

688396

“ + ”

68.98



“ + ”

+



12

MOSFET

MOSFET

IGBT

MOS

-100V

1500V

MOS

6

MOS

12



PMIC

PMIC



+

2017-2018

12

2020-2022

9.77/12.10/14.38



	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

Ⓖ)
2017-2018

Ⓖ)
IDM
MOS

2017-2018

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82	2019	8		36
83	2016-2020H1			36
84	2020H1			37
85		IC		37
86	IDM	Fabless		38
87				39

IDM+

- 3
IC MOSFET IGBT
IC AC-DC LED
- MEMS
- MCU

1

			/									
			MOSFET IGBT									
			IPM					IPM				
		IC	AC-DC	LED	IC	BMS IC	IC			IC		
		IC IC										
			MEMS									
			MCU					MCU			MCU	
			CMOS/ANALOG			BICMOS	RF/Mixed-Signal CMOS			BCD		
			MEMS									
			IPM	Copper Clip								
			. ,/6			Stepper			. ,/1			1 3
		1:1 Array										

20Q3

72.29% 6.43% 1%

Frequency	Percentage
Always	72.29%
Sometimes	21.28%
Never	6.43%

A horizontal timeline illustrating the progression of the 2008 financial crisis. The timeline is a horizontal line with arrows at both ends, indicating a continuous flow of time. Key events are marked with vertical lines and labeled with years: 1983, 2008, and 2011. The year 2020 is also labeled at the far left, below the timeline. The year 4 is labeled at the far right, above the timeline.

Year	2015	2016	2017	2018	2019	2020	2021	2022
Number of cases	2	8	12	133	100	69	8	247
Rate per 100,000	62	19.2	2.4	199				

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

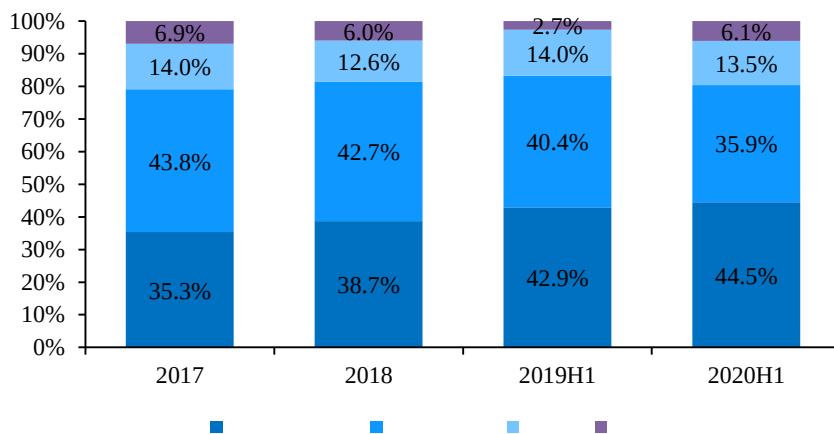
			SBD				60		
	8		8	BCD	8	MEMS	19.2		
	SiC 6		SiC JBS		MOSFET				
	12		MOSFET IGBT				3 /		
							199		
			QFP	QFN	PQFN	FC-QFN	TSSOP	SSOP	62
			MSOP IPM						69
									2.4

IDM

IDM

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

MOSFET

16

8.7%

MOSFET

2018

24.19

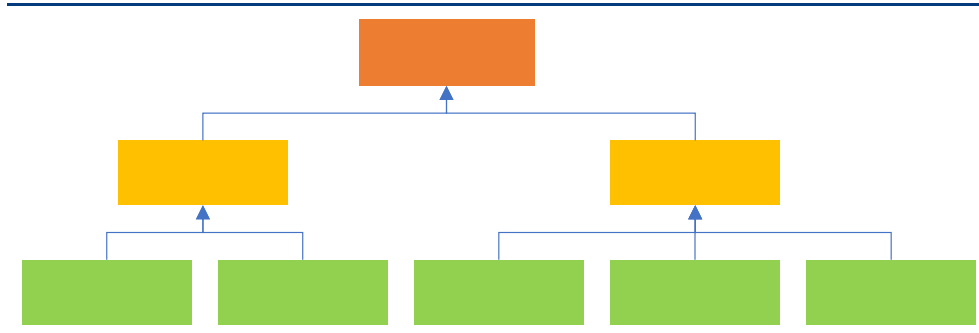
MOSFET

66%

IC

IC

7



20H1

22%

MOSFET

21%

IGBT

UPS

50%

SiC

2020

7

6

SiC

1200V

650V

SiC

2.

6

2020H1

10.95

65.3%

24.6%

3%-4%

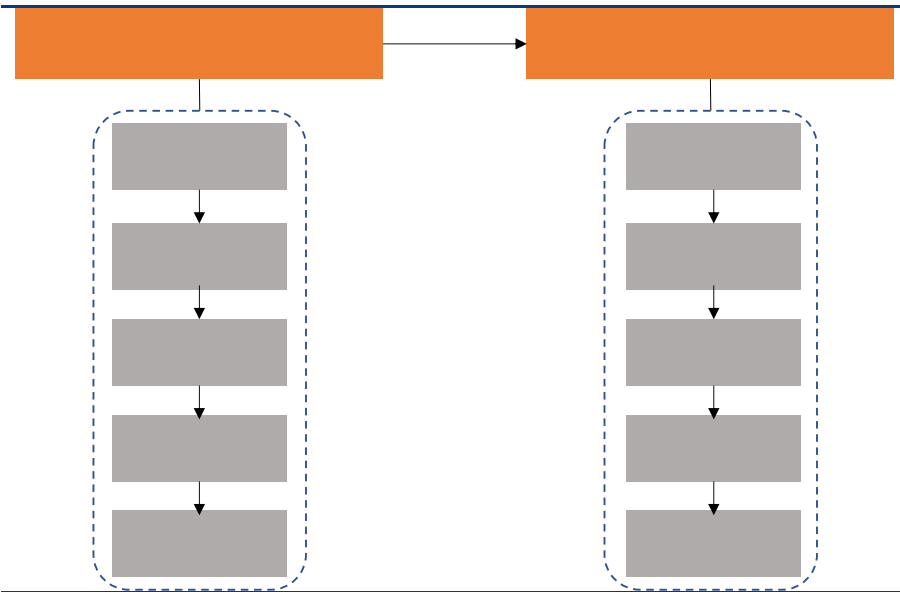
8



Wind

“ ”

9



CMOS/ANALOG	BICMOS	RF/Mixed-Signal	CMOS	BCD	MEMS
. , / /	. , / 6	. , 03	. , 13	. , 3	. , 3
BCD			BCD	CMOS	
		BCD		. , / 6	BCD
MOSFET			IGBT		CMOS DMOS

8
 6.5
 6
 20
 2018

10
 turn-key

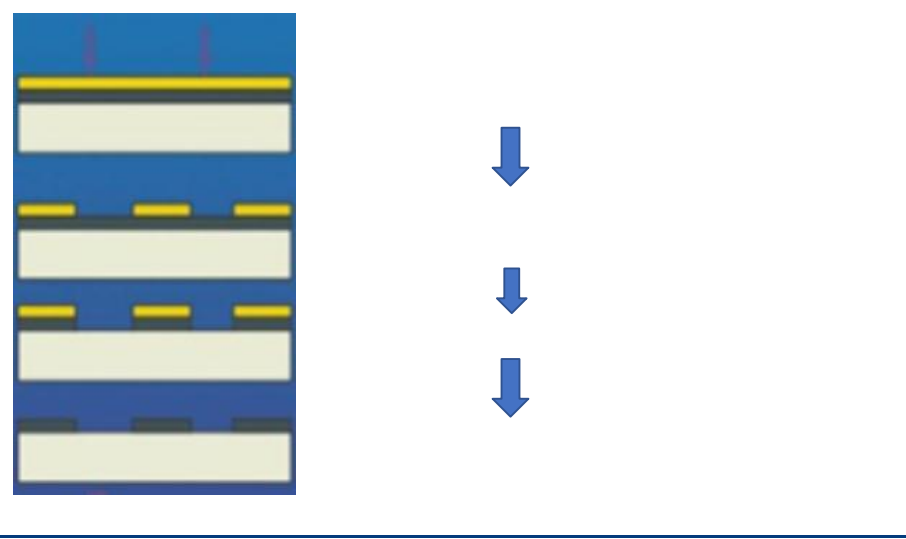
全产业链turnkey服务封装						
晶圆测试	封 装				成品测试	
深圳赛美科	无锡安盛	重庆矽磐	深圳赛美科	东莞杰群	深圳赛美科	无锡安盛
						
国内前三大晶圆测试工厂 销售额：3.5亿 220+晶圆测试 10ea激光修调 高温测试 12"：2万片/年 8"+6"：120万片/年	高可靠性传统C封装 销售额：7.5亿 IPM module, QFN, LQFP, TSSOP, SSOP, SOT, SOP FCOL package	先进面板封装 成立：2018.11 引进国际先进面板封装工艺，提供高能效低成本封装方案，用于功率产品大规模封装，可替代传统QFN, LGA BGA等	光耦和硅麦等sensor封装 和客户合作一起开发相应的满足市场需求的各类sensor	聚焦功率电子封装业务，Stacks、Modules、MOS-FETs / IGBTs、Drivers、IPMs、Controllers。拥有独特的技术优势、知名的管理团队和全球高质量的功率及汽车电子领导客户。	各类产品成品测试 200台套成品测试设备 年测试产出30亿颗 数字，模拟，混合	中高端成品测试 220台套测试设备 年产出21亿颗，高温，常温，低温测试能力，高端工业控制，汽车电子测试要求

