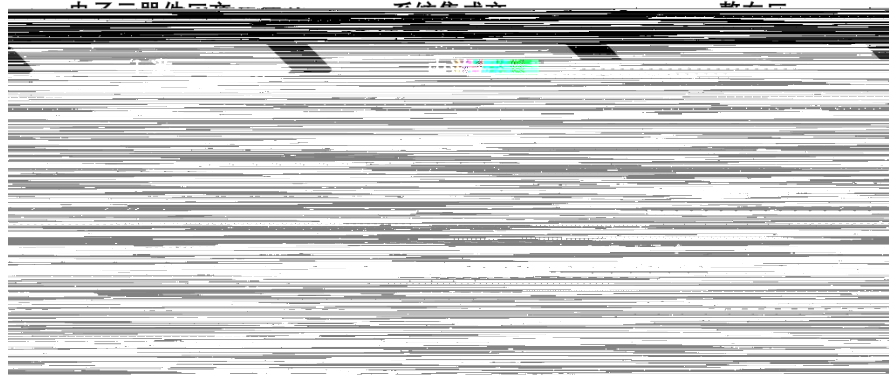
IHS

2.1.2

1

+

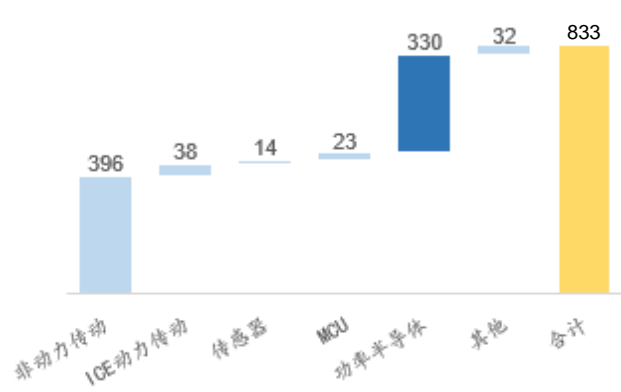
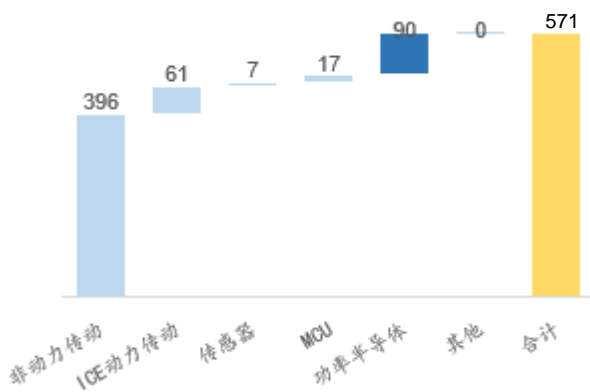
21



22 48V/

48V/  
330 /  
23 /

90 /



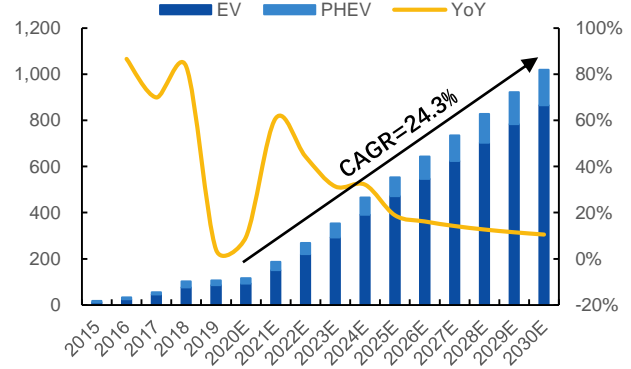
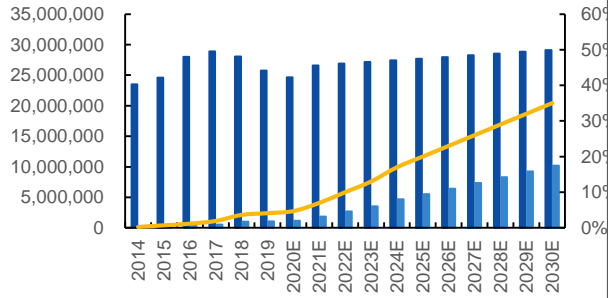
2021-2035  
 2025 1%      20%      2030 35%      2025

