

688396

+

68.98

+

“ + ”

12

MOSFET

MOSFET

IGBT

MOS

12

PMIC

MOS

-100V

1500V

MOS

6

PMIC

“ + ”

2017-2018

12

2020-2022

9.77/12.10/14.38

“ ”

0755-82755859

gengchen@hcyjs.com

S0360517100004

()	121,593
()	24,904
()	838.75
()	171.79
(%)	32.0
()	8.4
12 /	74.89/31.74

(12)



	2019A	2020E	2021E	2022E
()	5,743	7,083	8,637	9,995
(%)	-8.4%	23.3%	21.9%	15.7%
()	400	977	1,210	1,438
(%)	-6.7%	143.7%	23.9%	18.8%
()	0.33	0.80	1.00	1.18
()	143	82	66	56
()	11	13	11	9

2020 12 7

“IDM+ ”
2017-2018

“IDM+ ”
IDM
MOS

2017-2018

目 录

IDM+	.....	7
	.....	7
IDM		

34				21
35	2011-2018			21
36	2011-2021			21
37	2018	MOSFET		22
38	2018	MOSFET		22
39	2017	IGBT		22
40		IGBT		23
41	2017-2023	MOSFET	IGBT	23
42			265	24
43	2017-2021			24
44	2017-2021			24
45		MOSFET		24
46	2025		IGBT	24
47	5G			25
48	2017-2023			25
49	20W PD		MOS	26
50				26
51	2018		IPM	26
52				26
53	2016-2018		8 /	27
54	2015-2018		/	27
55				27
56	2007-2019	8	\$/	28
57	2016-2017	8		28
58	2007-2018	8		28
59	2008-2018			28
60	2009-2017	12		29
61	2018	8		29
62			%	30
63				30
64	2016-2019			30
65	2014-2018			31
66	2011-2018			31
67	2016Q1-2019Q4	8	/	31

68	2016-2019	ASP	.....	32
69	2016-2019H1	ASP	.....	32
70	2016-2019		.....	32
71	2016-2019	EBITDA	.....	32
72	2013-2022	8	/	33
73			.....	33
74	2018-2024		.....	34
75	2019Q1-2020Q4		.....	34
76	2020Q3	PC	.....	34
77	2020		.....	34

IDM+

MEMS

MCU

IC

IC AC-DC LED

3

MOSFET IGBT

1

		/						
					MOSFET IGBT			
					IPM	IPM		
		IC	AC-DC	LED	IC	BMS IC	IC IC	
					MEMS			
					MCU	MCU	MCU	
			CMOS/ANALOG	BICMOS	RF/Mixed-Signal	CMOS	BCD	
					MEMS			
			IPM	Copper Clip				
			0.18μm	Stepper	0.13μm	3"x5" UT		
				1:1 Array				

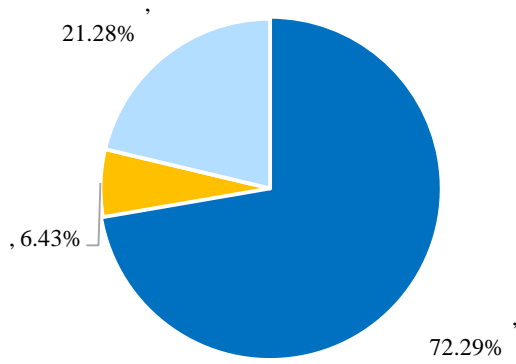
72.29%

20Q3

6.43%

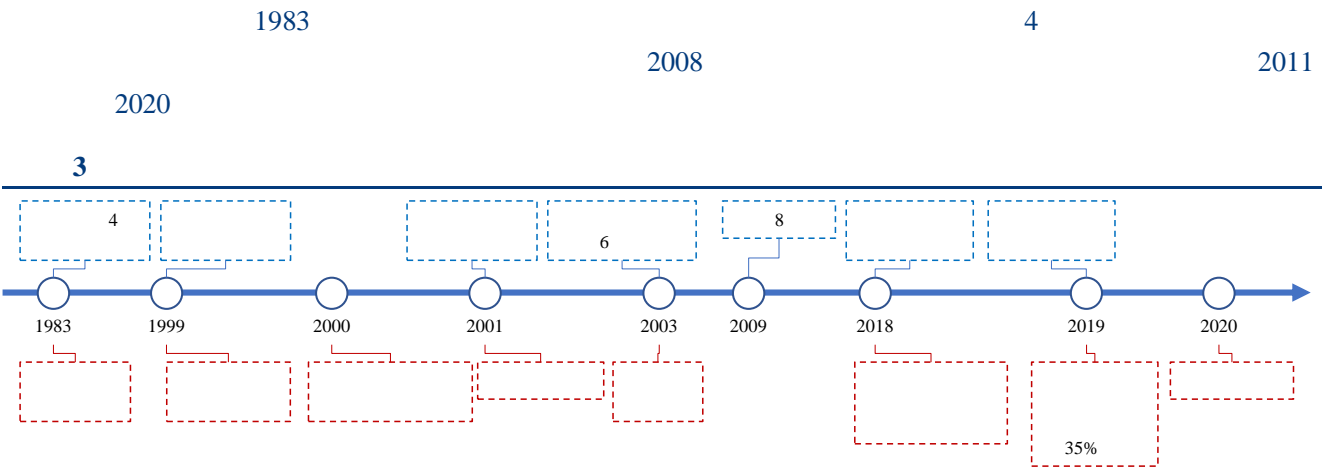
1%

2



Wind

3



4

		/		2018
	3 6		Analog BCD MEMS DMOS Power Discrete	247
	1 8		Advance BCD Analog DMOS	73
	1 8		MOS MOS MOS	

			SBD		60				
8		8	BCD	8	MEMS	19.2			
SiC 6		SiC JBS		MOSFET					
12		MOSFET		IGBT		3 /			
						199			
		QFP		QFN	PQFN	FC-QFN	TSSOP	SSOP	62
				MSOP		IPM		69	
								2.4	

