688396

IDM

IDM

2020 MOSFET Top10

74% 14%

IGBT SiC Yole

IGBT 2020-2026 CAGR 22.26% SiC

2021-2027 CAGR 39.21%

12

2
1. IDM 6
1.1 6
1.2 6
1.3 7
2. 8
2.1 8
2.2 18
3. 20
3.1. 20
3.2. IDM 25
3.3. 28
3.4. 30
4. 32
4.1. 32
4.2. 33
5. 35

1 6
2 2022 Q1 7
3 7
4 & n 8
5 8
6 8
7 8
8 9
9 9
10 9
11 2019 10
12 MOSFET 10
13 P N MOSFET 10
14 MOSFET 11
15 MOSFET 11
16 MOSFET 11
17 MOSFET 11
18 MOSFET 2020 12
19 MOSFET 2020 12
20 2021 12
21 2021 12
22 MOSFET 13

23 60V MOSFET 13
24 IGBT 13
25 MOSFET 2020-2026 14
26 2020-2026 MOSFET 14
27 Si MOSFET/IGBT/SiC MOSFET 15
28 IGBT 15
29 IGBT 15
30 2020 IGBT 16
31 2020-2026 IGBT 16
32 Si SiC GaN 17
33 Si SiC 17
34 SiC 17
35 2027 SiC 17
36 2021-2027 SiC 17
37 +IDM 18
38 18
39 18
40 19
41 19
42 19
43 2020 19
44 20
45 21
46 21
47 6 8 22
48 22
49 22
50 23
51 23
52 23
53 24
54 24
55 24
56 IPM 25
57 Copper Clip 25
58 25
59 25
60 25
61 26
62 26
63 26
64 MOSFET ..... `

62

1. IDM

IDM MOSFET IGBT MCU 2021 92.49 32.56%

1.1

1983 4 6 8 12 IDM

图表 1

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1.2

66.58% 4.92% 2.37% 76.77%

30

/ ” ` 2009 ´ ´

ـبـه 2	´	2022	Q1

´ ٮ ـئـه ‖

1.3 ـ ـ

ٱ م ´ 2008 ﮯ MOSFET ﮪ

MOS IGBT SiC SBD SiC MOSFET MEMS لج MCU

ـ ٮ ـشـه 4 6 ٮ 8 12 سر ٮ

ـ ٮ ـشـه IDM ـ ﮪ ٮ

ـ

ـبـه 3	´	ﮪ	ٱ ـ

´ ٮ ـئـه ‖

´ ٮ 2021 ٮ ـ 92.49 n

32.56% / 2018 ـ قـ ٮ ٮ خي ´

ـ 2019 ﮯ ـ سر قـ ٮ ٮ خي

ـ ´ ـ ٮ 2021 ـ ـ 35.33% ـ

2016

بم 8 ܁ ٧ ږ بم

٩ ئه ‖

ܸ ٧ خي سر 2019 464 2024 └ 522 2019-2024 U 2.38% ئهܸ ٧ خي سر 2019 └ 177 2024 └ 206 2019-2024

11 2019

MOSFET MOSFET

MOSFET MOSFET 5G

MOSFET MOSFET 2020 MOSFET

71% 29% 2024 64% 36% MOSFET

MOSFET MOSFET

2020 23.8 / 2025 35.1 / 8.1% MOSFET

2019 MOSFET

5 / / / /

25%/12%/9%/6%/5% 3.09%

2020 MOSFET 5%

MOSFET

2021 35.33%

24.41%

2026 7 ٩ 1.33% ٦ 7.45% U 38.31%
ﺈ ﺨﻴ MOSFET ﺨﻴ ˉ ⊦ ﺳﺮ
ǘ

ﺒﺼ 25 MOSFET ﺨﻴ ﺈ 2020-2026

Yole ﺌﻬ ‖

ﺒﺼ 26 2020-2026 MOSFET ﺨﻴ

27 Si MOSFET/IGBT/SiC MOSFET

	Si MOSFET	IGBT	SiC MOSFET
	20-650V	>650V	>650V
	(>20kHz)	(5-20kHz)	(>50kHz)
Vgs/Vge	0-15V(20V)	-10-15V(10-20V)	-5-20V(25-30V)
	<3kW	>3kW	>4kW
	- /	( ) UPS EV/HEV	PFC- EV/HEV DC/DC EV

