

1983

IDM

MOSFET PMIC

HIS Markit 2018

1

2

3

.....	2
.....	2
.....	3
.....	3
78.084.8	7
.....	8
MOSFET PMIC	9
30 +	9
.....	11
.....	12
.....	14
MOSFET	14
.....	16

18 Infineon
19 Infineon
TM
21 On Semi
22 On Semi
23 On Semi 2020
24 On Semi
25
26
27 2019
28

32
33
34 IC IC
35
36
37
38
39
40

41 IC
42
43

51
52

54
55

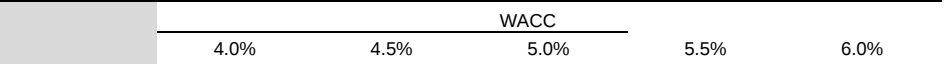
150-200
 5%
 100
 TI NXP
 3
 5
 30
 20-30
 2020
 Model 3
 MOFET IGBT

	2017	2018	2019	2020E	2021E	2022E	2023E	2024E	2025E
	33.63%	6.73%	-8.42%	17.41%	11.41%	12.40%	15.00%	15.00%	15.00%
/	82.38%	74.80%	77.16%	73.66%	73.63%	73.65%	73.65%	73.65%	73.65%
/	5.55%	5.56%	6.03%	2.0%	2.0%	2.0%	2.00%	2.00%	2.00%
/	2.04%	2.01%	1.95%	2.0%	2.0%	2.0%	2.00%	2.00%	2.00%
/	1.34%	1.35%	1.15%	1.00%	1.00%	1.00%	1.00%	1.00%	1.00%
	-75.43%	8.98%	-1.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
	7.32%	29.81%	38.70%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%

Beta	0.8	T	7.00%
	2.50%	Ka	4.90%
	3.00%	Beta	0.84
	48.17	Ke	5.01%
	1216	E/(D+E)	100.00%
(E)	58571	D/(D+E)	0.00%
(D)	2752	WACC	5.00%

