

(688396)

2020 12 16

IDM

(688396)

67.63

IDM



52 / 72.95 / 32.38

A 249.04

A 1215.93

16842.90

82233.02

+



48V/

90 / / 330 /
200

" "

10-20

MCU IPM
12% IPM

2019

MCU
5G

Wind



2023

GaN

70

-2021

2020-11-29

- 8

2020-11-01

IGBT

MOSFET

12

IDM 2020-

10-20

2017-2018
CMOS

MOSFET

PC

8

2020-09-18

- 688396

2020-07-29

2020-2022

9.93 14.40 17.51

83x 57x 47x

2020-07-14



S0020520060001

021-51097188-1937

	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

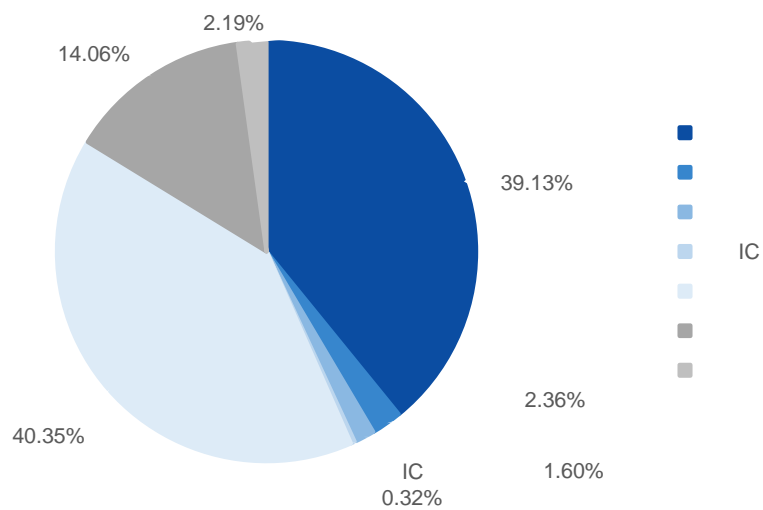
1.	IDM	.....	5
1.1	IDM	.....	5
1.2		.....	6
1.3		.....	8
1.4		.....	9
1.5		.....	12
1.5.1		.....	12
1.5.2		.....	13
1.5.3	IDM+	.....	14
1.6		.....	14
2.		.....	16
2.1		.....	16
2.1.1		.....	16
2.1.2		.....	17
2.2	AIOT	MEMS	.....
2.2	AIOT	MEMS	.....
2.3			.....
2.3.1		PMIC MCU IPM	.....
2.3.2			.....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

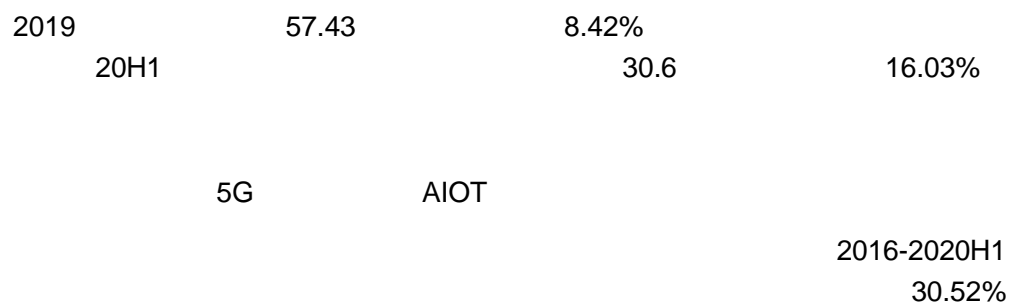
13	.....	13
14	IDM	14
15	.....	16
16	.....	16
17	.....	17
18	2019	17
19	2018	17
20	2016-2018	17
21	.....	18
22	48V/	18
23	/	18
24	.....	19
25	.....	19
26	.....	19
27	.....	20
28	.....	20
29	.....	20
30	.....	21
31	.....	22
32	.....	22
33	.....	22
34	MEMS	23
35	MEMS	23
36	MEMS	23
37	2019 MEMS	24
38	2016-2021 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



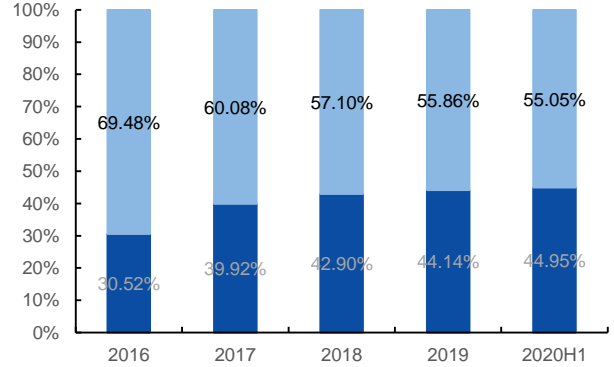
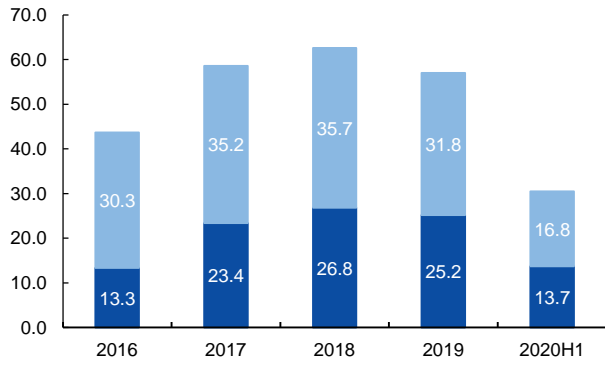
1.2



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

3

4



Wind

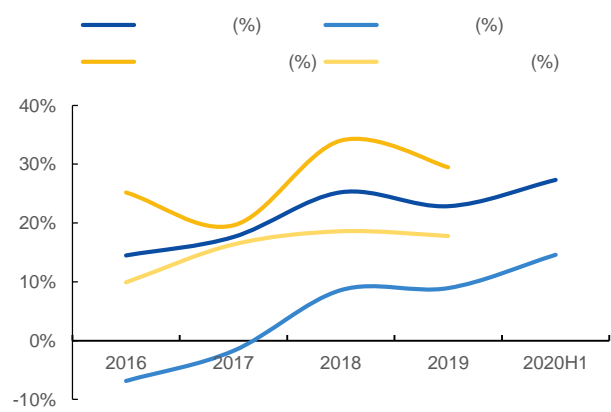
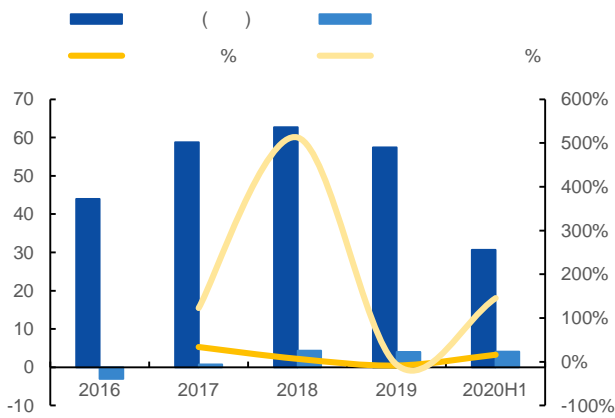
Wind