IC

2018

27%

11

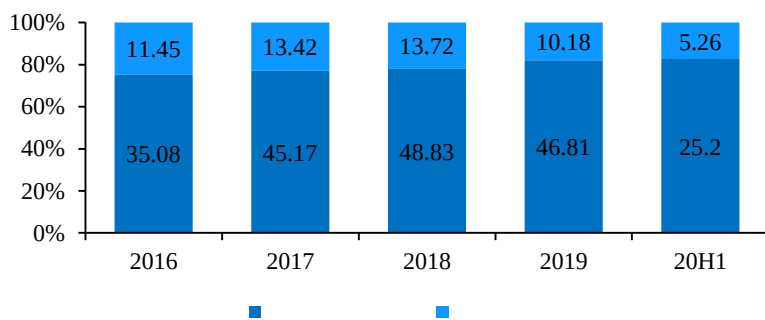


12

	TCL

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

13 2016-2020H1



Wind

14 2019H1 Top5

MPS	14.43%	
Diodes	11.32%	
O2 Micro	7.35%	IC
JUNWELL	3.95%	
CIRRUS Logic	3.44%	IC BOSE
	40.49%	

2016

44

2019

57

CAGR

9.3% CAGR 6.5% 8.7% 2019 2019 2020 2018 12.16% 49

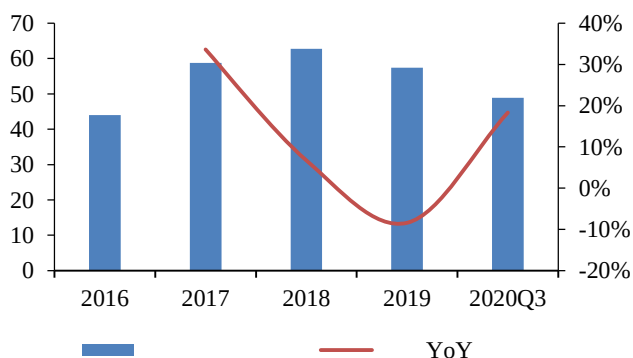
8% 2019H1 2020 -3.03 10 2017

18% 2017 2016 2016 9 2017

2015-2016 0.7 2018 155%

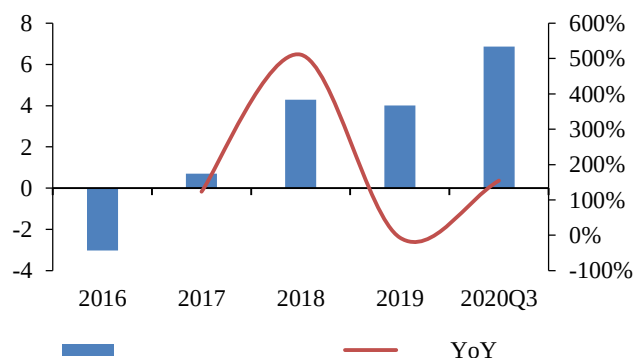
6.87 500% 4 2020

15 2016



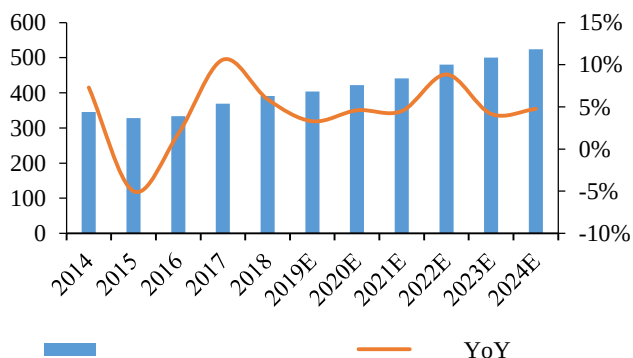
Wind

16 2016



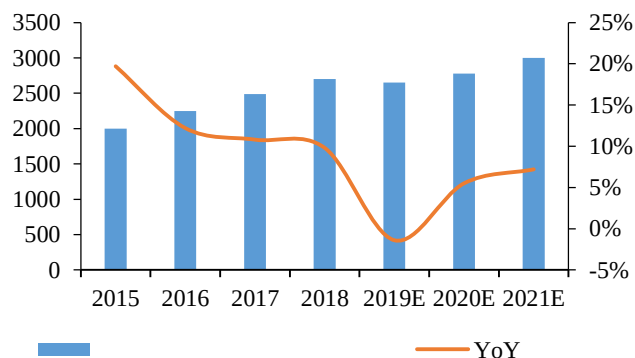
Wind

17 2014-2024



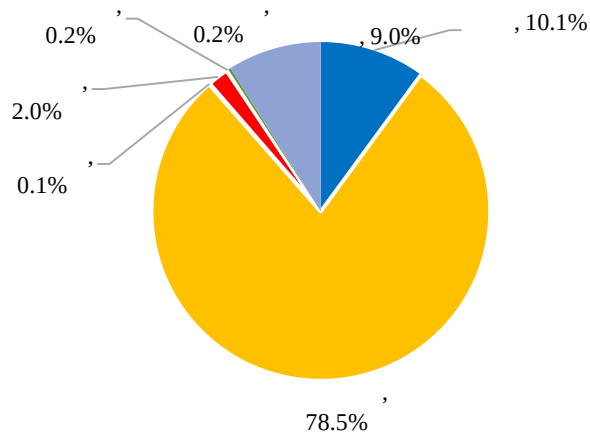
IHS Markit

18 2015-2021



IDM
20H1 78.5%
97.5%

19 2020H1



Wind

8 25 10 3-8 2012

2017 8 5359 5466

20 2020H1

		25	5%	3.80%
		8	2%	12.25%
		5	0%	20.00%
		3~5	0%~2%	19.60%~33.33%
		8	0%	12.50%
		5	0%	20.00%
		10	2%	9.80%

2020

21

8		2009
8		2008
6		1997
6	1#	2005
6	2#	2007
		1987

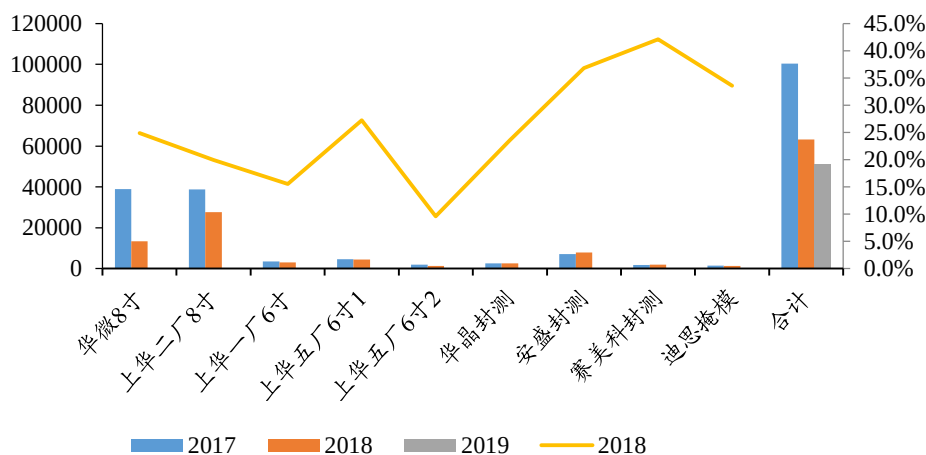
		2003
		2000
		1990

2020

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

22 2017-2019

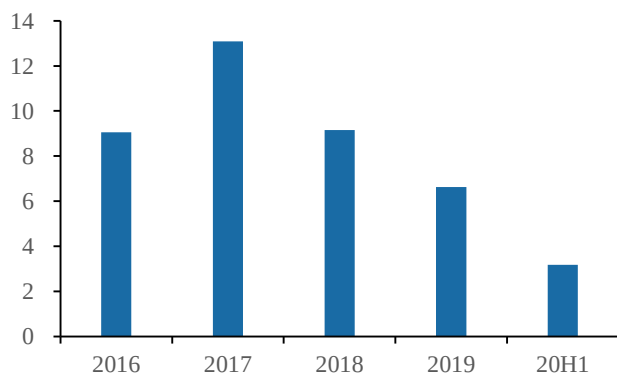
2018



2019

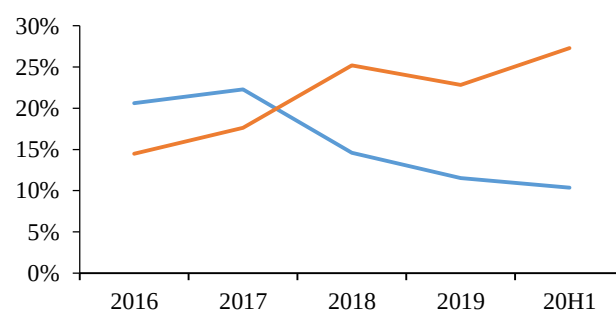
2019

23 2016-2020H1



Wind

24 2016-2020H1



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

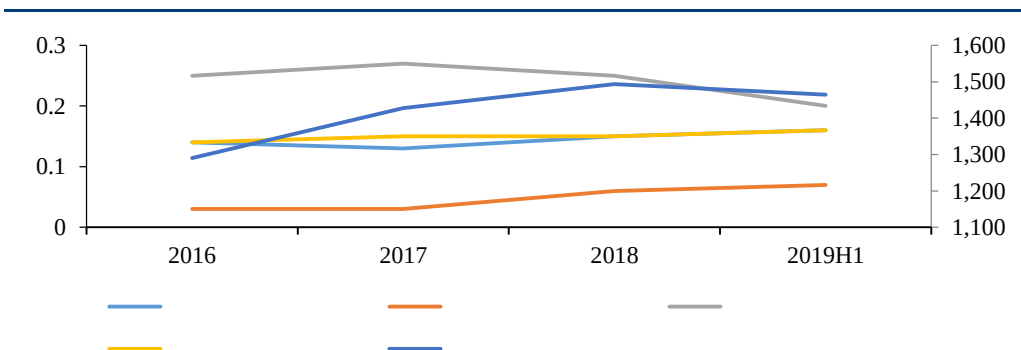
ASP 0.14

2019H1 0.16
ASP 1290
ASP

1465

26 2016-2019H1

ASP



2020

Wind

2020Q1

2017

/

3.3%

2019 2020H1
2018

Quarter	Number of New Cases (Approx.)	Percentage of New Cases (Approx.)
2017Q1	78	80%
2018Q1	98	100%
2019Q1	125	130%
2019Q3	122	125%
2020Q1	160	180%
2020Q2	138	155%
2020Q3	135	155%