Kd	5.30%	10	2.00%
----	-------	----	-------

WACC 3



IDM

IC

MOSFET PMIC

MOSFET PMIC

MOSFET PMIC

MOSFET+PMIC

1



30 +

1983

4

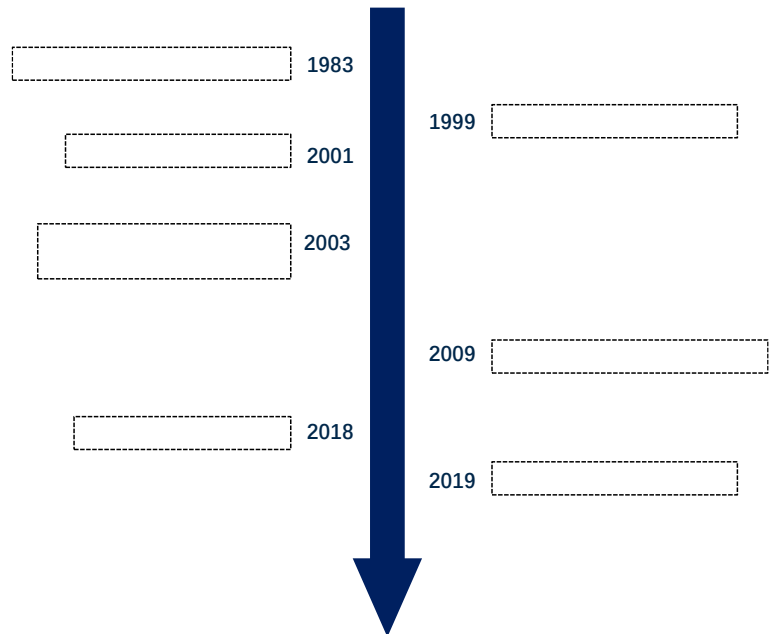
1999

6 MOS

6

8

2



2002

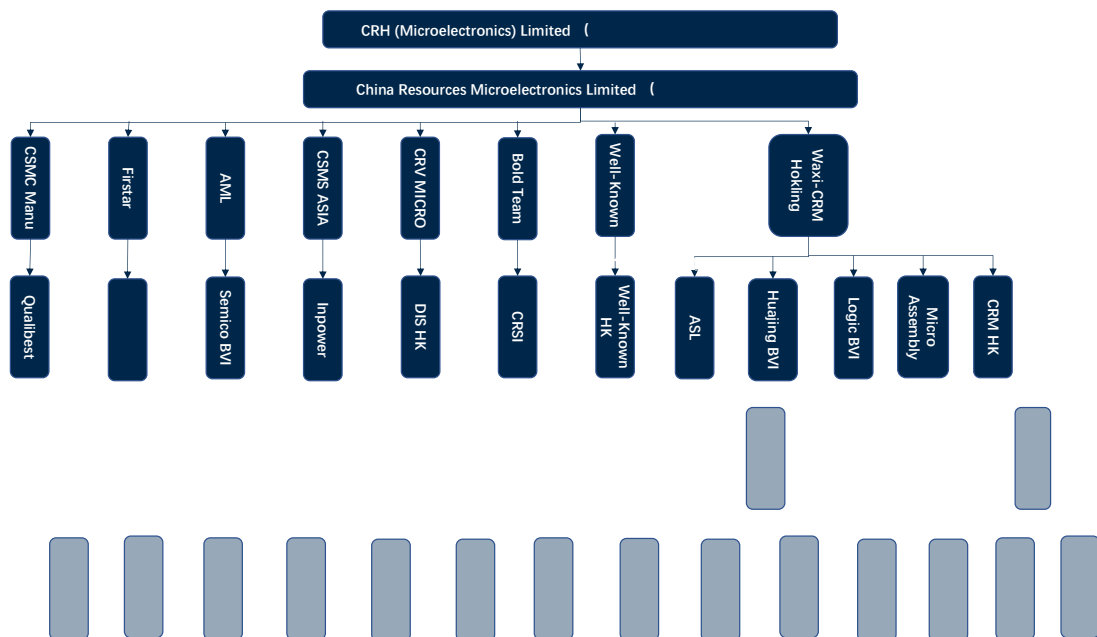
2008

2017

2019

35%

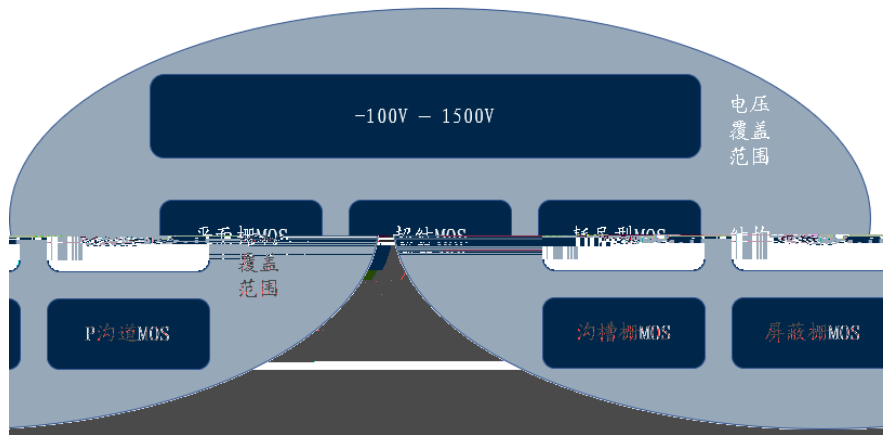
3



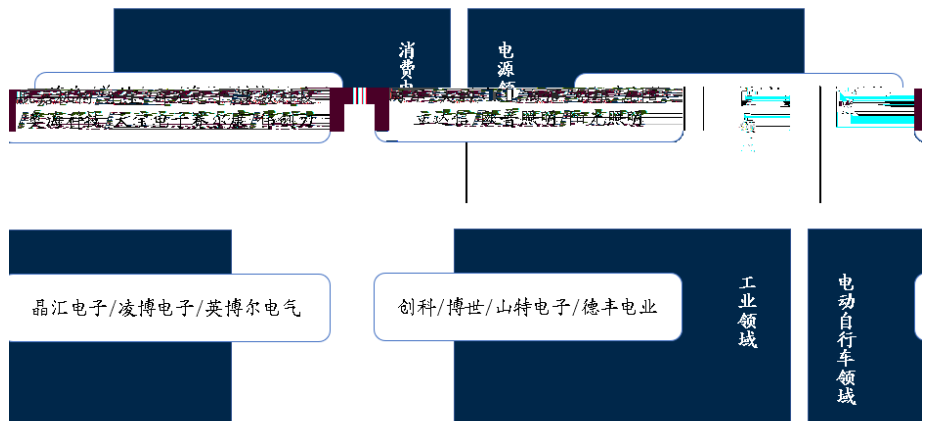
Infineon

ON

5 MOSFET



6



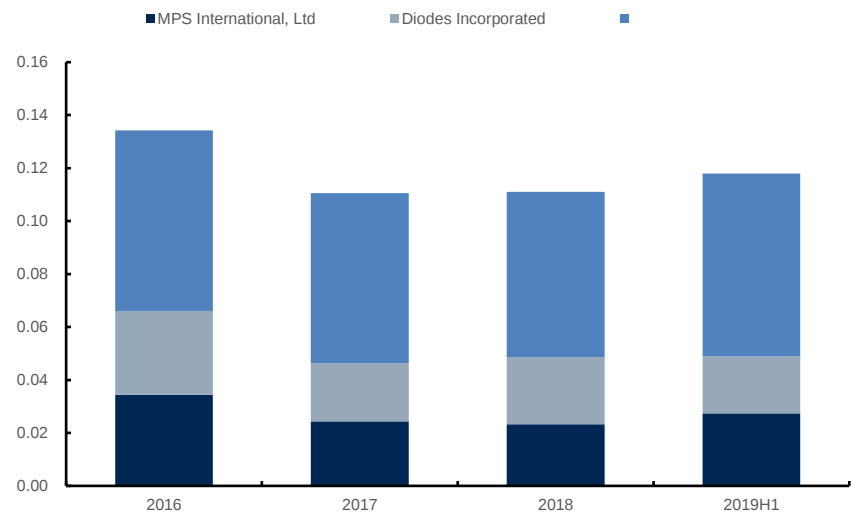
MPS

Diodes Incorporated

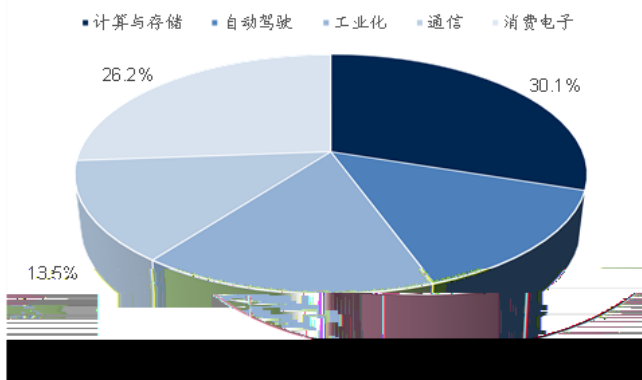
2016-2019

20%

7



8 MPS



9 Diodes

DC

AC

DC/AC

AC/DC