2016-

2018
22.8%
2.36% 20H1
2019
27.3%

5

6

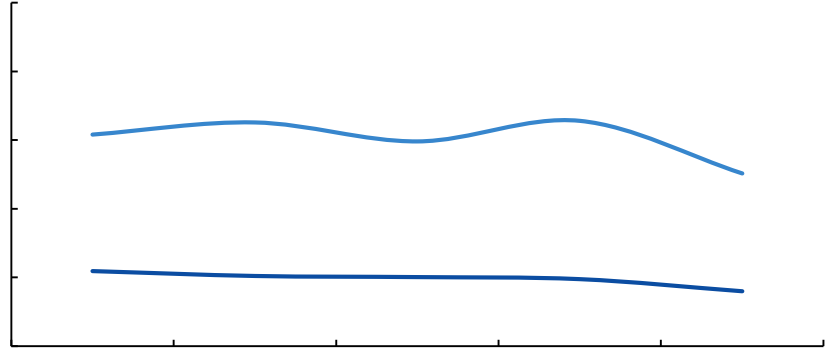


Wind

Wind

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

7



Wind

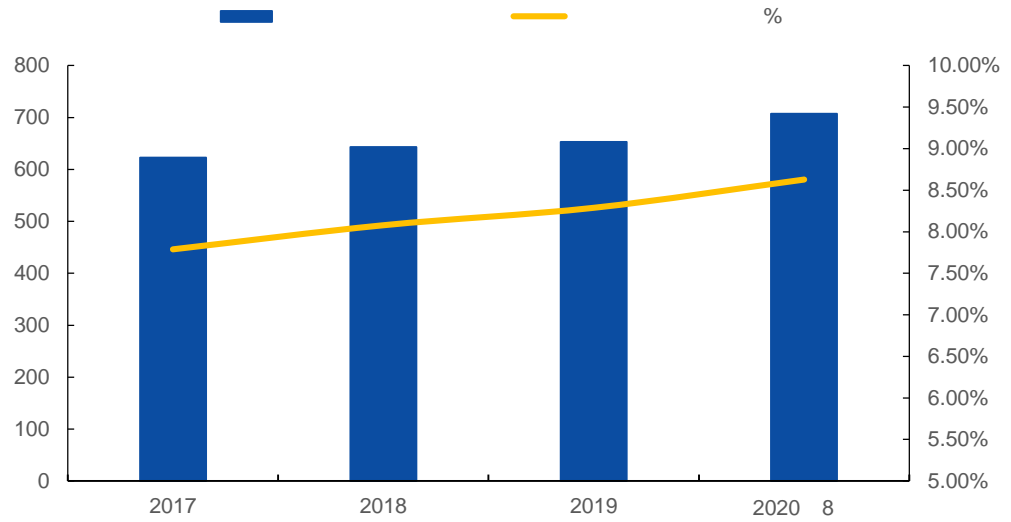
1.3



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

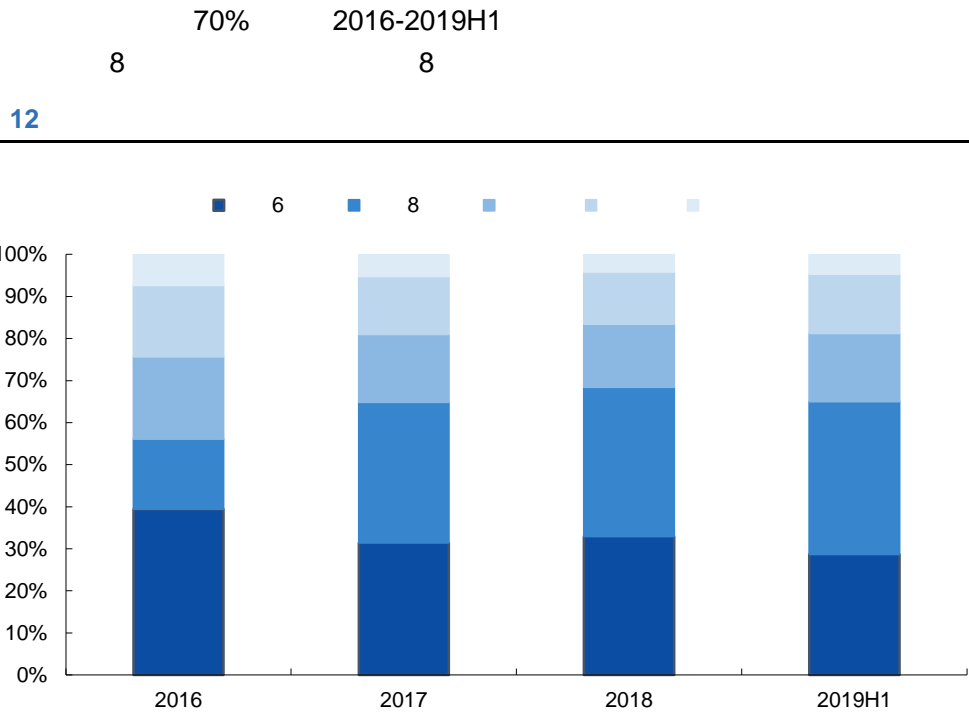
VDMOS

UIS

EMI

MOS

2019
TOPCO SCIENTIFIC Co., Ltd.



1.5.2

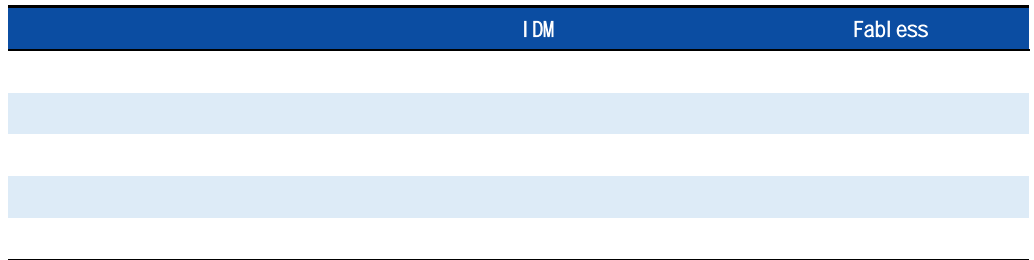
13



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%

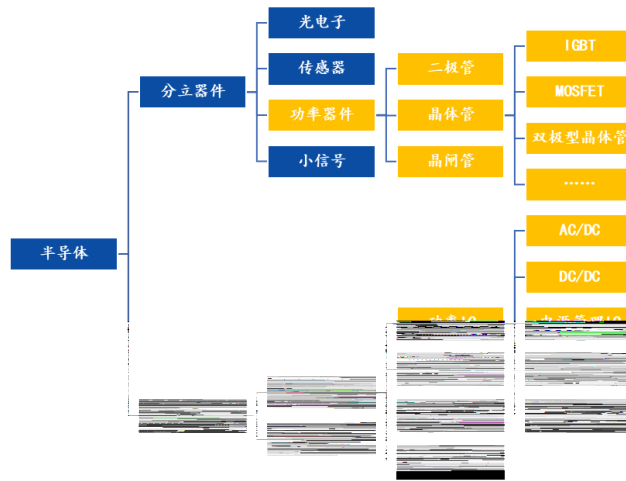
2.