Wind

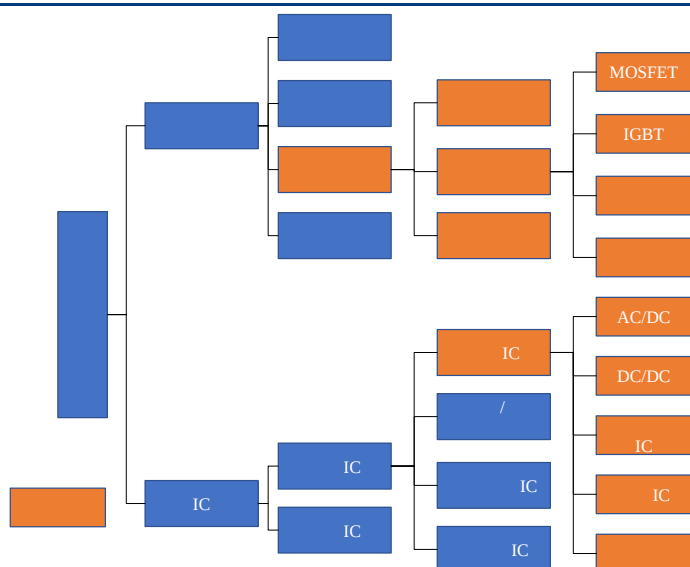
2020

IC

● P/N

- IC IC IC AC/DC DC/DC IC

28



MOSFET IGBT

SBD

FRD

SBD

FRD

40%

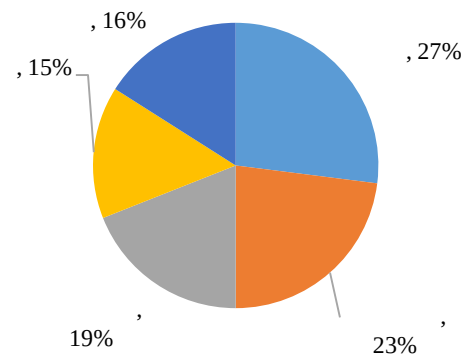
SiC

5G

75%

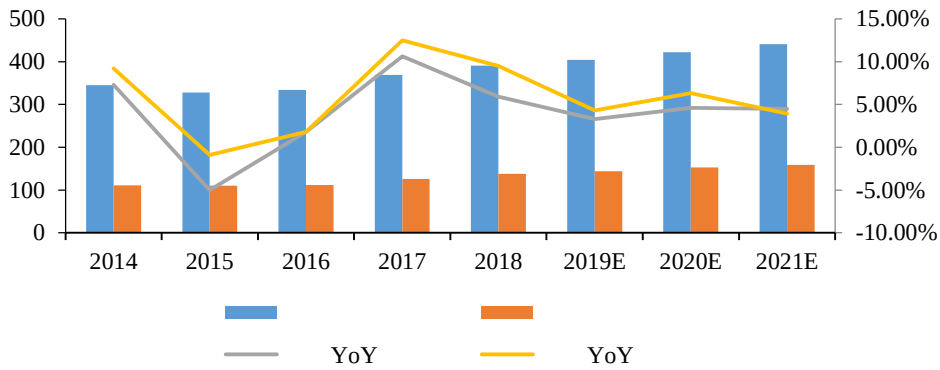
16%

30 2019



4.8%

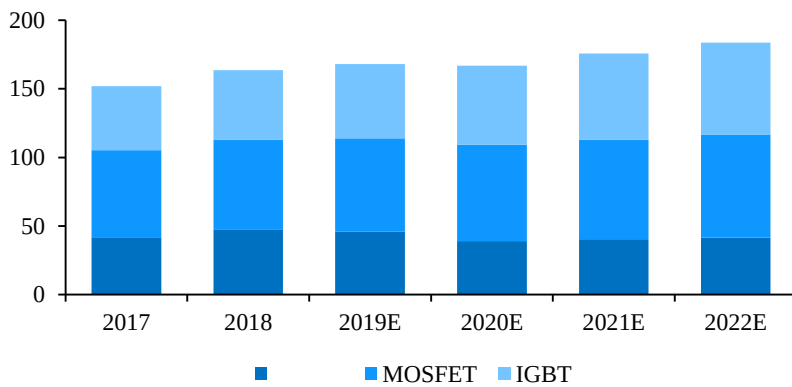
31 2014-2021



IHS Markit

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

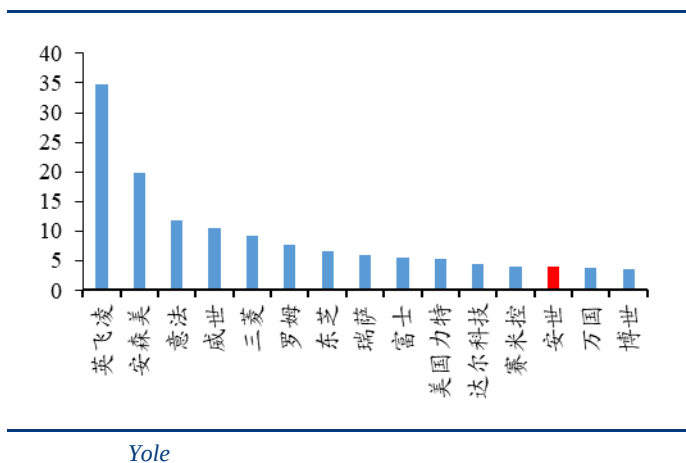
32 2017-2022 MOSFET IGBT



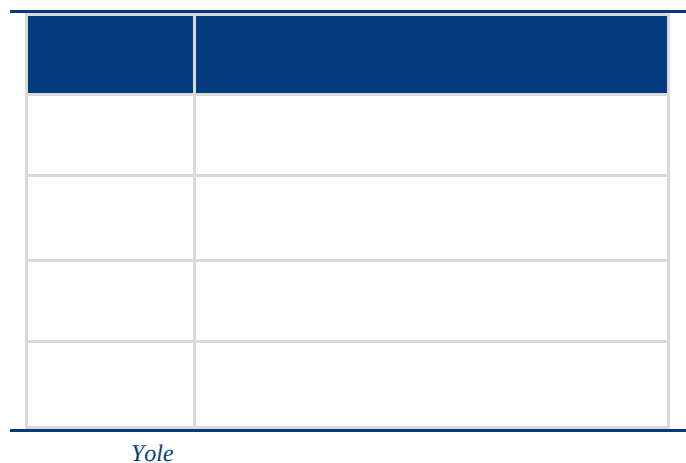
2.