IDM

IDM

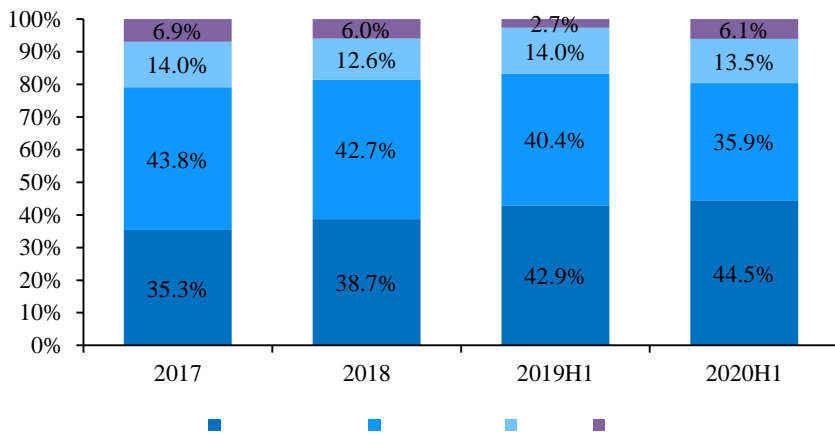
2016

30.52%

20H1

44.94% 14pct

5 2017-2020H1



Wind

1. IDM

IDM

IDM

IDM

6 2018 Top10

	2018
1	21.7
2	18.5
3	17.1
4	8.1
5	7.7
6	7.2
7	6.9
8	6.0
9	5.4
10	4.9

MOSFET

6

MOSFET

2018
2018

MOSFET

16

8.7%

MOSFET

24.19

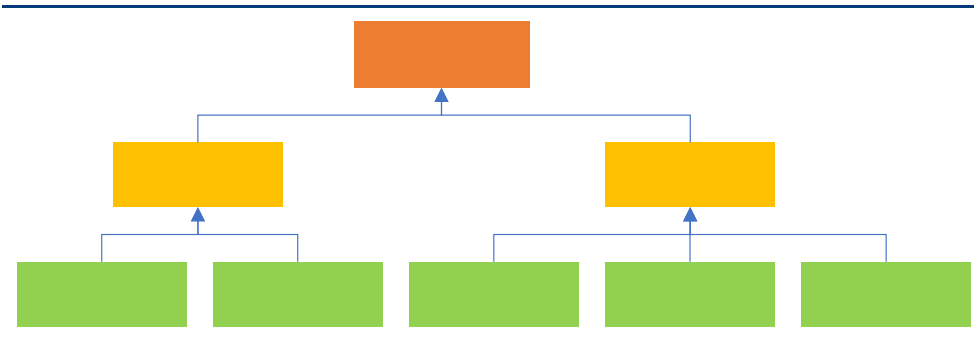
MOSFET

66%

IC

IC

7



21% IGBT
SiC
1200V

UPS
2020
SiC

20H1

50%

22%

MOSFET

2.

65.3%

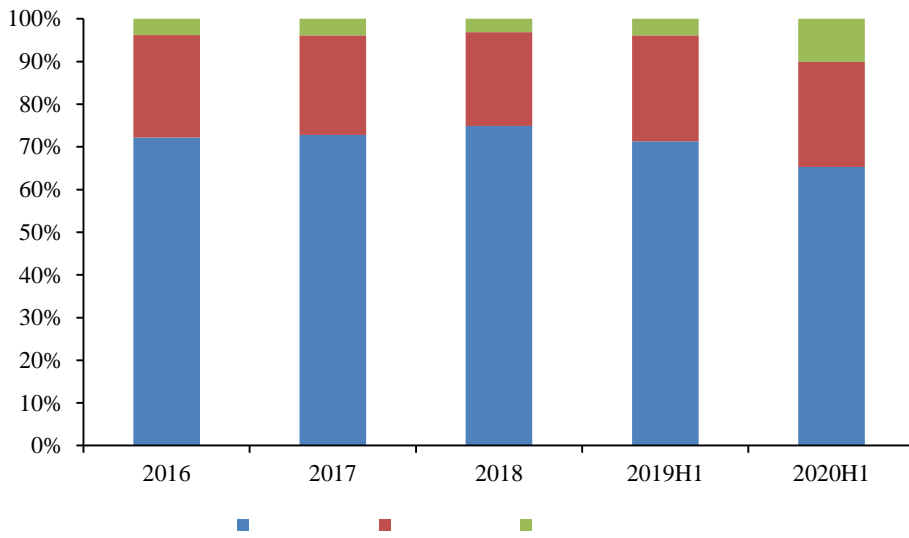
24.6%

6 2020H1

3%-4%

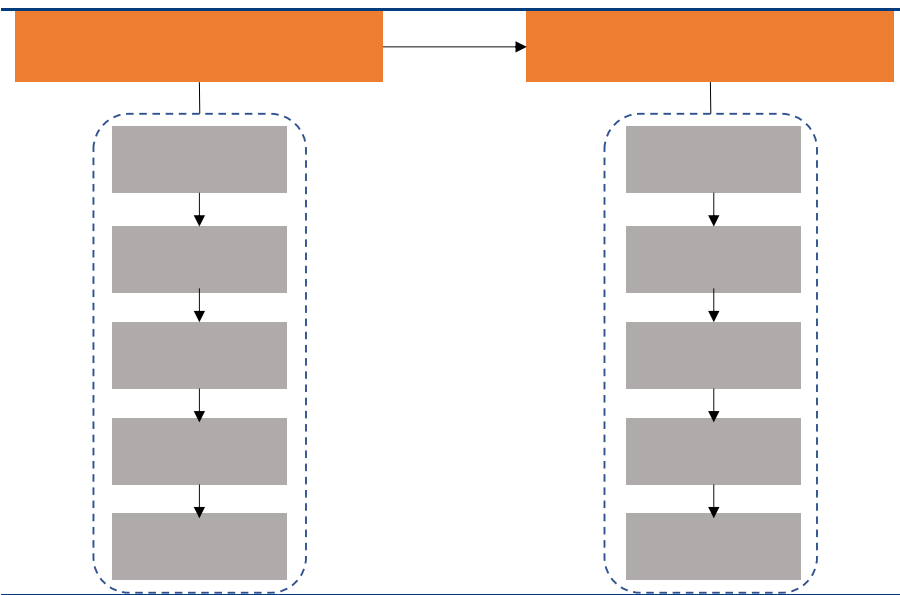
10.95

8



Wind

9



CMOS/ANALOG	BICMOS	RF/Mixed-Signal	CMOS	BCD		MEMS
0.11μm	0.18μm	0.25μm	0.35μm	0.5μm	0.5μm	
BCD			BCD		CMOS	
	BCD				0.18μm BCD	CMOS DMOS
MOSFET				IGBT		

