36.07

(　)	12.16
A (　)	2.37
(　)	438.58
(　)	50.99/35.66
300	3625
	2722

SAC S1130520010001
zhengbiyu gjzq.com.cn

SAC S1130519100004
zhang_chun gjzq.com.cn

SAC

1. IDM

IDM IDM ,
IDM
Fabless IDM

1

IDM
IDM
8
23 IDM

IDM

IDM

IDM **IDM**
IDM
A IDM

IDM

2 IDM 2018

	3898	350	6270	1482	0	0	8.6%
	2557	871	3025	240	73	2.4%	2.5%
	1026	375	1709	423	48	2.8%	6.3%

FRD MOSFET
MOSFET -100V 1500V
MOSFET MOSFET
VDMOS
MOS MOS

3 MOSFET

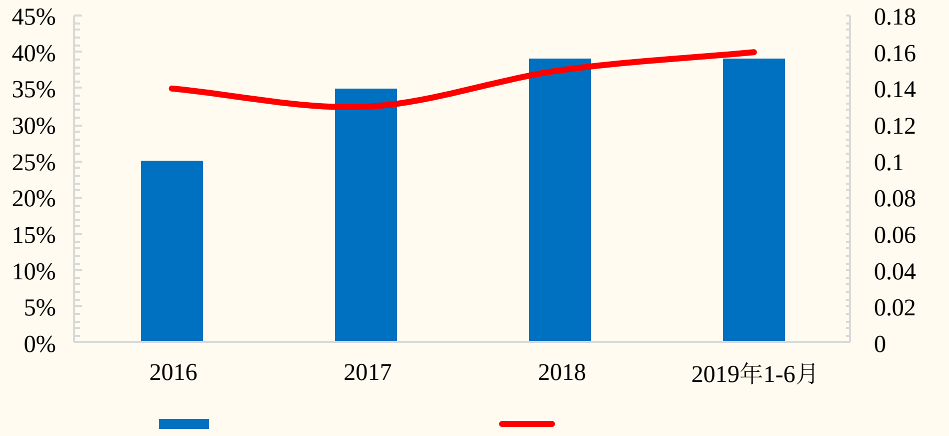
	30V-900V	40V-900V	-60V-150V	-100V-1500V
	MOS MOS MOS MOS MOS	MOS MOS	MOS MOS MOS P MOS	MOS MOS MOS MOS P MOS MOS

MOSFET MOS

VDMOS Salcomp
MOS
MOS

IGBT Trench-FS
600V-6500V IGBT IGBT
600V-1200V

5

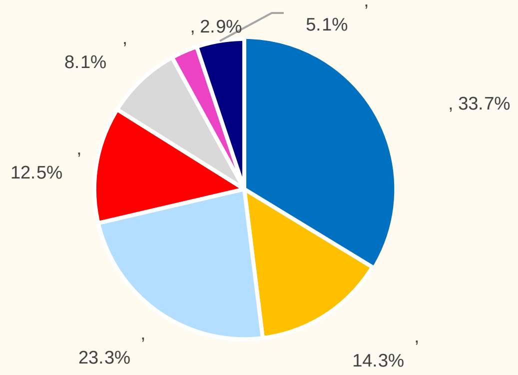


3.

IC

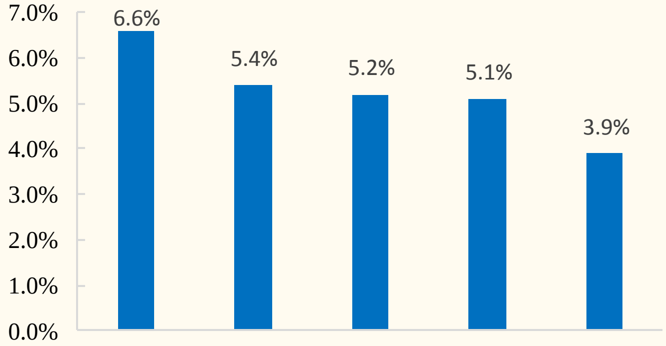
2018 4700 33.7% 23.3% 12.5% 2018 587 IC Insight 2017-2022 6.6% 5.1%