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

33 To15 &



34

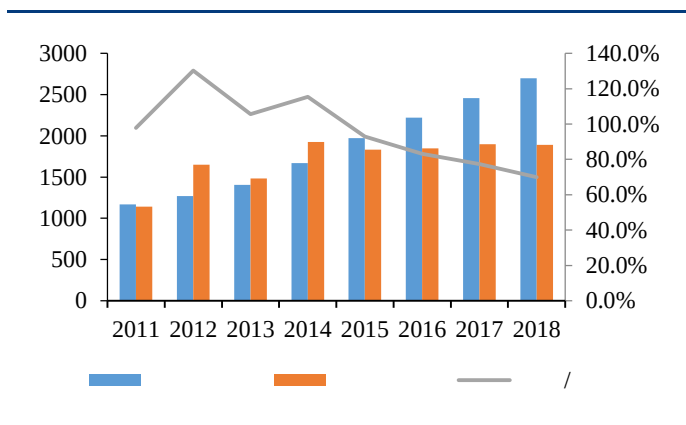


Yole

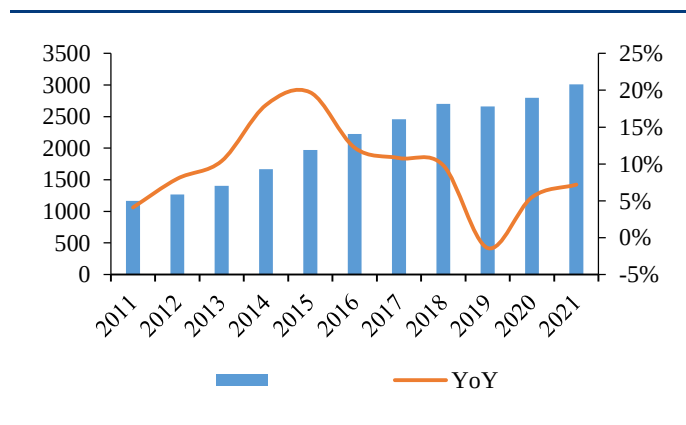
Yole

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

35 2011-2018



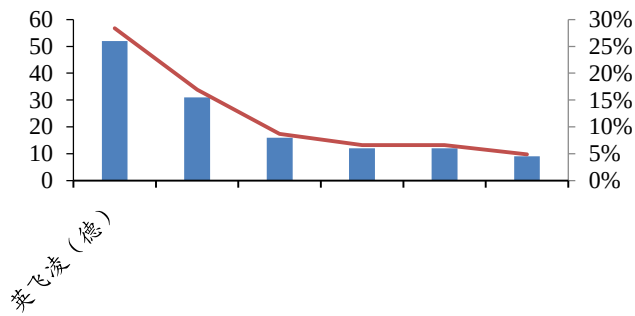
36 2011-2021



Yole

MOSFET MOSFET MOSFET MOSFET
 52 16 28.4% 8.7%
 72.1% IHS Markit 2018 16.9% 45.3% CR6
 Top6

37 2018 MOSFET



IHS Markit

IGBT

38 2018 MOSFET

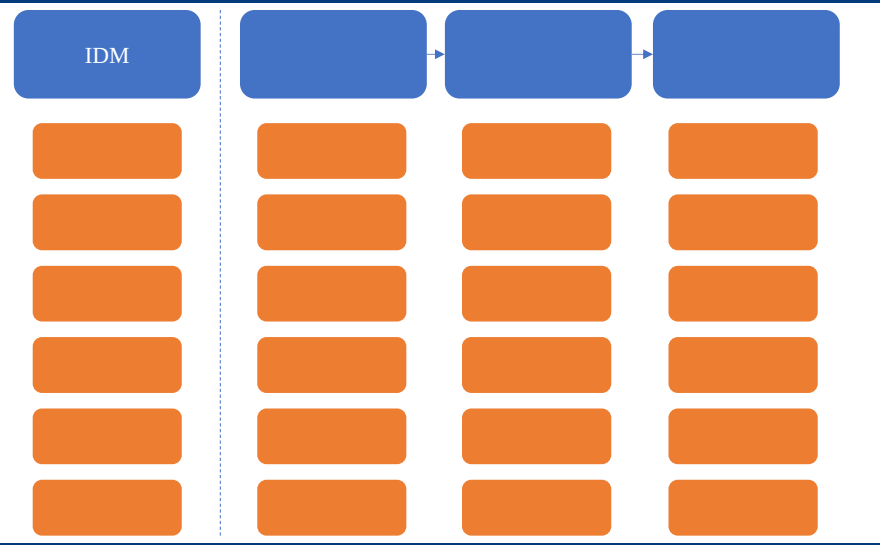
IHS Markit

IHS Markit 2018	IGBT	75%
IGBT	90%	

39 2017 IGBT

IGBT	IDM	“Fabless+Foundry”	IDM
------	-----	-------------------	-----

40 IGBT



SITRI

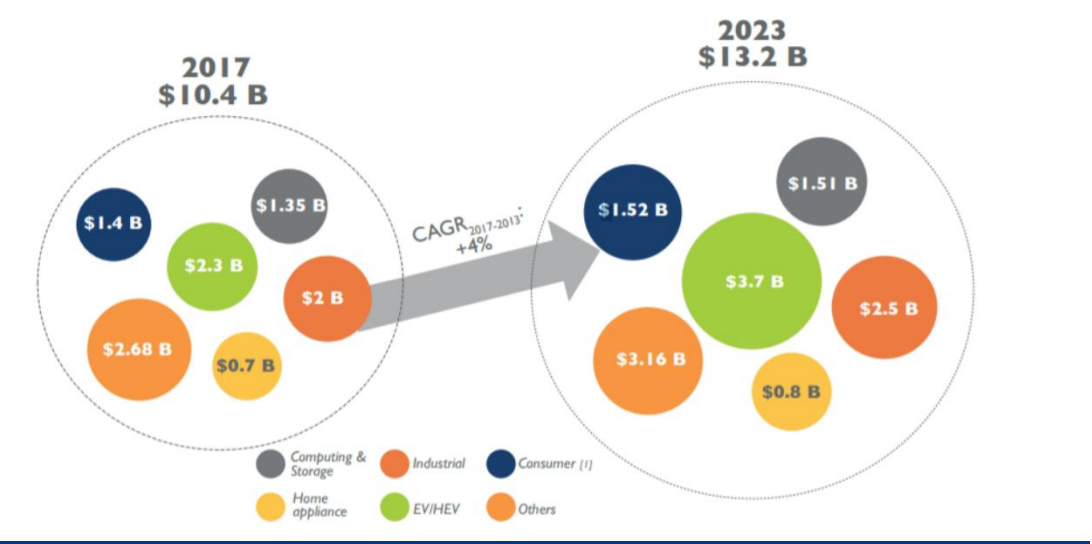
5G

5G

900

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

41 2017-2023 MOSFET IGBT

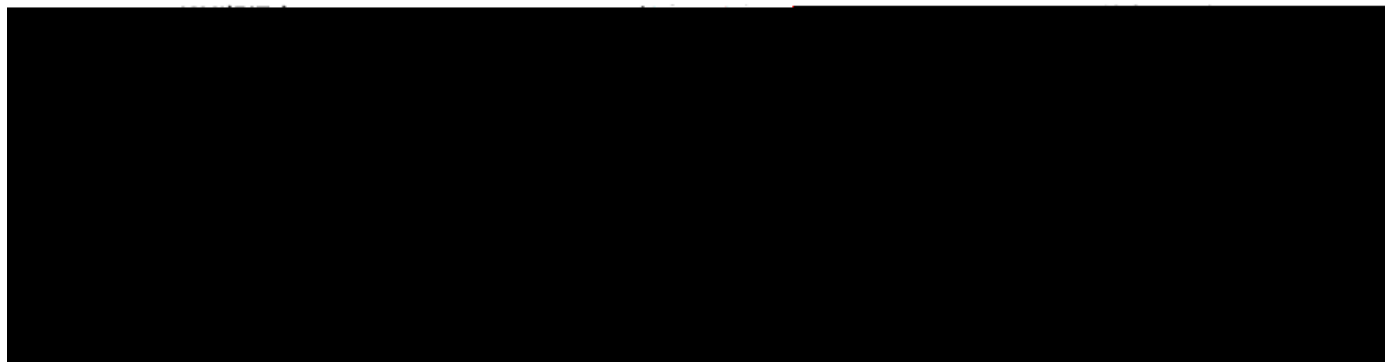


Yole

1.		300	
	17	90	305
360			

42

265



MOSFET&IGBT

300

MOSFET&IGBT
2025

IGBT

MOSFET
210

2022

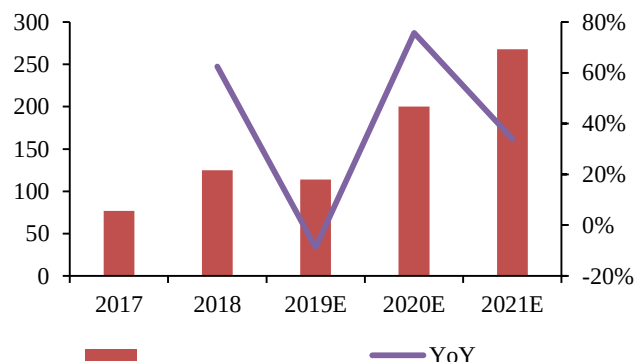
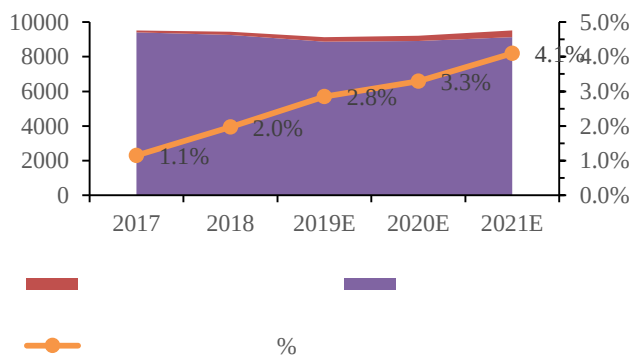
116

IGBT

310

43 2017-2021

44 2017-2021



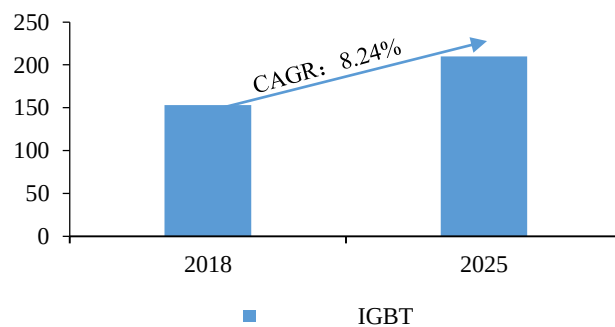
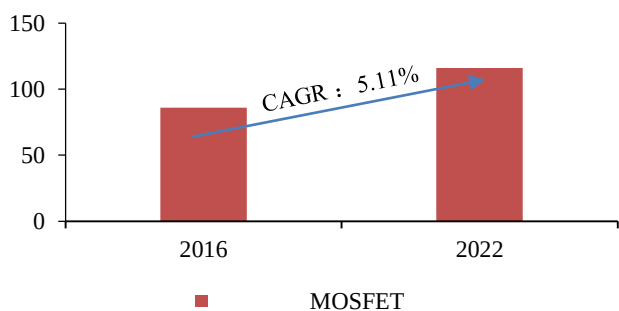
Bloomberg NEF marklines