8

6.5

6

20

2018

10

turn-key

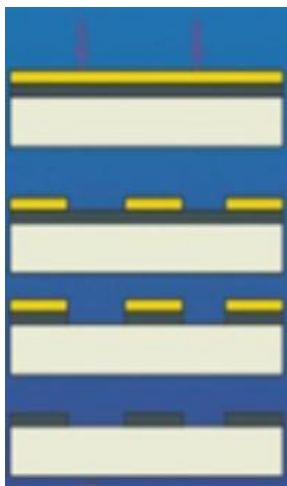


IC

2018

27%

11



12

	TCL

8:2 17% 2019H1 2016-2020H1
 40.49%

13 2016-2020H1

Wind

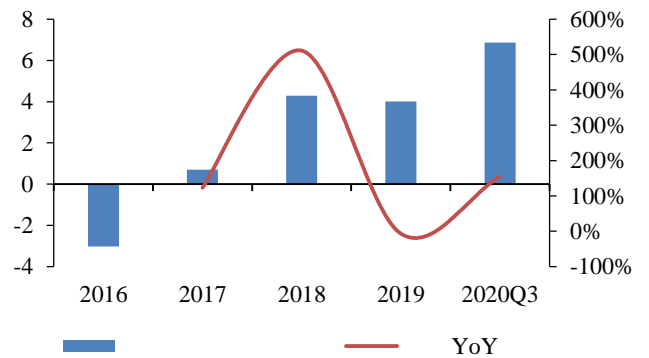
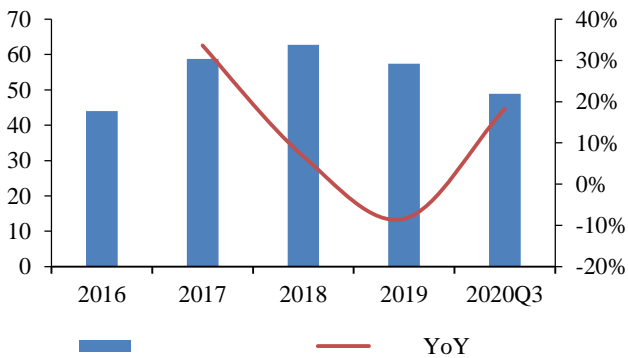
14 2019H1 Top5

MPS	14.43%

9.3% CAGR 6.5% 8.7% 2019
 8% 2019H1 2020 2018 12.16% 49
 18% 2017 2016 -3.03 2017
 2015-2016 9 10
 0.7 2018 500% 4 2020
 6.87 155%

15 2016

16 2016

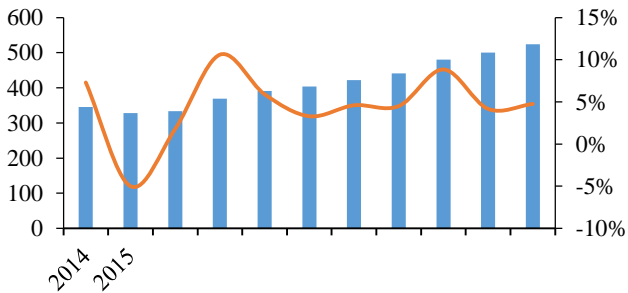


Wind

Wind

17 2014-2024

18 2015-2021



IHS Markit

IDM
 20H1 97.5%
 78.5%

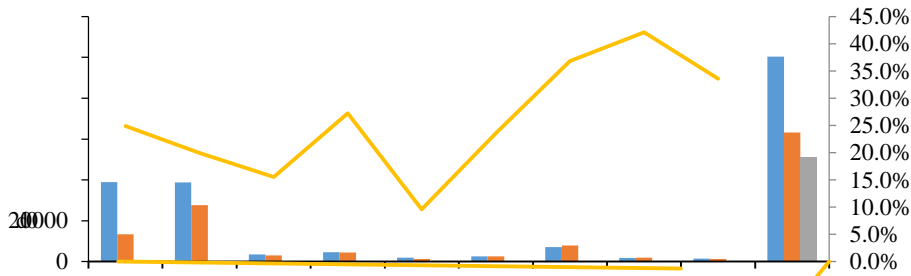
		2003
		2000
		1990

2020

2009 8 2017 2017 8 2016-2020H1 2020H1
 9.06 13.09 9.15 6.62 3.18 2017 2017 22.3%
 10.4% 17.6% 27.3% 2017 4 3.8 0.7
 52.41%

22 2017-2019

2018



2019

2019

23 2016-2020H1

24 2016-2020H1

Wind

Wind

8

23

8 BCD
2018 9

2.75

8 MEMS
2021 5

23.11

25 8

	46788	3.80%	1777.9
	129540	12.25%	15868.7
	39694	9.80%	3890.0
	15122		
	231144	9.32%	21536.6