550 2030 1000

10 24.3%

24

25

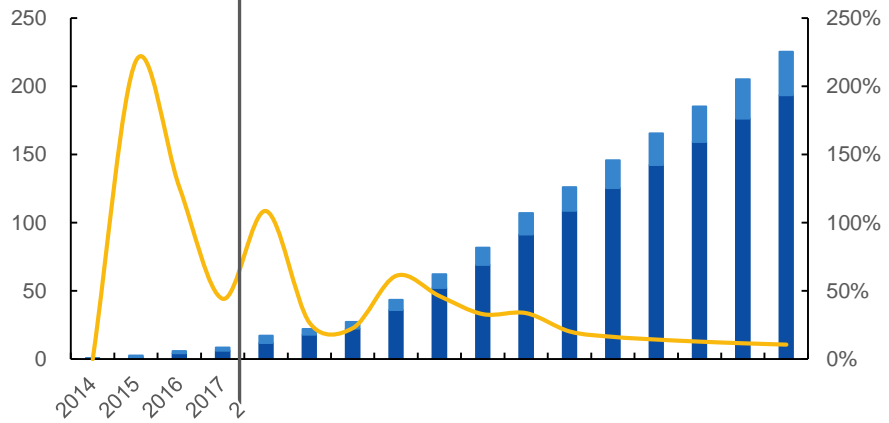


PHEV

EV A00 C

2025 125 2030 225

26



2

3-5

+

2018 5

2019 4

15

GB 17761-2018

MOSFET 27 MOSFET 10

27



起步阶段为早期实验性生产，主要是电动自行车四大件

2000年起，电动自行车进入初步规范化阶段

《道路交通安全法》于2004年将电动自行车确定为非机动车的合法车型

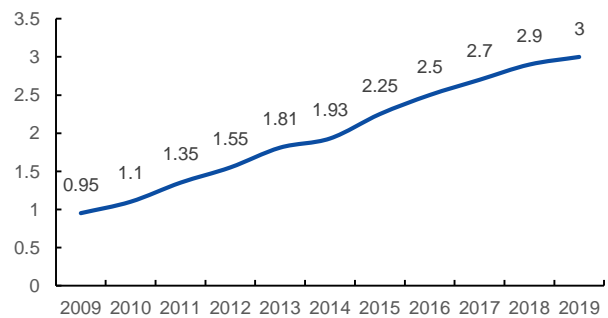
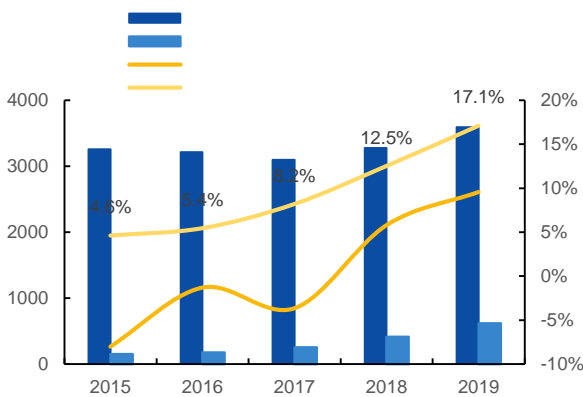
中国成为世界上最大的电动自行车生产、消费和出口国

《新国标》拓展了传统电动自行车企业的发展空间



3 2019 17.1% 2019 3592 615 29

28



3 70% 2020-2024 50% 5% 15% 30% 30% 20% 6000-

8000

55kg

MOS  
MOSFET

20  
10-20

30

3-5

8

MOSFET

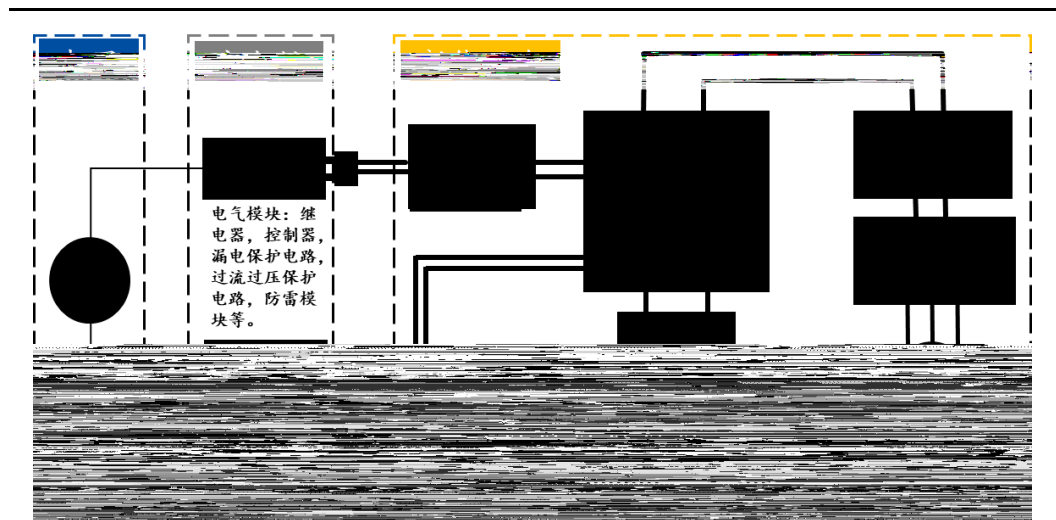
	2019	2020E	2021E	2022E	2023E	2024E
	3592	3200	3200	3200	3200	3200
	2019	3	70%	50%	2020-2024	
	5%	10%	20%	30%	25%	10%
	-	1500	3000	4500	3750	1500
	<b>3592</b>	<b>4700</b>	<b>6200</b>	<b>7700</b>	<b>6950</b>	<b>4700</b>
	17%	20%	27%	35%	43%	50%
	615	940	1674	2695	2989	2350
	2977	3760	4526	5005	3962	2350
/	MOSFET	20	30			
	MOSFET	7.8	10.3	14.1	18.1	16.9

