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- MOSFET IGBT SJNFET / MOSFET  
-100V 1500V  
SiC/GaN

- 5 2025 2019 70%

- / / 13

---

1

- 50% 2017

- / 12 MOSFET IGBT

- SiC JBS 6 650V 1200V SiC JBS  
MOSFET GaN MOCVD 650V

- 2020-2022 0.83 1.07 1.25  
2021 72 PE 77

- 

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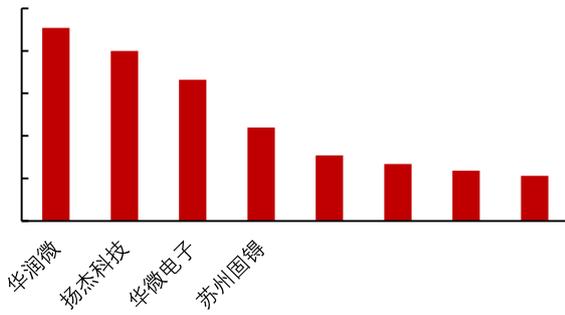


# 1.

## 1.1

## IDM

		6-8		5		2		1
MOSFET	IGBT	SJNFET	/	20				-100V 1500V
		MOSFET			SiC/GaN			



5-10

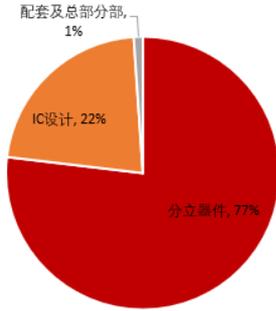
wind

2020

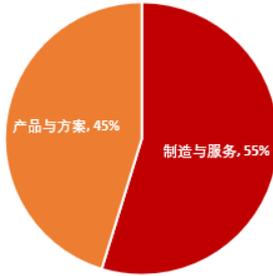
77%  
65%

45% 55%

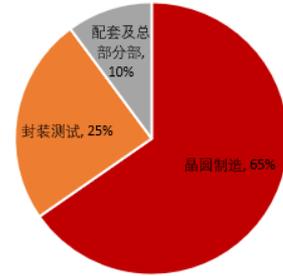
产品与方案



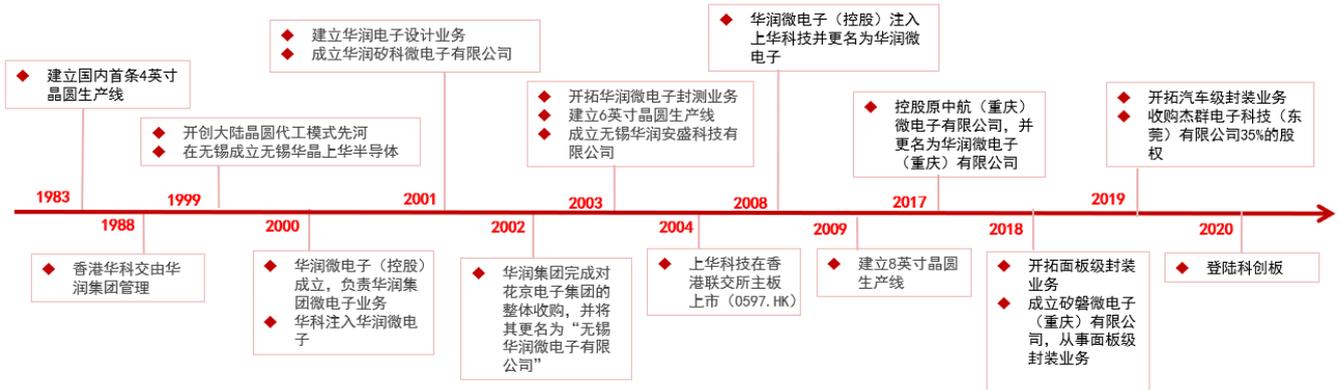
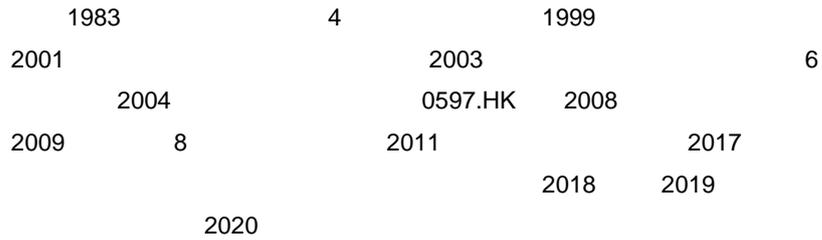
2020H1营收拆分