2020

ASP
MOSFET IGBT

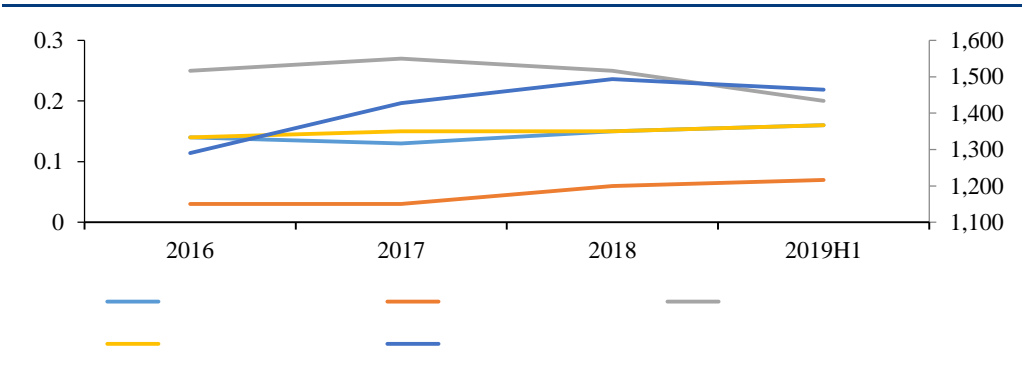
2016

ASP 0.14

2019H1 0.16

ASP 1290 1465
ASP

26 2016-2019H1 ASP



2020

Wind

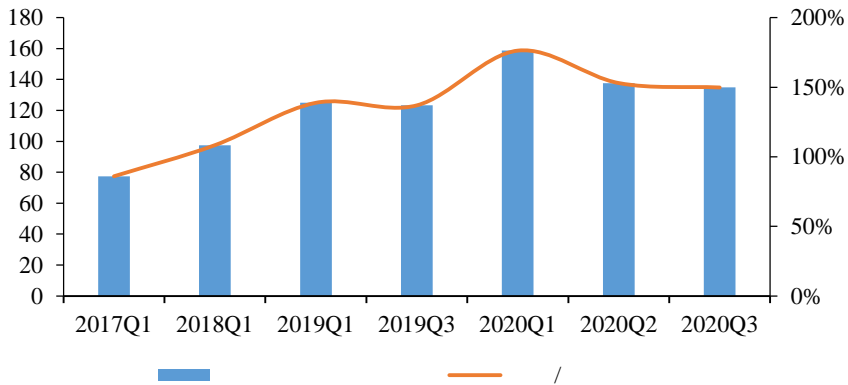
2020Q1

2017

/
3.3%

2019
2018 2020H1

27 2016-2019H1

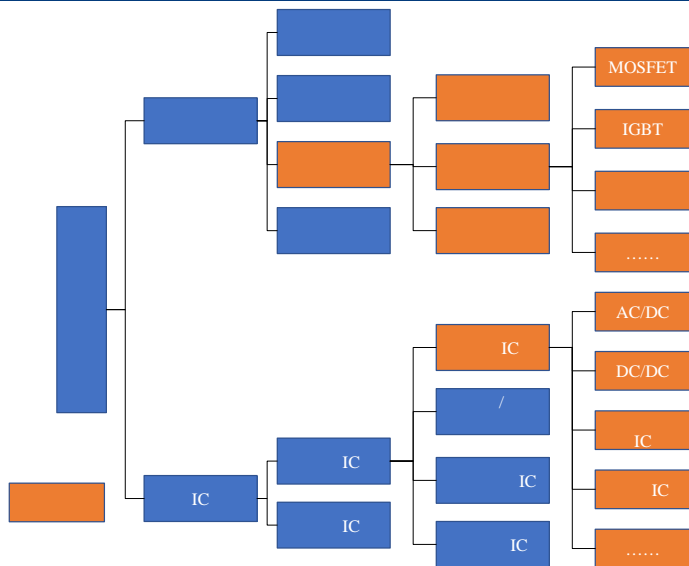


Wind

2020



28



MOSFET IGBT

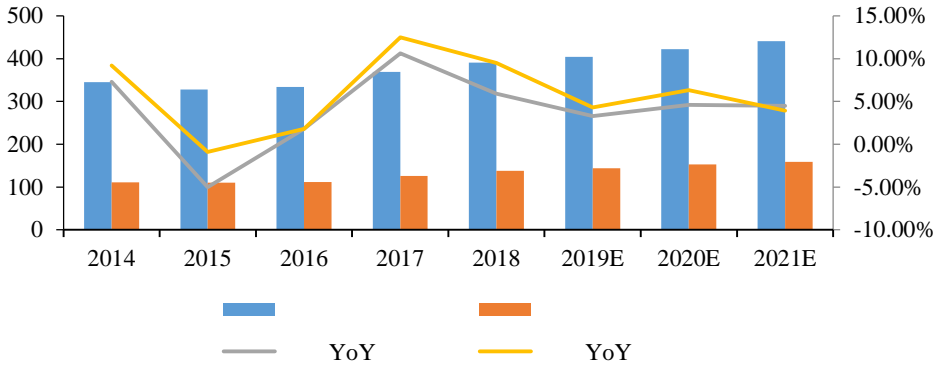
SBD

FRD

SBD

FRD

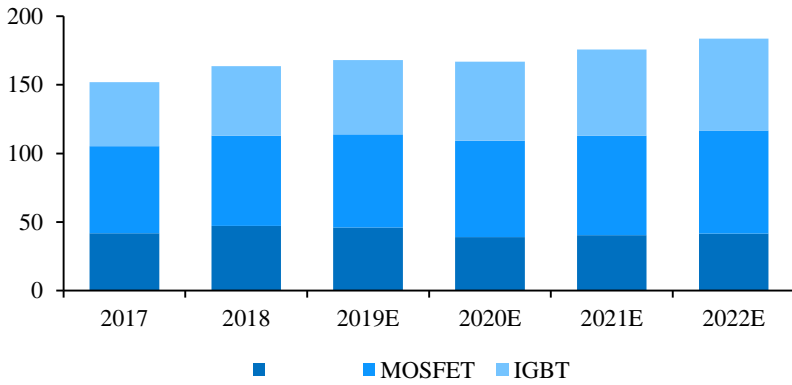
31 2014-2021



IHS Markit

MOSFET		IGBT		60	
IC Insights					
MOSFET	IGBT	MOSFET	IGBT	2019	68
75		58		2022	67
		IGBT2020			

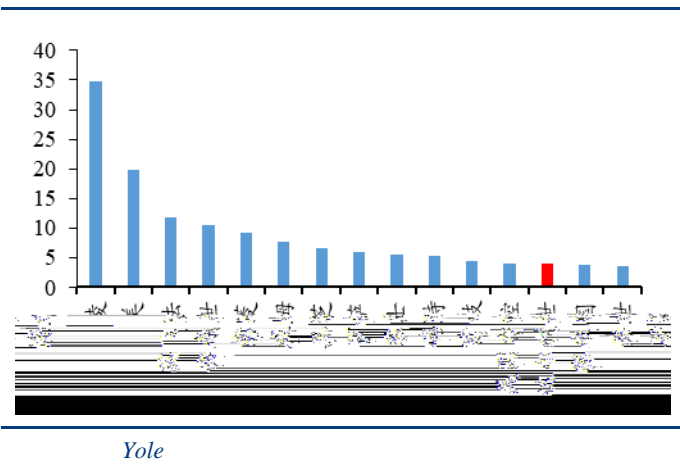
32 2017-2022 MOSFET IGBT



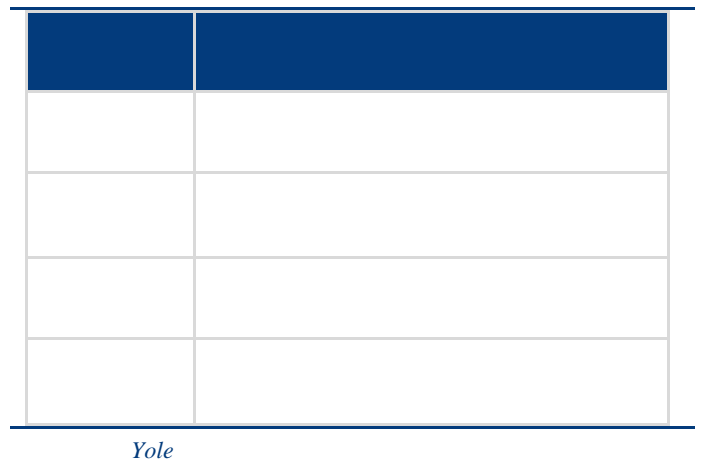
2.

