

(688396)

2020 12 16

IDM

(688396)

67.63

IDM

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

7%

2019

MCU

5G

GaN

Wind

2023

GaN

70

—2021

2020-11-29

- 8

2020-11-01

IGBT

MOSFET

12

IDM

2020-

10-20

2017-2018

MOSFET

PC

8

CMOS

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

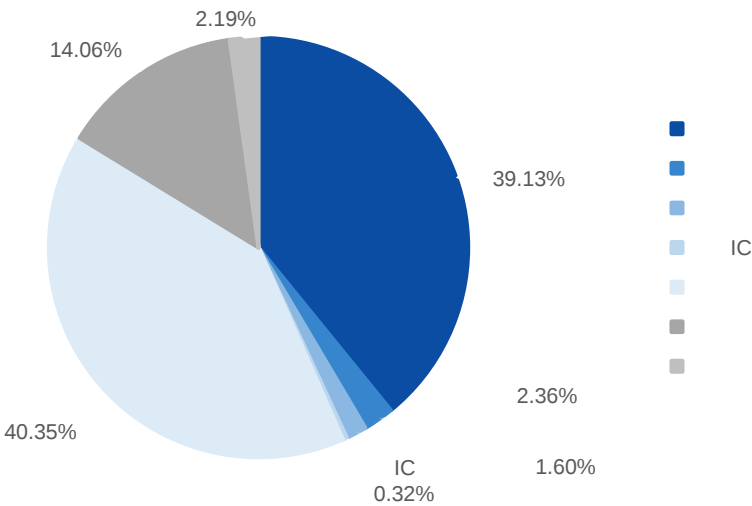
1.	IDM	.....	5
1.1	IDM	.....	5
1.2		.....	6
1.3		.....	8
1.4		.....	9
1.5		.....	12
1.5.1		.....	12
1.5.2		.....	13
1.5.3	IDM+	.....	14
1.6		.....	14
2.		.....	16
2.1		.....	16
2.1.1		.....	16
2.1.2		.....	17
2.2	AIOT MEMS	.....	22
2.3		.....	25
2.3.1	PMIC MCU IPM	.....	25
2.3.2		.....	30
2.4		.....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

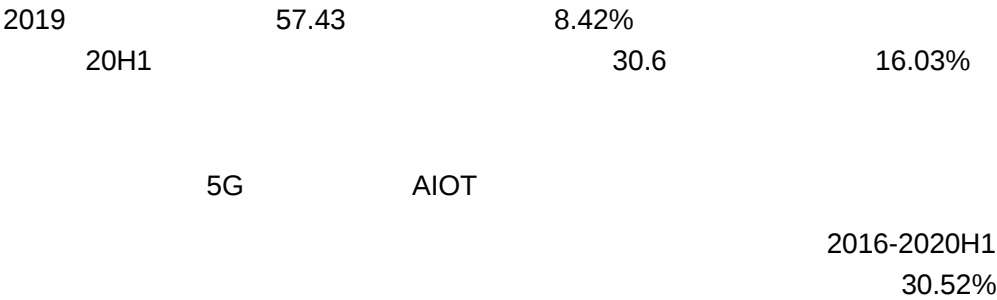
13		.....	13
14	IDM	.....	14
15		.....	16
16		.....	16
17		.....	17
18	2019	.....	17
19	2018	.....	17
20	2016-2018	.....	17
21		.....	18
22	48V/	.....	18
23	/	.....	18
24		.....	19
25		.....	19
26		.....	19
27		.....	20
28		.....	20
29		.....	20
30		.....	21
31		.....	22
32		.....	22
33		.....	22
34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



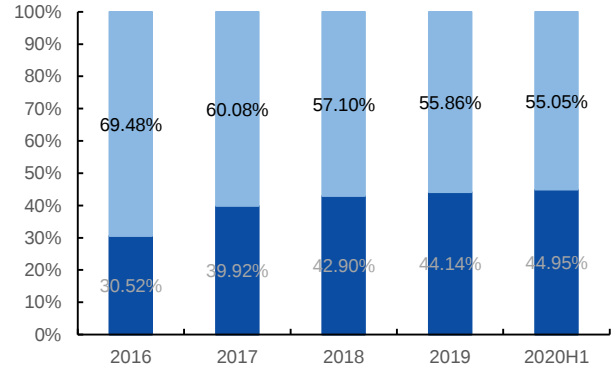
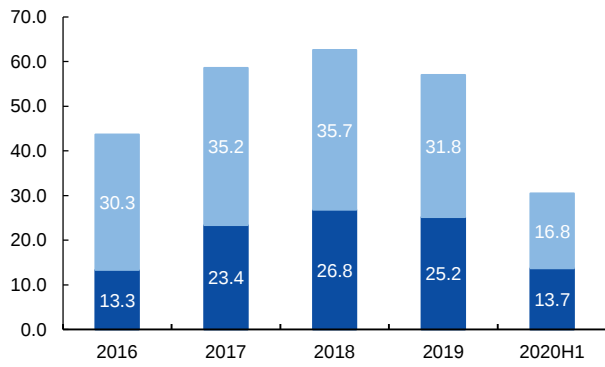
1.2



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

3

4



Wind

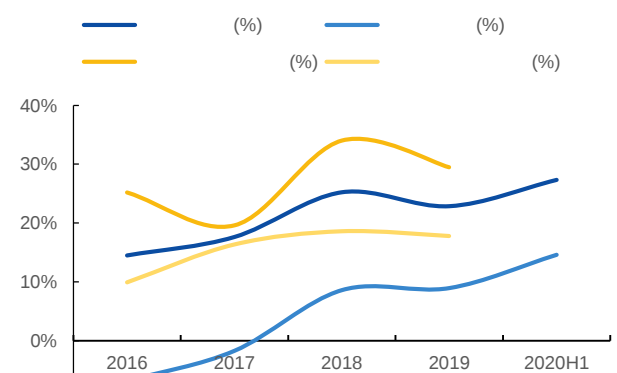
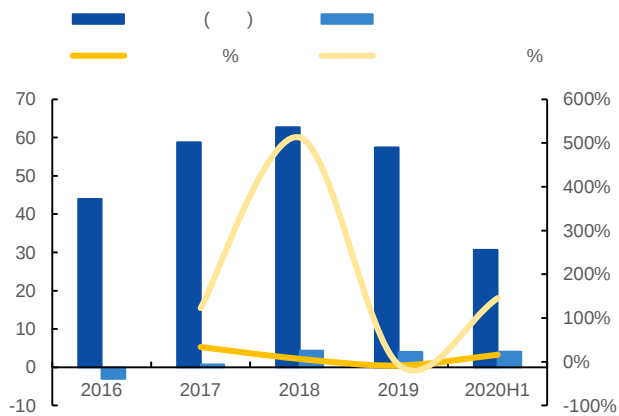
Wind