IGBT Omdia IGBT 2024 66.19 2020-2024 5.16% IGBT 2024 25.76 2020-2024 4.34% 40% 2020 IGBT

IGBT 30% 27% 22% OBC IGBT IGBT IGBT

بم 30 2020 ﺌﻬ IGBT ﺨﻴ ﻴﻟ

ٰ ﺌﻬ ‖

Yole 2020-2026 IGBT ﺨﻴ 54 84
U └ 7.64% م ⅎ ﺨﻴ
IGBT ﺨﻴ 5.09 17.00 U 22.26%
IGBT ﺨﻴ 0.69 2.33
م n IGBT ﺨﻴ IGBT 17
23 IGBT 13 20

بم 31 2020-2026 IGBT ﺨﻴ

ٰ	2020 ﺨﻴ	2026 ﺨﻴ	CAGR	2020 ٰ	2026 ٰ
Industrial motor drives	17.00	23.00	5.17%	31.48%	27.38%
Home appliance	13.00	20.00	7.44%	24.07%	23.81%
EV/HEV	5.09	17.00	22.26%	9.43%	20.24%
DC charging infrastructure	0.69	2.33	22.49%	10 239	

2.2

+IDM

2020 2021 1101

26% IC Insights 2

2021

3.

IDM

IGBT SiC/GaN

MCU

44

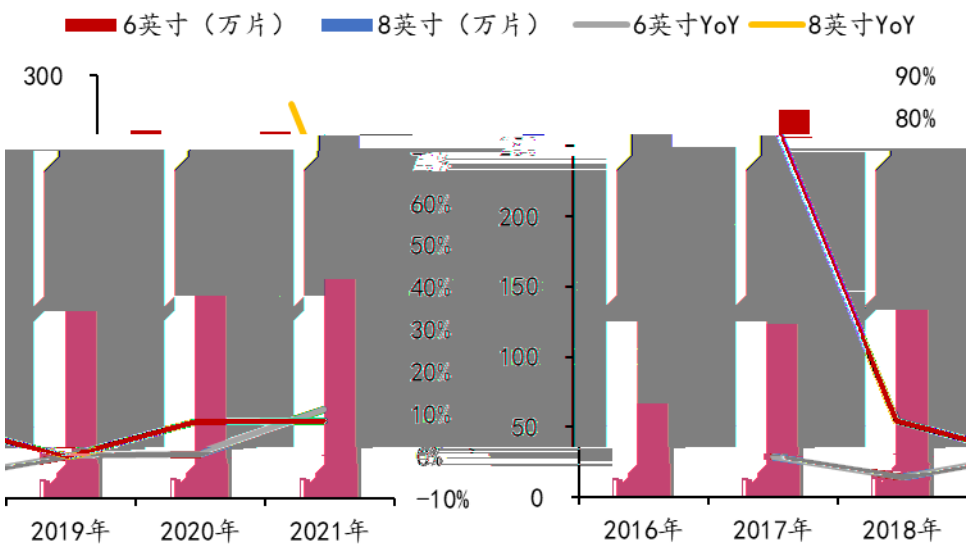
3.1.