6 2018



WSTS

7 2017-2022E



IC Insight

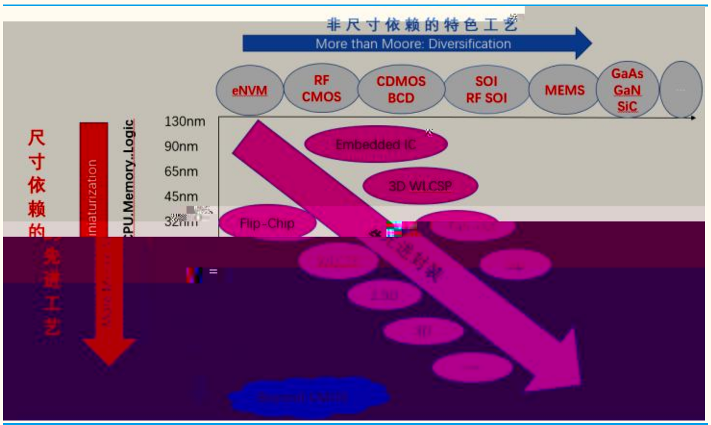
120 / 68 /

130nm 5nm 3nm EUV ; IC MEMS RF-COMS SOI/RF-SOI BCD/CDMOS MEMS

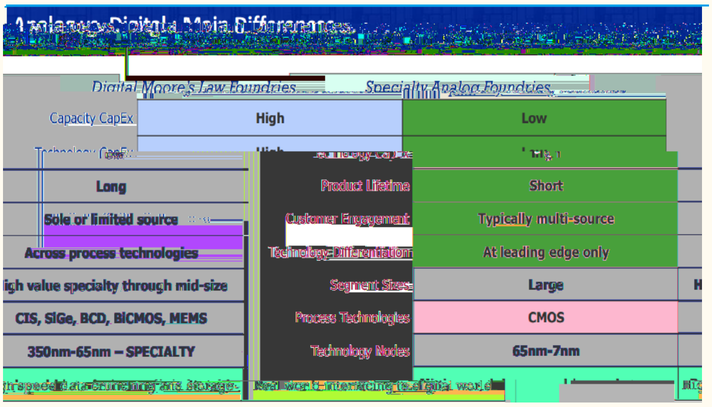
2018

238 50%
119 35% 77
58 8 ASP
400 / 1450 / 120 /
2019 38 /
37 / 75 /
90% 68 /

8



9 ***vs.***


Analog vs. Digital: Main Differences

	Digital Moore's Law Foundries	Specialty Analog Foundries
Capacity CapEx	High	Low
Technology CapEx	High	Low
Product Lifetime	Long	Short
Customer Engagement	Sole or limited source	Typically multi-source
Technology Differentiation	Across process technologies	At leading edge only
Segment Sizes	High value specialty through mid-size	Large
Process Technologies	CIS, SiGe, BCD, BiCMOS, MEMS	CMOS
Technology Nodes	350nm-65nm – SPECIALTY	65nm-7nm
	High speed data crunching and storage	Real world interfacing to digital world

8 12 8
12
8 RF-COMS SOI/RF-SOI BCD/CDMOS
8
8
Hynix

8 8 8

MOSFET CIS
IC IC MCU IGBT MOSFET
2019 8 92.5%
8
MOSFET
MOSFET

10 MOSFET

技术	制造商	目前货期	货期趋势	目前价格
低压 Mosfet	Infineon	15-30	延长	稳定
	Diodes Inc.	21-25	延长	稳定
	ON Semiconductor (Fairchild)	15-24	延长	稳定
	ON Semiconductor	13-20	延长	稳定
	Nexperia	12-20	延长	稳定
	STMicroelectronics	17-30	延长	稳定
	Vishay	17-22	延长	稳定
高压 Mosfet	Infineon	21-26	延长	稳定
	ON Semiconductor (Fairchild)	15-22	延长	依据市场进行选择性调整
	IXYS	22-30	延长	稳定
	STMicroelectronics	19-24	延长	依据市场进行选择性调整
	ROHM	18-22	延长	稳定
	Microsemi	25-30	延长	稳定
	Vishay	15-17	延长	依据市场进行选择性调整

4.