2016-

2018
22.8%
2.36% 20H1
2019
27.3%

5

6

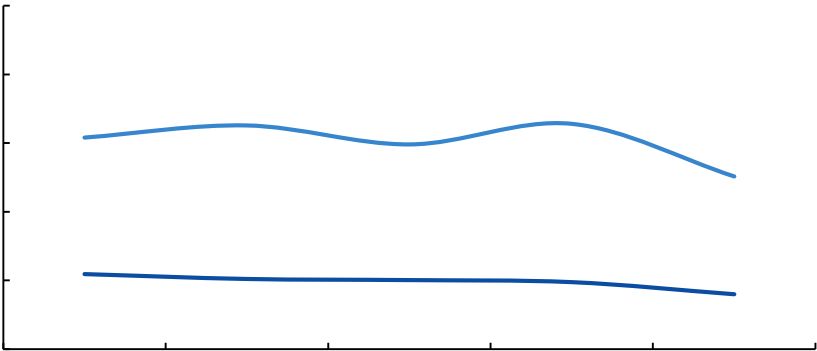


Wind

Wind

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

7



Wind

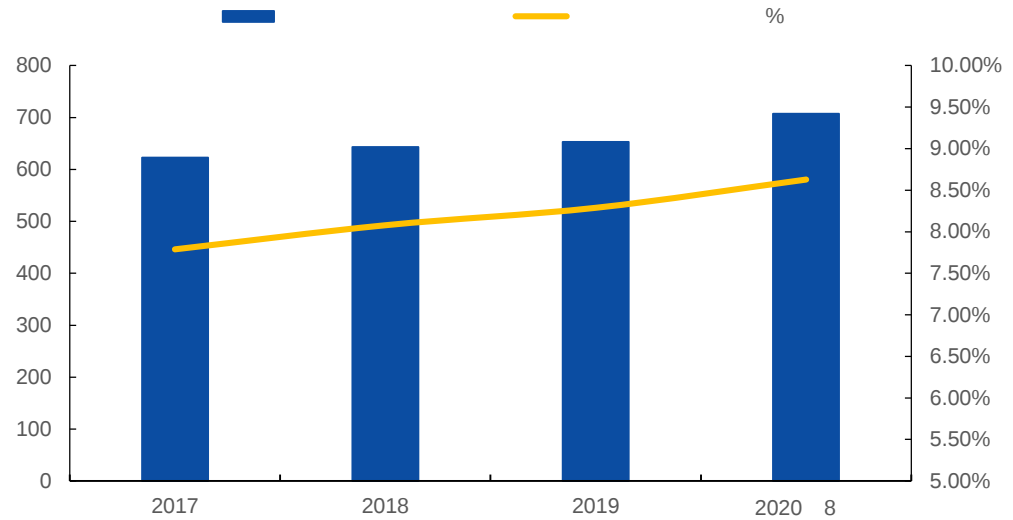
1.3



8

IC

11



Wind

2

2019 6

/											
							MEMS	IPM	48		
							MOS	IGBT	SBD/FRD	123	
ASIC		MCU	SOC	IC		,		MCU	ASIC	177	
							BCD	MEMS	analog	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							
AC-DC Flyback							
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%
					550,000,000	332,805,780	60.5%
MEMS							
					FC QFN, LGA		
					15,000,000	1,273,300	8.5%
32	MCU						
					42,000,000	1,534,200	3.7%
2 32							
200V							
200V							
					10,000,000	432,244	4.3%
MOS							
					4,500,000	390,756	8.7%
4500V VDMOS							

2020

1.5

1.5.1

2016-2019H1

20%

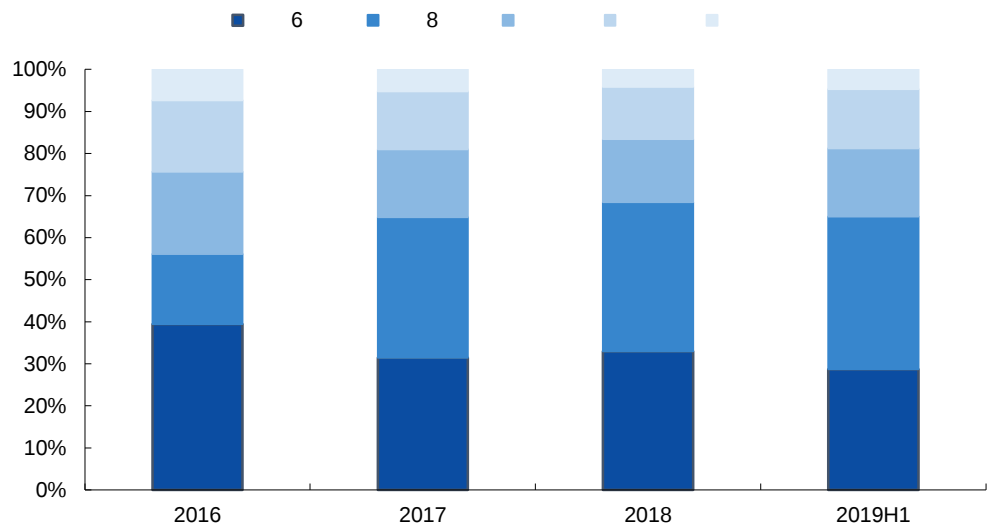
15%

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.

70% 2016-2019H1
8 8
12



1.5.2

13



1.5.3IDM+



6	IDM	Fabless
	IDM	Fabless

	IDM	IDM	Fabless
IDM			
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			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%

V)04SK0(Z8304(Ep CPp`CPpa54CPpa547UFyZzH

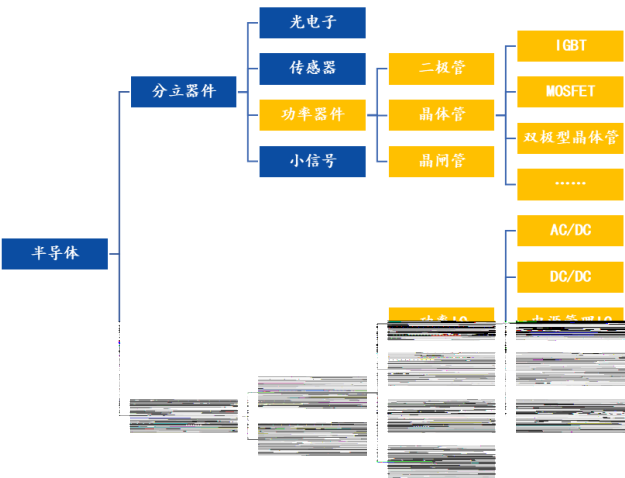
2.