1983 4

ㄴ 52.41% ㄴ ㄩ ↔ سر قد ㄧ

شم 12 غي شى شم 8

8 ㄩ 6 شم 47 بم



ئه ‖

176.86 ث شم+ 2021 ث شم+

1.52% n 173.93 n 2.68%

ㄴ ㄩ 2019 سر ق م ث شم+ 98.34%

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ث شم+ 49 بم

ث شم+ 48 بم

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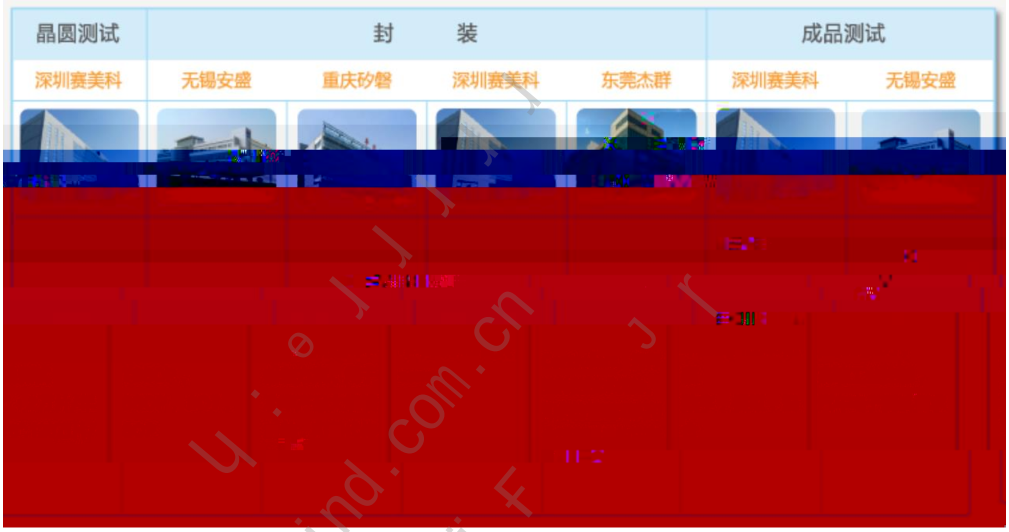
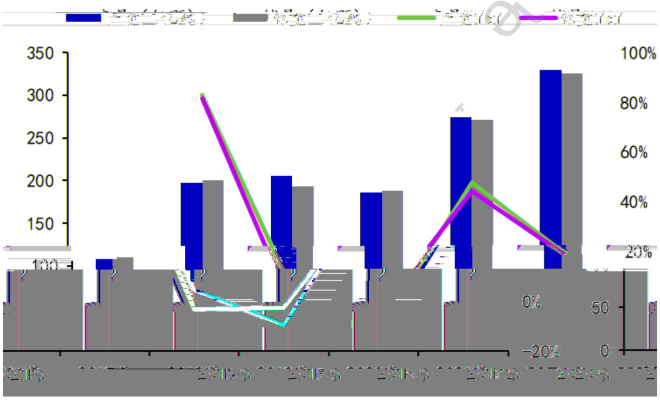
图表 53



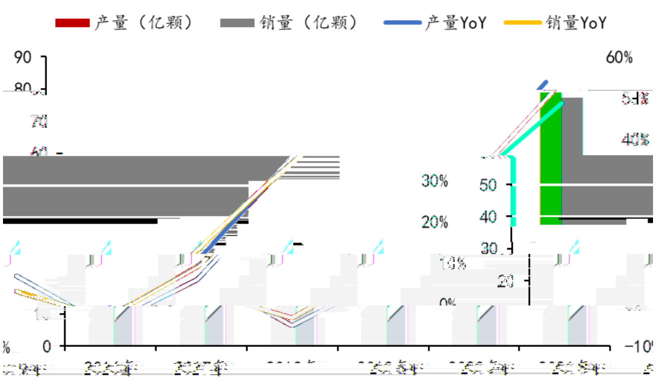
2021 329.99 325.14 20.32% 19.77%

78.90 77.15 54.01% 48.79%

图表 54



图表 55



IPM 60

Copper-Clip BOND

MOSFET IPM 2021

49 12 8

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56 IPM

3.2. IDM

90.20% 2019 90% 22.69 2019 6.19% 90

IC	AC-DC	AC-DC	
	LED IC	LED	
	BMS IC		
	IC	78 1117 100mA-1A	
	IC	100W	

IDM Pts

64 MOSFET 2021

MOSFET		MOSFET
	IDM	670+
	IDM	370+
	IDM + Fabless	210+
	IDM	240+
	Fabless	1300+
	Fabless +	360+
	Fabless +	60+
	Fabless	500+
	Fabless	190+
	Fabless	490+
	Fabless	250+
	Fabless	230+
	Fabless	120+

67

Wind

IGBT SiC

MOSFET MOSFET

IGBT 8 1200V 40A FS-IGBT 650V 40A FS

	MOSFET	MOS	
		VDMOS	
		MOS	
	IGBT	IGBT	
	SiC	SiC JBS	
		SiC MOS	
	GaN	GaN D-mode	
		SBD	
		FRD	
	IC	IC	
		MEMS	
	IC	IC	
		IC	
		LED IC	
		U	