2.1

2.1.1

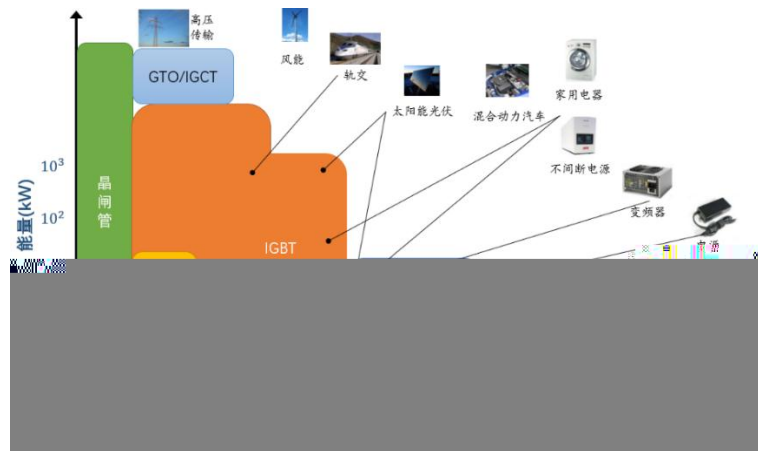
IC

15



/

16



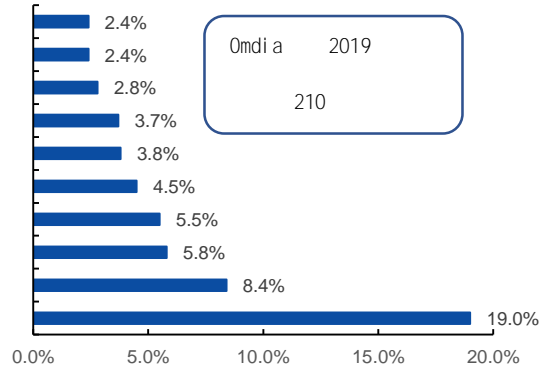
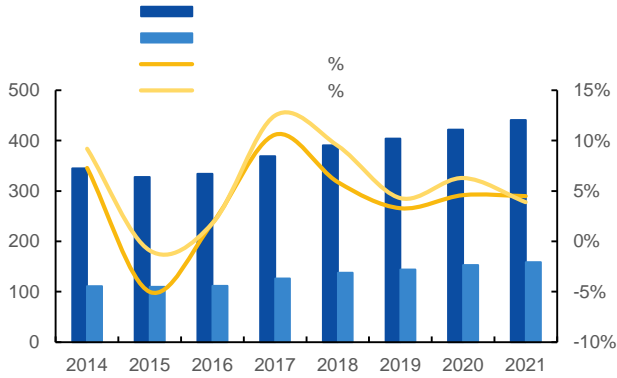
Yole

2019
IC 404
210
60%
IHS Markit 144
Omdia 2019

19% 58.3%

17

18 2019



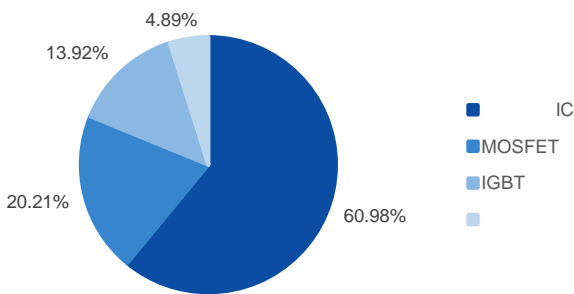
IHS

Omdia

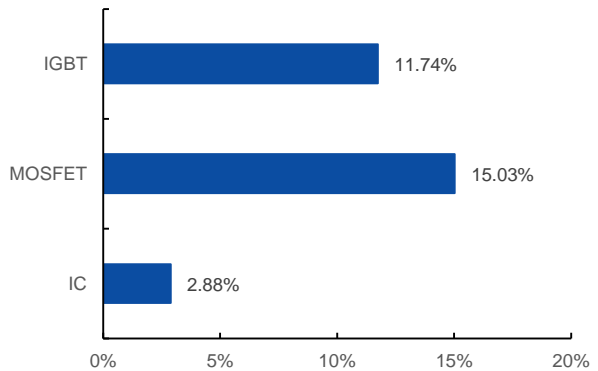
PMIC MOSFET IGBT 2018
60.98% 20.21% 13.92% MOSFET IGBT
2016-2018 15% 12%

19 2018

20 2016-2018



IHS



IHS

2.1.2

1

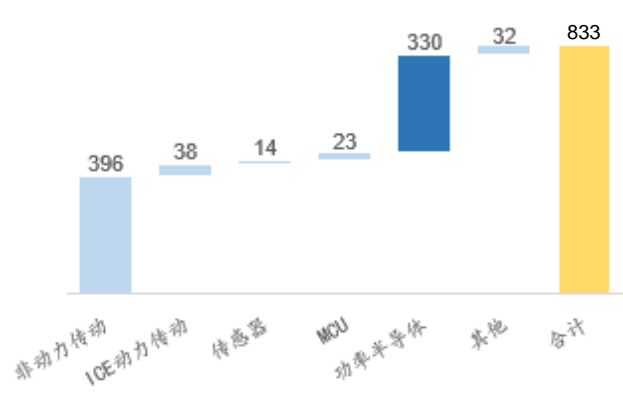
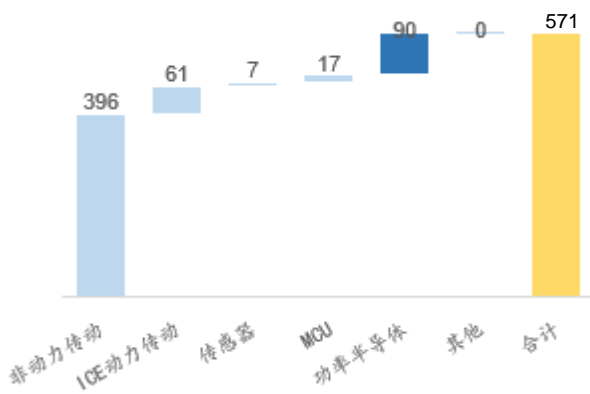
+

21

电子元器件行业... 系统集成... 数字...