2.1

2.1.1

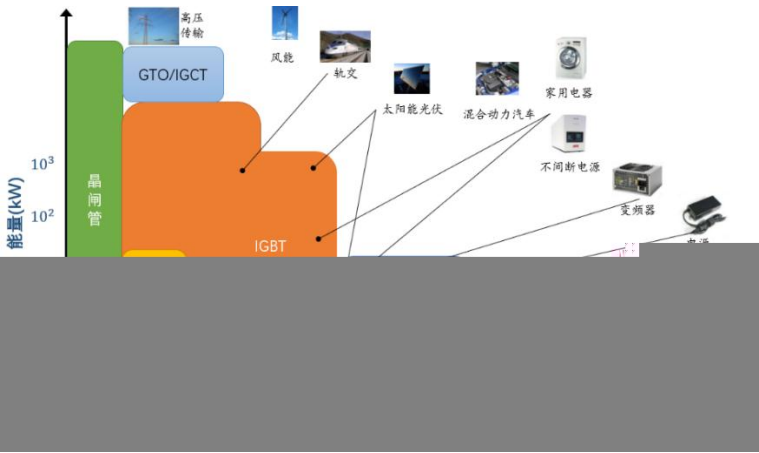
IC

15



/

16



Yole

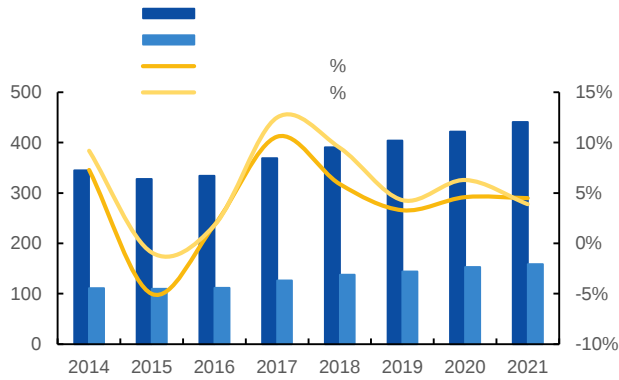
2019

	60%	IHS Markit
404		144
IC	Omdia	2019
210		

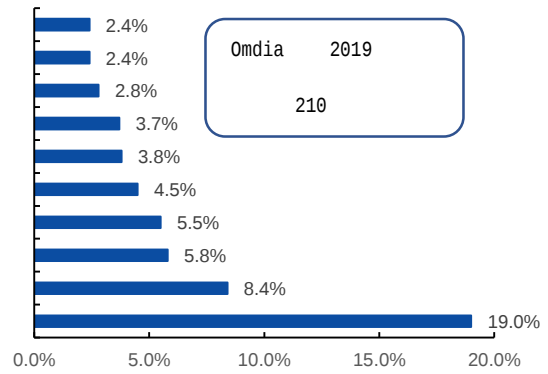
19% 58.3%

17

18 2019



IHS

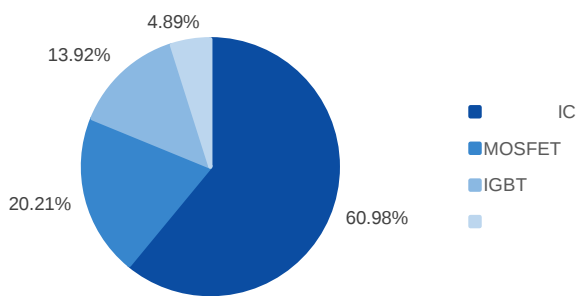


Omdia

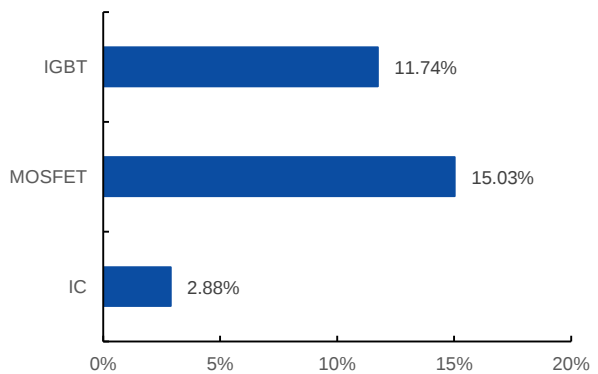
	PMIC	MOSFET	IGBT		2018
	60.98%	20.21%	13.92%	MOSFET	IGBT
2016-2018	15%	12%			

19 2018

20 2016-2018



IHS



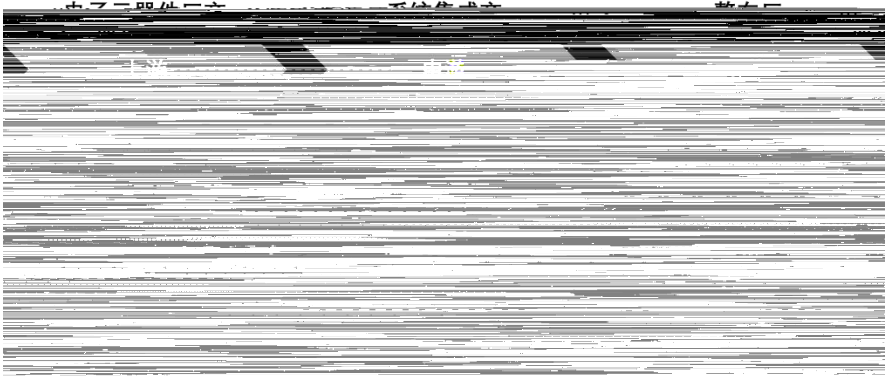
IHS

2.1.2

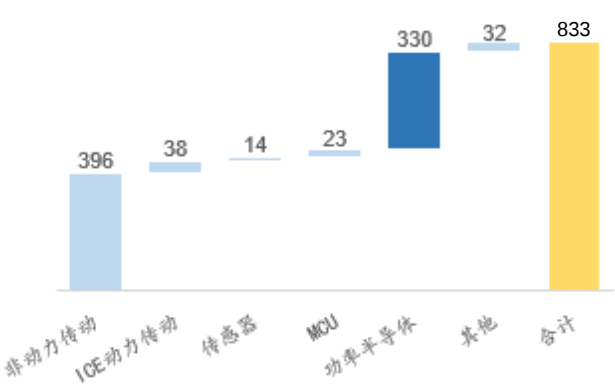
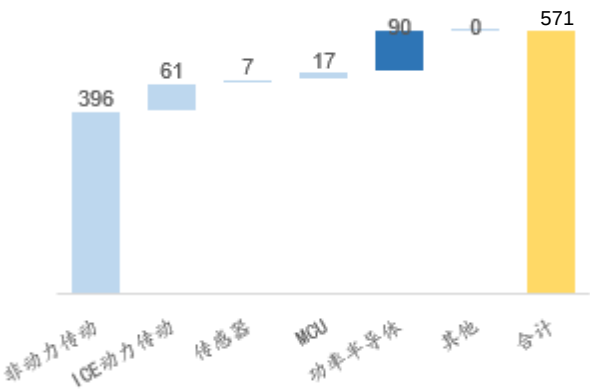
1

