

688396

+

68.98

+

“ + ”

12

MOSFET

MOSFET

IGBT

MOS

12

PMIC

MOS

-100V

MOS

1500V

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

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IDM		

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75	4Q10102020Q4....		.....	34
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77	2020		.....	34

IDM+

3

IC

IC

AC-DC LED

MOSFET IGBT

MEMS

MCU

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					

20Q3

72.29%

6.43%

1%





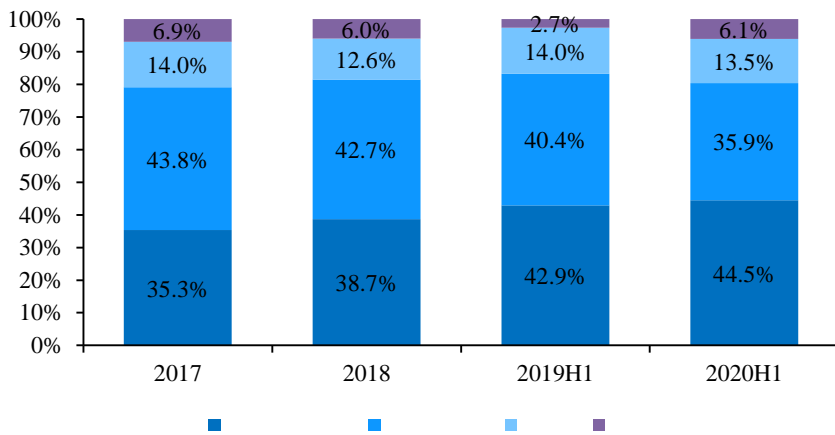
			SBD		60				
8		8	BCD	8	MEMS	19.2			
SiC 6		SiC JBS		MOSFET					
12		MOSFET		IGBT		3 /			
						199			
		QFP		QFN	PQFN	FC-QFN	TSSOP	SSOP	62
				MSOP		IPM		69	
								2.4	

**IDM**

**IDM**

44.94%      14pct      2016      30.52%      20H1

**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

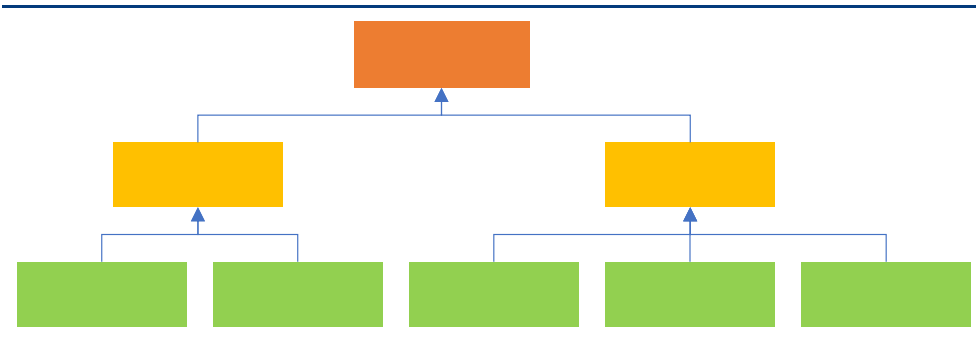
MOSFET

66%

IC

IC

7



21% IGBT  
SiC  
1200V

UPS  
2020  
SiC

20H1

50%

22%

MOSFET

2.