GG11

3

" + " " + "

30



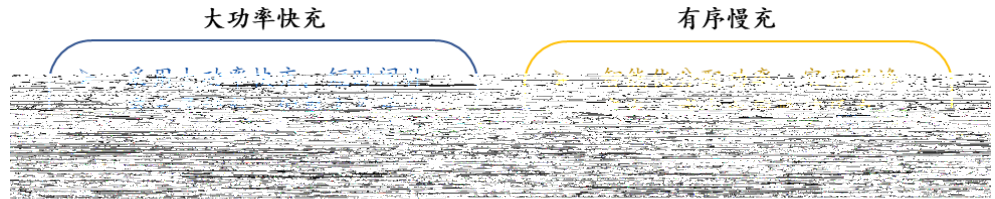
1

3 1

2 1 2

3 / 6 4  
/ 1 1

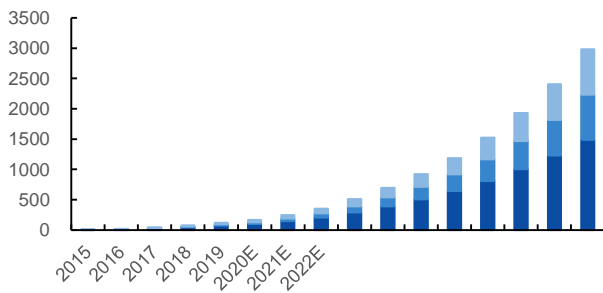
31



2025 4:6 2030 1:1  
210 2030 750  
500 10

32

33



EVCIPA

GGII

2.2AIOT

MEMS

MEMS

A/D

34 MEMS



AIOT

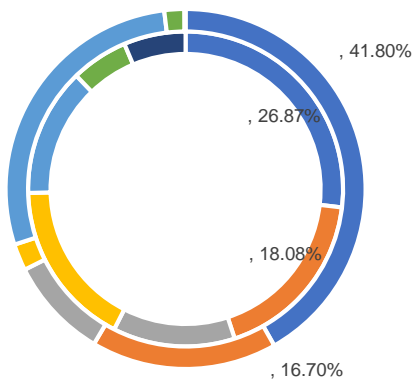
MEMS

MEMS

		26.87%	13.19%	18.08%	Yole
			32.6%	2025	
111.4	10.4	26			

35

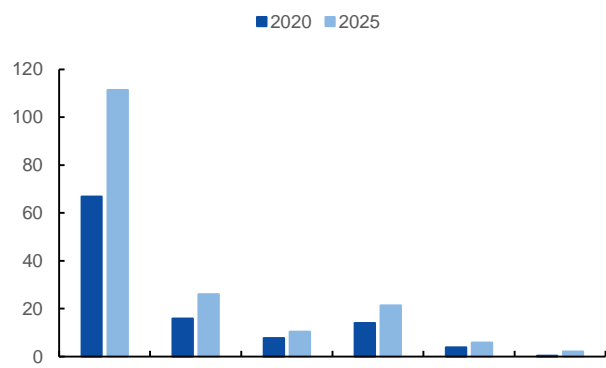
MEMS



CCID

36

MEMS



Yole

810

2019  
MEMS

MEMS

600

2021

QORVO

MEMS





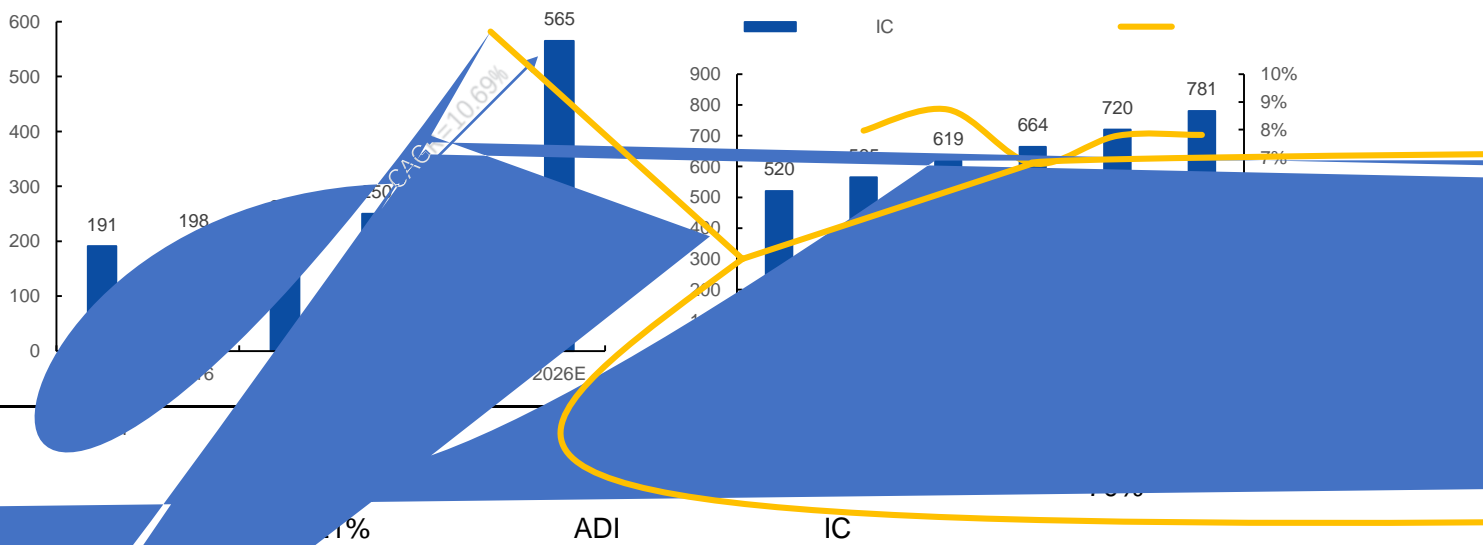


Household Appliances

Power Solution



565	2018-2026	SEMI	2026
			10.69%
781		2015-2019	720
			520



Yole

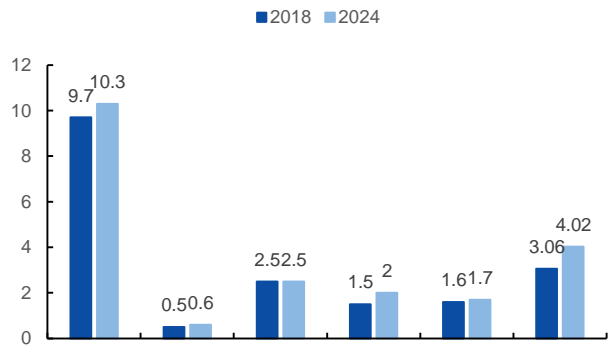
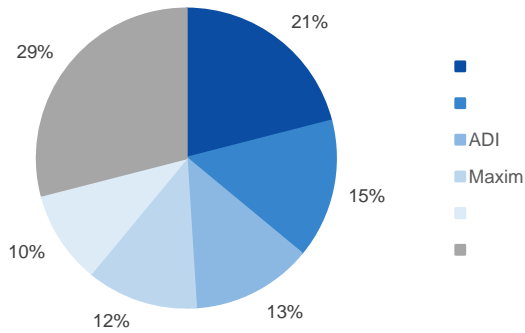
2018 PMIC  
2024 103