22 48V/

48V/ 90 /
330 /
23 /



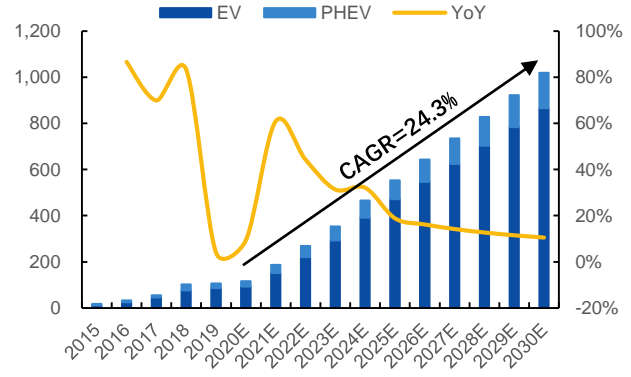
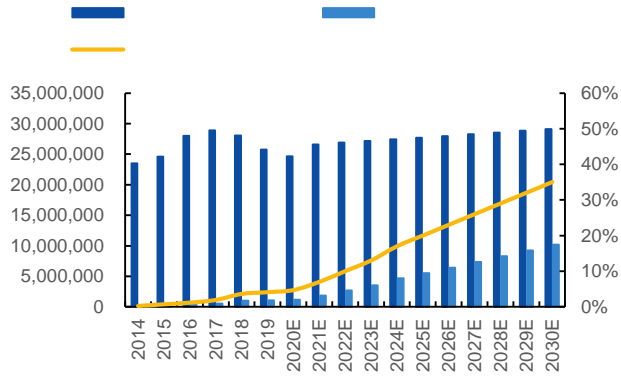
2021-2035
2025 20% 2030 35%
1% 2025

550 2030 1000

10 24.3%

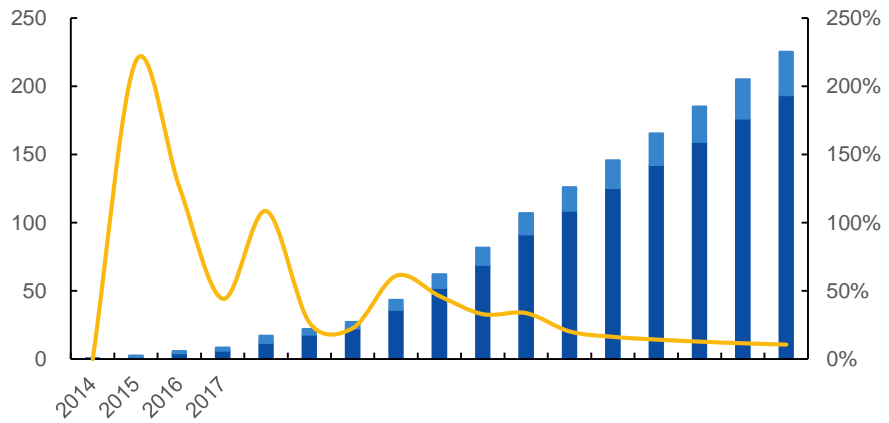
24

25



PHEV EV A00 C
2025 125 2030 225

26

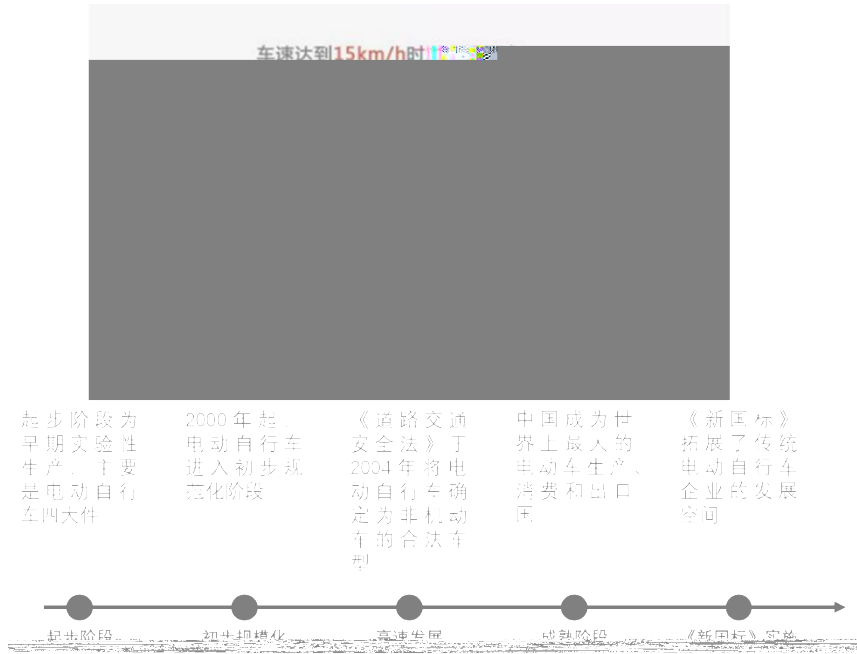


2

GB 17761-2018 3-5 18 5 19 4 15 +

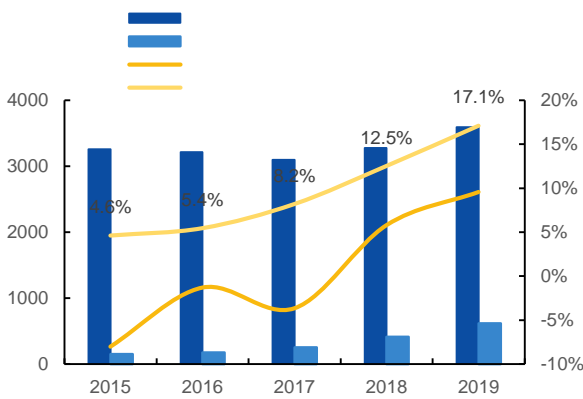
MOSFET 27 MOSFET 10

27



3 2019 17.1% 2019 3592 615 29

28



3

70%

50% 2020-2024 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
	3592	4700	6200	7700	6950	4700
	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