+

21



48V/ 90 /
330 /
22 48V/ 23 /



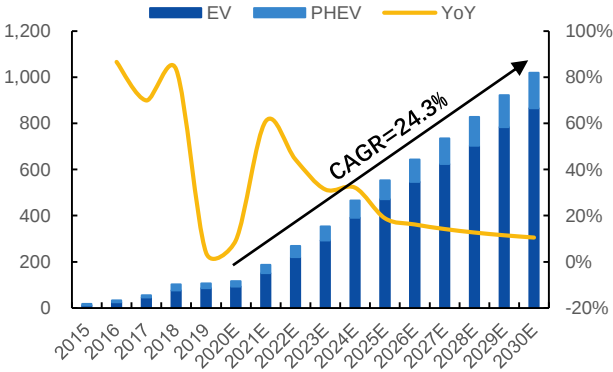
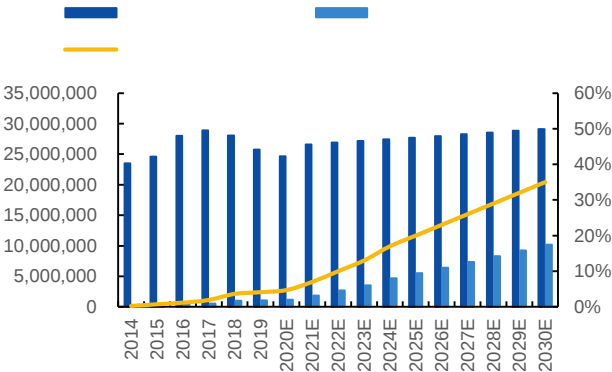
2021-2035
2025 20% 2030 35%
1% 2025

550 2030 1000

10 24.3%

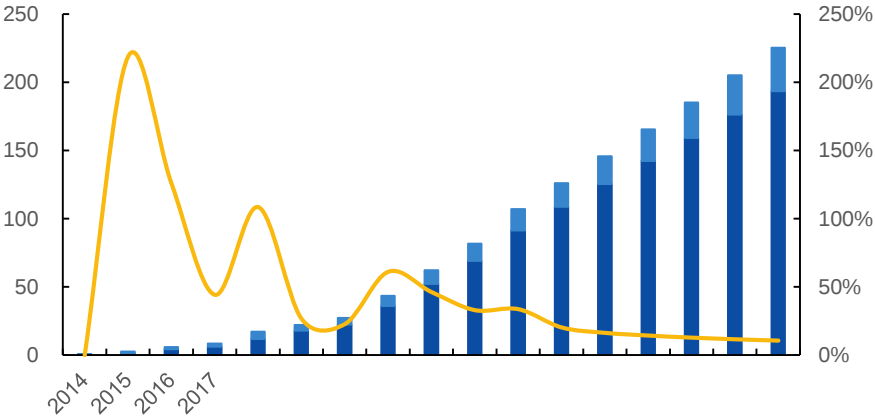
24

25



EV A00 C
PHEV
2025 125 2030 225

26

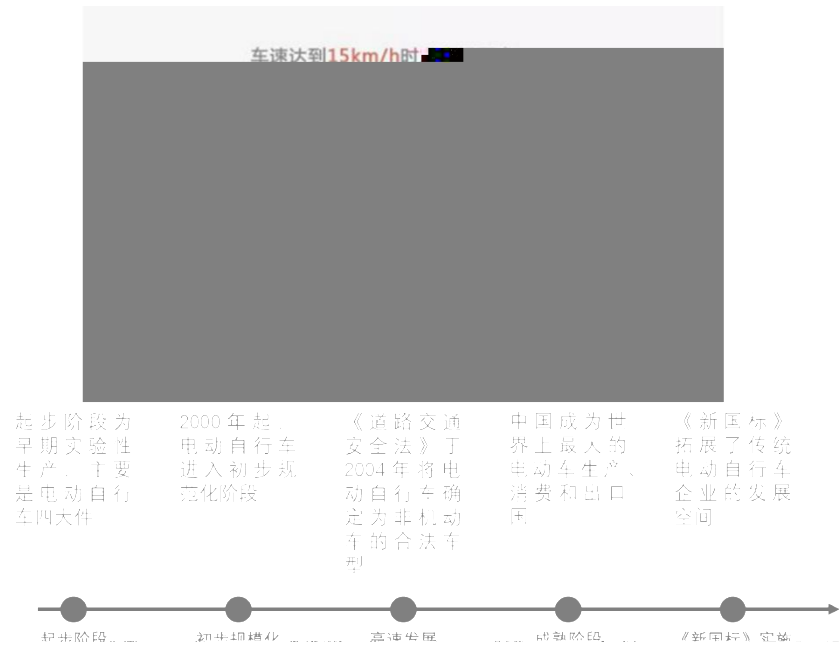


2

3-5
2018 5
GB 17761-2018 2019 4 15 +

MOSFET

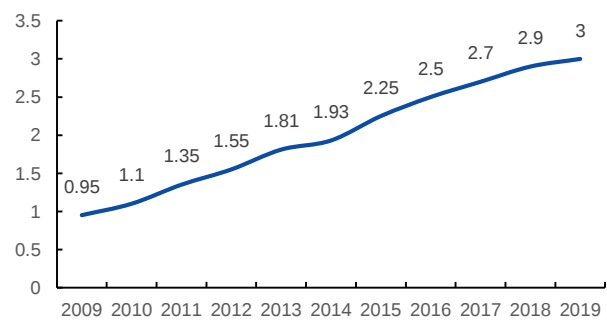
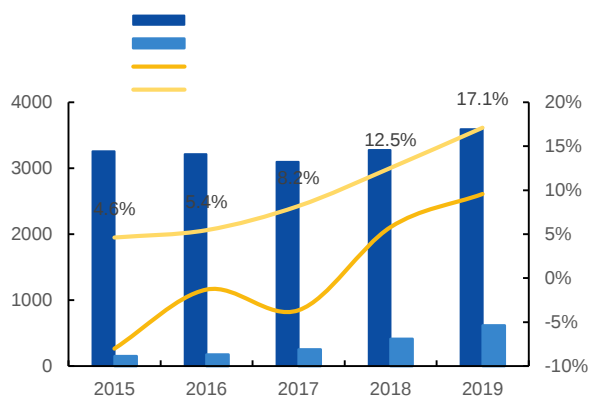
27



3 2019 3592 615 17.1% 2019

28

29



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

8000

55kg

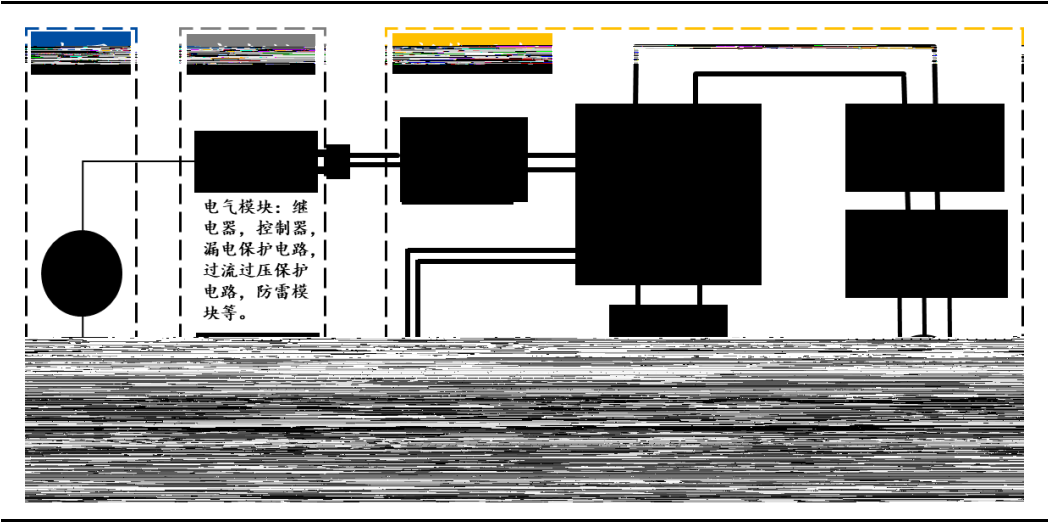
MOS 20 30 3-5
MOSFET 10-20

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	11.8

GGII

3
" + " " + "