65.3%

24.6%

6 2020H1

3%-4%

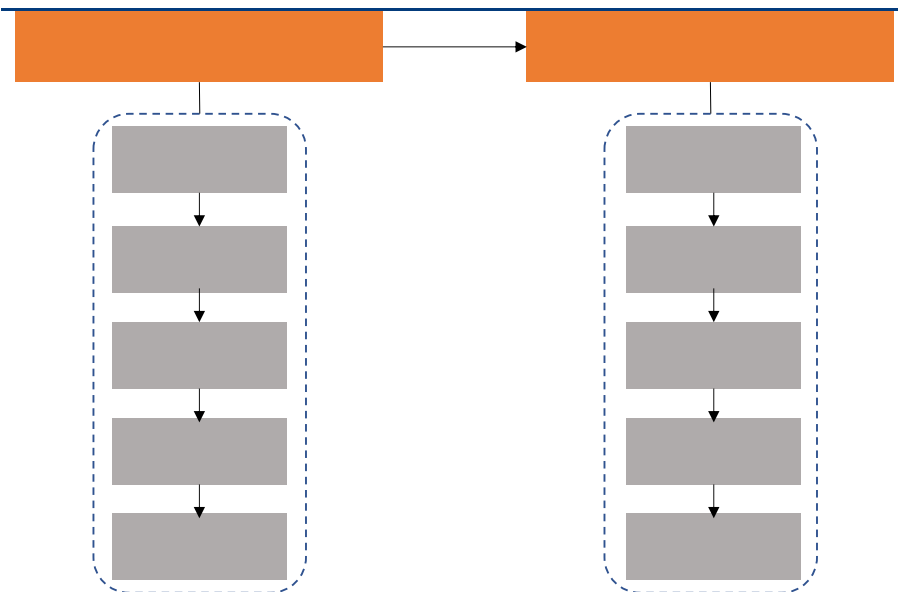
10.95

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

BCD

CMOS

CMOS

DMOS

MOSFET

IGBT

0.18μm BCD

8

6.5

6

20

2018

10

turn-key

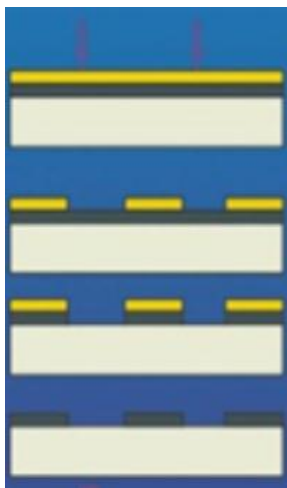


IC

2018

27%

11



12

	TCL

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

13 2016-2020H1

*Wind*

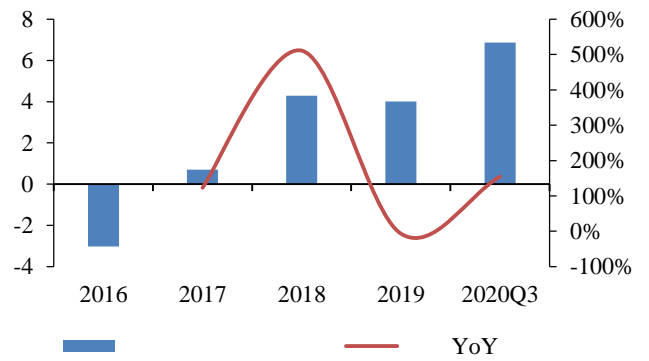
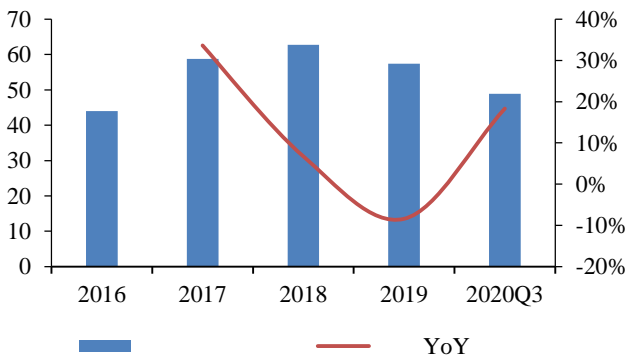
14 2019H1 Top5