2016 2018 34,559 44,742
44,976 7.86% 7.61% 7.17%

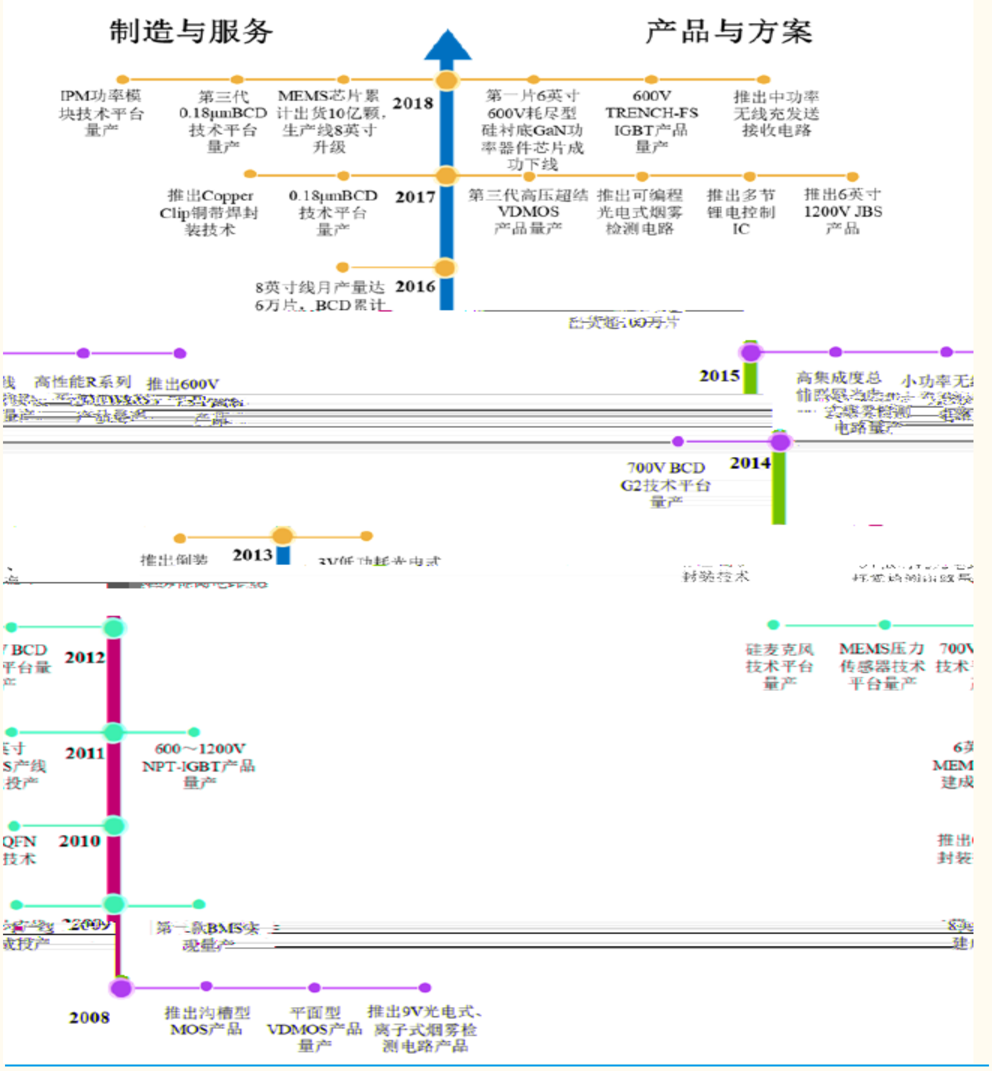
2019 6 30 7937 641 2290
37%

11

EDA

MOSFET IGBT BMS GaN
BCD MEMS

12 2008



MOSFET IGBT FRD MEMS
SBD
BCD

13

BCD	1 1.0-0.18µm 2 5V 700V 3 4 200 600V SOI BCD	BCD BCD SOI BCD
MEMS	1 MEMS 2 3 MEMS	MEMS
	IPM TO-220 TO-3P TO247 DPAK PDFN PQFN IPM	MOSFET IPM