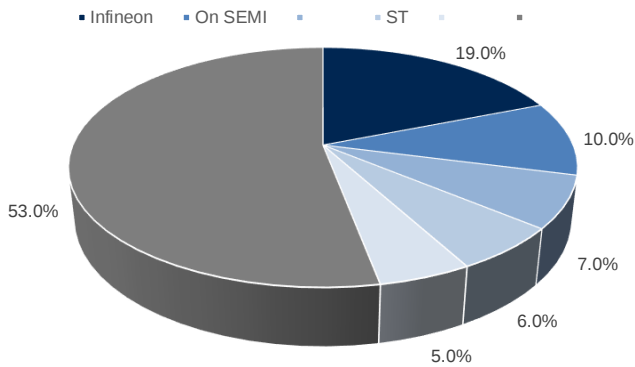
DC/DC

AC/AC

10

mosfet IGBT BJT

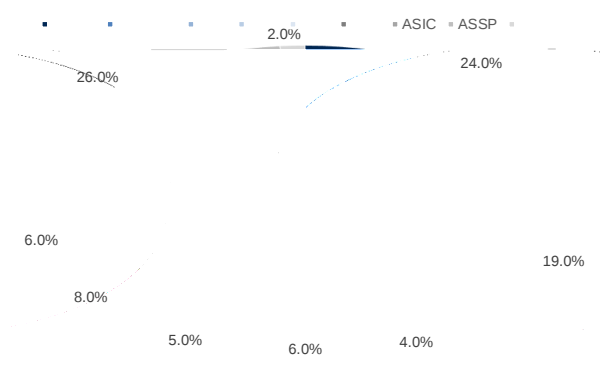
13



WSTS

14

5%

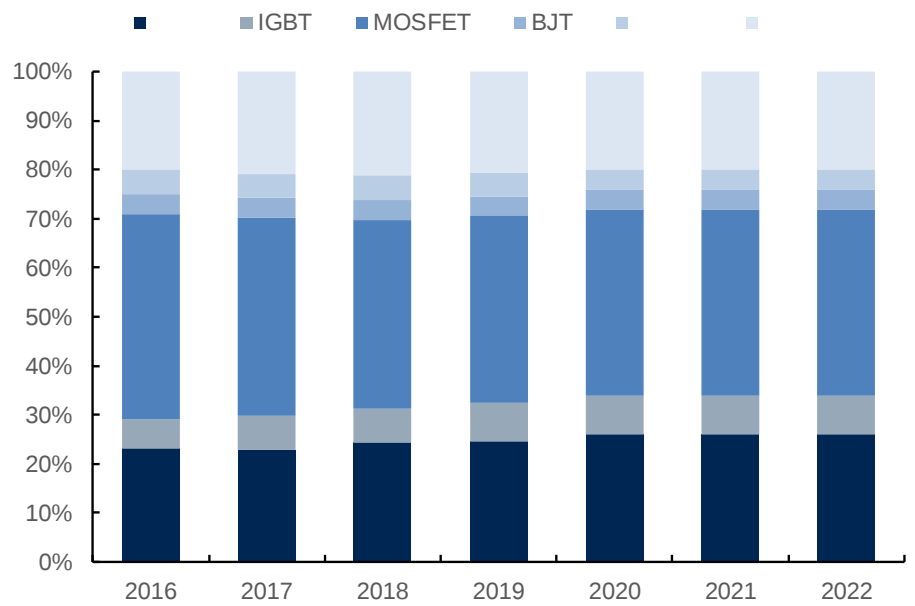


WSTS

IGBT MOSFET Infineon 27% 28%
Renesas ST

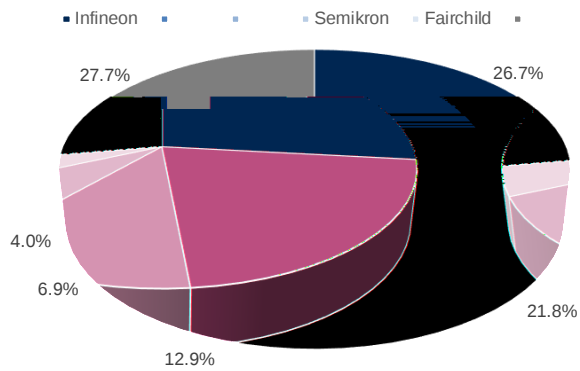
IGBT MOSFET

15



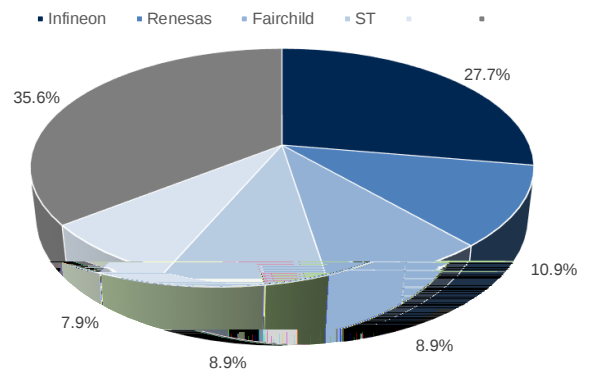
Yole

16 IGBT



IHS

17 MOSFET



IHS

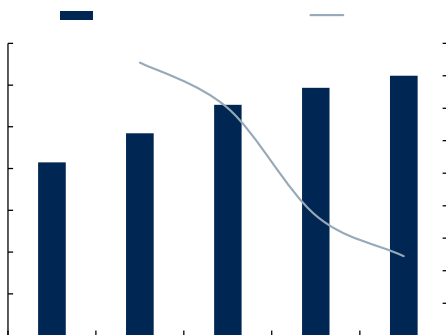
Infineon

1999

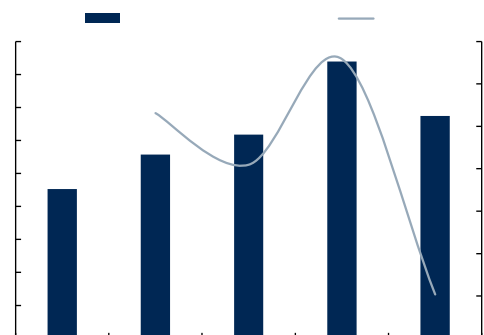
1999

2000

18 Infineon



19 Infineon



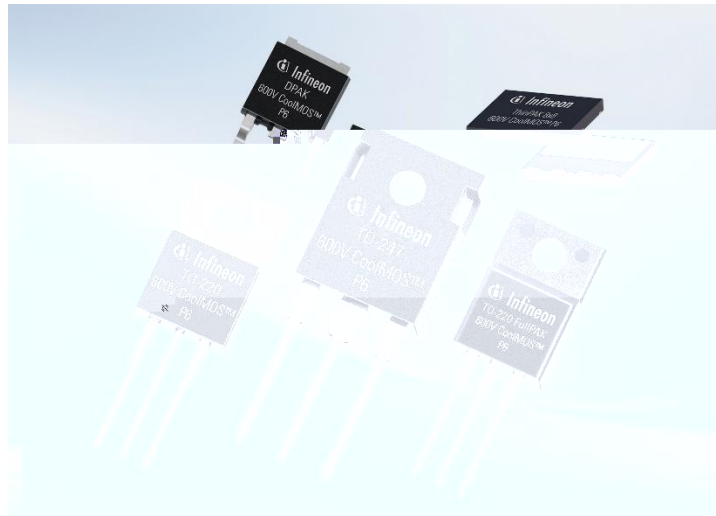
OptiMOS™