MPS	14.43%

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

15 2016

16 2016

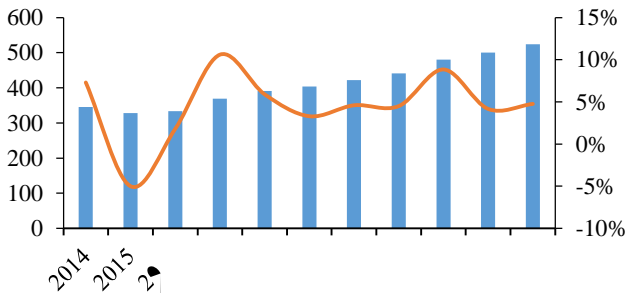


Wind

Wind

17 2014-2024

18 2015-2021



IHS Markit

IDM  
 20H1 97.5% 78.5%



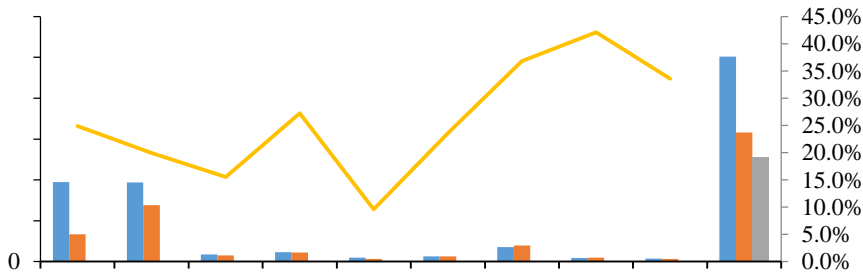
		2003
		2000
		1990

2020

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

**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

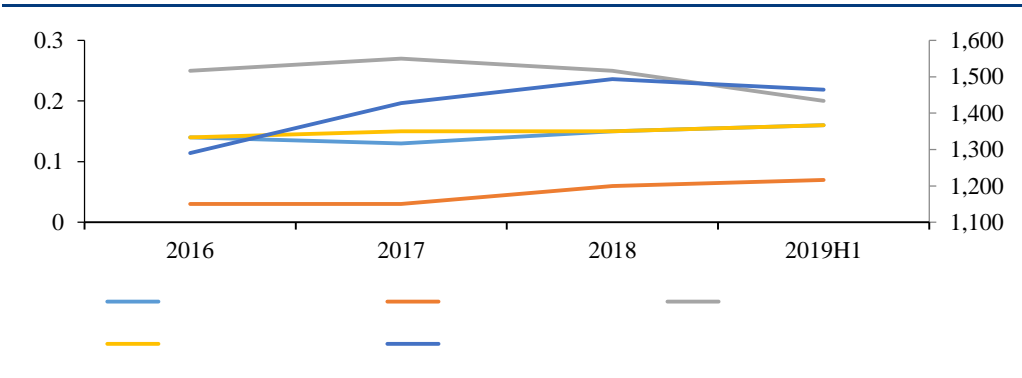
2016

ASP 0.14

2019H1 0.16

ASP 1290 1465  
ASP

26 2016-2019H1 ASP