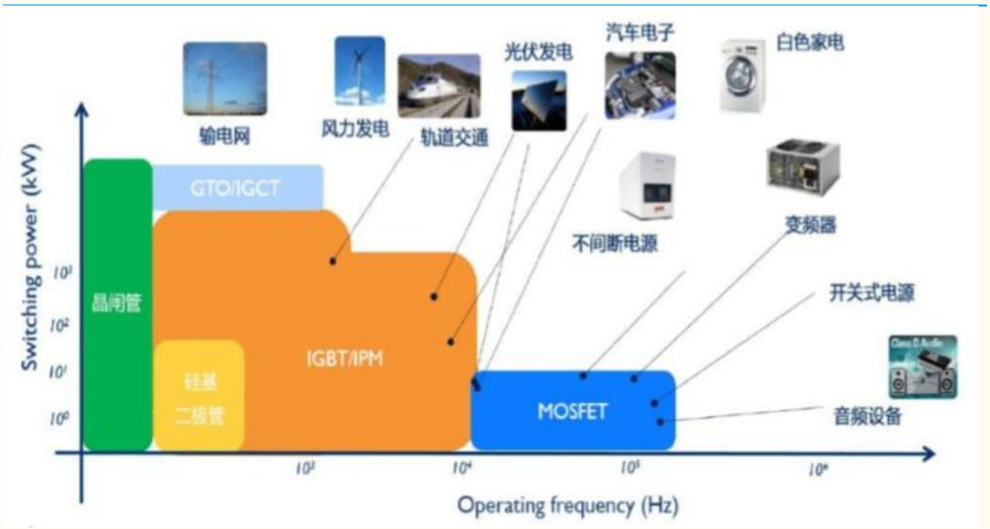
1. **IDM**

IDM MEMS
IDM ( )
Fabless ( ) Foundry (
)
Fabless+Foundry
Foundry
MEMS
IDM Fabless