45

MOSFET

46 2025

IGBT



2. 5G

23

5G

5G

Massive MIMO

AAU

DU CU

5G

100

4

5G

5G

700

5G

4G

1.5-2

4G

4G

4G

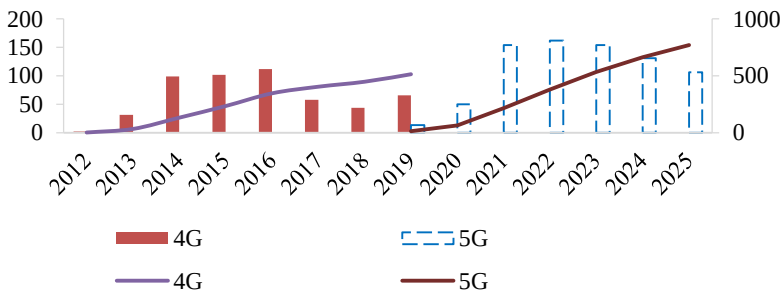
1.5

5G

771

7.7

47 5G



2019

UPS

UPS

UPS

IGBT&

IGBT

UPS

6%-10%

UPS

15

Yole 2017

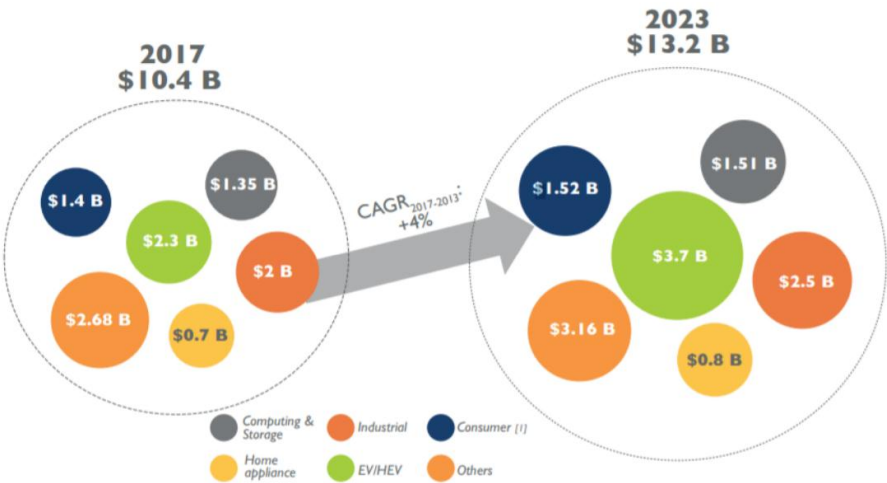
&

13.5

2023

15.1

48 2017-2023



Yole

3.