30

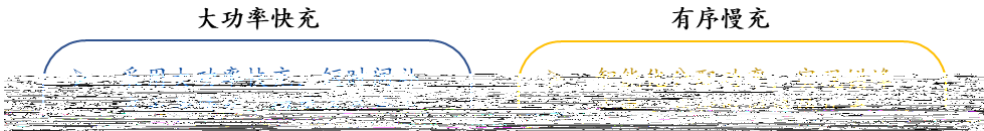


1 3 1

2 1 2

3 / 6 4
/ 1 1

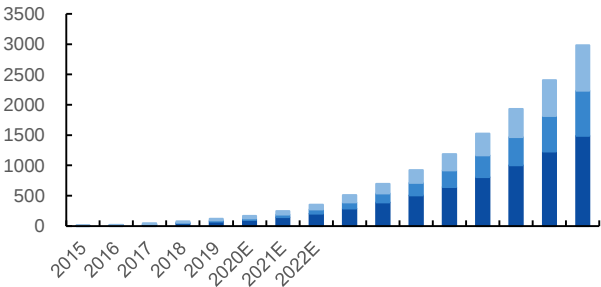
31



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

32

33



EVCIPA

GGII

2.2AIOT
MEMS

MEMS

A/D

34 MEMS



AIOT

MEMS

MEMS

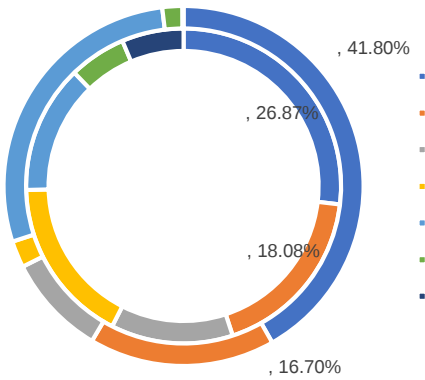
26.87% 13.19% 18.08%
32.6% 2025

Yole

111.4 10.4 26

35

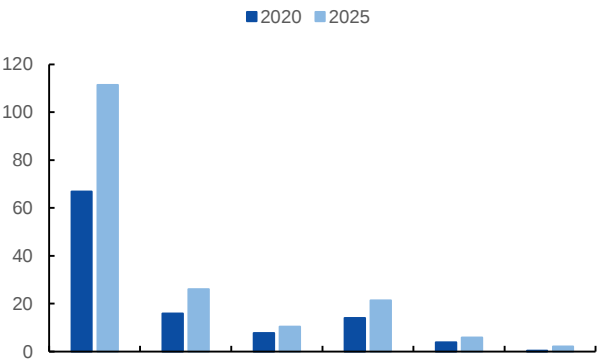
MEMS



CCID

36

MEMS



Yole

810

2019
MEMS

MEMS

600

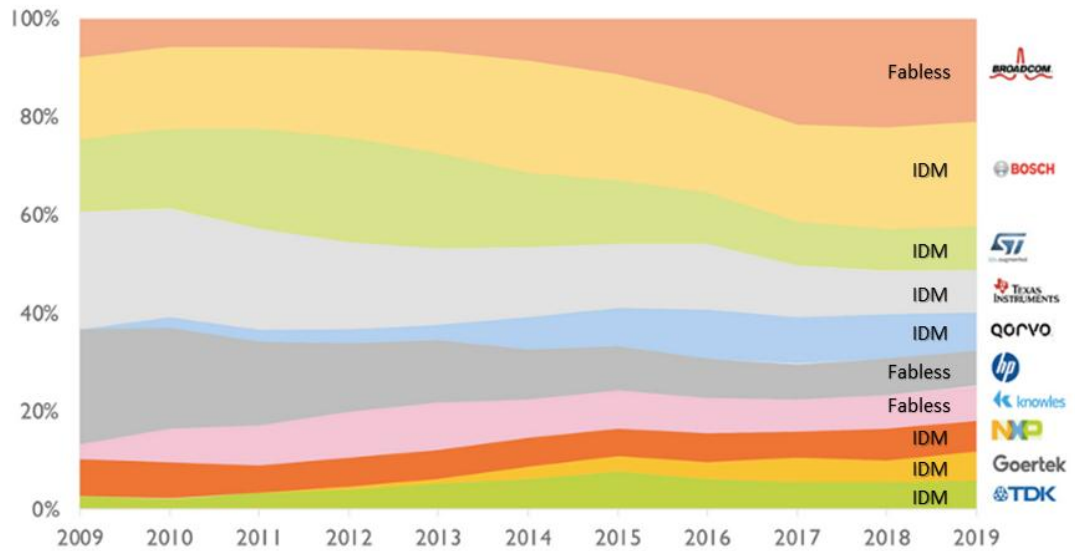
2021

QORVO

MEMS

41

MEMS

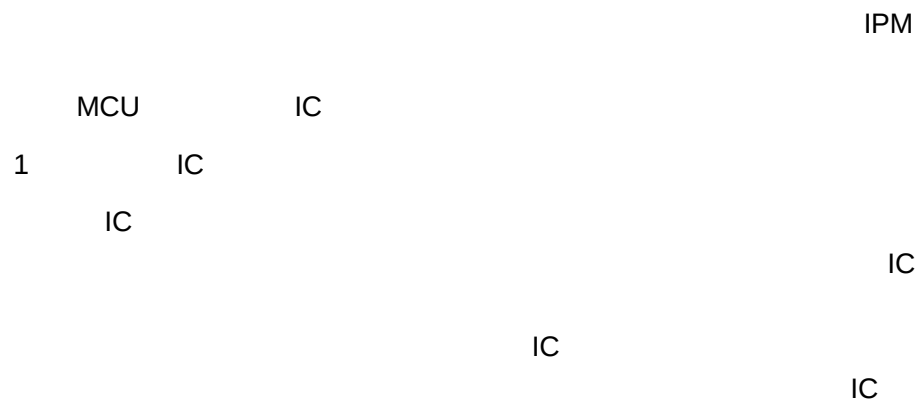


Yole

2.3

2.3.1

PMIC MCU IPM

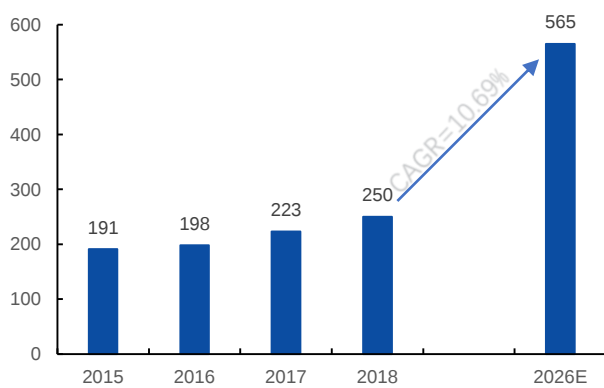


42