Top10		35		Yole		2019	
&		Top15		4	5	20	1
12							
2019							

33 To15 &

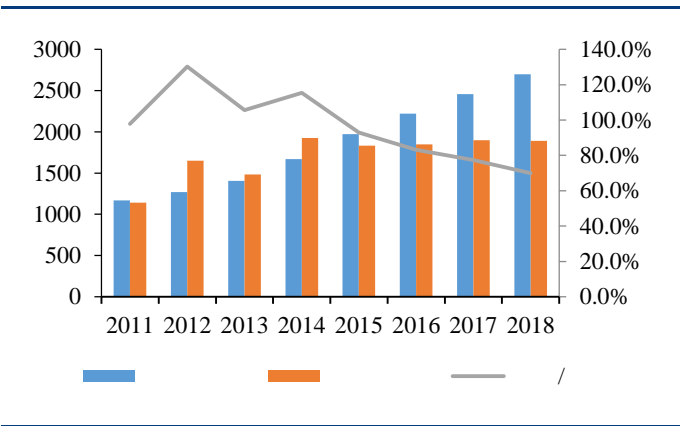


34

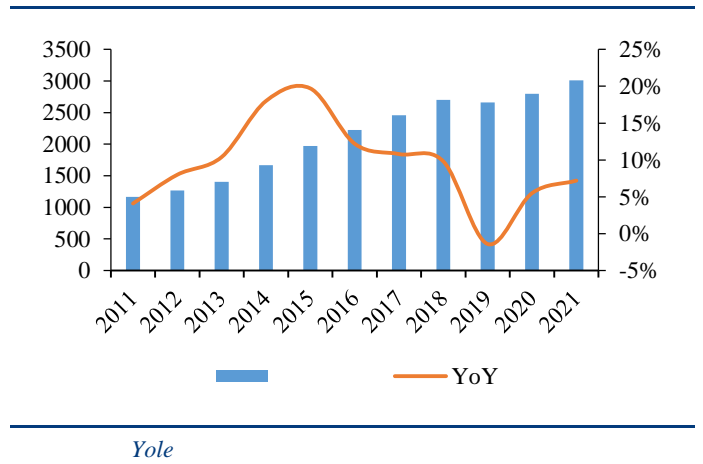


1970 1832 93% 2015
 2016-2018 83% 77% 70% 2017
 2025 3000 50% 1500 50%

35 2011-2018



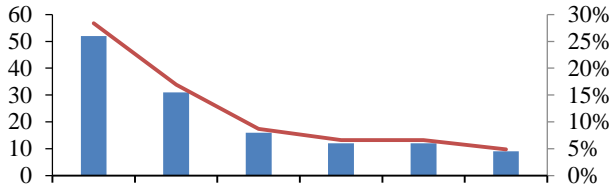
36 2011-2021



MOSFET 52 28.4%
MOSFET 16 8.7%
 72.1%

IHS Markit 2018 45.3%
Top6 CR6

37 2018 MOSFET



IHS Markit

IGBT

38 2018 MOSFET

IHS Markit

IHS Markit 2018
IGBT

IGBT
90%

75%

39 2017 IGBT

IGBT

IDM

IDM

40 IGBT

SITRI

5G

5G

900

Yole	2017	-2023	IGBT	MOSFET				
					300	2025		150
	2023				440	2022		900

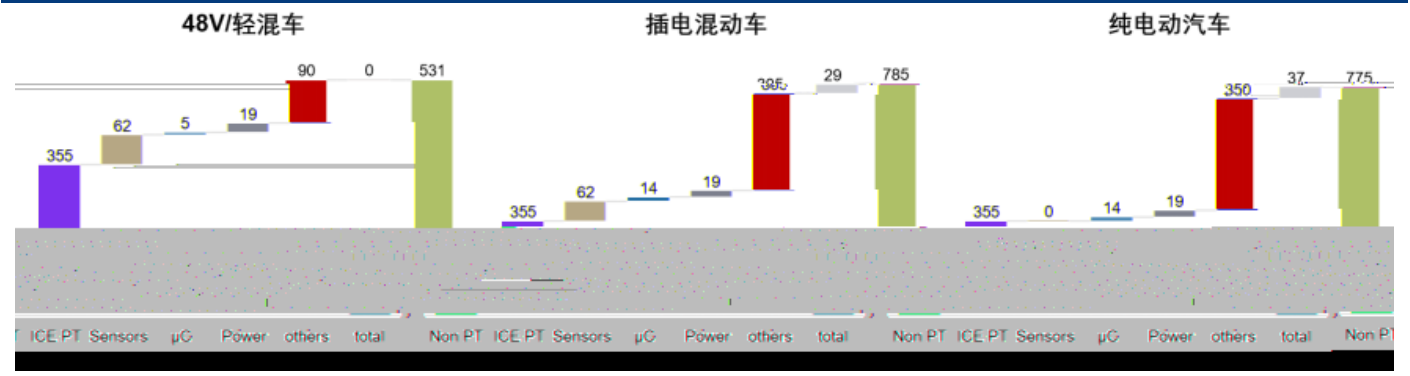
41 2017-2023 MOSFET IGBT

Yole

1.					300			
		17				90		305
360								

42

265



MOSFET&IGBT
2025

MOSFET&IGBT

IGBT

300

MOSFET
210

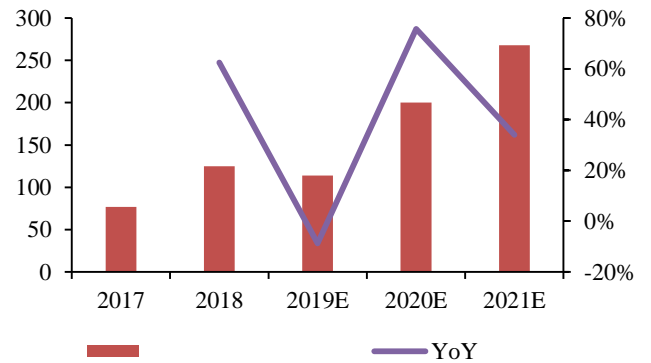
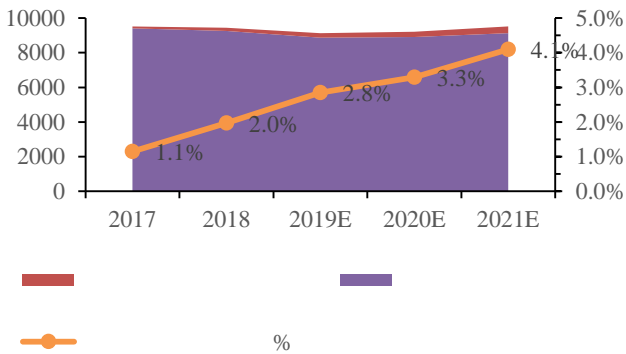
2022

116

IGBT
310

43 2017-2021

44 2017-2021

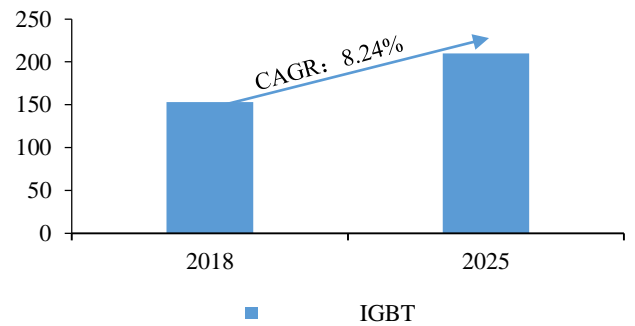
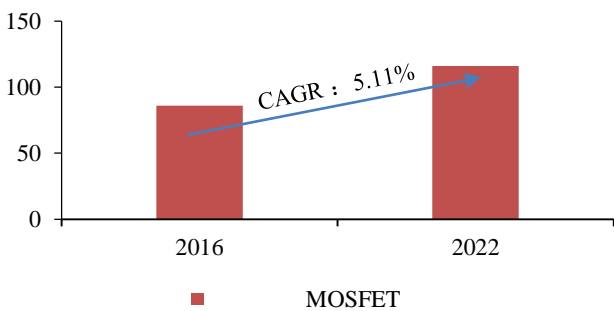