97

45

IC

46



Yole

2 MCU IPM

MCU Micro Control Unit  
I/O

CPU RAM ROM

47



MCU

MCU

MCU  
2020 21 22

IHS  
5% 7% 9%

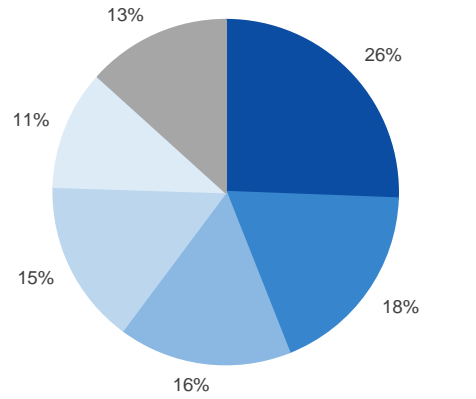
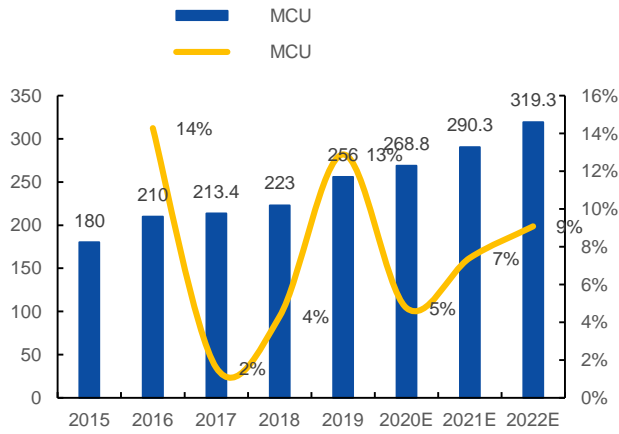
MCU  
2022

256  
320

ASPENCORE 2019 MCU 18% 16%

48 MCU

49 2019 MCU



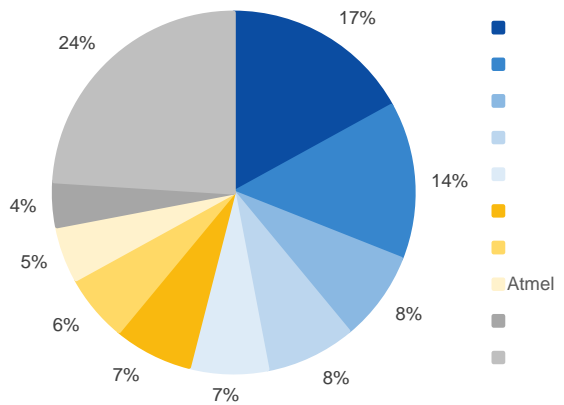
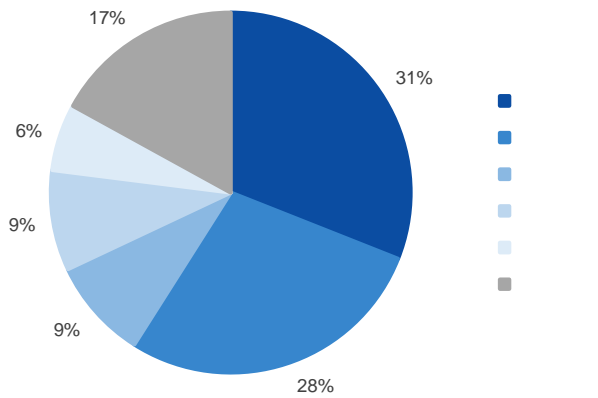
IHS Markit