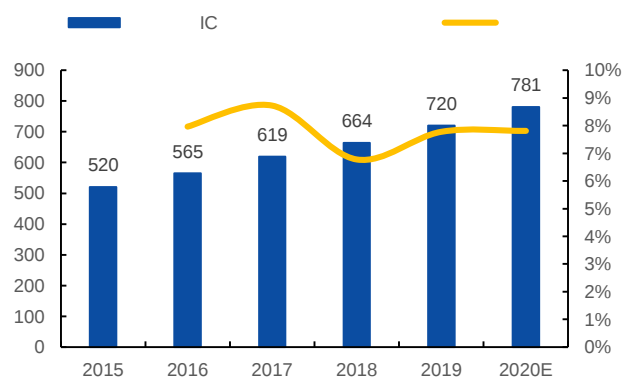
SEMI 2026
10.69%
2018-2026
520 720
565
781

43 IC



SEMI

44 IC



IC 70%
21% ADI IC

Yole

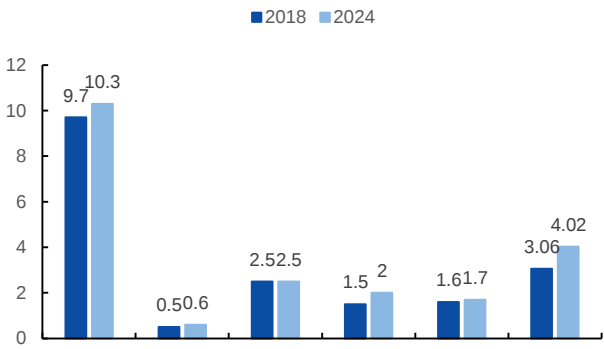
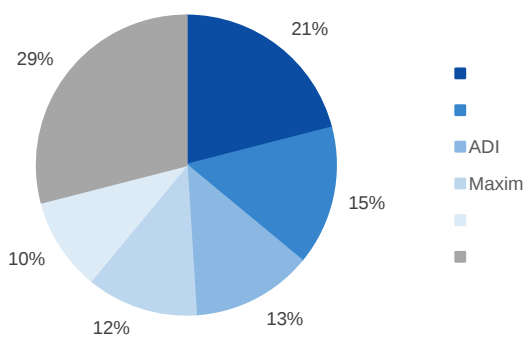
2018 2024 PMIC 103

97

45

IC

46



Yole

2 MCU IPM
MCU Micro Control Unit CPU RAM ROM
I/O

47



MCU
MCU
MCU IHS 2019 2022 256 320
2020 21 22 5% 7% 9%

ASPENCORE
26%

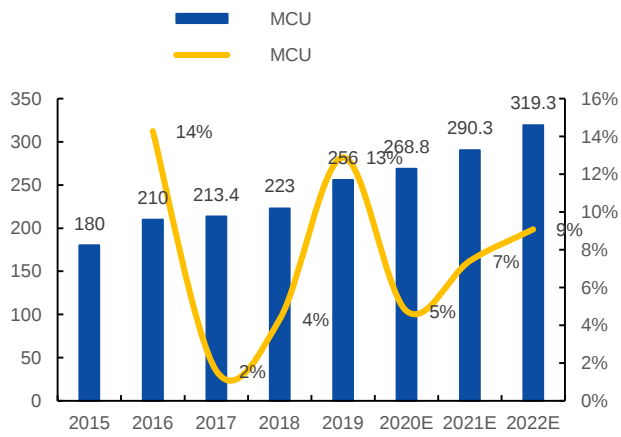
2019

MCU

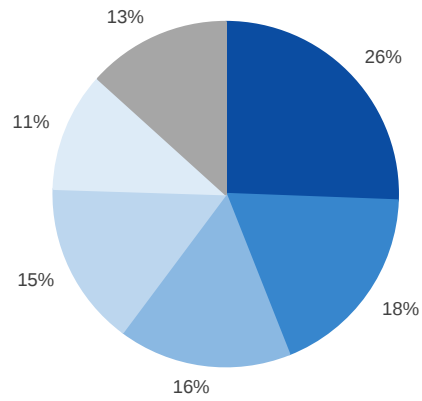
18% 16%

48 MCU

49 2019 MCU



IHS Markit



ASPENCORE

2019

MCU

80%

28%

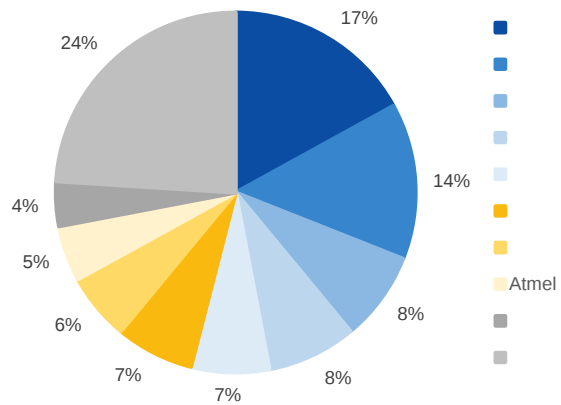
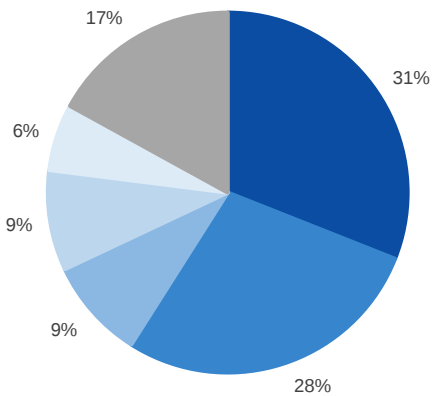
MCU