Bloomberg NEF marklines

45 MOSFET

46 2025

IGBT



2G 5G 2G 5G Massive MIMO
DU CU

5G 700 4G

4G 1.5 5G 4G 1.52 7

4G 5G



20 20 20 20 20 20

20

UPS UPS

T& S

16 2 &

2023 15.1

48 201 2023

68

2009 1210

25

5G 4G 5G

1. 2017

2017-2018 8

2016 20.6% 14.6%
5.0% 11.5% 2016-2018 8

8

2017-2018 7.6% 7.1%
CAGR 32% 20%

53 2016-2018

8

/

54 2015-2018

/

SUMCO

Wind

1 8

20

,2018 92%,
50%

28%

IC insights
26%

55

IC insights

2017 8

3% 2018Q1

2017 8

10% 8

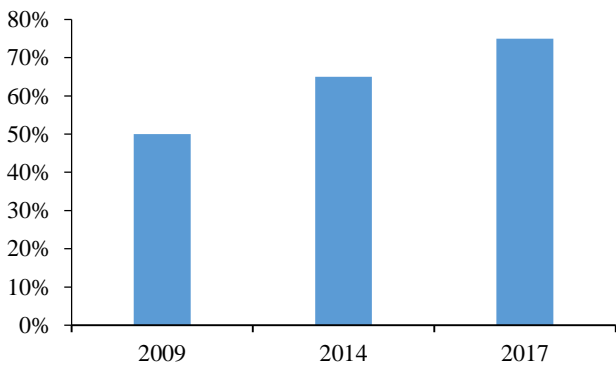
Q1

90%	2017	8	2016	8	
		44%			
56	2007-2019	8	\$/	57	2016-2017 8

1 8	10			2007	8	
	2007	8	1.4 /	2017		43%
		8		8		
SEMI	2008-2018			2008	8	200mm
	2018	25%				35%
58	2007-2018	8		59	2008-2018	

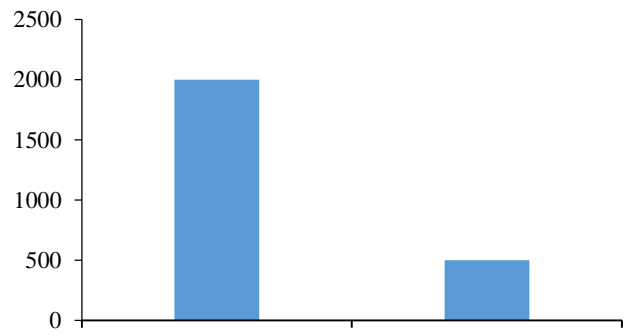
8
8
12 75% VLSI research 20 90 2000 2017
8 9 8 12 8 116
8 8
3 5 2018 Surplus Global 2017 8
500 8 2018 8 2000 8
8