68

GaN-MOSFET

18W

50W

100W

MOS

GaN

GaN

GaN MOSFET

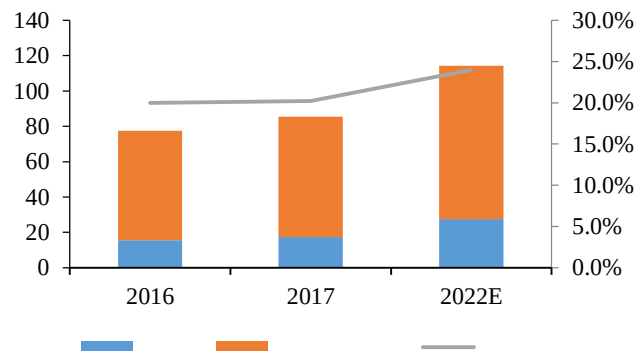
49

20W PD

MOS



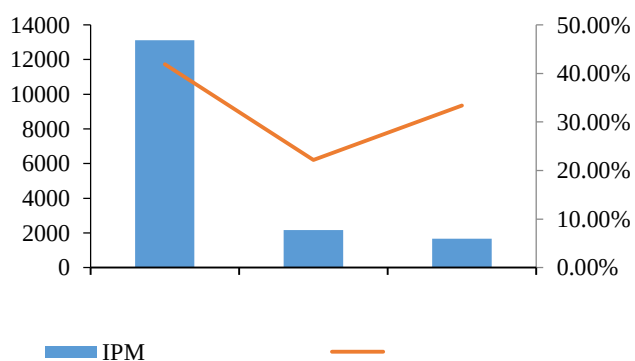
50



41.9% 33.4% 22.2%
 2018 1.3 2000 1600
 2017 31.4

51 2018

IPM



68

2018

IPM

IPM

2022

65%

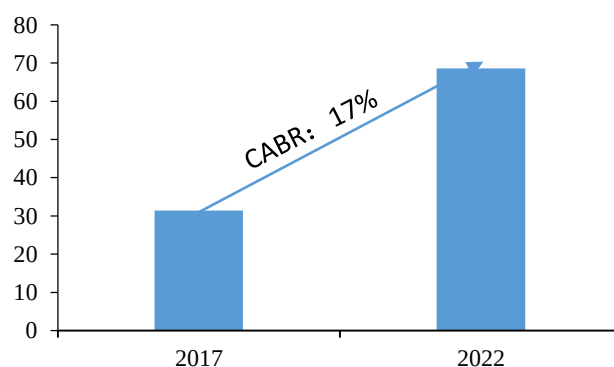
2022

68.6

CAGR

17%

52



2017-2018

PMIC

1. 2017

2017-2018 8

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

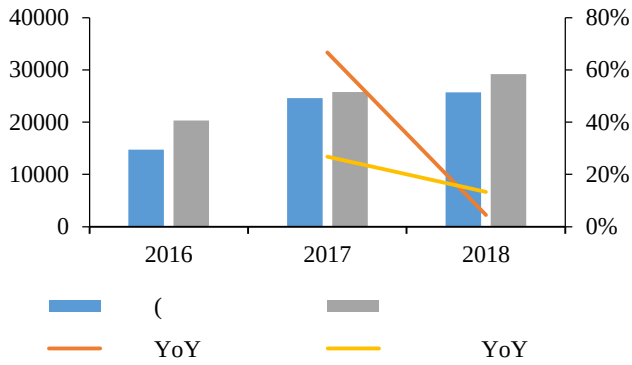
8

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

53 2016-2018

8

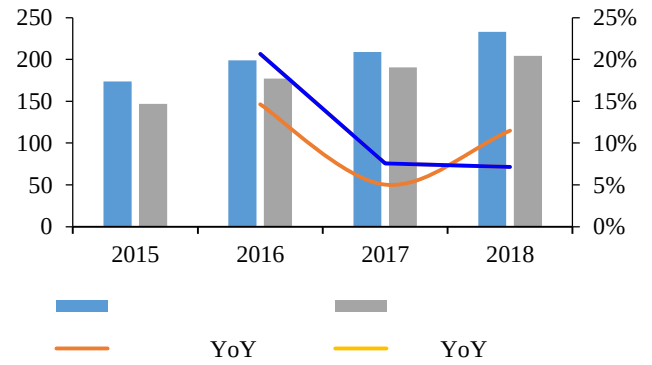
/



SUMCO

54 2015-2018

/



Wind

1

8

,2018 92%,
 50%

20

IC insights
 26%

28%

55



IC insights

2017 8

3% 2018Q1

2017 8

10% 8

Q1



CHU

券
ITIES

688396

90% 2016 44%

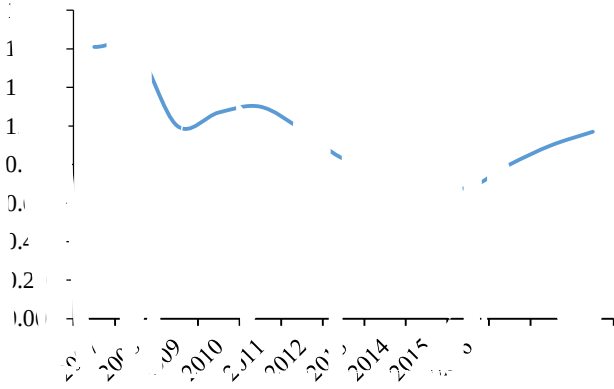
56 200%

8

\$/

5/ 2010

8



10
107 8
8
SE. I 2007 8
3

1.4 /

200% 8
2017
8
2008 3 200mm

3%

55%

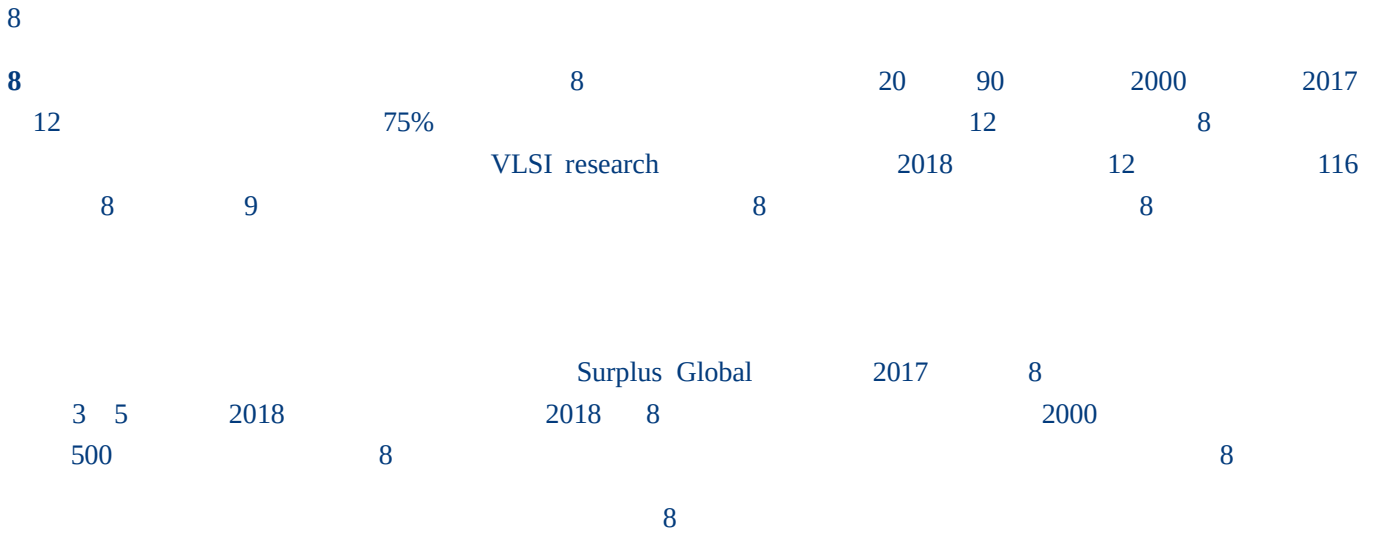
25%

58 2007-18

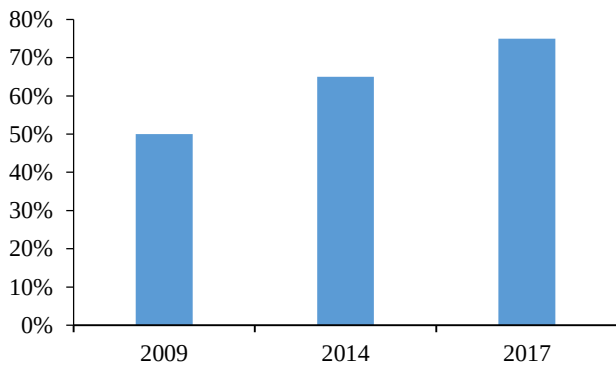
5 2008-2018

10
1

2018 8

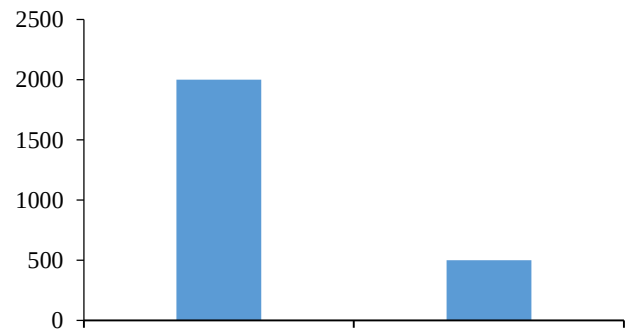


60 2009-2017 12



IC Insights

61 2018 8



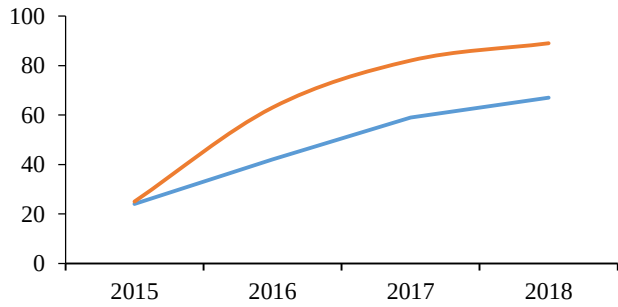
Surplus Global

2

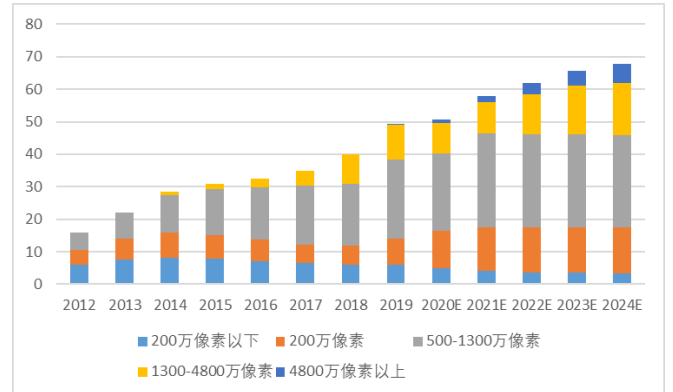


62

%



63



Yole Frost&Sullivan,

ADAS

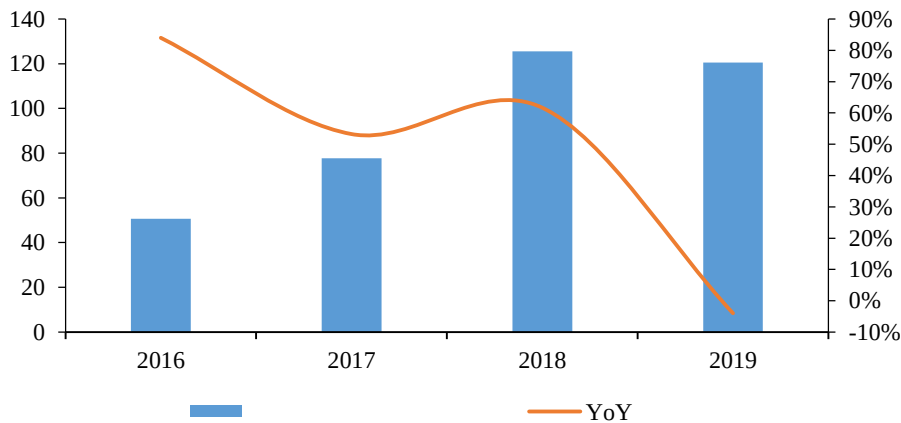
8

65%

15% 2017-2018

53% 62%

64 2016-2019



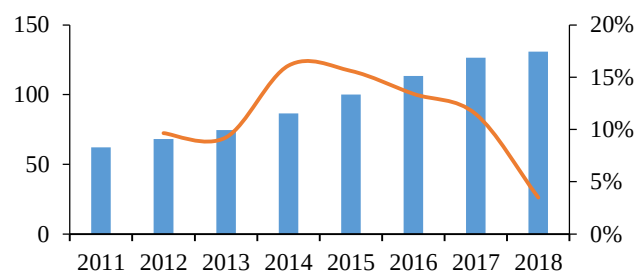
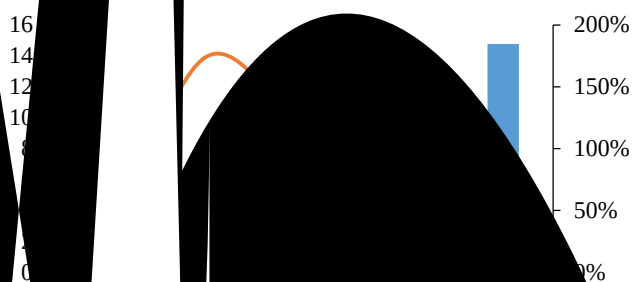
IGBT