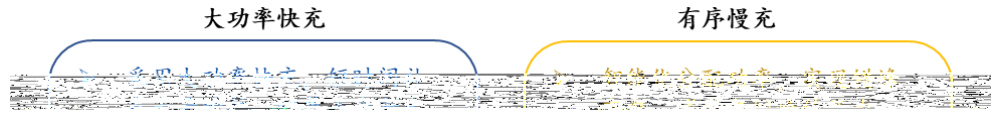
1

3 1

2 1 2

3 / 6 4
/ 1 1

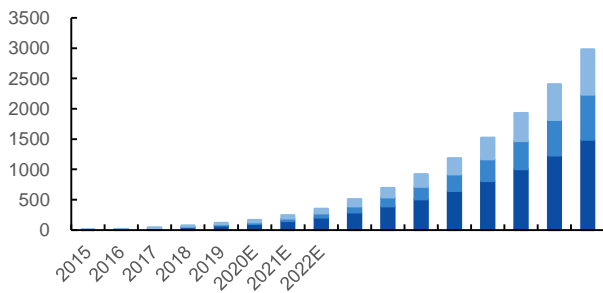
31



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

32

33



EVCIPA

GGII

2.2AIOT

MEMS

MEMS

34 MEMS



AIOT

MEMS

MEMS

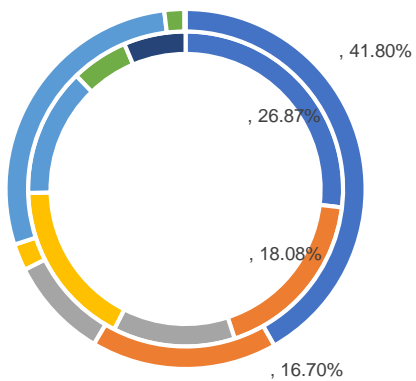
111.4 10.4 26

26.87% 13.19% 18.08%
32.6% 2025

Yole

35

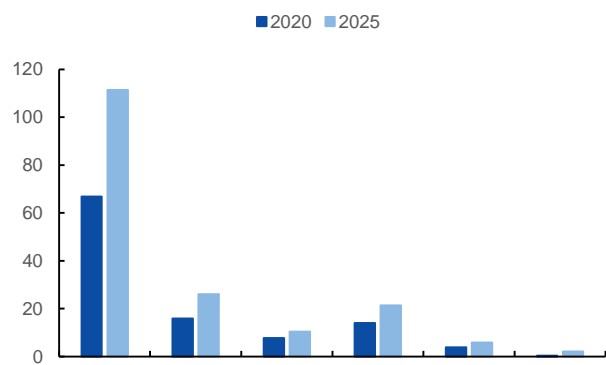
MEMS



CCID

36

MEMS



Yole

810

2019
MEMS

MEMS

600

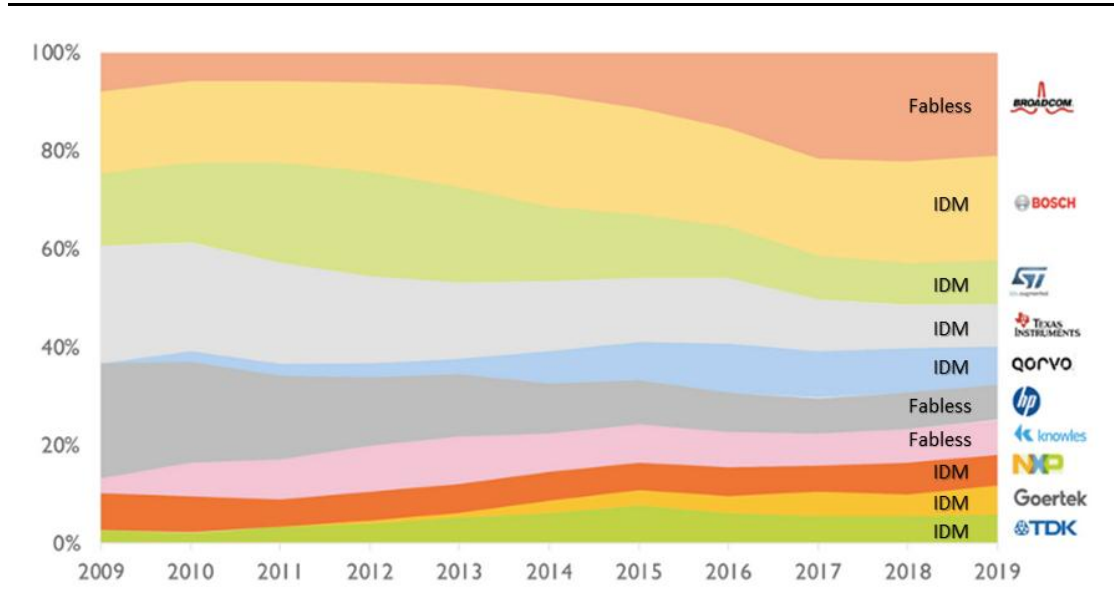
2021

QORVO

MEMS

41

MEMS

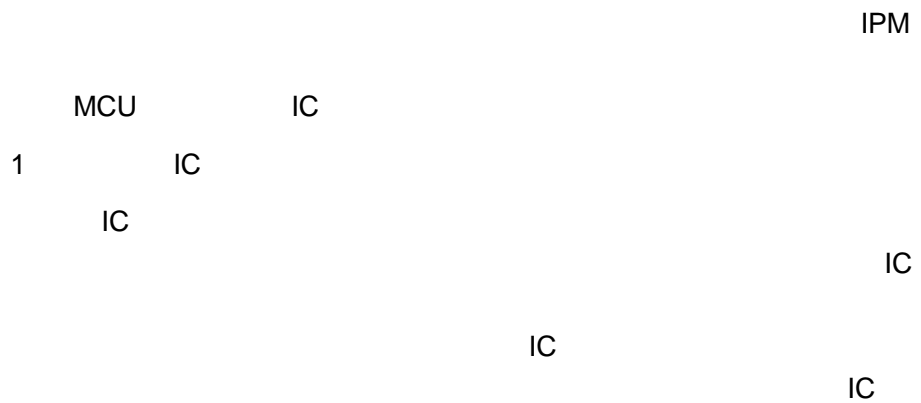


Yole

2.3

2.3.1

PMIC MCU IPM



42

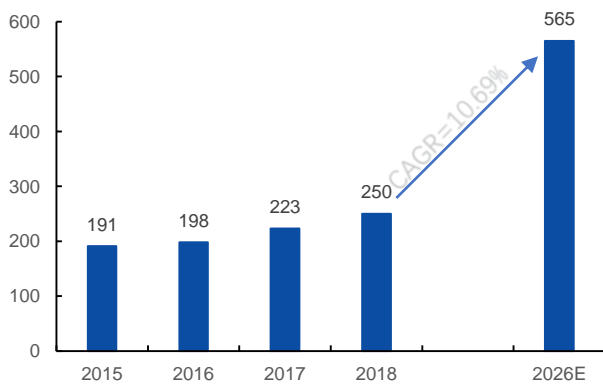
Household Appliances

Power Solution



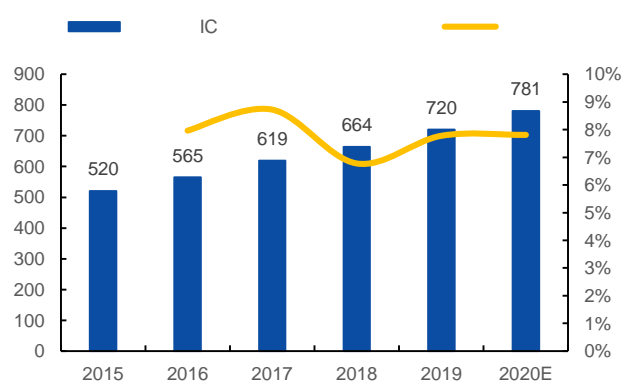
565 SEMI 2026
2018-2026 10.69%
520 2015-2019
720
781