IDM

IDM

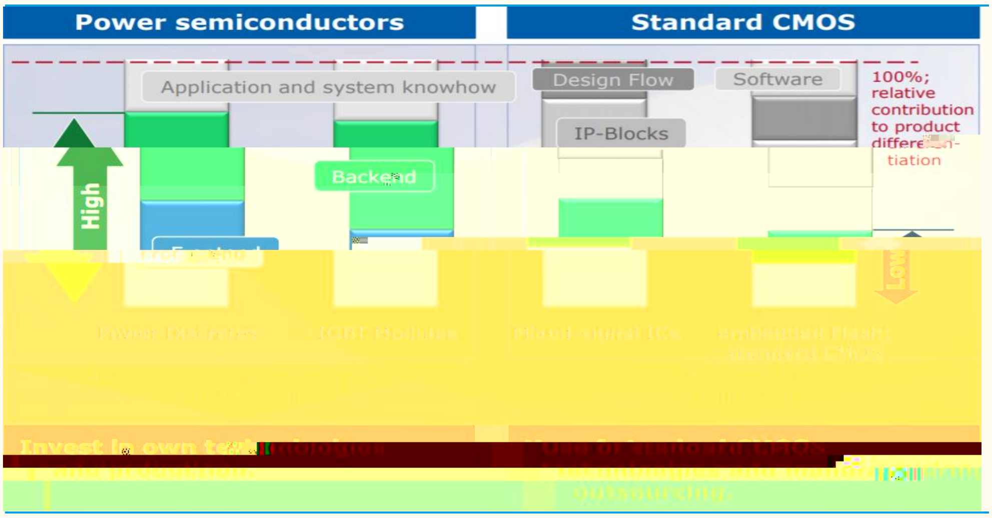
14



Yole

IP

15 CMOS



IDM

IDM

IP 2008

MOSFET VDMOS NPT-IGBT 700V BCD

700V BCD G2 VDMOS 1200V JBS

IPM 600V TRENCH FS IGBT

Fabless IDM

IDM

16

		IDM
		IDM
	IC Ic	IDM
	MOSFET IGBT	IDM
		IDM
	MOSFET (NXP)	IDM
	MOSFET IGBT IC SiC	IDM

2.