ASPENCORE

2019 MCU 31% 28% MCU 80% 5%

50 2019 MCU

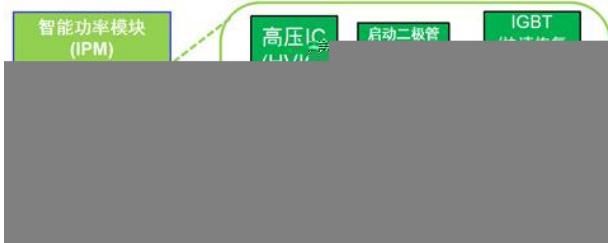
51 2019 MCU



IPM IGBT GTR MOSFET IGBT MOSFET GTR IGBT  
IPM ,

52

IPM



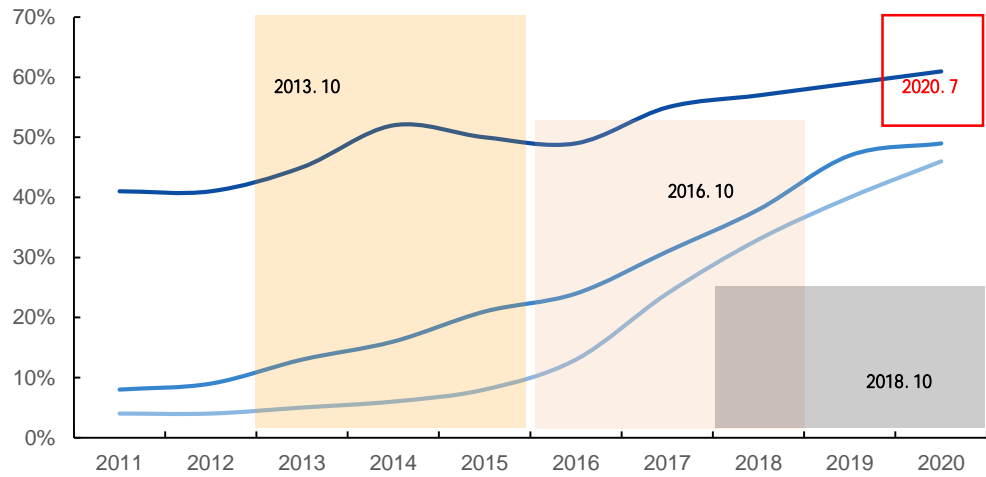
53

IPM



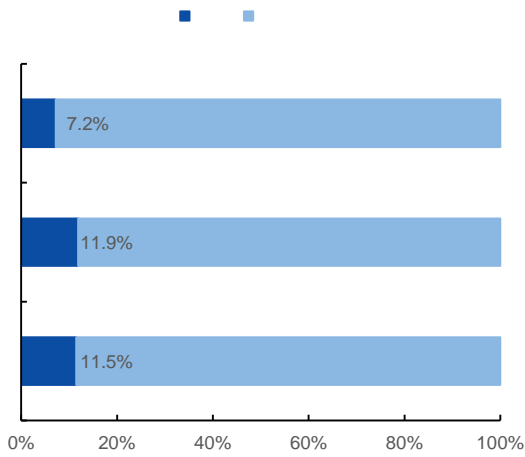
60-70% 2020  
 61% 49% 46%  
 0.79 10.67  
 IPM 2020 IPM  
 2.2 MCU 4.56

54