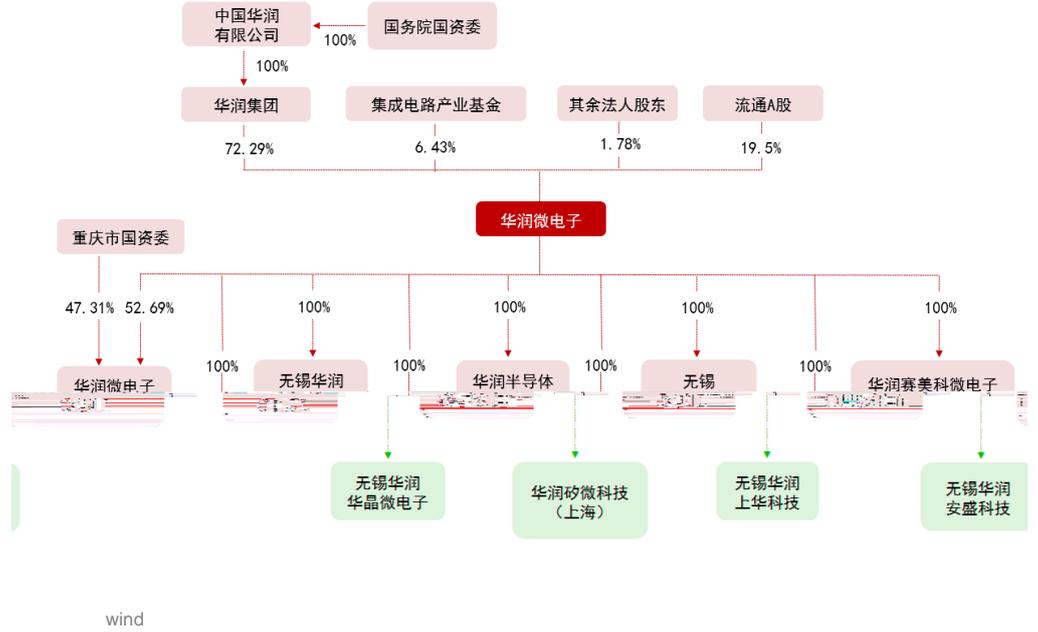
制造与服务



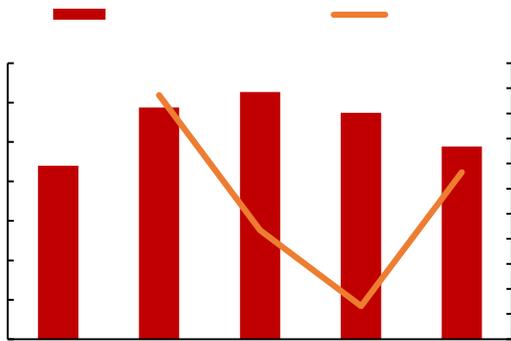
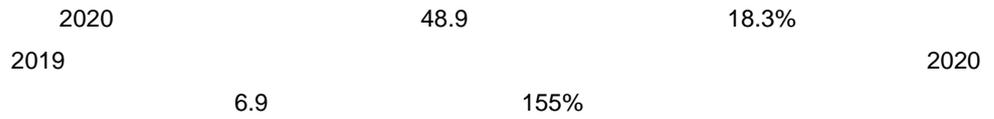
1.2 9