CoolSiC™

CoolGaN™

CoolMOS™

20 Infineon CoolMOS™ MOSFET



WSTS

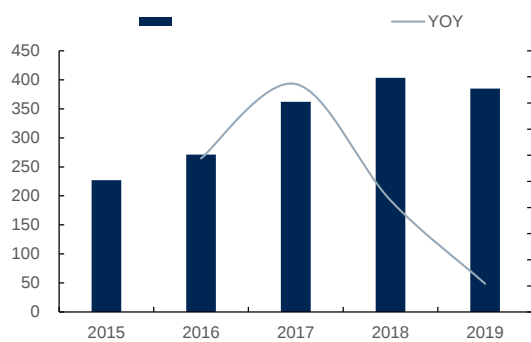
On SEMI

On Semiconductor Corporation

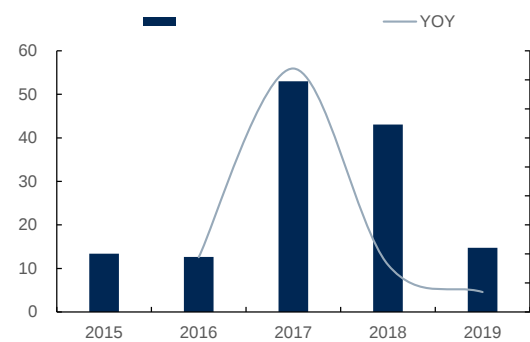
1999

LED

21 On Semi



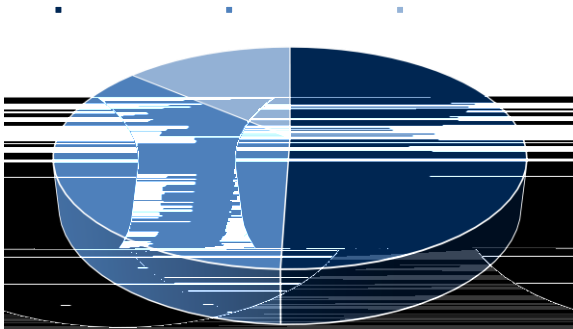
22 On Semi



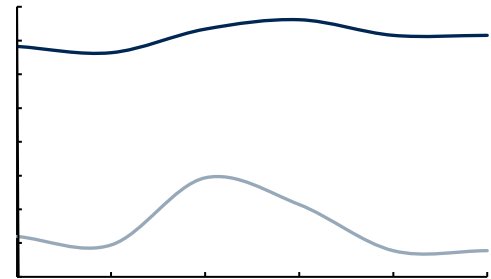
ASIC DSP

LED

23 On Semi 2020



24 On Semi



2015-2018

2019

2017

2020

50%

ST

ST

1987

SGS

Thomson

1998

5

SGS-

25

26

CMOS

FD-SOI

Bi-CMOS BCD (Bipolar, CMOS, DMOS) Silicon Carbide

RF-SOI (

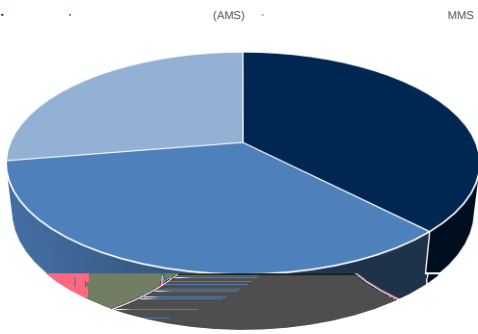
)