2020

Wind

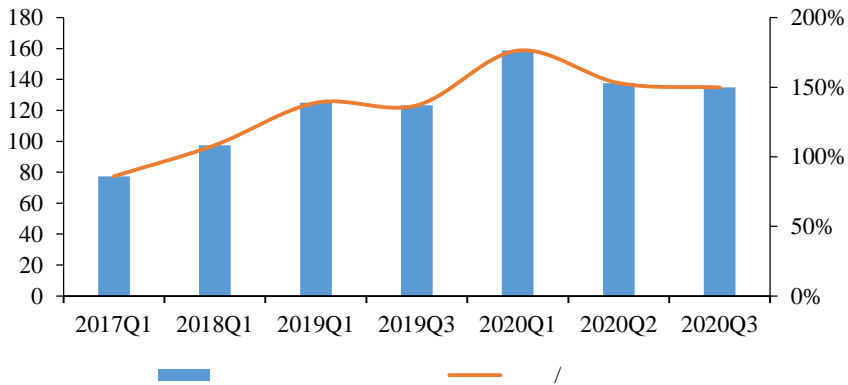
2020Q1

2017

/  
3.3%

2019  
2018 2020H1

27 2016-2019H1

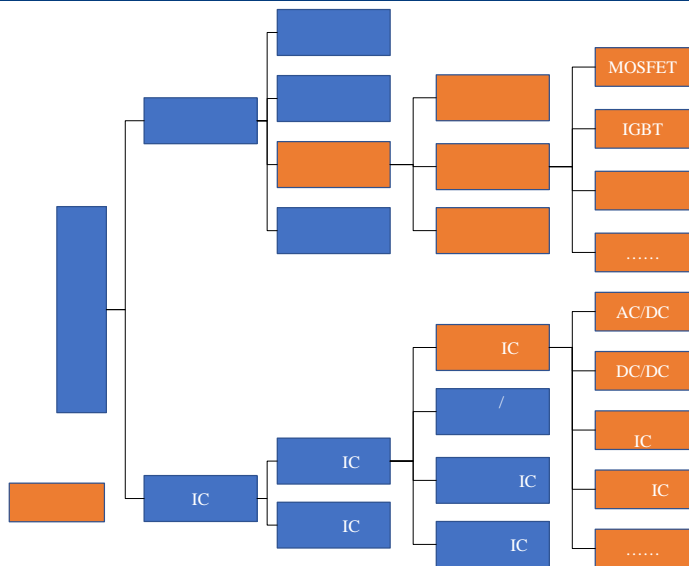


Wind

2020



28



MOSFET IGBT

SBD

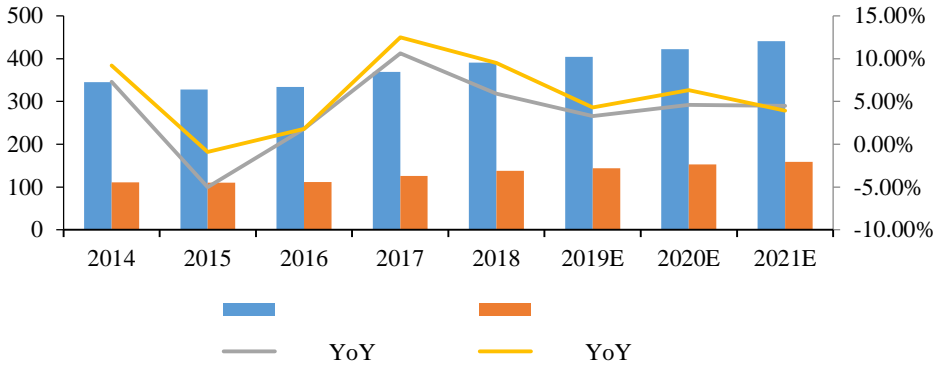
FRD

SBD

FRD



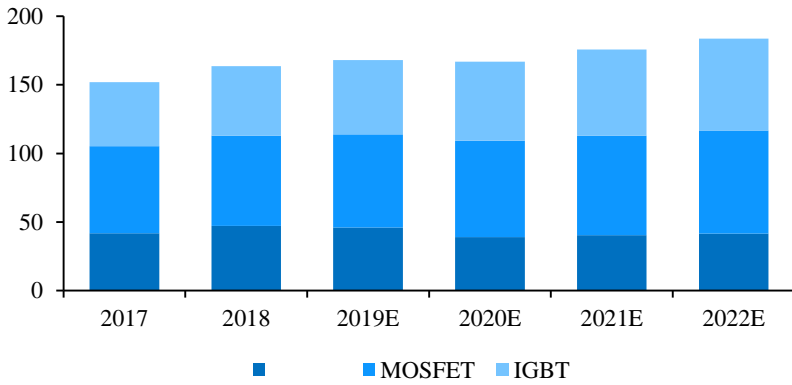
**31 2014-2021**



IHS Markit

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

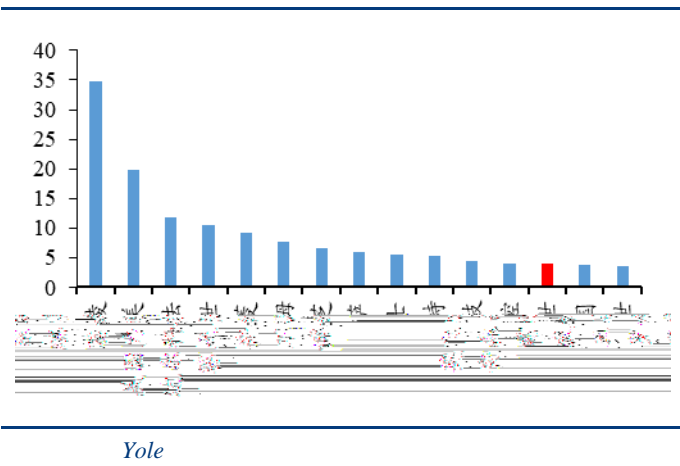
**32 2017-2022 MOSFET IGBT**



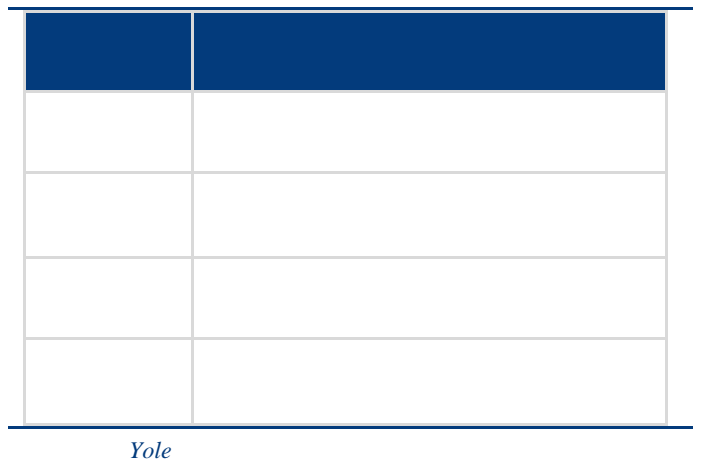
2.