43 IC



SEMI

44 IC



21% IC ADI IC 70%

Yole

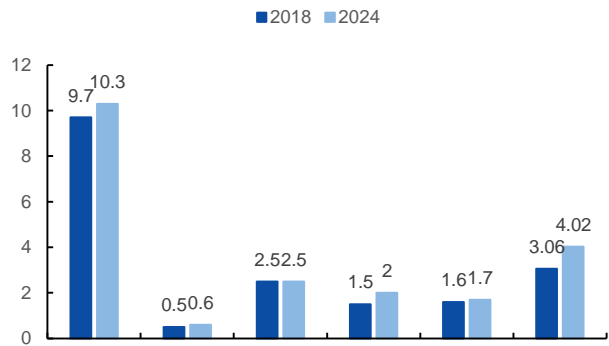
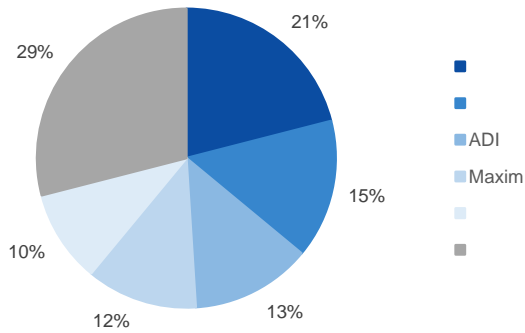
2018 PMIC
2024 103

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%

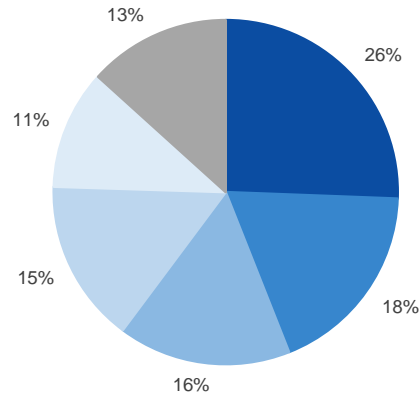
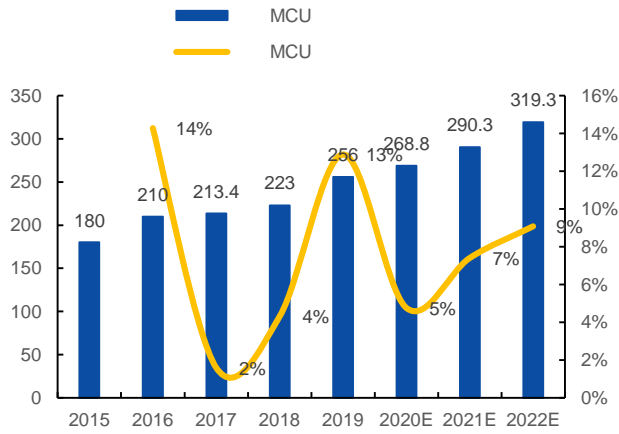
MCU
2022

256
320

ASPENCORE 2019 MCU 18% 16%

48 MCU

49 2019 MCU



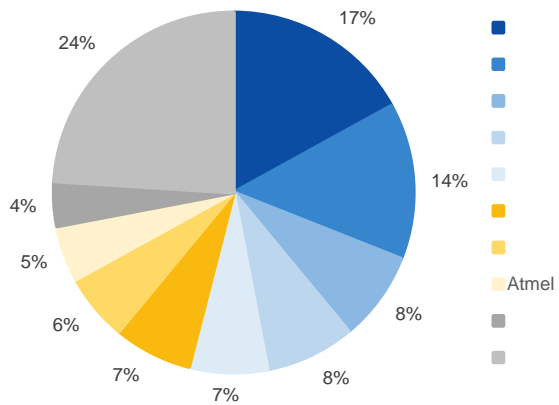
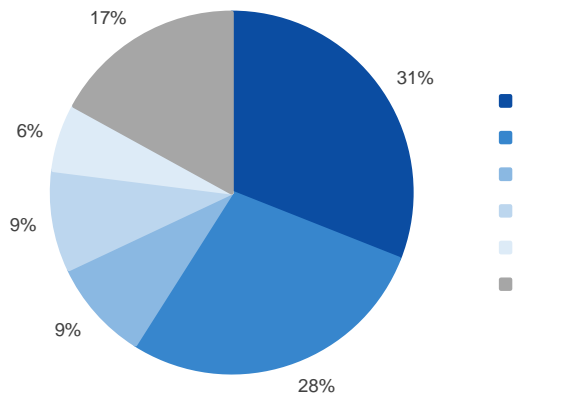
IHS Markit