MEMS

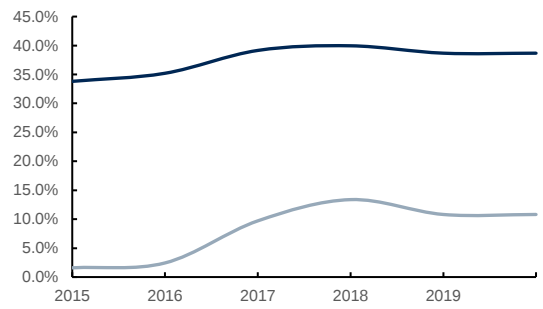
VIPOWER

27

2019



28



2019

2019

2015-2018
2019

38%

5

DC / DC

29

5

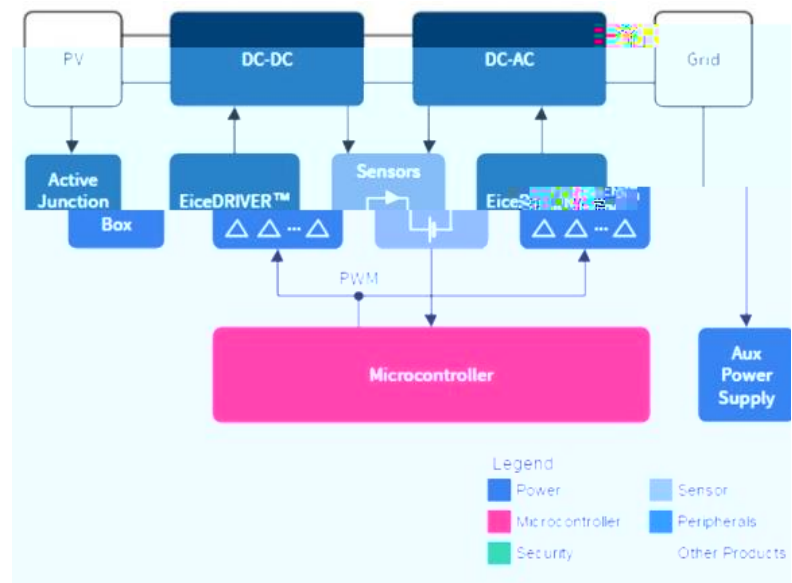
Infineon

30

IGBT

20-30

30



Infineon

;

31

Infineon

IGBT MOSFET
/

DC / AC
;

PMIC- IC

PMIC- IC

33



34 IC IC

比较项目	模拟IC	数字IC
信号传输	光, 声音, 速度, 温度等自然现象 连续信号	1或0非连续信号
技术层次	设计门槛高, 学习曲线10-15年	电脑辅助设计, 学习曲线3-5年
产品认证与生命周期	认证期长 (约1年以上), 但生命周期也长	认证周期短 (约3-个月), 但生命周期也短
替代性	低	高 (可用标准产品替代)
产品特点	少量多样	量大集中