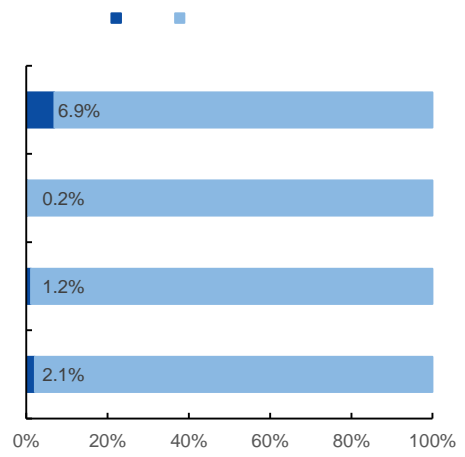


MCU IPM  
 2019 MCU 12% IPM  
 2020 IPM  
 7% 2.2 20% MCU 4.56  
 0.6%

55 2019 MCU



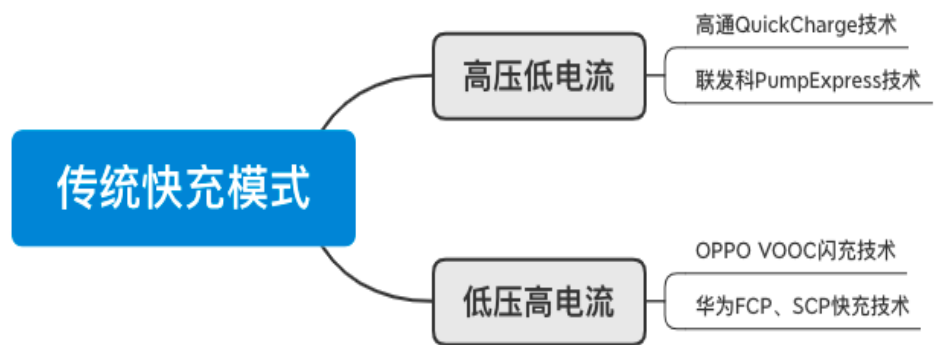
56 2019 IPM



2.3.2

OPPO

57



120W  
120W  
OPPO

10  
6C  
125W  
IQOO

9

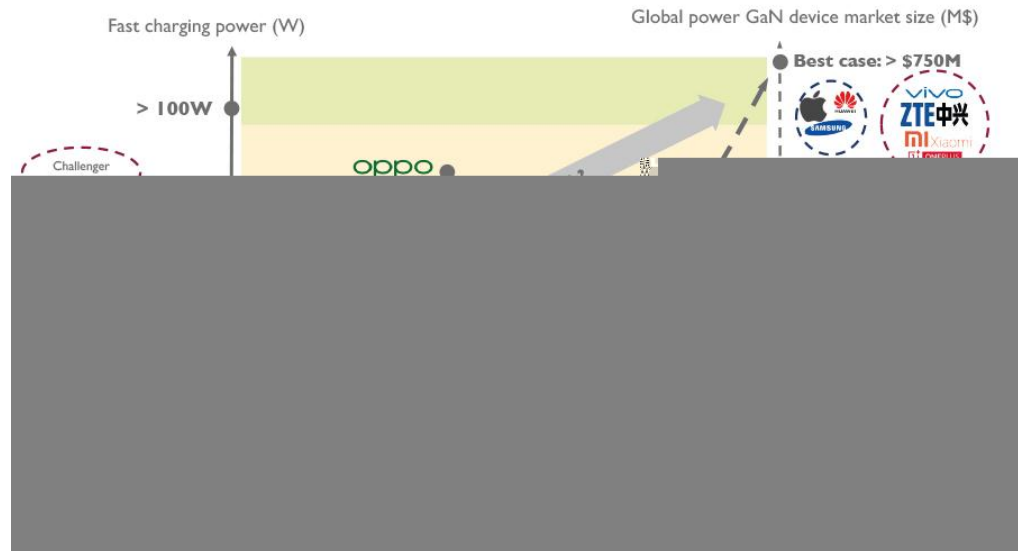
OPPO	125W	6C	14
vivo	120W	"	"
	120W	IC	"
		IC	"
	120W		