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

33 To15 &

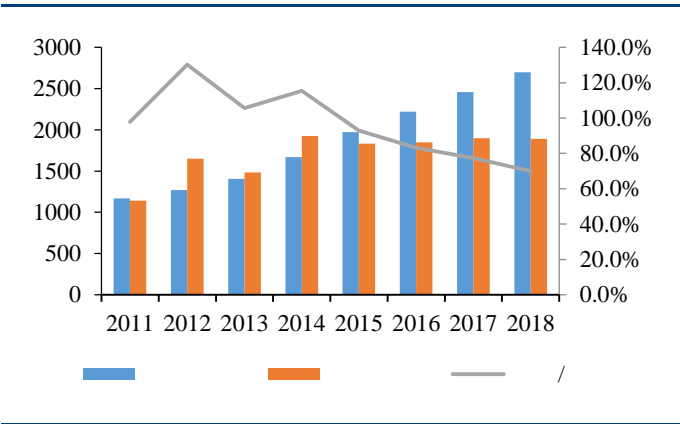


34

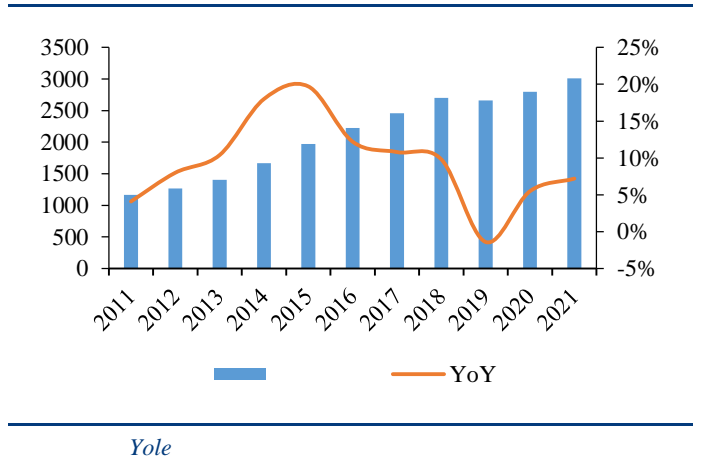


1970 1832 93% 2015  
 2016-2018 83% 77% 70% 2017  
 2025 3000 50% 1500 50%

35 2011-2018



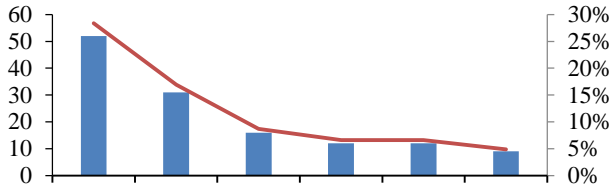
36 2011-2021



**MOSFET**  
 MOSFET 52 28.4%  
 MOSFET 16 8.7%  
 72.1%

**IHS Markit** 2018  
 16.9% 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**

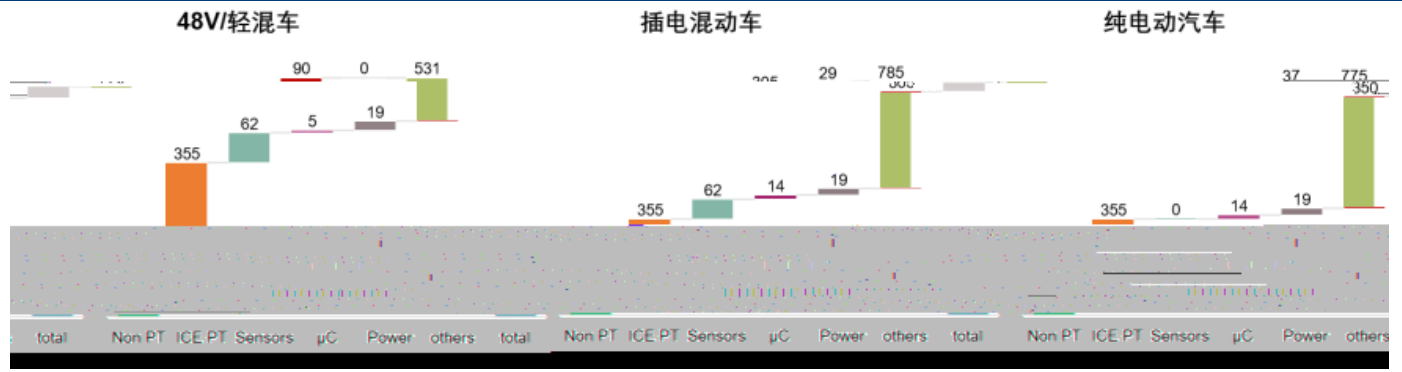
---

*Yole*

1.					300			
		17				90		305
360								

42

265



**MOSFET&IGBT**

300

MOSFET&IGBT  
2025

IGBT

MOSFET  
210

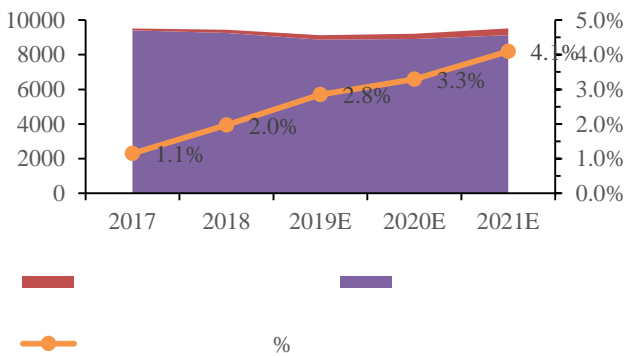
2022

116

IGBT  
310

43 2017-2021

44 2017-2021

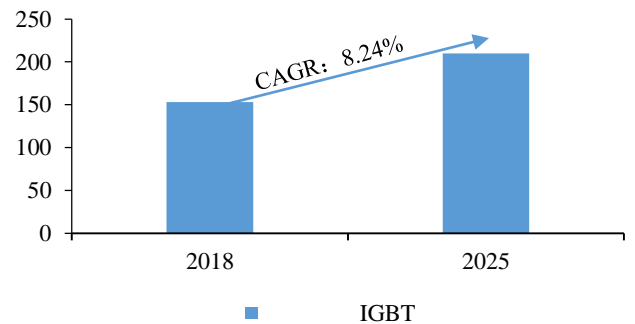
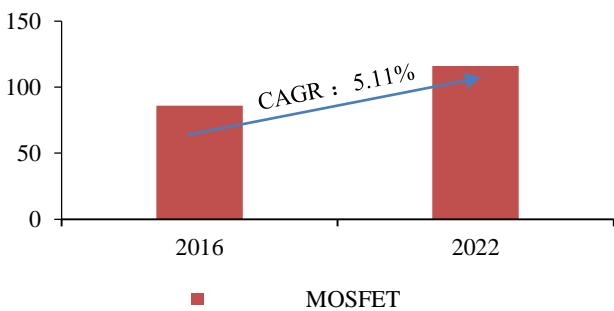