IC

IC

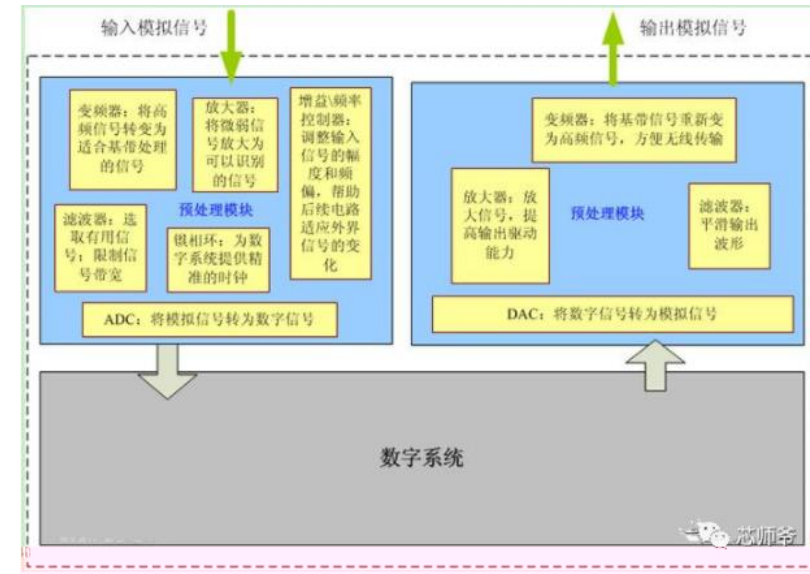
IC CMOS IC 10 CMOS

IC

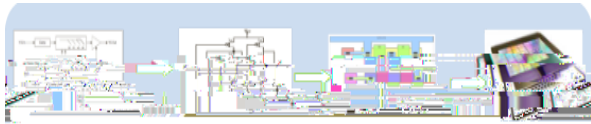
IC

IC IC IC

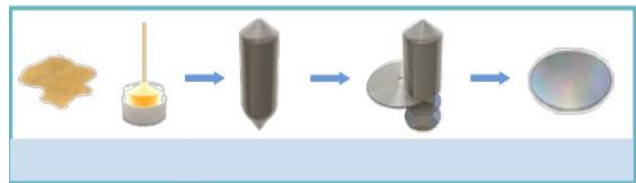
35



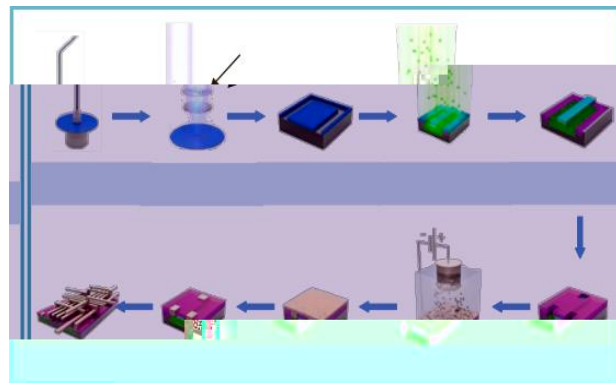
36



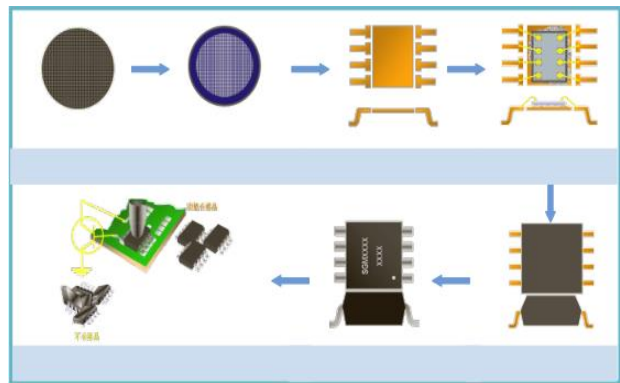
37



38



39



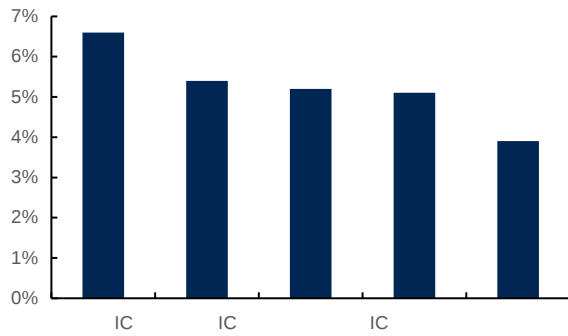
McClean Report

545 6.6% 2022 2017

748

40

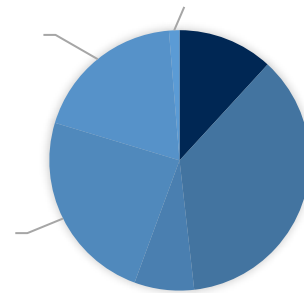
17~22



:ICinsights

41

IC



: ICinsights

()

WSTS
18/19/20
IC

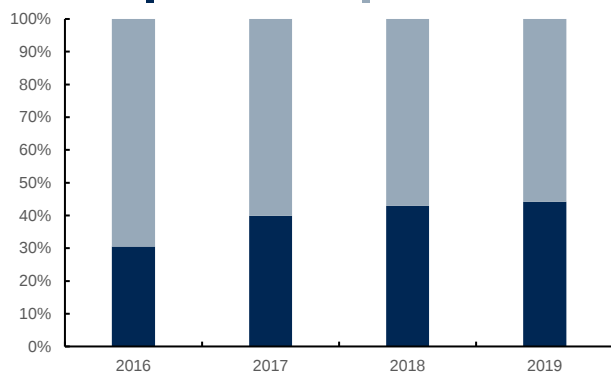
19

10.8%/-5%/5%

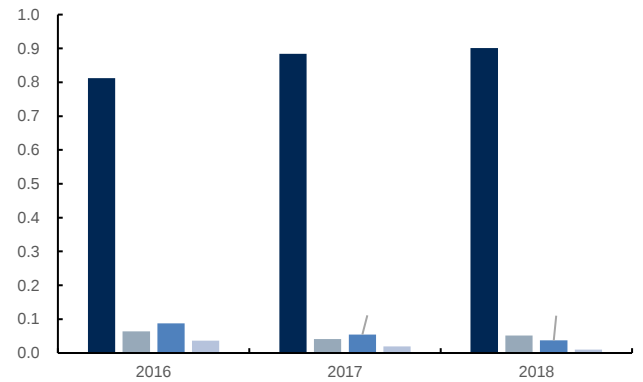
558

IDM
IDM
Foundry
IC
2017
75.64%
IDM

42



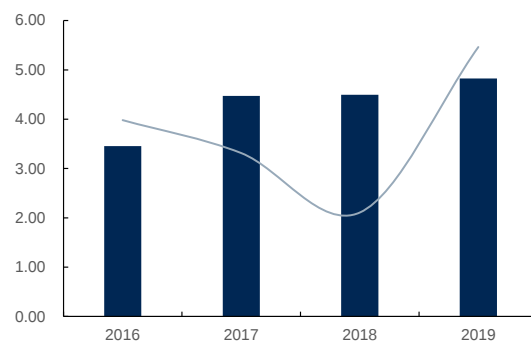
43



2016-2019
7% 2017

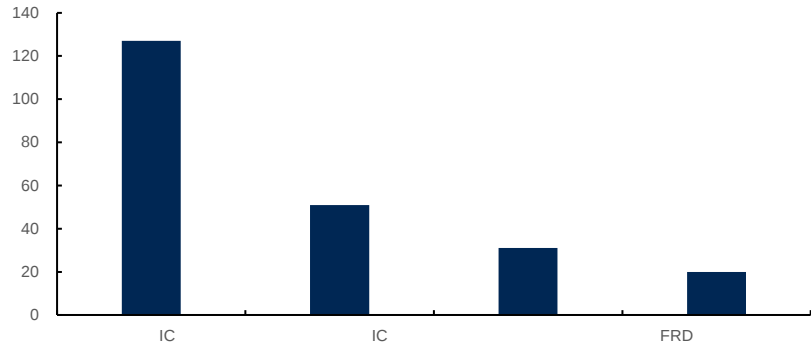
2018

44



1173 152 IC
BCD SBD

4546



IDM

+

3 6 1 8
1.0-0.11 m

8

IC

2018							
3	6	Analog	BCD	MEMS	DMOS	Power Discrete	247
1	8	Advance		BCD	Analog	DMOS	73
1	8	MOS		MOS	MOS	SBD	60