IHS Markit

2018 391 2021

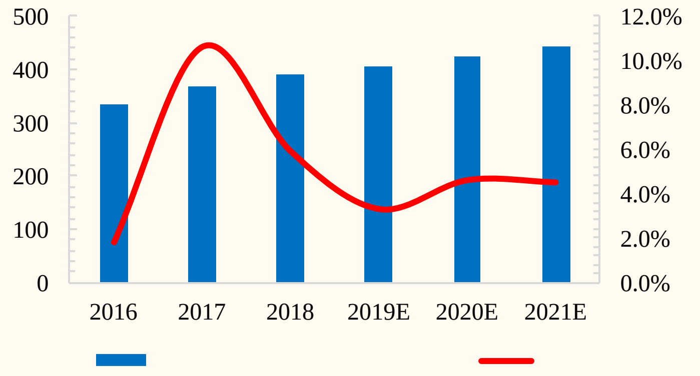
441 4.1% 2018 138

9.5% 35%

2021 159

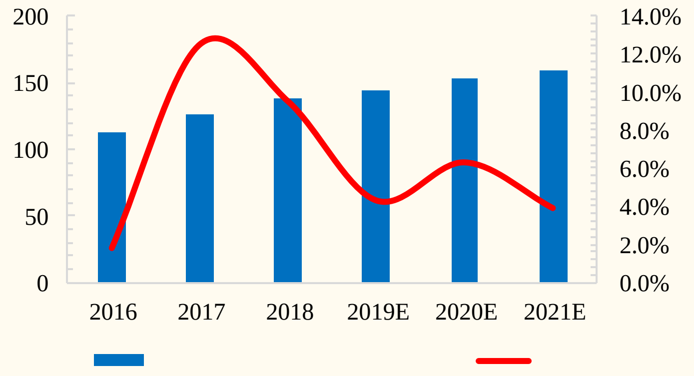
4.8%

17 2016-2021



IHS Markit

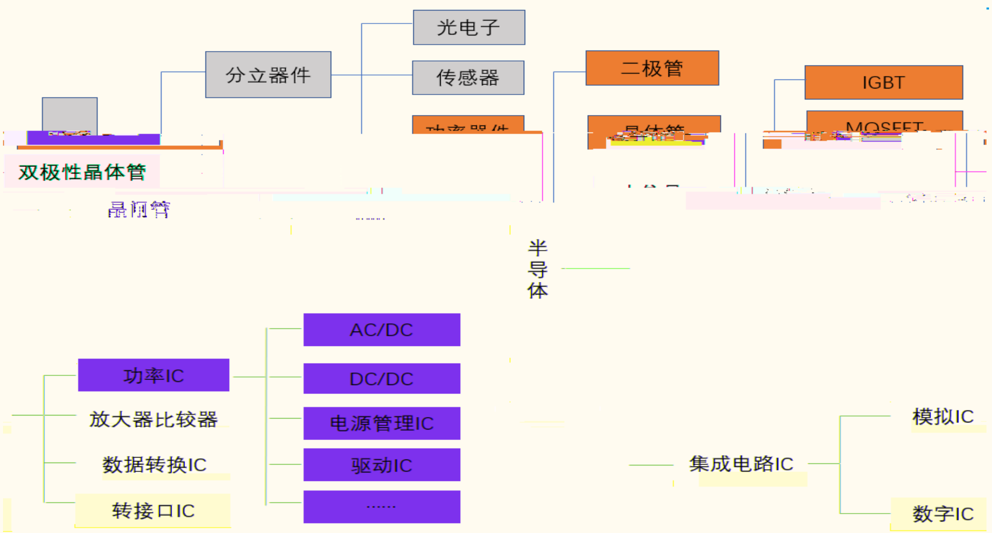
18 2016-2021



IHS Markit

IC
IGBT/MOSFET/BJT
Yole Development 2018
/ / IC 32.7% 13.3% 54.0%

19



MOSFET IGBT SiC

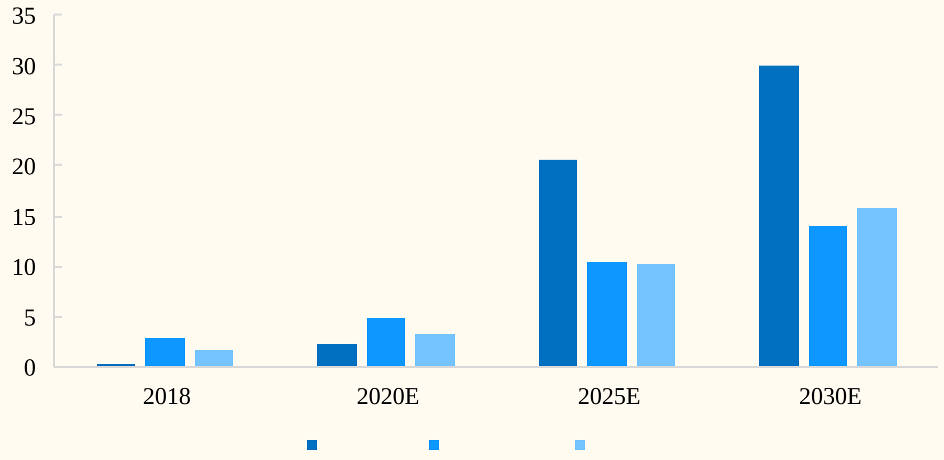
23%
20% 20% 18% 15%
MOSFET IGBT
MOSFET 41% 21% 23%
IGBT 7%

20

21

1050 1020

24



Infineon

Infineon 100 kW 200-
300 IEA 2030
2000 2019 1900 47.5

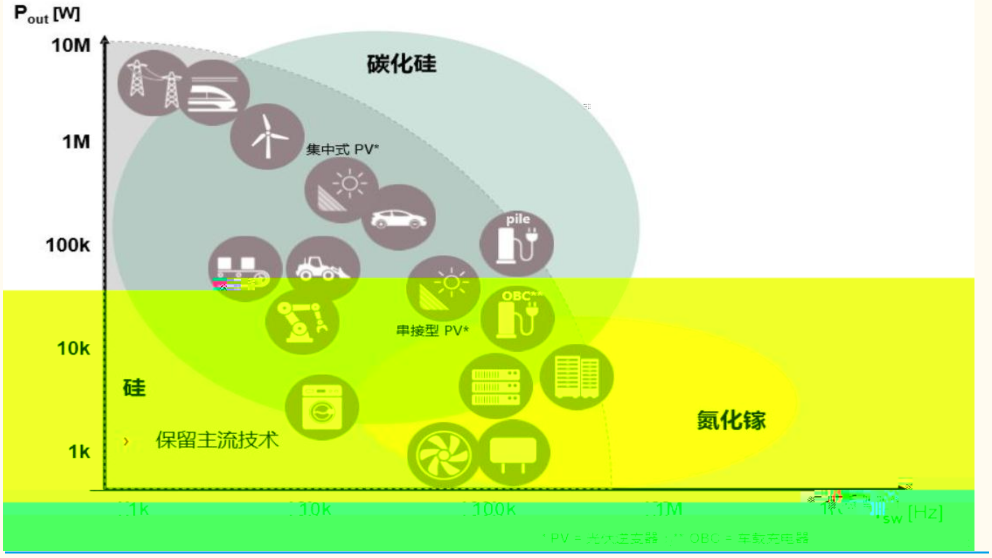
IGBT
2015-2025
CAGR 5.9% 15-25 CAGR 16.4%
CAGR 8.8% 1MW
30