Bloomberg NEF marklines

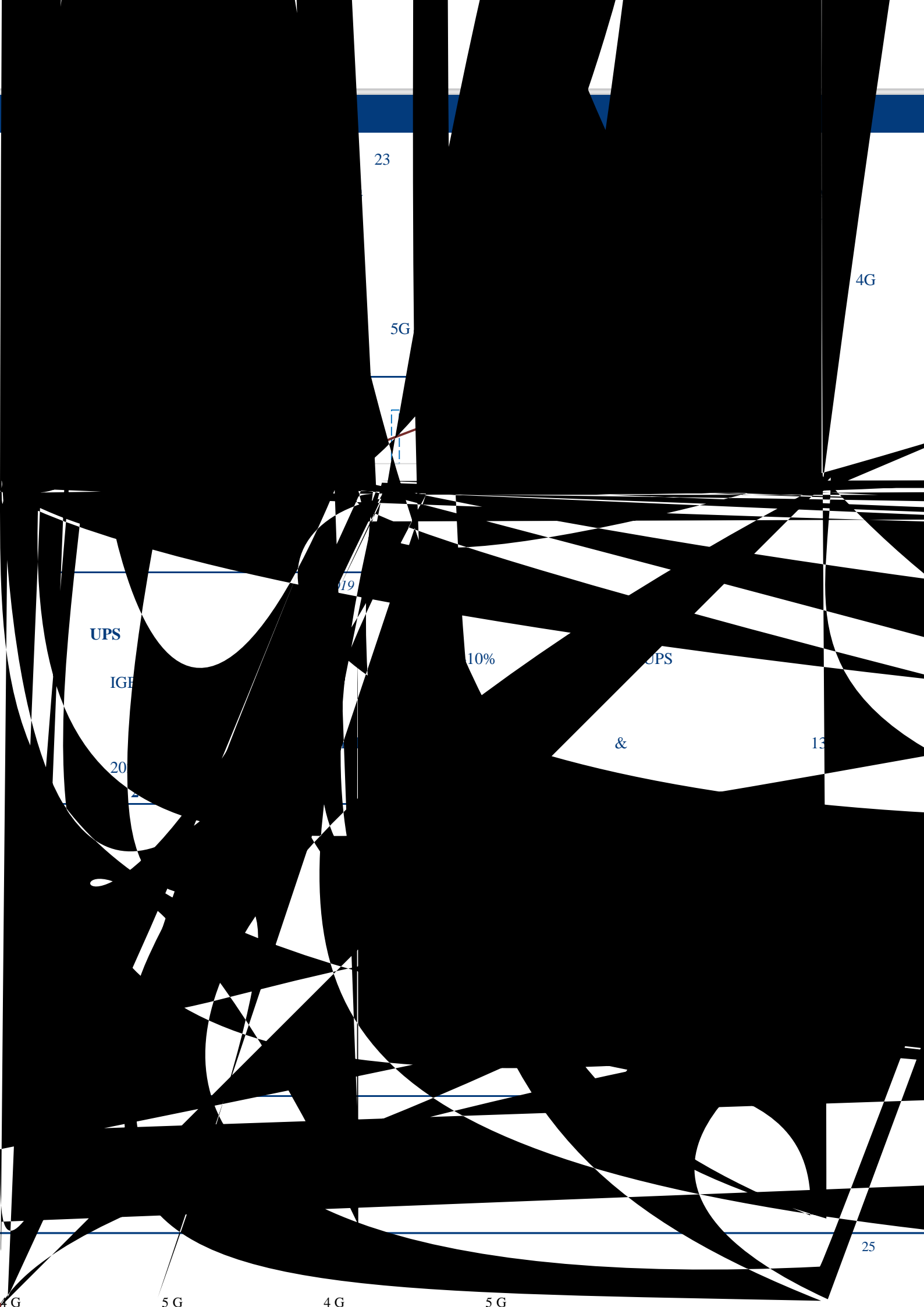
45 MOSFET

46 2025

IGBT







23

4G

5G

19

UPS

10%

UPS

IGF

&

13

20

25

4G

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

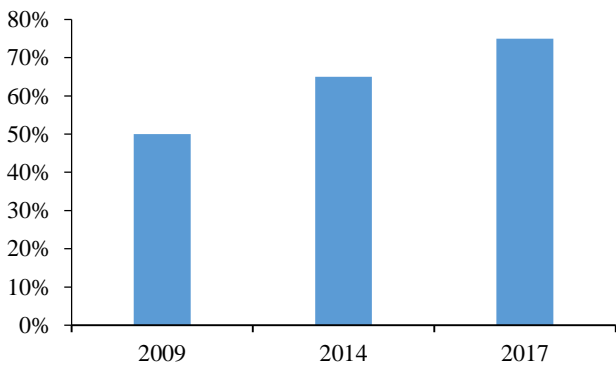
Q1

90%	2017	8	44%	2016	8	
<b>56</b>	<b>2007-2019</b>	<b>8</b>		<b>57</b>	<b>2016-2017</b>	<b>8</b>

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

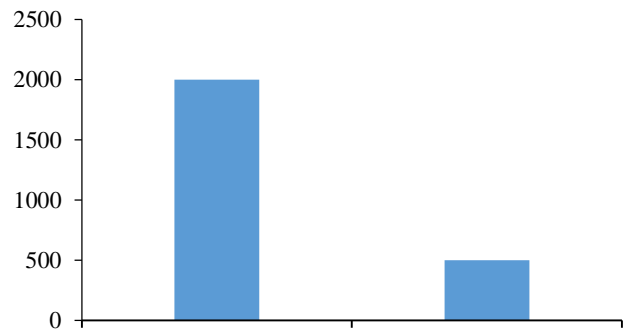
8  
8  
12 75% VLSI research 20 90 2000 2017  
8 9 8 12 8 116  
3 5 2018 8 2018 8 2017 8 2000 8  
500 8 8

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%

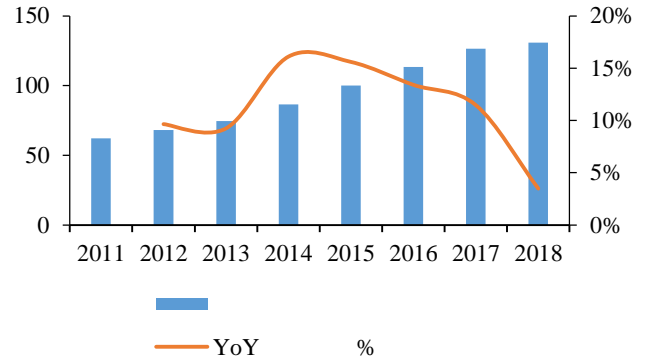
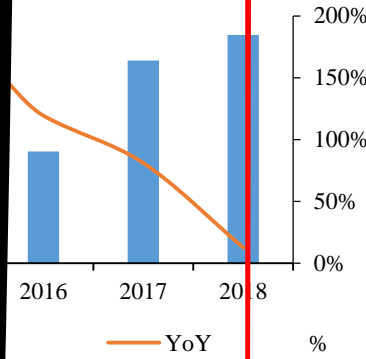
15% 2017-2018

53% 62%

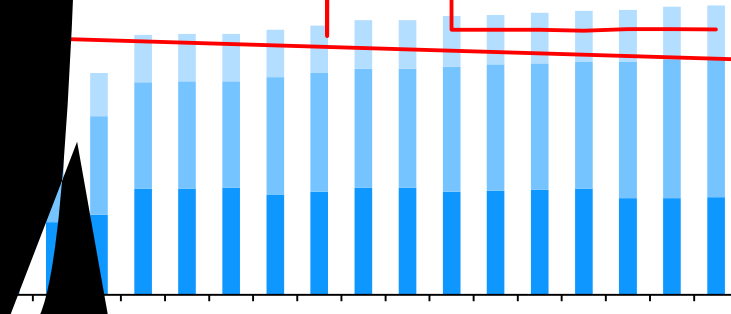
64 2016-2019

IGBT

66 2011-2018



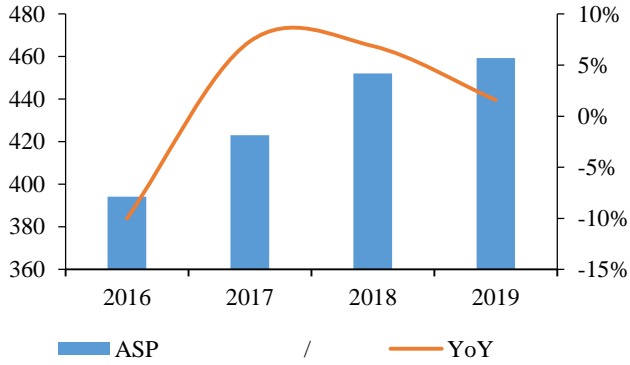
2017 Q3	8	/	SUMCO 2016 Q4	8
2017Q2	540	/	2016Q4	12.7%
SEMI 2021	8		550	/
			2017	525