9

5%

50 2019 MCU

51 2019 MCU



Atmel

IPM

IGBT

GTR

MOSFET

IPM

IGBT

MOSFET

GTR

IGBT

,

52

IPM



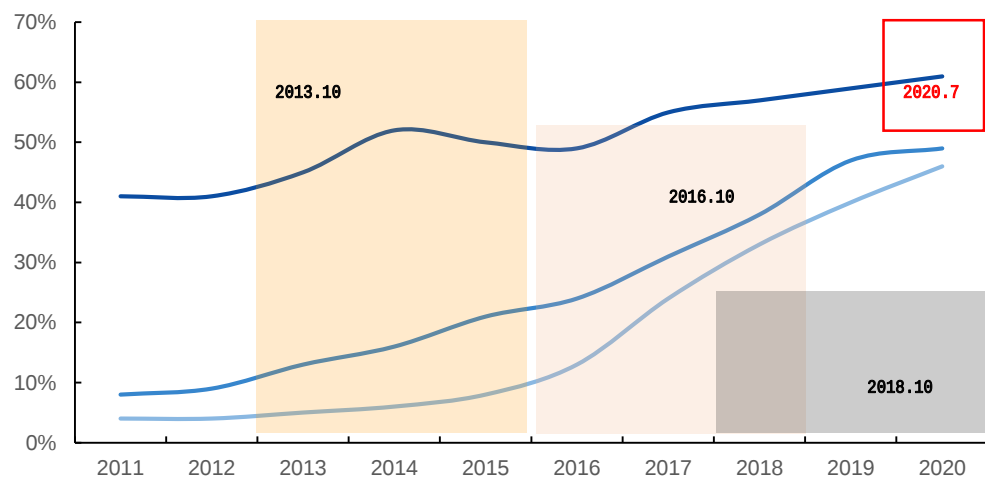
53

IPM



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

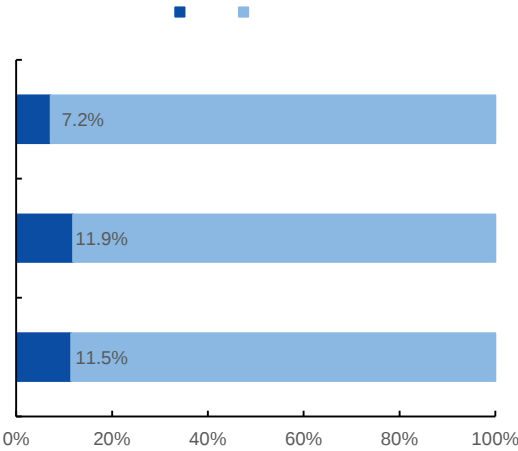
54



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

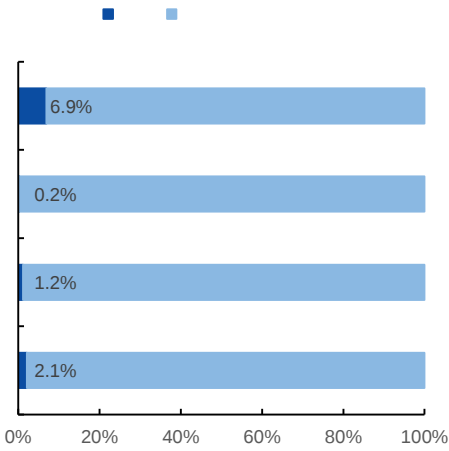
55 2019

MCU



56 2019

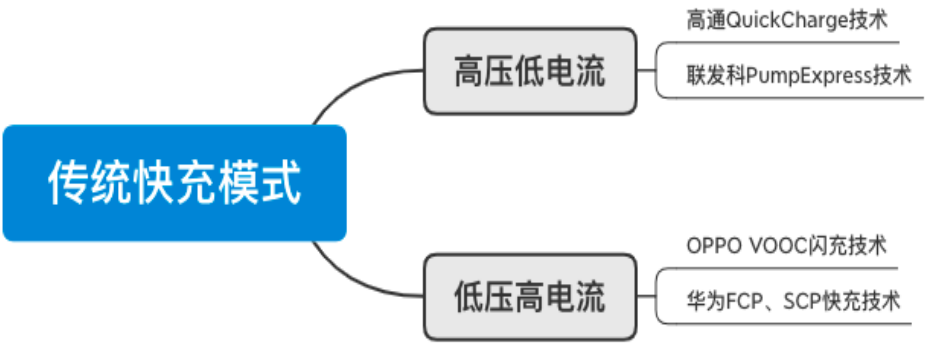
IPM



2.3.2

OPPO

57



120W
120W
OPPO

10
6C
125W
IQOO

9

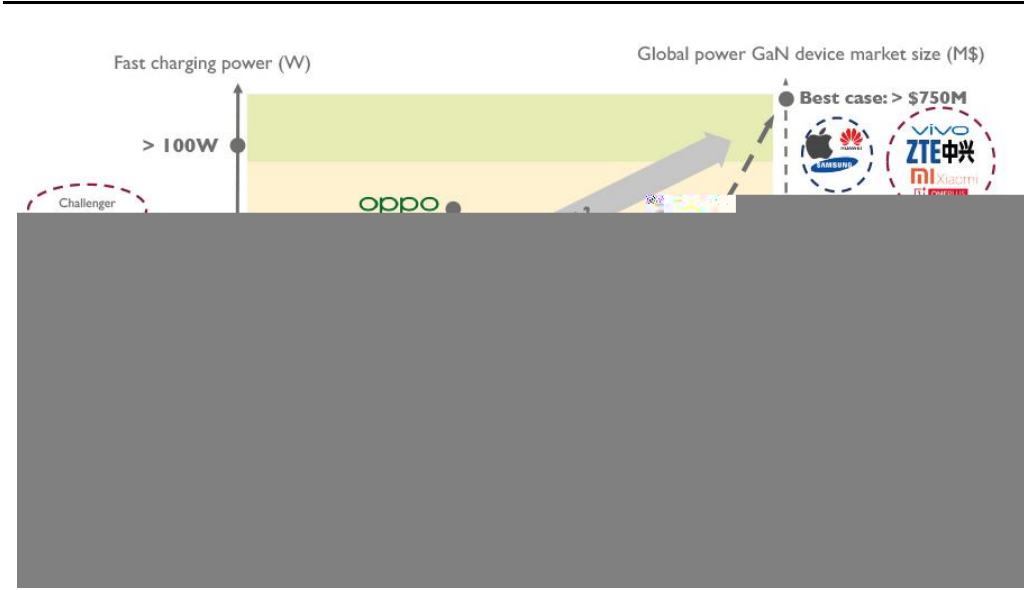
OPPO	125W		·	
			· 6C	
			·	
			· 14	
vivo	120W		·	
			· “ ”	
			· IC	
			· “ IC ”	
	120W		·	
			·	
			·	
			·	