IGBT

SiC GaN

SiC GaN
(>600V) SiC
GaN
SiC
GaN

25 GaN SiC



Infineon

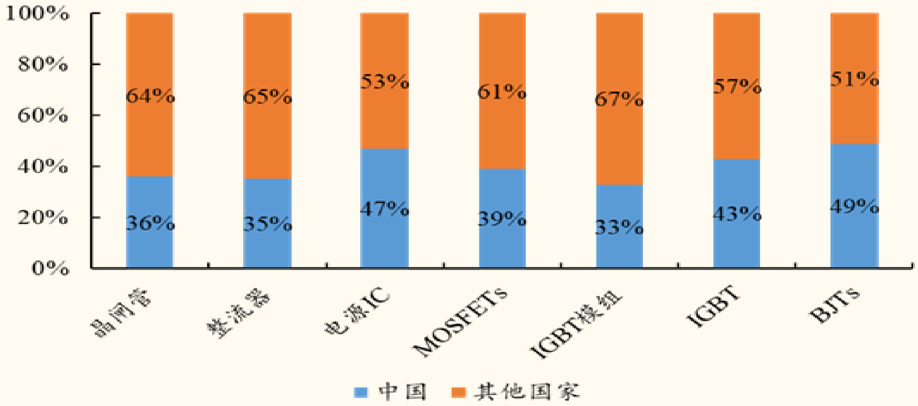
SiC GaN 100 SiC GaN IGBT

2018 SiC GaN 7 IHS 2025 100

3.

IHS Markit 2018 35% MOSFET 39% IGBT 43% BJT 49% IC 47% IGBT 40%

26



Yole

19% 10.0% 7.0% 58.9%

27

BCD
130nm
180nm 110-180nm BCD
3.