ASP  
17-2019  
ASP

68 2016-2019

ASP



Wind

69 2016-2019H1

ASP

Tf 61/L

2016  
33.1%  
2017-2018

2016 2019

30%

2017-2018

2016 2019

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%

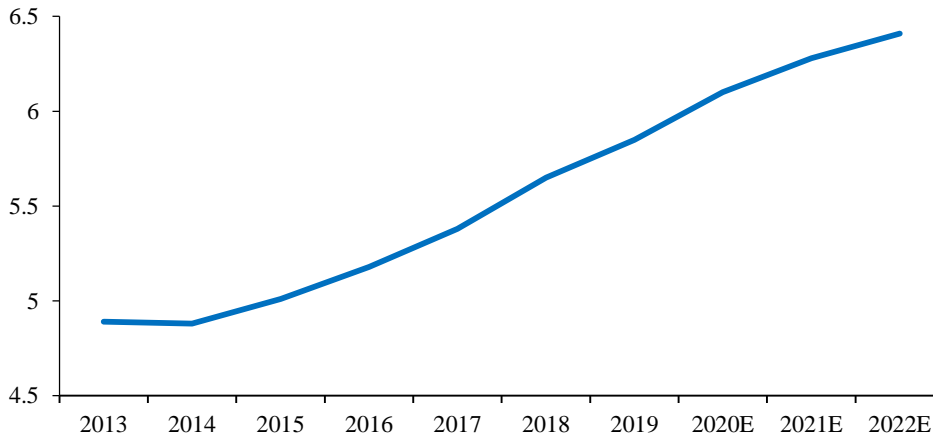
2016



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%

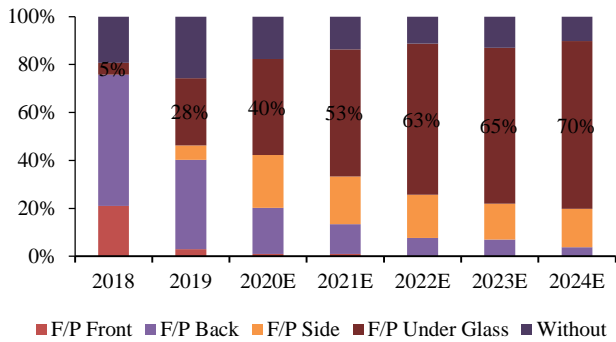
Counterpoint 2020Q1

3.5

8

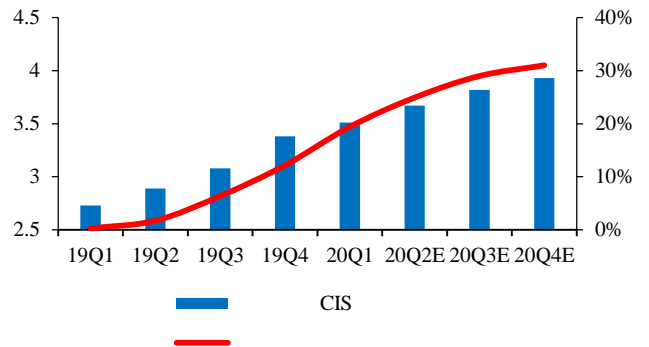
CIS

**74 2018-2024**



CINNO Research

**75 2019Q1-2020Q4**



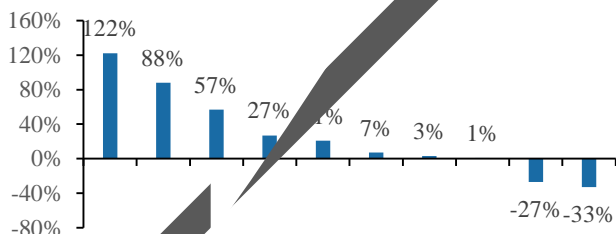
199IT

5G  
5G  
21%  
5G  
4G  
100  
4G  
1  
IGBT  
SCR  
52.5%  
2020  
7  
19.3%

Tom's Guide  
MOSFET  
130  
5G  
4  
5G  
NB/PAD  
NB/PAD  
23%  
1.245  
Q3

iPhone12  
5G  
BCC Research  
2020  
Massive MIMO  
5G  
UPS  
Canalys  
PC  
2020Q2-Q3  
88%  
57%  
10.9pct  
9-10  
65%