Wind

8

1.6 /
90nm

12

47 8



2009

8

2019

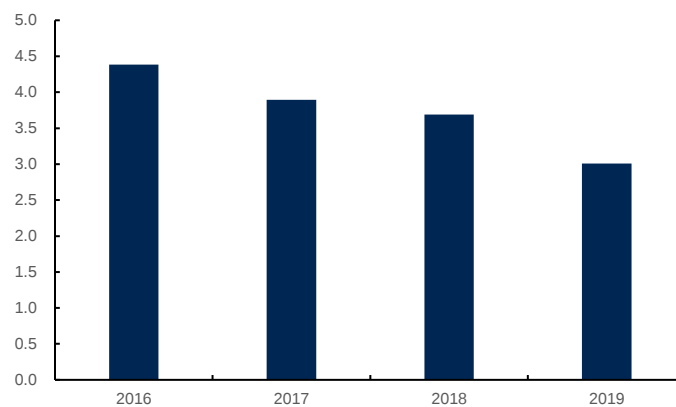
2020Q2

2020	PC		8	IC
	MOSFET			
		IC	MOSFET	2020
	PC		OEM/ODM	
	IC	MOSFET		
INTEL		PC	Tiger Lake	10
	10	15%	Thunderbolt 4	SuperFin
		40Gbps	CPU	USB 4
PC			8	
IC	IC		IC	MOSFET
		IDM		
	IC	MOSFET		

2019
 2.1% 1015.8 3055.5 20%

53

/



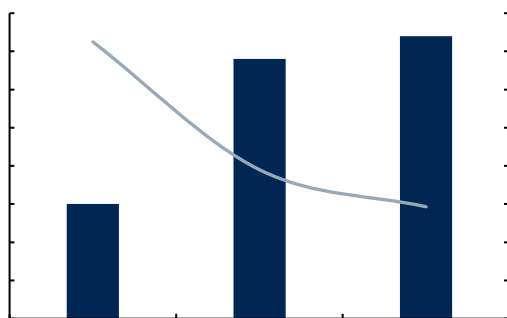
2016-2018

30%

5%

54

55



23877.7

2019

IDM

56

IHS Markit

MOSFET

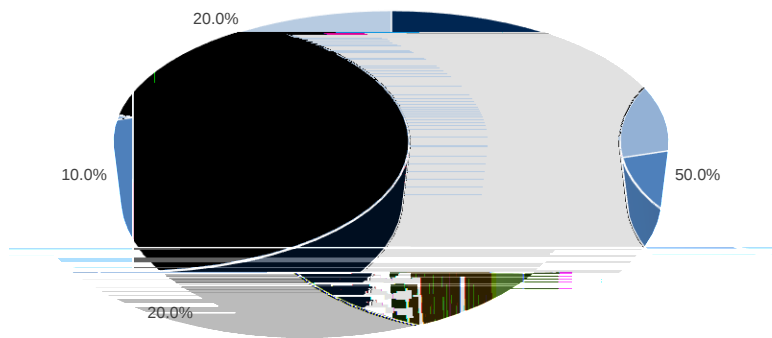
IGBT

5

SiC

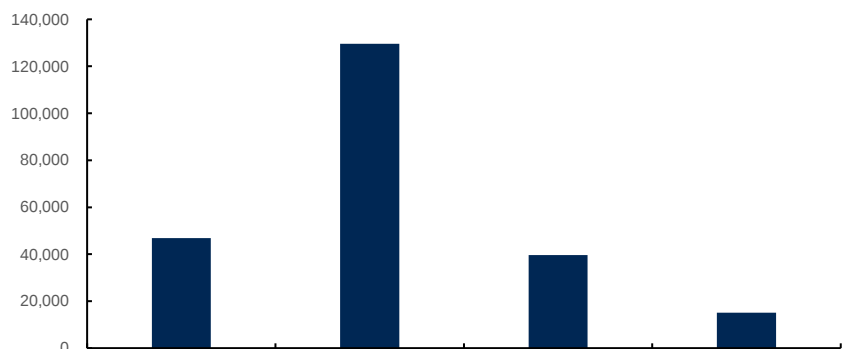
MOSFET IGBT 600-1200V SiC MOSFET IGBT 8
 IGBT 2020 5 1.26 IPO 2018 9
 35%

58



MEMS 8 BCD 2020 7 50% 8
 16000 MEMS 8
 90nm 12

59 8



150-200

5%

TI NXP

100

3

5

30

20-30

2020

Model 3

1 7

MOFET IGBT

	2017	2018	2019	2020E	2021E	2022E
	22.9	26.6	25.0	29.1	33.4	38.5
YOY	78.9%	15.8%	-5.9%	16.4%	15.0%	15.0%
	19.4%	34.0%	29.4%	34.3%	33.9%	33.5%
	35.2	35.7	31.8	37.6	40.9	45.1
YOY	16.1%	1.5%	-10.9%	18.2%	8.6%	10.3%
	16.3%	18.6%	17.7%	20.2%	20.2%	20.3%
	58.1	62.3	56.8	66.7	74.3	83.5
	17.5%	25.2%	22.8%	26.3%	26.4%	26.4%

	2019	2020E	2021E	2022E
	6271	5743	6743	7512
	4690	4431	4967	5531
	85	66	67	75
	126	112	135	150
	374	377	146	161
	0	31	60	109
	11	(0)	0	0
	(72)	37	0	0
	(349)	(284)	0	0
	586	478	1368	1485
	5	28	0	0
	591	506	1368	1485
	53	(6)	0	0
	108	112	302	328
	429	401	1066	1157