10W

30W

30-100W

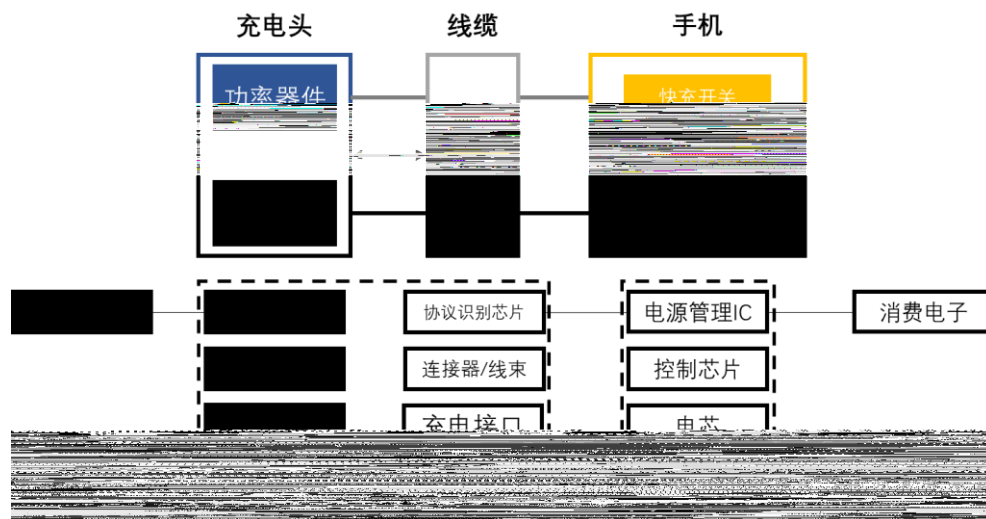
58



Yole

GaN

59 GaN



GaN

150

50

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	2020	USB-PD QC PPS Apple2.4A AFC	65W 20V3.25A	159	
18W PPS	2019	USB-PD QC FCP AFC	18W 12V1.5A	49	
075PQ		Apple2.4A PPS			
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	2018	USB-PD	18W 9V2A	243	A1695
5W		USB-PD	5W 5V1A	145	A1443

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

GaN 149 65W NV6115 NV6117
 50 1/3

11	GaN	Type-C 65W			
/					
1	PCB	-	-	-	
2		400V 100 μF 400V 18 μF	AiSHi		2
3		TEC25001	-		1
4	ACDC	E002M DBF310			2
5		UCC28780	TI		1
6	GaN	NV6115 NV6117	Navitas		2
7		3.15A 250V	-		1
f l					

/	3000	20-25%	3000		GaN	
GaN			35%	77.0	90.5	102.4
			25%	55.0	64.6	73.1
			15%	33.0	38.8	43.9
GaN			35%	48.6	53.0	54.0
			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

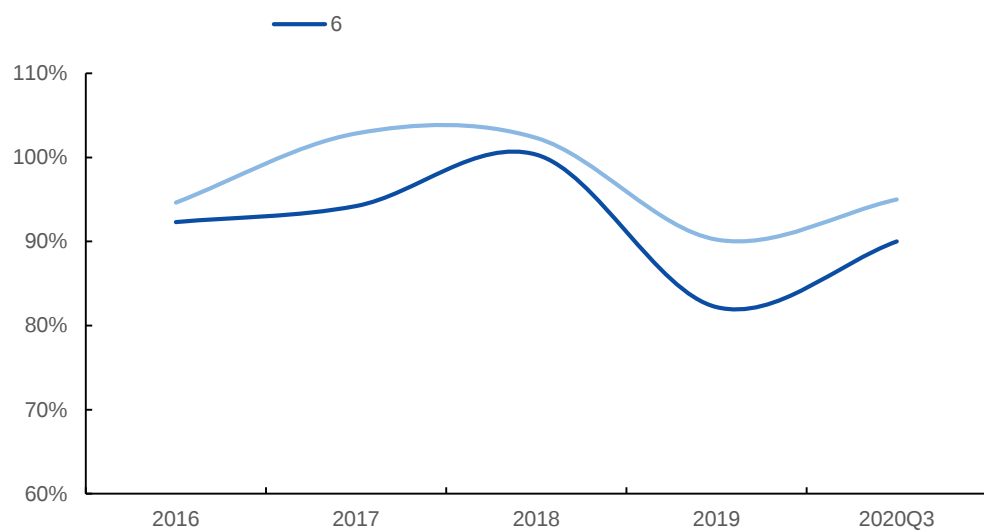
				247	-
--	--	--	--	-----	---

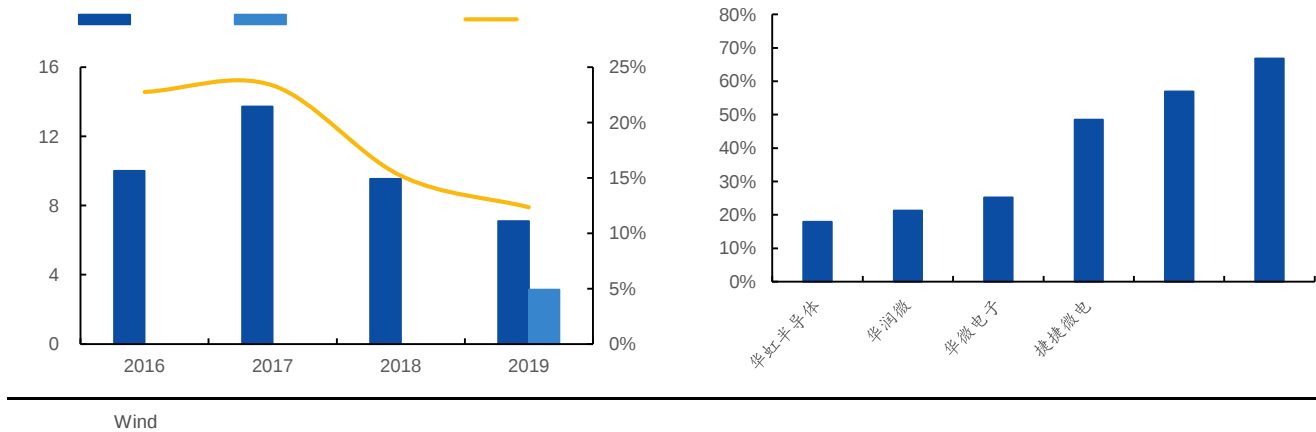
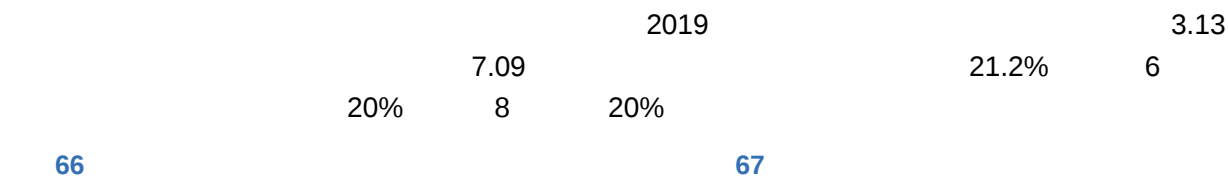
3 6 Analog BCD MEMS DMOS

4-6

Device Type	Market Share (%)
MOSFET	90%
IGBT	6%

65





2.4.2

IC IPM

62

50

60%-70%

16

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

3.

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

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

17.51	130x	96x	72x
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17.51	83x	57x	47x	“	”
-------	-----	-----	-----	---	---

18

	2020E	2021E	2022E	2020E	2021E	2022E
--	-------	-------	-------	-------	-------	-------

*

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

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