8



018

66 2011-2018



YoY %

01 2020

8

SUMCO 2016

540

2016Q4

12.5

16Q4

1 201

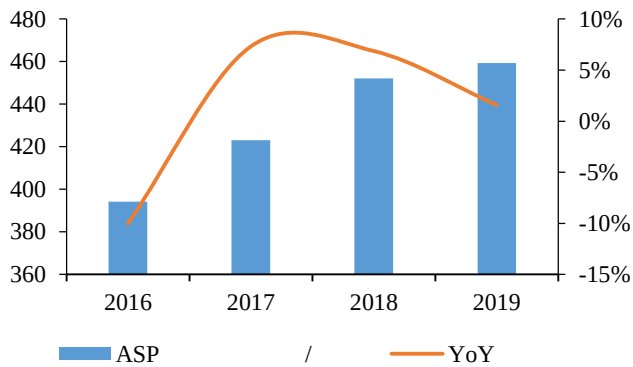
ASP

2019 ASP

-10.0% 1.6%

68 2016-2019

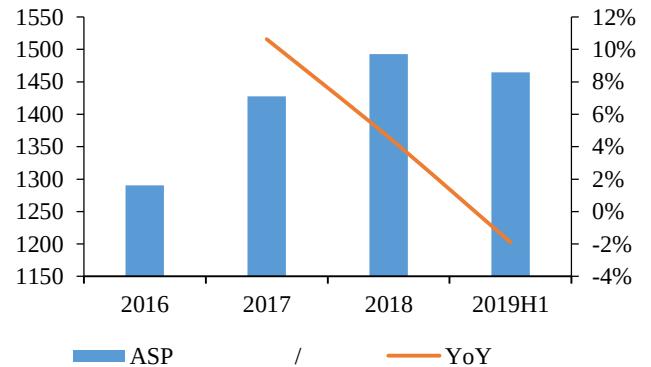
ASP



Wind

69 2016-2019H1

ASP



33.1% 33.4%
2017-2018

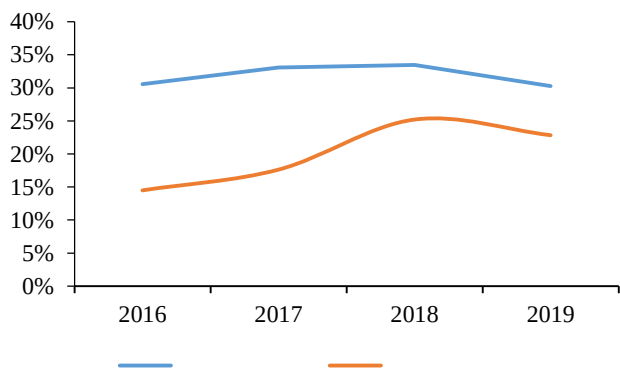
2016 2019

2016 2019

30%

2017-2018

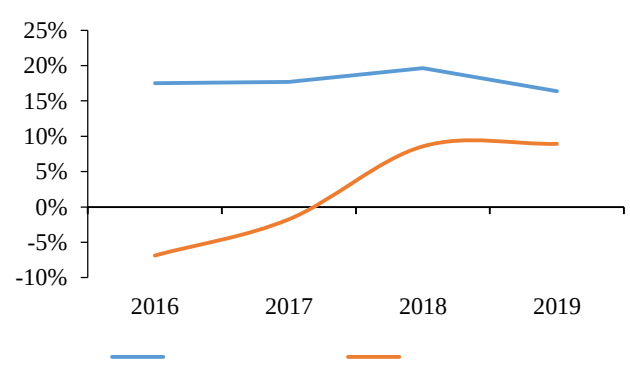
70 2016-2019



Wind

71 2016-2019

EBITDA



2. 2020

1 8

8

2018

15

8

SK

8

SEMI

2019-2022

16 8

14

70

2019-2022

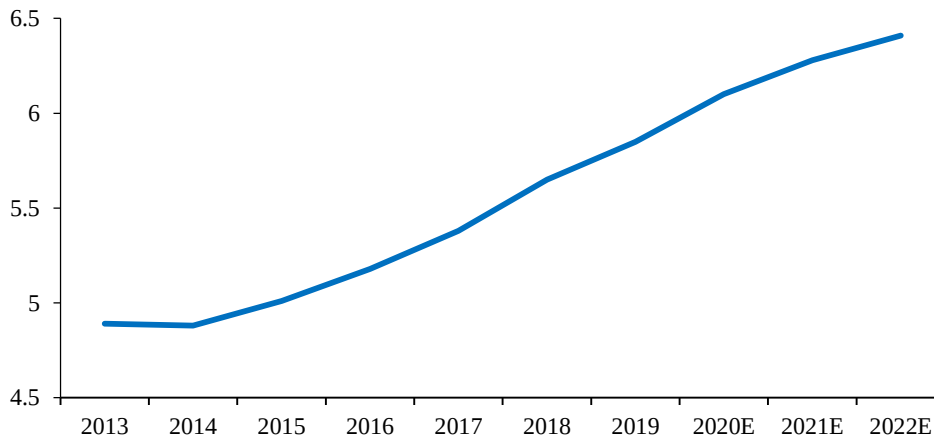
CAGR

4.5%

72 2013-2022

8

/



SEMI

2020

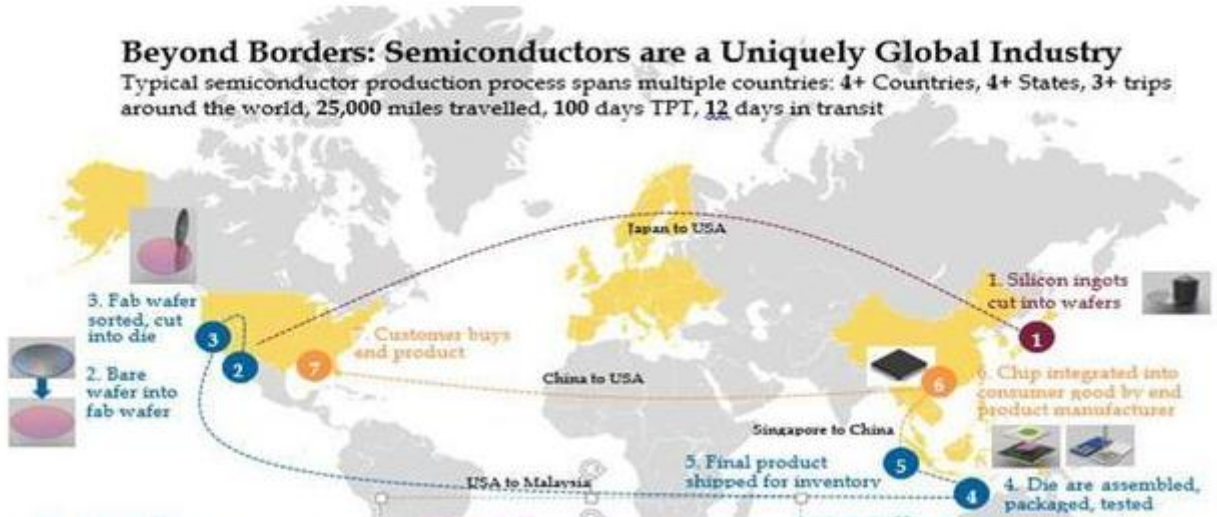
IDM

7

2020 H1

IDM

73



SIA

2

5G

2017

2020

CINNO Research 2020

40%

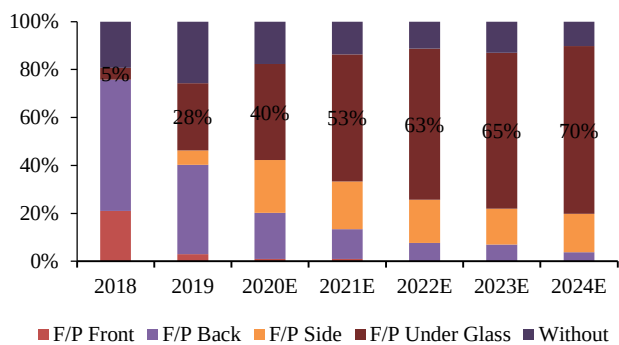
Counterpoint 2020Q1

3.5

8

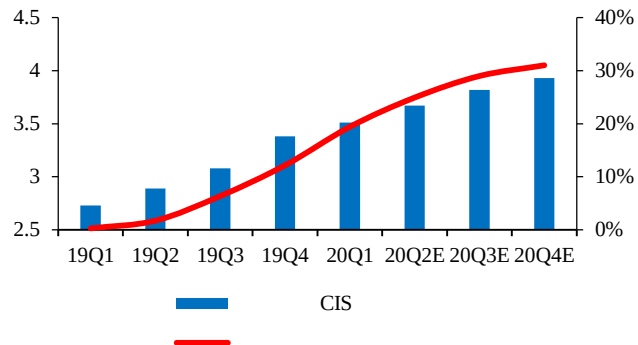
CIS

74 2018-2024



CINNO Research

75 2019Q1-2020Q4



199IT

5G 5G 4G Guide iPhone12 5G 4G 2

21% 130 MOSFET

5G 100 4 5G

4G 1 IGBT SCR 5G UPS

NB/PAD

NB/PAD NB/PAD Canalys PC 2020Q2-Q3

Q3 1.245 23%

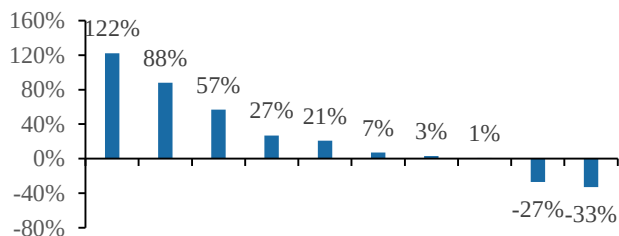
52.5%

2020 7 19.3%

10.9pct

9-10 65%

76 2020Q3 PC



199IT

77 2020

21%

20H1

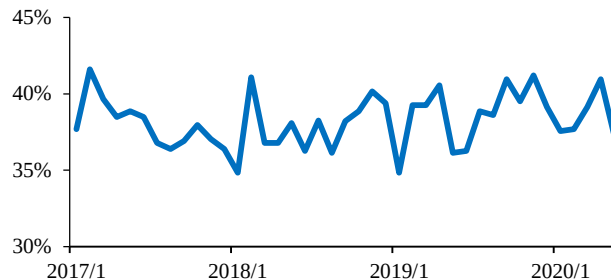
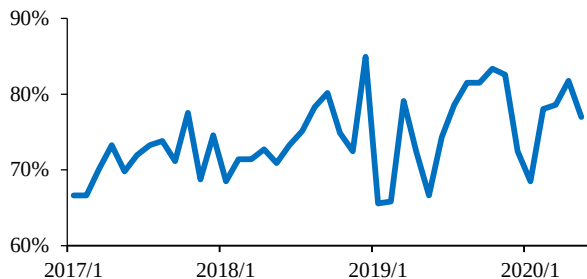
2019