ASPENCORE

2019 MCU 31% 28% MCU

50 2019 MCU

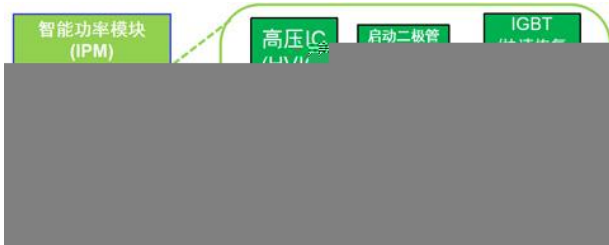
51 2019 MCU



IPM IGBT GTR MOSFET IGBT MOSFET GTR IGBT
IPM ,

52

IPM



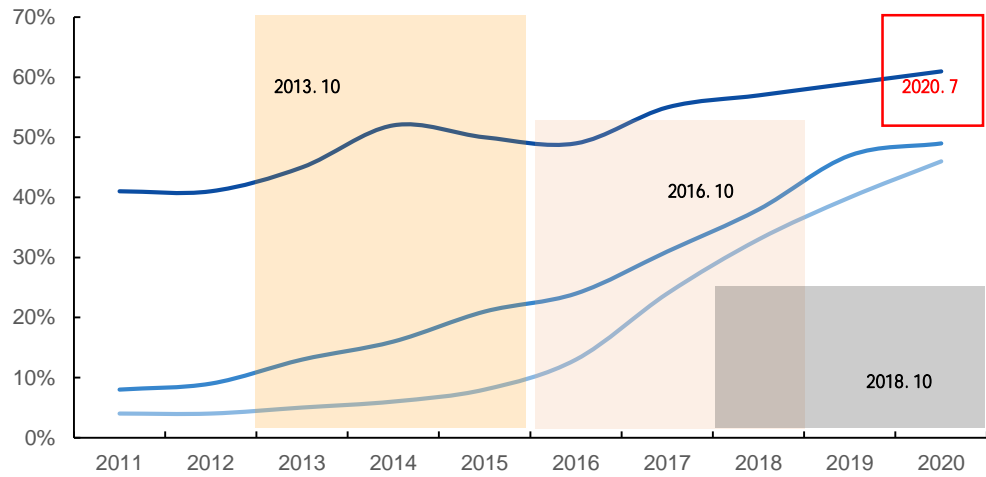
53

IPM



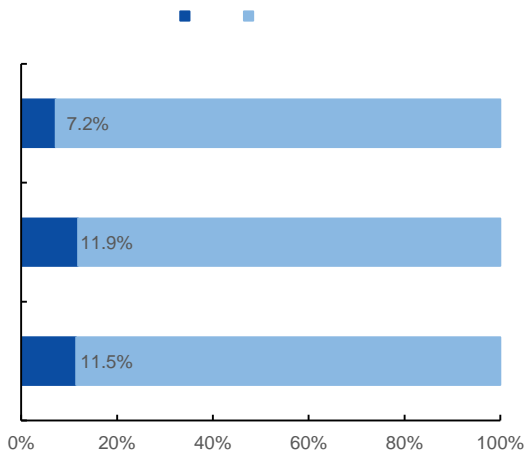
60-70% 2020
61% 49% 46%
0.79 10.67
IPM 2020 IPM
2.2 MCU 4.56

54

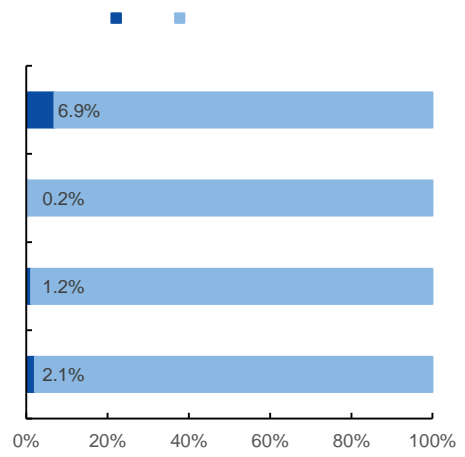


MCU IPM
2019 2020
7% 2.2 20% MCU 4.56 12% IPM IPM
0.6%

55 2019 MCU



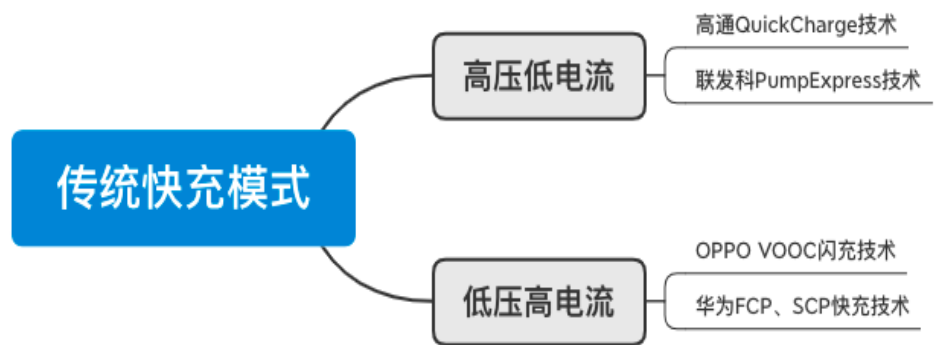
56 2019 IPM



2.3.2

OPPO

57



120W
120W
OPPO

10
6C
125W
IQOO

9

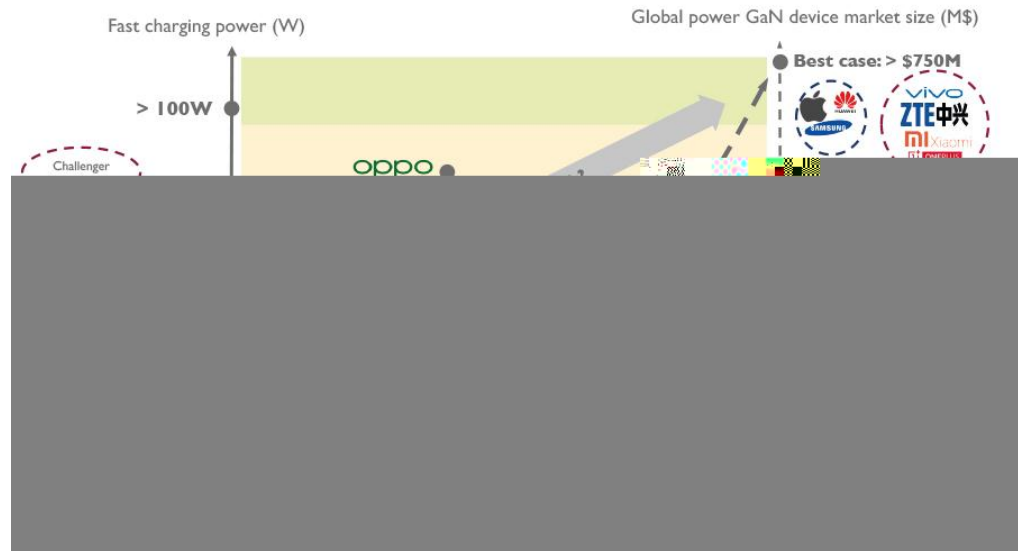
OPPO	125W	6C	14
vivo	120W	"	"
	120W	IC	"
		IC	"