60 2009-2017 12



IC Insights

61 2018 8



Surplus Global

2

IC MCU 8 3 8 CIS
8 2016
20% CIS 2017-2018 CIS CIS 2017 10 12 33%

62

%

63

Yole Frost&Sullivan,

ADAS

8

65%

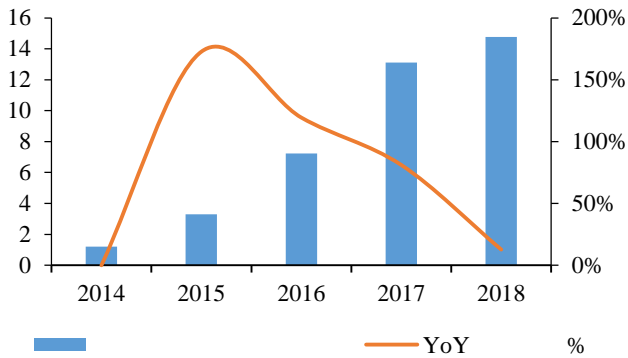
15% 2017-2018

53% 62%

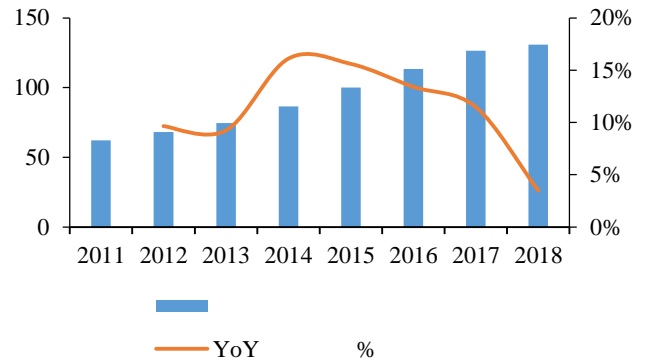
64 2016-2019

IGBT 8h

65 2014-2018

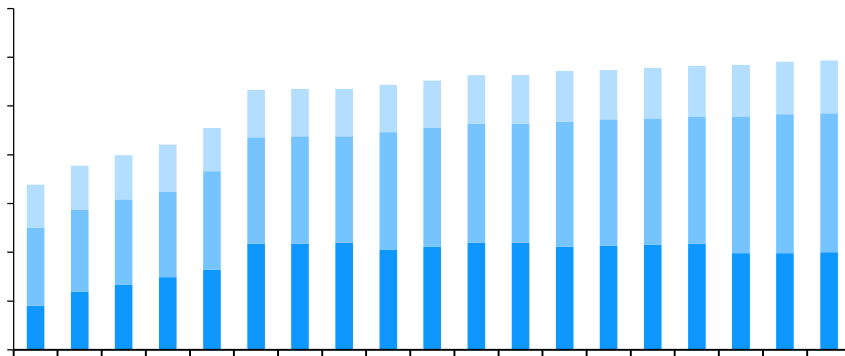


66 2011-2018



460	/	2017 Q2	540	/	2016Q4	12.7%	8
15	/	SEMI	8		550	/	2017

67 2016Q1-2020Q3 8



SUMCO

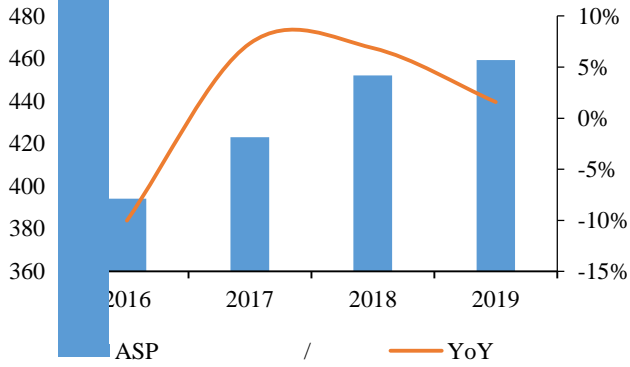
3

2017-2019		ASP		2016		2019		ASP		2017-2018	
ASP	7.3%	6.9%	2016	2019	ASP	-10.0%	1.6%				
ASP	10.6%	4.6%	-1.9%								

2018

68 2016-2019

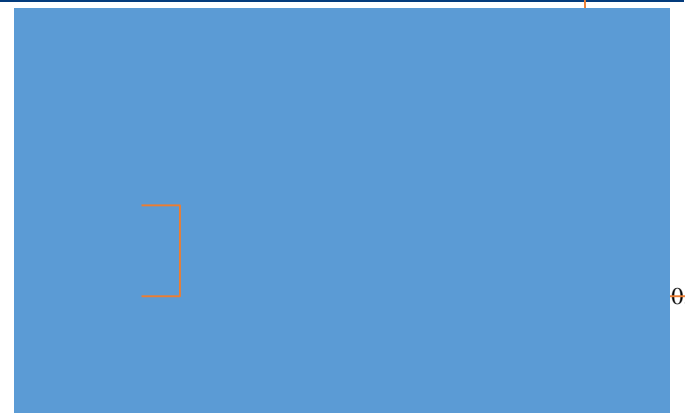
ASP



Wind

69 2016-2019H1

ASP



0.56 Tt +

33.1% 33.4%
2017-2018

2016 2019

30%

2017-2018

70 2016-2019

71 2016-2019

EBITDA

Wind

2. 2020

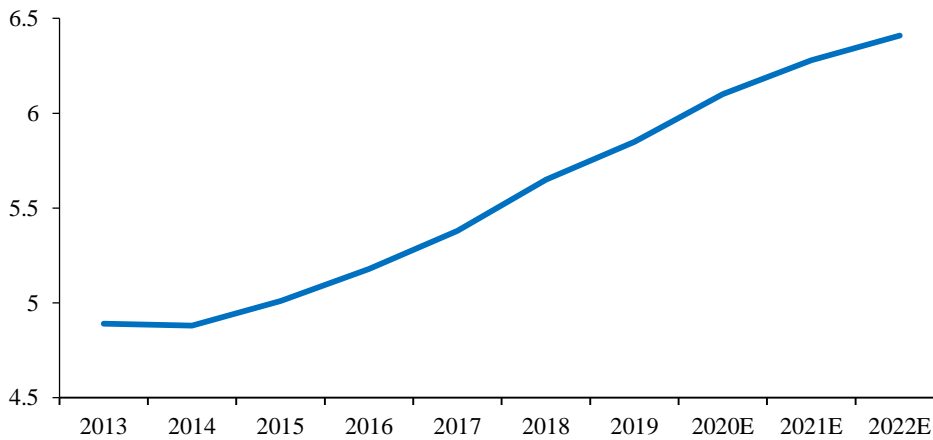
1 8

	8		2018	15	8
	SK		8	SEMI	2019-2022
16	8	14	70	2019-2022 CAGR	4.5%

72 2013-2022

8

/



SEMI

2020

IDM

7

2020 HI

IDM

73

Beyond Borders: Semiconductors are a Uniquely Global Industry

Typical semiconductor production process spans multiple countries: 4+ Countries, 4+ States, 3+ trips around the world, 25,000 miles travelled, 100 days TPT, 12 days in transit



SIA

2

5G

2017

2020

CINNO Research 2020

40%

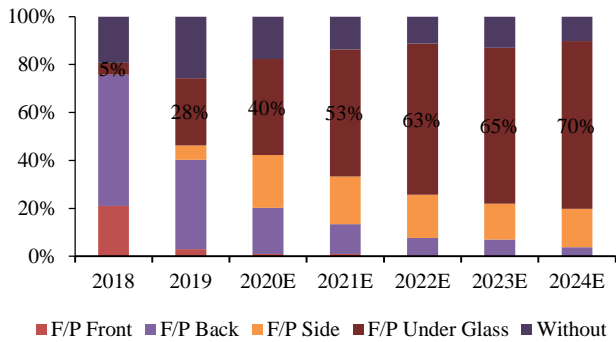
Counterpoint 2020Q1

3.5

8

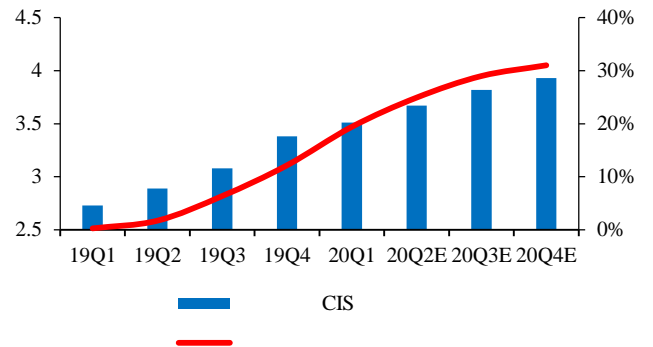
CIS

74 2018-2024



CINNO Research

75 2019Q1-2020Q4



199IT

5G

5G 4G Tom's Guide iPhone12 5G 4G 2

21% 130 MOSFET BCC Research 2020

5G Massive MIMO

4G 1 100 4 5G UPS

IGBT SCR

NB/PAD

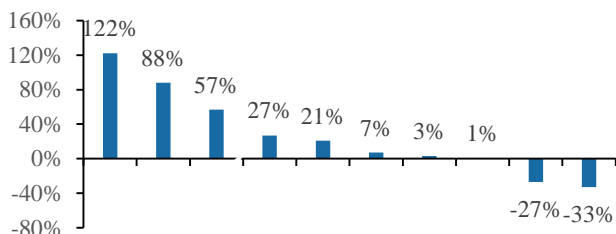
NB/PAD Canalys PC 2020Q2-Q3

Q3 1.245 23% 88% 57%

10.9pct

2020 7 52.5% 19.3% 9-10 65%

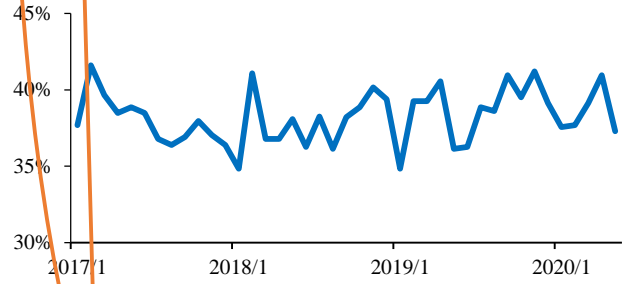
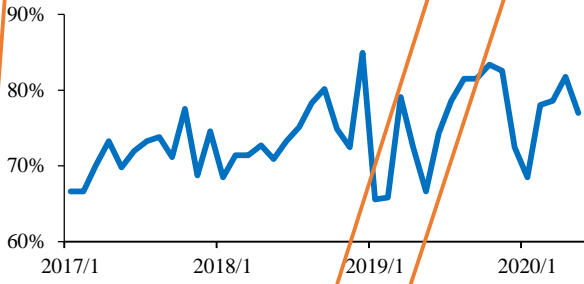
76 2020Q3 PC