Wind

20-22

 10.7/11.6/13.0
 78.0-80.8

55/51/45X

	2017	2018	2019E	2020E	2021E
()	6,271	5,743	7,417	8,263	9,288
(+/-%)	6.73%	-8.42%	29.15%	12.56%	13.64%
()	429	401	1173	1273	1426
(+/-%)	511.02%	-6.68%	192.60%	8.58%	11.97%
EPS	0.52	0.48	0.96	1.05	1.17
()	6,271	5,743	6,743	7,512	8,444
(+/-%)	6.73%	-8.42%	17.41%	11.41%	12.40%
()	429	401	1,066	1,157	1,296
(+/-%)	511.02%	-6.68%	166.00%	8.58%	11.97%
EPS()	0.52	0.48	0.88	0.95	1.07
()	6,271	5,743	6,068	6,761	7,600
(+/-%)	6.73%	-8.42%	5.67%	11.41%	12.40%
()	429	401	959	1,042	1,166
(+/-%)	511.02%	-6.68%	139.40%	8.58%	11.97%
EPS	0.52	0.48	0.79	0.86	0.96
	830	830	1216	1216	1216

TV

WACC

TV

1

10

2

WACC

WACC

2.6%

6.0%

WACC

3

10

TV

2%

10

4

2018

PE

PE

1

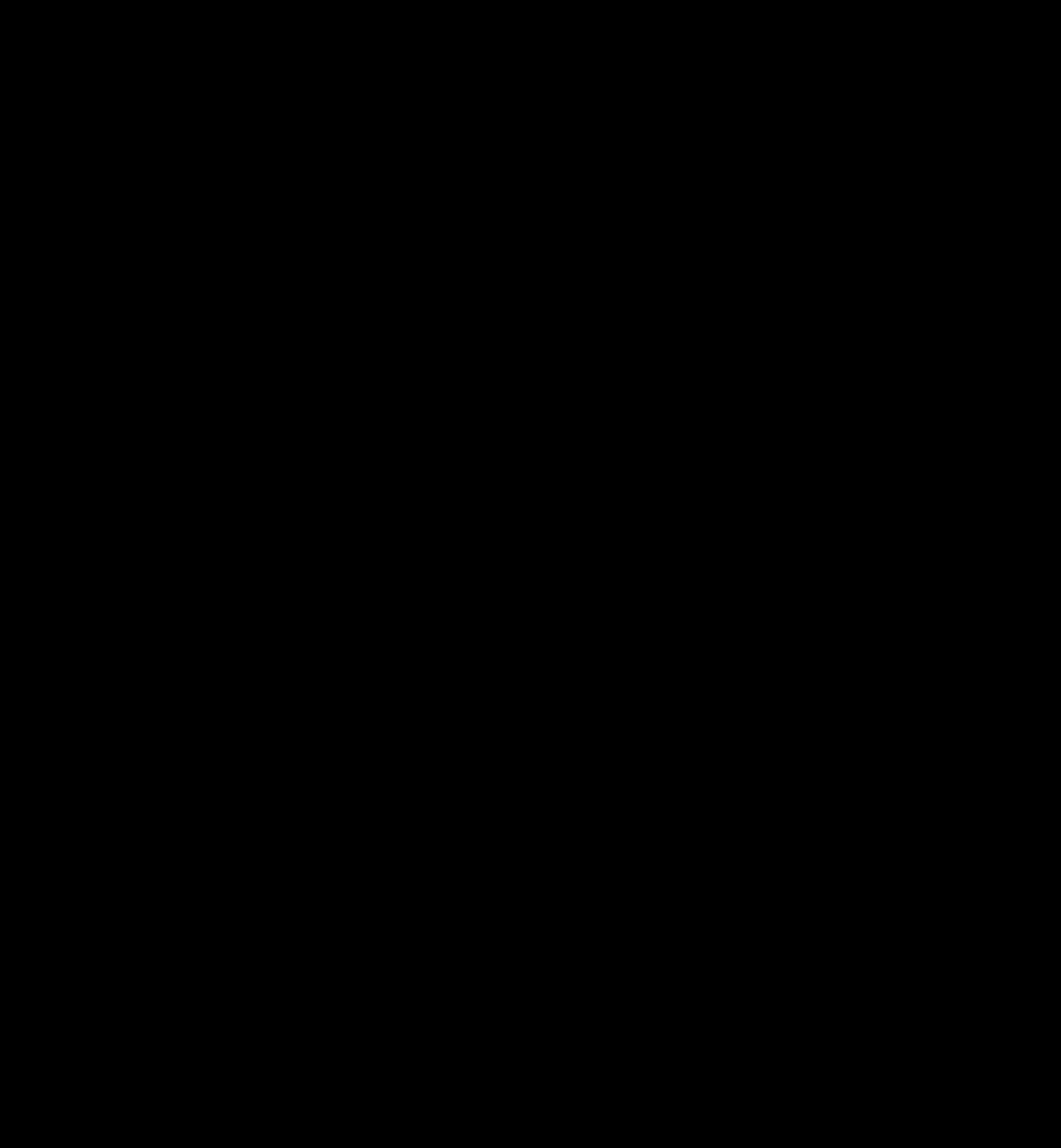
3

2

3

2

/



		6 20%
		6 10%20%
		6 ±10%
		6 10%
		6 10%
		6 ±10%
		6 10%

		1012		18
518001		075582130833		
	1199		1	12
200135				
		6	9	
100032				