10W

30W

30-100W

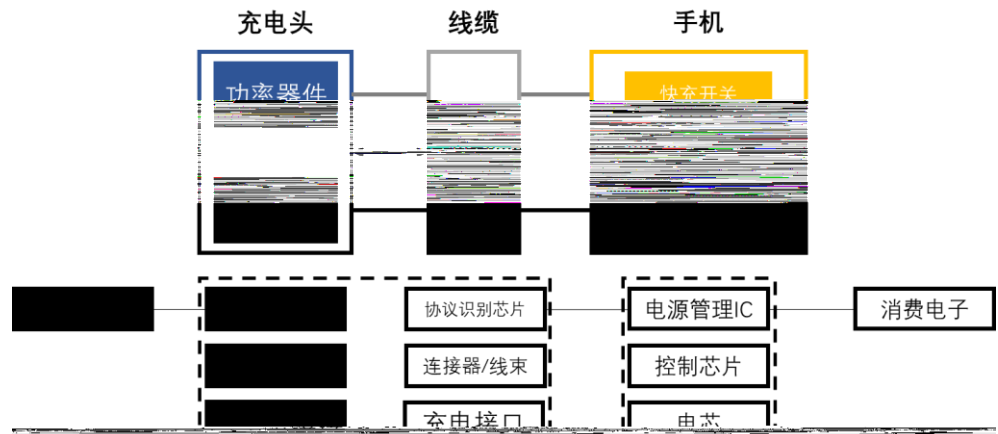
58



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 Apple2.4A	100W 20V5A	598
18W USB-PD					
		2019	USB-PD	18W 12V1.5A	49
GaN X	PD65W	2020	USB-PD QC PPS Apple2.4A AFC	65W 20V3.25A	159
18W PPS TC-					
075PQ		2019	USB-PD QC FCP AFC Apple2.4A PPS	18W 12V1.5A	49
GaN2 Pro		2020	USB-PD QC FCP/SCP AFC	65W	148
2C+U 65W			Apple2.4A PPS PE+	20V3.25A	
GaN2 Pro		2020	USB-PD QC SCP/FCP AFC	100W 20V5A	299
2C+U120W	GaN		MTK Apple2.4A 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	

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
CII					

	<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

64



IDM IDM

13

				IDM
				IDM
IC		IC		IDM
		MOSFET IGBT		IDM
				IDM
MOSFET IGBT		IC SiC		IDM
MOSFET				IDM

73		3	6	247	8
6.2	6	SiC	8	60	5.7 /
		12		1000 /	650/1200V
					2021

14



247

3 6 Analog BCD MEMS DMOS

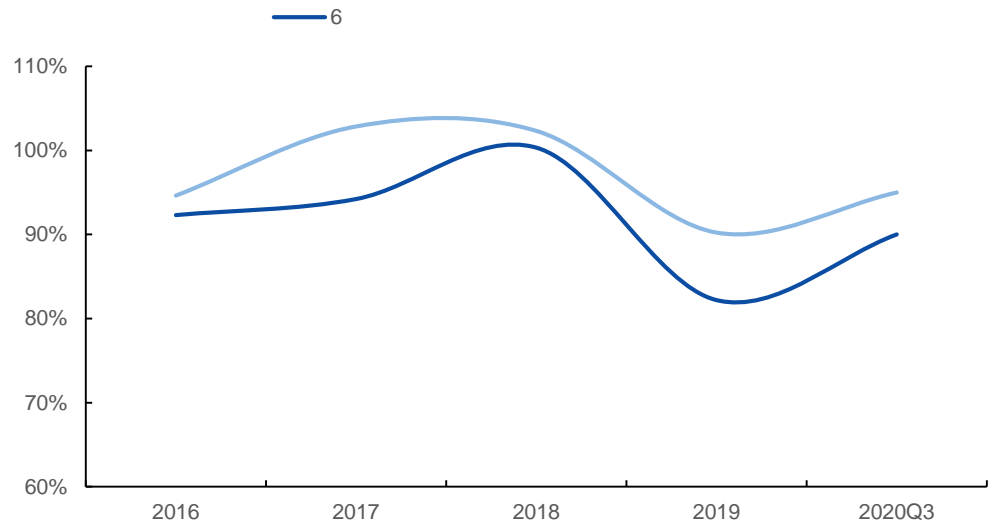
1	8	Advance	BCD	Anal og	D MOS				73				
										5.7	/	6.2	/
1	8			MOS		MOS		MOS	SBD	60			
1	6	SiC								1.2		-	
				SiC		650V/200V							
1	12			MOSFET		IGBT				-			
				BCD		0.13um/0.11um	MEMS	6	8	19.2			2020.7
1	8												

5G

MOSFET
6
2019

4-6
IGBT MOSFET
6 90% 8

65



2019

20% 7.09
8

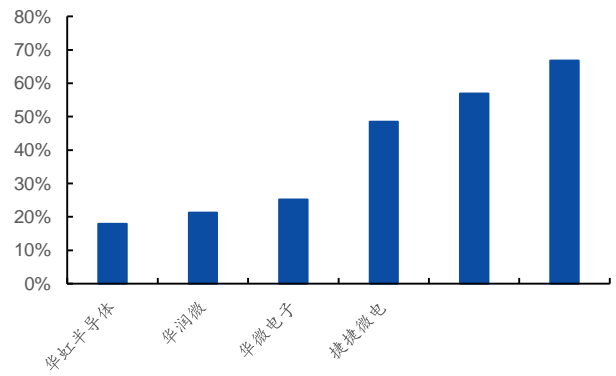
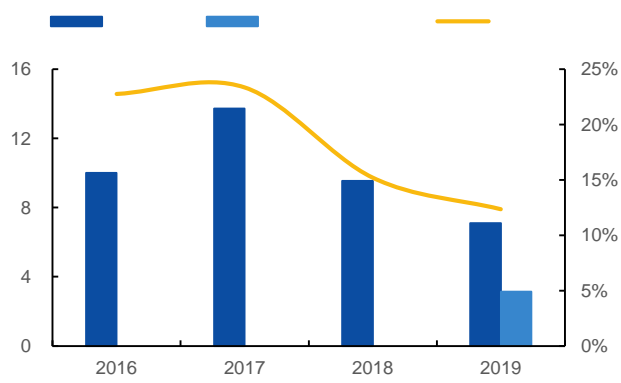
20%

21.2%

3.13
6

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

	2,515.66	3,018.79	3,924.43	4,905.54
	741.62	1,071.67	1,491.28	1,864.10
	43.60	45.78	48.07	50.47
	4.38	9.16	9.61	10.09
	5,742.78	6,884.80	8,365.76	9,788.59
%		19.89%	21.51%	14.66%
	1,311.49	1,940.38	2,511.35	3,009.86
%	22.84%	28.18%	30.02%	30.75%

17.51 2017-2018 CMOS 2020-2022 MOSFET PC 9.93 14.40
 130x 96x 72x 8

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

	(	PE			PB		
		2020E	2021E	2022E	2020E	2021E	2022E
605111.SH	220	146.5	102.0	74.4	24.9	20.3	16.2
603290.SH	430	231.2	168.3	124.1	41.7	34.1	27.7
300373.SZ	193	55.0	42.5	33.7	6.8	5.9	5.1
300623.SZ	230	87.5	69.6	56.4	9.8	9.0	8.1
		130.1	95.6	72.1	20.8	17.3	14.3

Wind * 2020 12 15 wind

4.

	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