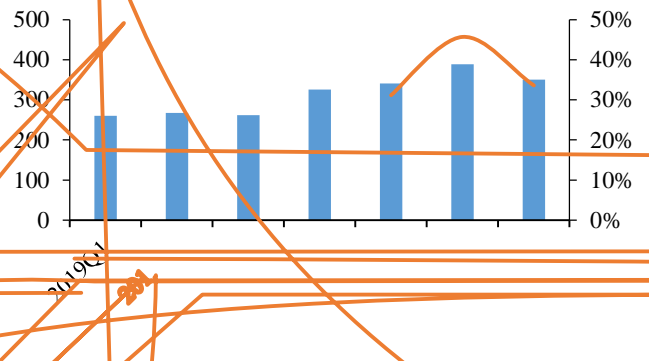
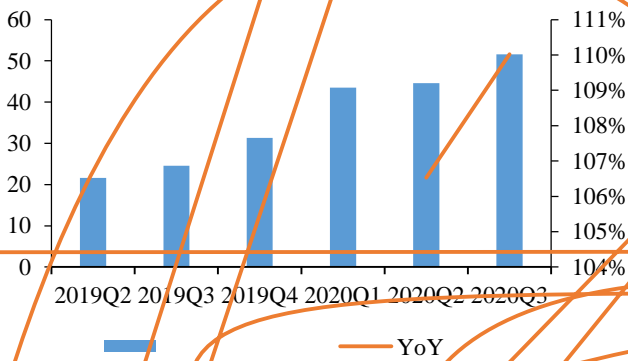
199IT

77 2020

21% 20H1 2019 11% 6
78 2017-20H1 79 2017-20H1



80 2019Q2-2020Q3 81 2019Q2-2020Q3



Wind

Wind

3 2020

8

IC MOSFET

3D sensing

5G

DIGITIMES

20H2

12

10-20%

IC

20Q3

MOS

IDM+

8

IC

know-how

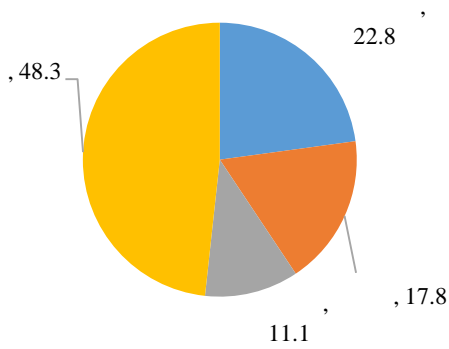
IC

IC

20Q2 2019 51.7% 8 100 / 12 17.8 / 1:1 2019 8 2019 8 11 / 8 2019 8 45.7 / 22.8 / 8

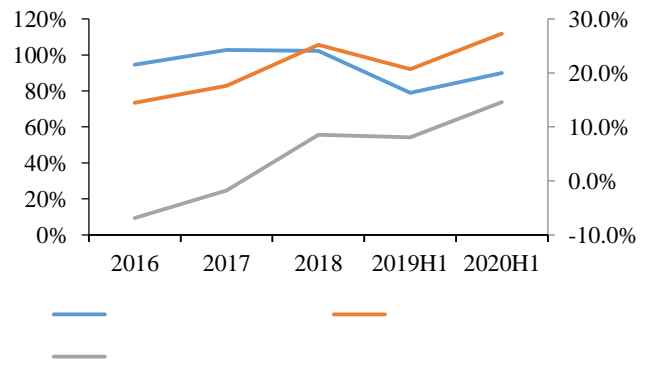
94% 2017-2018 2020 100% 2019H1 79% H1 2016-2018 90%

82 2019 8



2019

83 2016-2020H1



Wind

2020H1

90%

2020H1

8

12

2019 9

/ 12

2020

8

8

2021

1.6 12

84 2020H1

	8	20H1		1.6
	12			
	12	2019 9		4
	8	20H1	1.5	2.1
	8	20H1		8

2020H1

SEMI 2019-2022 CAGR 4.5% IHS 16 8
 Omida 2019-2024 CAGR 5.3% IHS 16 8

IDM+

IDM

Fabless

50%

IDM

“Fabless+Foundry”

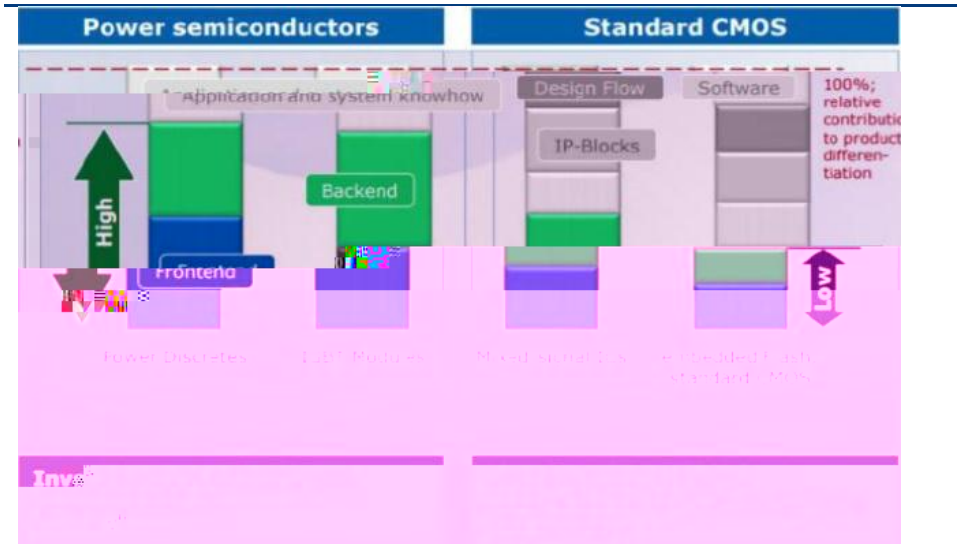
Fabless

IDM

Fabless

85

IC



IDM

Fabless

MOSFET

IDM

IDM

Fabless

IDM

86 **IDM** **Fabless**

Wind

IDM+

IDM

Fabless

6866.97 **IDM+**

know-how

IDM

87

	/						
MOSFET	MOSFET						
	MOSFET						
	MOSFET						
		1500V	700V	800V		300V	500V
IGBT							
		SiC	GaN		650V GaN		SiC MOS

2020

2019A	2020E	2021E	2022E		2019A	2020E	2021E	2022E
1,931	2,169	3,184	4,723		5,743	7,083	8,637	9,995
191	580	628	671		4,431	5,082	6,203	7,282
815	886	1,044	1,211		66	82	100	100
52	60	73	85	0	112	131	157	172

&

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6	20%		
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3-6			5%

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