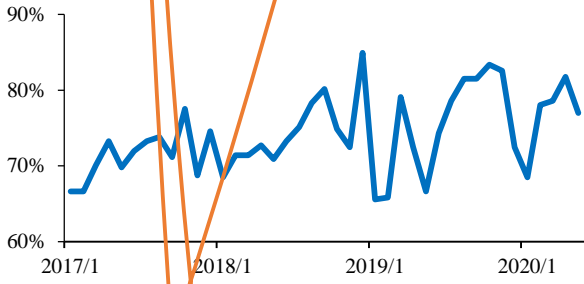
**76 2020Q3 PC**



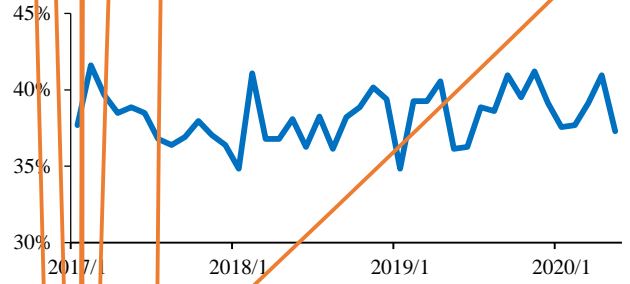
199IT

**77 2020**

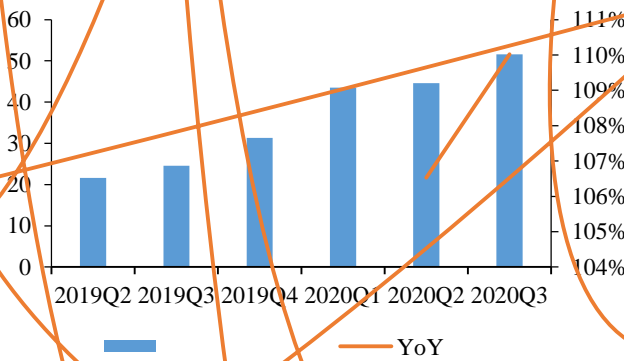
21%  
**78 2017-20H1**



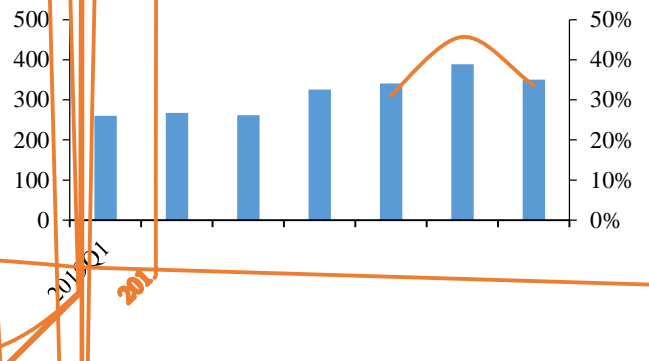
2019 11% 6  
**79 2017-20H1**



**80 2019Q2-2020Q3**



**81 2019Q2-2020Q3**



Wind

Wind

3 2020

8

IC MOSFET

8

8

IC

3D sensing

DIGITIMES

10-20%

5G

2012

12

20Q3

MOS

**IDM+**

8

IC

know-how

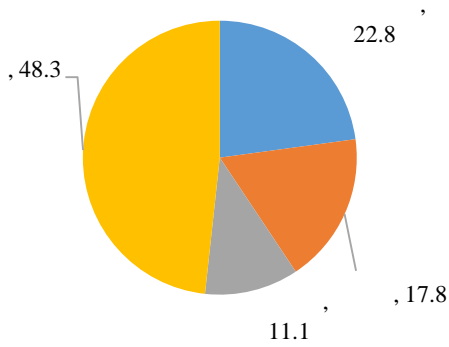
IC

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

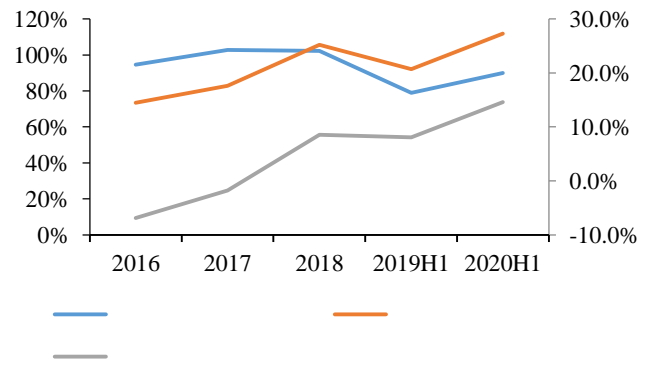
94% 2017-2018 2020 100% 2019H1 79% H1 2016-2018 90%

**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”

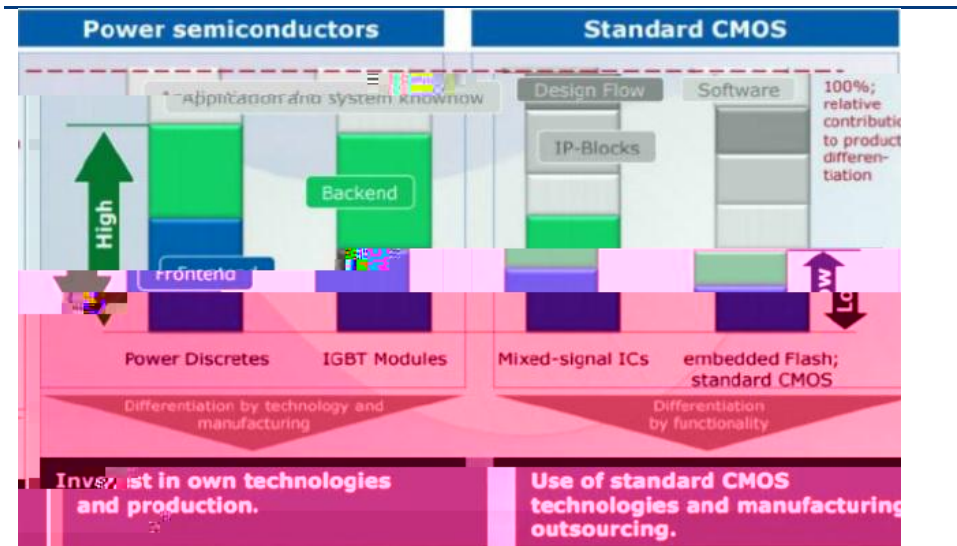
Fabless

IDM

Fabless

85

IC



IDM

Fabless

MOSFET

IDM

IDM

Fabless

IDM

---

86      **IDM**      **Fabless**

---

*Wind*

**IDM+**

**IDM**

**Fabless**

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	<b>5,743</b>	<b>7,083</b>	<b>8,637</b>	<b>9,995</b>
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	112	131	157	172



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021

( 300)

6	20%		
6	10%	20%	
6		-10%	10%
6	10%	20%	
3-6			5%
3-6		-5%	5%
3-6			5%

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