11%

6

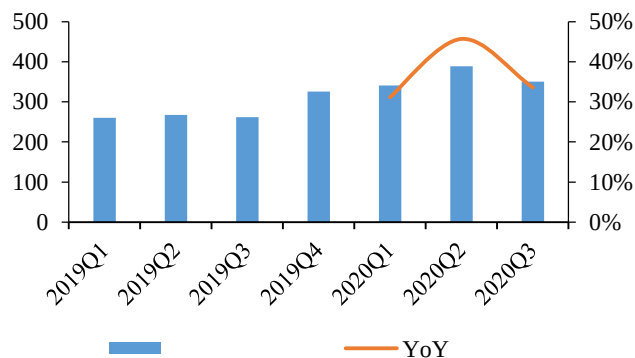
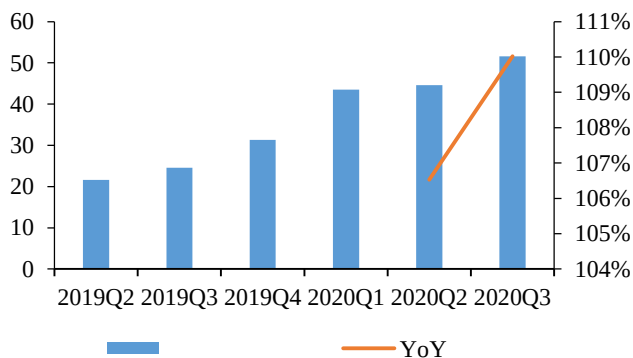
78 2017-20H1

79 2017-20H1



80 2019Q2-2020Q3

81 2019Q2-2020Q3



Wind

Wind

3 2020

8

5G

IC MOSFET

3D sensing

8

DIGITIMES

20H2

12

8

10-20%

IC

20Q3

MOS

IDM+

8

IC

know-how

IC

IC

84 2020H1

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

2020H1

SEMI 2019-2022 16 8
CAGR 4.5% IHS
Omdia 2019-2024 14 70 2019-2022 CAGR 5.3%

IDM+

IDM

Fabless

50%

D) D

Fabless

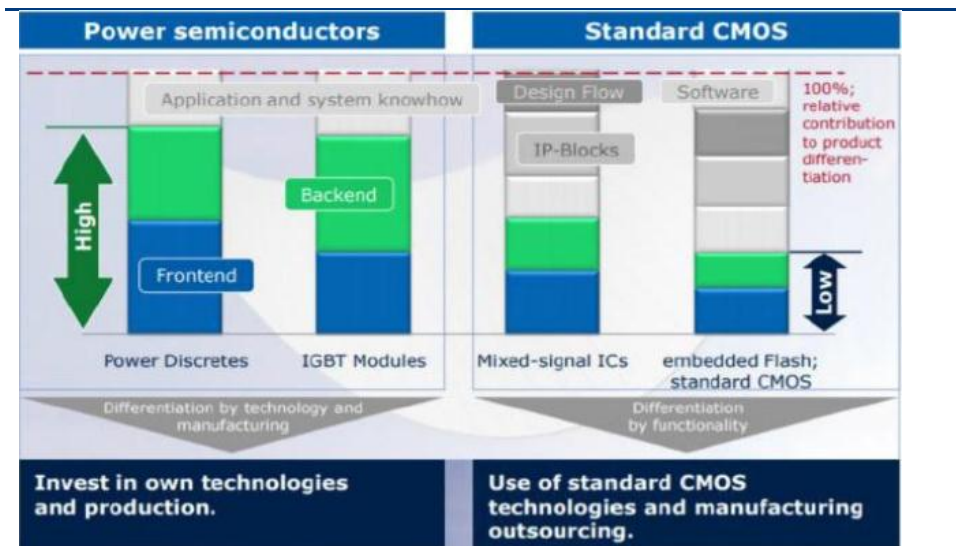
IDM

IDM

Fabless

85

IC



IDM

Fabless

MOSFET

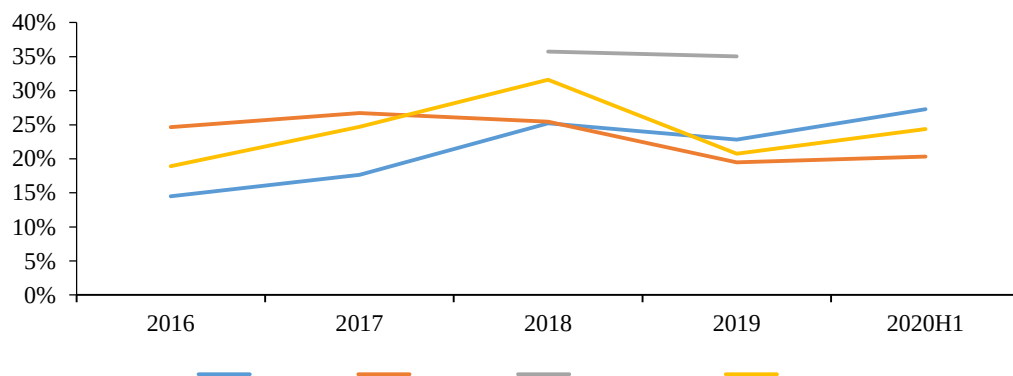
IDM

IDM

Fabless

IDM

86 IDM Fabless



Wind

IDM+

IDM

Fabless

know-how

-
-
-

IDM

Fabless

IDM+

MOSFET
 600-1200V
 6 SiC

20H1

IGBT

-100V-1500V
 Trench-FS

IGBT
 20H1

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		112	131	157	172
1,055	1,069	1,362	1,667		377	446	539	592
0	0	0	0		483	567	691	800
1,048	2,132	2,454	2,612		31	14	14	11
5,092	6,896	8,745	10,969		31	0	0	0
3	3	3	3		-37	100	100	100
82	90	100	100		0	0	0	0
3,816	4,961	5,910	6,695		0	20	80	120
489	689	889	1,089		239	280	260	280
275	247	223	200		478	1,181	1,423	1,658
338	333	329	326		32	50	100	150
5,003	6,323	7,454	8,413		4	10	10	10
10,095	13,219	16,199	19,382		506	1,221	1,513	1,798
0	0	0	0		-6	0	0	0
100	87	105	136		512	1,221	1,513	1,798
749	859	1,048	1,230		112	244	303	360
112	187	200	219		400	977	1,210	1,438
0	0	0	0	NOPLAT	544	1,235	1,528	1,809
535	527	560	568	EPS()	0.33	0.80	1.00	1.18
0	675	844	993					
482	684	929	1,125					
1,978	3,019	3,686	4,271		2019A	2020E	2021E	2022E
1,506	2,306	3,106	3,906		-8.4%	23.3%	21.9%	15.7%
0	0	0	0	EBIT	-9.1%	130.1%	23.7%	18.4%
220	314	314	314		-6.7%	143.7%	23.9%	18.8%
1,726	2,620	3,420	4,220					
3,704	5,639	7,106	8,491		22.8%	28.3%	28.2%	27.1%
5,423	6,368	7,578	9,017		8.9%	17.2%	17.5%	18.0%
968	1,212	1,515	1,874	ROE	6.3%	12.9%	13.3%	13.2%
6,391	7,580	9,093	10,891	ROIC	6.3%	10.9%	10.5%	10.1%
10,095	13,219	16,199	19,382					
					36.7%	42.7%	43.9%	43.8%
2019A	2020E	2021E	2022E		27.0%	43.5%	46.9%	47.9%
576	540	1,762	2,325		257.4%	228.4%	237.2%	256.8%
1,253	1,923	2,408	2,849		204.1%	193.0%	200.3%	217.8%
126	-14	-293	-305					
155	-568	-319	-323		0.6	0.5	0.5	0.5
-72	164	254	240		44	43	40	41
-887	-965	-288	-135		59	57	55	56
-41	-2,018	-2,020	-2,011		91	75	71	75
-746	-2,005	-2,004	-2,003	()				
-82	-8	-10	0		0.33	0.80	1.00	1.18
787	-5	-6	-8		0.47	0.44	1.45	1.91
-180	1,716	1,273	1,225		4.46	5.24	6.23	7.42
-945	1,475	969	948					
-155	-49	-49	-49	P/E	143	82	66	56
0	0	0	0	P/B	11	13	11	9
920	290	353	326	EV/EBITDA	22	14	11	9

&

TMT

2019

2016

2017

2 TMT 2019

2019

3 2020

2020

			010-66500809	zhangyujie@hcyjs.com
			010-66500827	duboya@hcyjs.com
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			010-63214683	guoyunlong@hcyjs.com
			010-66500867	liuyi@hcyjs.com
			010-63214683	dana@hcyjs.com
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			0755-83715428	wangliyan@hcyjs.com
			0755-82756805	duanjiayin@hcyjs.com
			0755-83024576	zhuyan@hcyjs.com
			0755-82756805	baoqingqing@hcyjs.com
			021-20572536	xucaixia@hcyjs.com
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			021-20572257-2552	huangchang@hcyjs.com
			021-20572585	zhangjiani@hcyjs.com
			021-20572506	wujun1@hcyjs.com
			021-20572590	keren@hcyjs.com
			021-20572591	heyiyun@hcyjs.com
			021-20572582	dongxinzhu@hcyjs.com
			021-20572509	jiangyu@hcyjs.com
			021-20572548	shijiawei@hcyjs.com
			021-20572559	panyaqi@hcyjs.com
			021-20572559	wangzizang@hcyjs.com

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20%

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3-6

5%

3-6

-5%

5%

3-6

5%

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100033	518034	200120
010-66500801	0755-82027731	021-50581170
010-66500900	0755-82828562	021-20572500