10W

30W

30-100W

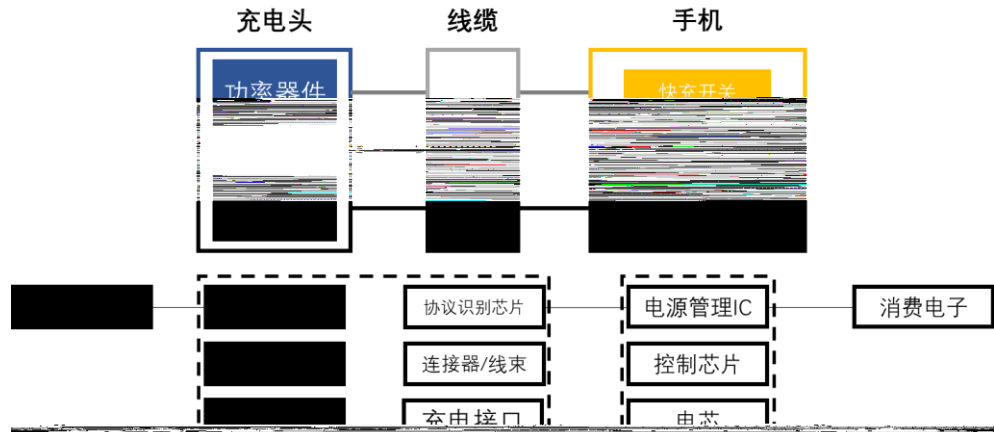
58



Yole

GaN

59 GaN



50

GaN

150

10

/					
Anker PowerPort PD 2		2019	USB-PD QC	18W 9V2A	199
Anker PowerPort Atom PD 1		2018	USB-PD	30W 20V1.5A	258
GaN					
Anker PowerPort Atom PD 4		2019	USB-PD Appl e2. 4A	100W 20V5A	598
18W USB-PD					
		2019	USB-PD	18W 12V1.5A	49
GaN X	PD65W	2020	USB-PD QC PPS Appl e2. 4A AFC	65W 20V3.25A	159
18W PPS TC-					
075PQ		2019	USB-PD QC FCP AFC Appl e2. 4A PPS	18W 12V1.5A	49
GaN2 Pro		2020	USB-PD QC FCP/SCP AFC	65W	148
2C+U 65W			Appl e2. 4A PPS PE+	20V3.25A	
GaN2 Pro		2020	USB-PD QC SCP/FCP AFC	100W 20V5A	299
2C+U120W	GaN		MTK Appl e2. 4A PPS		
18W A1695					
		2018	USB-PD	18W 9V2A	243
5W A1443					
			USB-PD	5W 5V1A	145



45W	EP-TA845	2019	USB-PD	45W(20V2.25A)	299
25W	EP-TA800	2019	USB-PD QC	25W 9V2.77A	219
40W 100400C00	HW-	2018	QC FCP SCP	40W 10V4A	159
22.5W 050450C00	HW-	2017	QC FCP SCP	22.5W(5V4.5A)	109
18W	HW-059200CHQ	2016	QC FCP SCP	18W 9V21 68.9	

GaN 149 65W  
 50 NV6115 NV6117  
 1/3

11	GaN	Type-C 65W			
/					
1	PCB		-	-	-
2		400V 100μ F 400V 18μ F		Ai SHi	2
3		TEC25001		-	1
4	ACDC	E002M DBF310			2
5		UCC28780		TI	1
6	GaN	NV6115 NV6117		Navi tas	2
7		3.15A 250V		-	1
f l					