IGBT ´ IGBT ٮ 2019-2021 n ⌋ ⌋ 45% 75% 57%
2022 ´ ⌋ ⌋ سر ⌋ ⌋ IGBT
ٮ 9

MOSFET ⌋ ⌋ لج ´ ⌋ سر ⌋ م
⌋ ⌋ لج ⌋ MOSFET ´ U
⌋

ٮ ⌋ سر ⌋ ´ م شم ٮ
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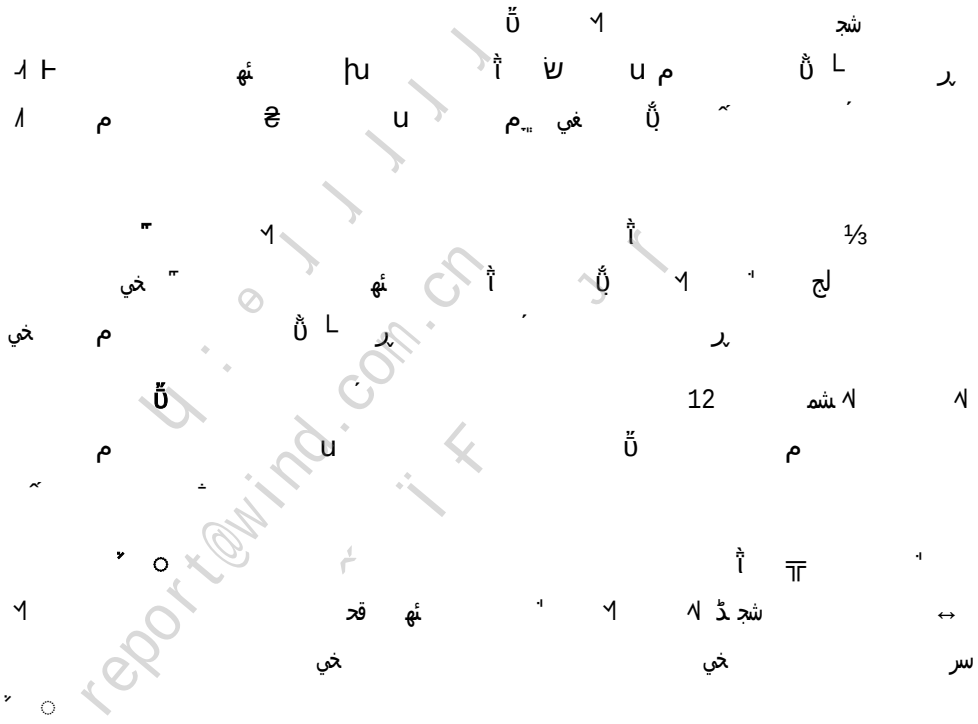
FCFF		ᒧ
	6,561.49	7.02%
	18,933.44	20.24%



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	2020A	2021A	2022E	2023E	2024E
	6866	11246	11989	14639	18347
+	1795	1499	2437	2859	3342
	52	37	73	86	101
	1269	1548	1624	1920	2263
	932	361	376	389	404
U	**10914**	**14692**	**16499**	**19894**	**24457**
	191	1365	1399	1433	1467
	4367	4544	5085	5394	4880
	402	519	432	346	259
	274	349	291	233	174
	385	723	709	696	695
U	**5618**	**7500**	**7917**	**8101**	**7475**
	16532	**22191**	**24415**	**27995**	**31932**
	6	81	0	0	0

	2020A	2021A	2022E	2023E	2024E
	6977	**9249**	**10766**	**12632**	**14768**
	5061	5982	6515	7706	9080
	69	85	99	116	136
	106	131	153	179	210
	936	1154	1354	1576	1828
	-120	-141	-32	-40	-55
	-11	18	-22	-26	-30
	1	0	0	0	0
	28	112	46	46	46
	128	184	204	207	211
	1072	**2351**	**2906**	**3321**	**3797**
	14	3	15	15	15
	1086	**2354**	**2921**	**3337**	**3812**
	26	96	120	137	156

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