MOSFET
MOSFET IGBT ,

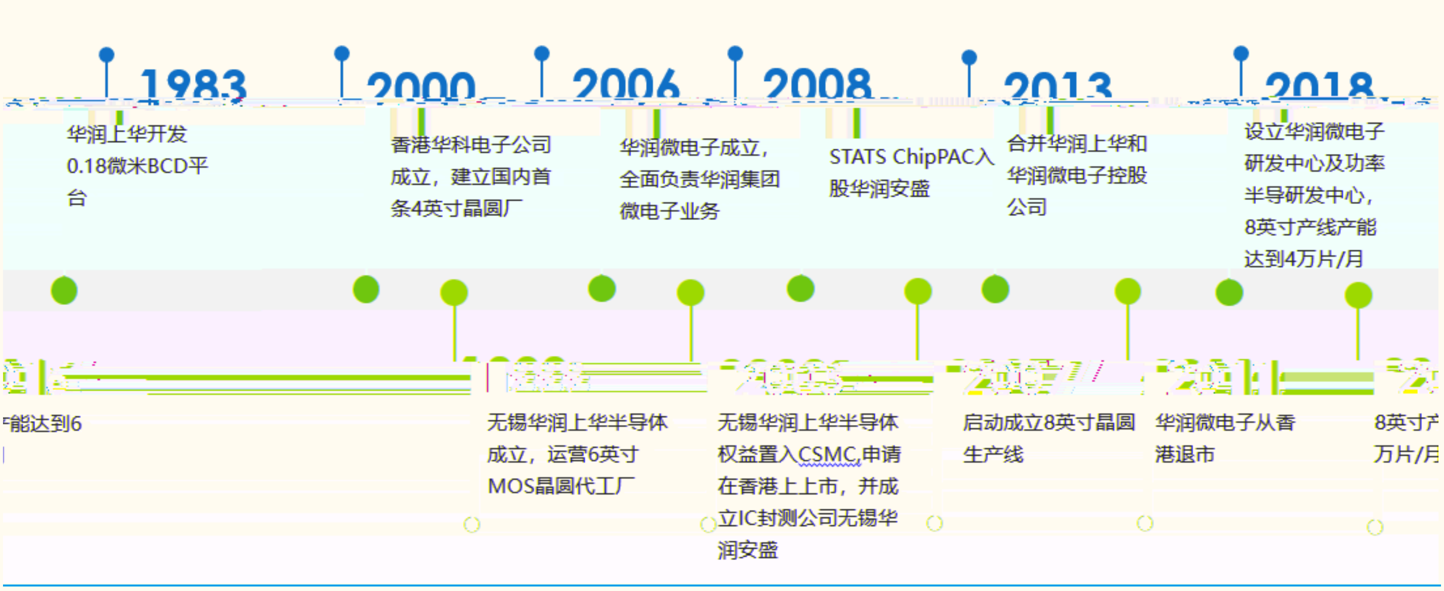
IDM

IDM

1.

1983
4 1999 6
MOS 2000
2003
CSMC IC 2007
8 2008
2011
2013
2018 0.18 BCD 2020

30



A 100%
100% 16
20 3 7

31 2020 2 18

2. IDM+

2016 31% 2019 43%

32

	2019 1-6		2018		2017		2016	
	1140	**43%**	**2683**	**43%**	**2339**	**40%**	**1332**	**31%**
	1028	39%	2419	39%	2069	35%	1081	25%
	62	2%	138	2%	97	2%	85	2%

AC-DC LED IC LED LED BMS IC

IC IC IC WPC QI IC IC BCD CMOS

36 IC

AC-DC	AC-DC	
LED IC	LED	
BMS IC		
IC	78 1117 100mA-1A	
IC	100W	
IC		
IC	AB D 5mW-50W	

MEMS MEMS

37

MEMS		

MCU MCU MCU 4 8 16 32 CPU

38

MCU	MCU PC MCU	
MCU	MCU MCU	
MCU	8 16 32 CPU	

2)

1 8 3 6
8 73 6
247 6
0.1-1 SOI BCD
CMOS CMOS Bipolar BiCMOS
IGBT MEMS GaN SiC

BCD MEMS
1 8
60
IC
62

2.4
2018
27%

39

			2018
	3 6	Analog BCD MEMS DMOS Power Discrete	247
	1 8	Analog BCD MEMS DMOS	73
	8	MOS MOS MOS SBD	60
			199

2018
MPS International
Diodes Incorporated

Diodes
CIRRUS Logic 1984

BOSE

40 2018

	12,112	4.51%
	8,940	3.33%
	8,649	3.22%
	7,987	2.98%
	7,638	2.85%
	45,326	16.89%

41 2018

42

	TCL
	TTi

1.

2016 2017 2018 2019H1 0.14 / 0.13 / 0.15 / 0.16 /

2020-2022 +5% +10% +5% 2020-2022 2020-2022 2022

2020-2022 +10% +20%
+20% +16% +32% +23%
ASP 2020-2022
-18% 5% 8%
2020-2022 3% 10% 8%

2020-2022 24% 26% 26%
MOSFET
2020-2022 29% 32% 32%
2020-2022 19% 18%
18%

43

2019 **2020E**

44

2019-2021 58 63 76
4.0 4.9 6.7
IDM

2021 90 52.3

IDM
Forward P/E 2020-2023 /

47

1.

2. [illegible]

3.

SiC GaN

4.

5.

2020 8 27 IPO
1191 5%

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0.00	**0.00**	**0.00**	**0.00**	**0.00**

1
2 3 4

1.00 = 1.01~2.0= 2.01~3.0=
3.01~4.0=

021-60753903
021-61038200
researchsh@gjzq.com.cn
201204
1088
7

010-66216979
010-66216793
researchbj@gjzq.com.cn
100053
3 4

0755-83831378
0755-83830558
researchsz@gjzq.com.cn
518000
4001
7GH