	<i>3000</i>	<i>20-25%</i>	<i>3000</i>	<i>GaN</i>		
			35%	77.0	90.5	102.4
GaN			25%	55.0	64.6	73.1
			15%	33.0	38.8	43.9
			35%	48.6	53.0	54.0
GaN			25%	34.7	37.9	38.6





2019

3.13

7.09

21.2%

6

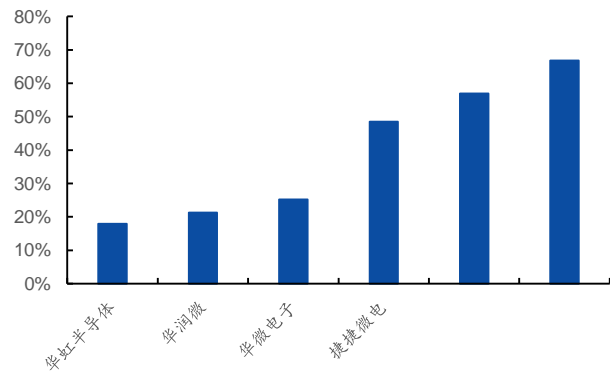
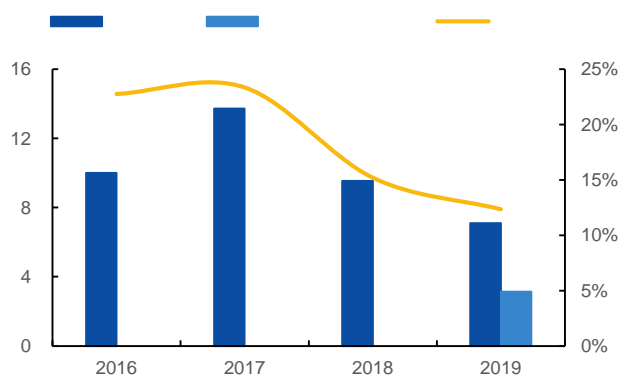
20%

8

20%

66

67



Wind

2.4.2

IC IPM



62

50

60%-70%

16

						2018
						199
QFP	QFN	PQFN	FC -QFN	TSSOP	SSOP	62
						69
						2.4

3.

2020-2022  
30.02% 30.75% 68.85 83.66 97.89 28.18%

1

2

IGBT MOS SiC

3

17

	2019	2020E	2021E	2022E
	3,183.52	3,820.22	4,393.26	4,832.58
	565.39	859.55	1,010.45	1,135.66





	2018	2019	2020E	2021E	2022E
	5106.31	5092.50	9914.66	12341.14	15221.72
	1537.64	1930.67	7148.73	9032.00	11358.38
	601.61	815.01	977.08	1187.26	1389.18
	1183.63	12.96	15.53	18.88	22.09
	68.18	51.89	57.90	68.55	79.38
	1181.25	1054.76	1176.90	1393.50	1613.52
	533.99	1227.20	538.51	640.95	759.17
	4885.74	5002.79	5102.52	4396.47	3565.82
	0.00	81.71	81.71	81.71	81.71
	3898.40	3815.75	4201.04	3658.27	2929.77
	293.96	274.94	254.94	234.94	214.94
	693.37	830.40	564.83	421.55	339.41
	9992.05	10095.29	15017.18	16737.61	18787.54
	4653.87	1978.72	2099.39	2302.29	2506.93
	0.00	0.00	0.00	0.00	0.00
	715.57	748.64	835.33	989.07	1145.23
	3938.29	1230.08	1264.06	1313.22	1361.71
	318.39	1725.74	1768.71	1771.23	1755.23
	0.00	1506.11			

	2018	2019	2020E	2021E	2022E
	6270.80	5742.78	6884.80	8365.76	9788.60
	4690.26	4431.29	4944.42	5854.41	6778.74
	84.55	66.16	68.85	83.66	97.89
	126.13	112.02	110.16	133.85	156.62
	373.62	376.84	344.24	334.63	391.54
	449.76	482.62	516.36	585.60	685.20
	0.24	30.99	-63.66	-84.33	-136.95
	-71.74	-36.57	-10.00	0.00	0.00
	0.00	0.04	5.00	5.00	5.00
	10.59	-0.03	30.00	30.00	30.00
	585.61	477.76	1131.43	1644.94	2002.56
	10.99	32.69	10.00	10.00	10.00
	6.02	4.50	0.00	0.00	0.00
	590.58	505.95	1141.43	1654.94	2012.56
	53.02	-6.47	34.24	49.65	60.38
	537.56	512.43	1107.19	1605.29	1952.18
	108.12	111.67	114.14	165.49	201.26
	429.44	400.76	993.05	1439.79	1750.93

投资评级说明

(1) 公司评级定义

(2) 行业评级定义