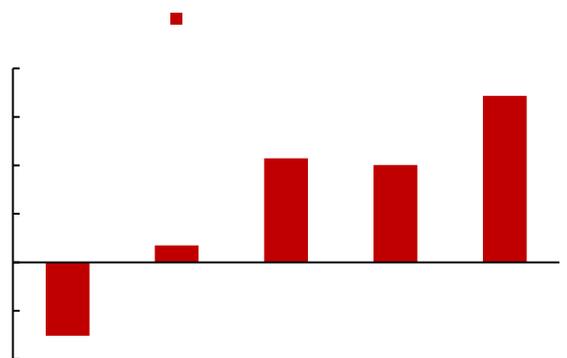
100%



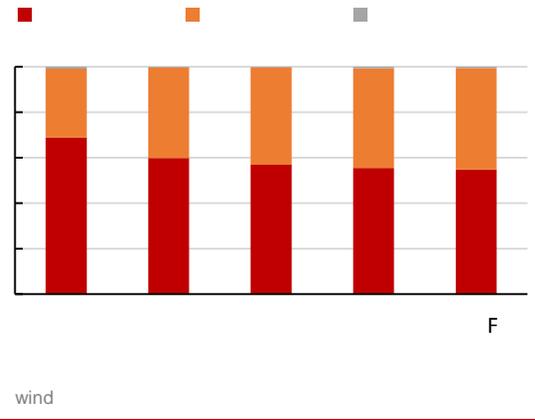
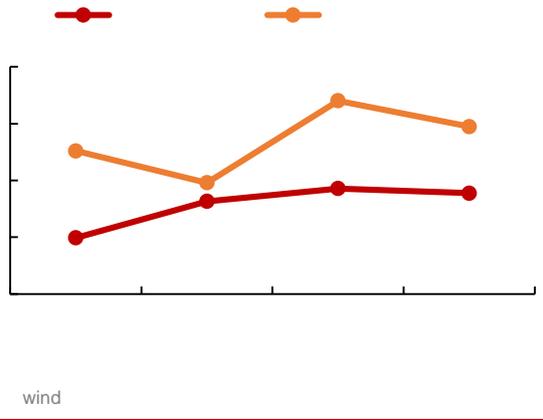
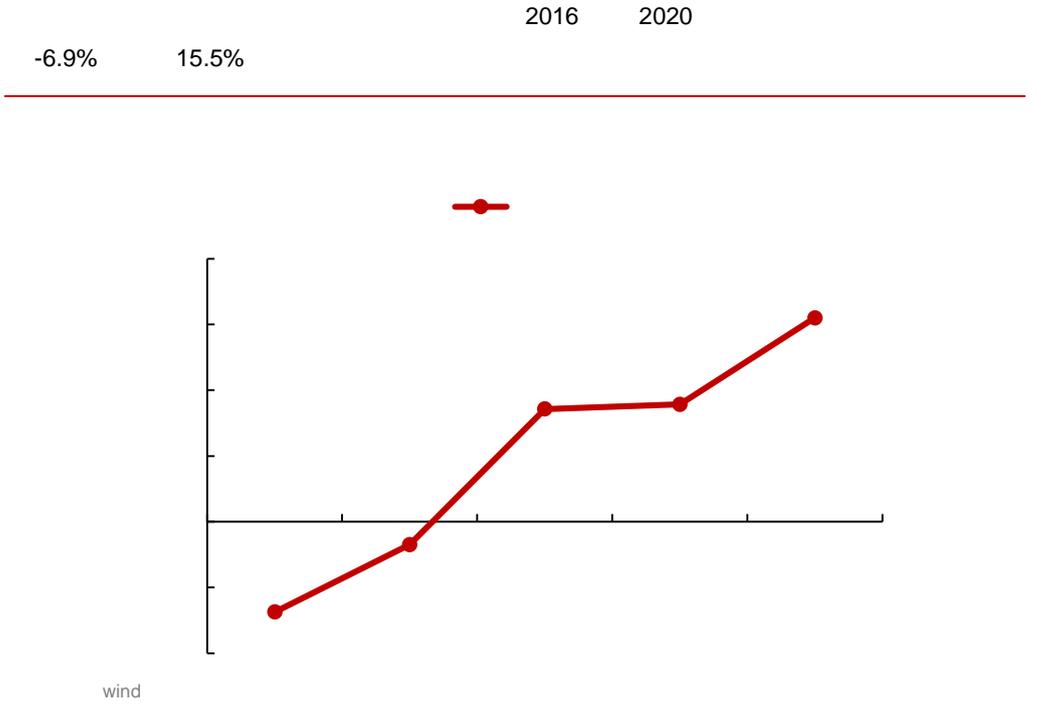
### 1.3



wind



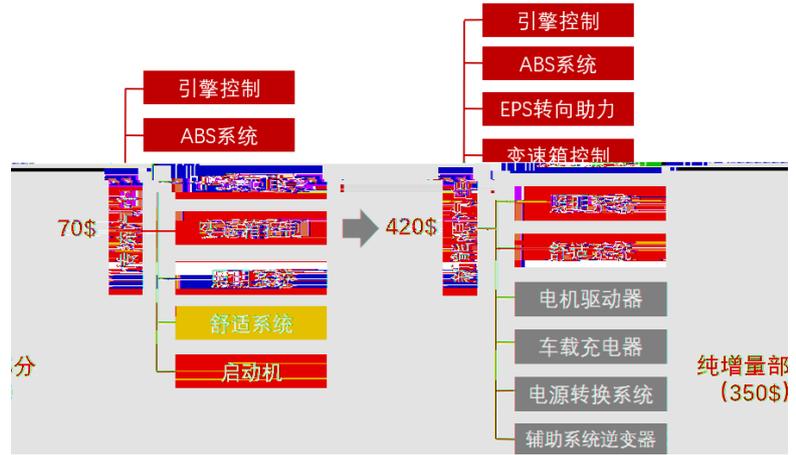
wind





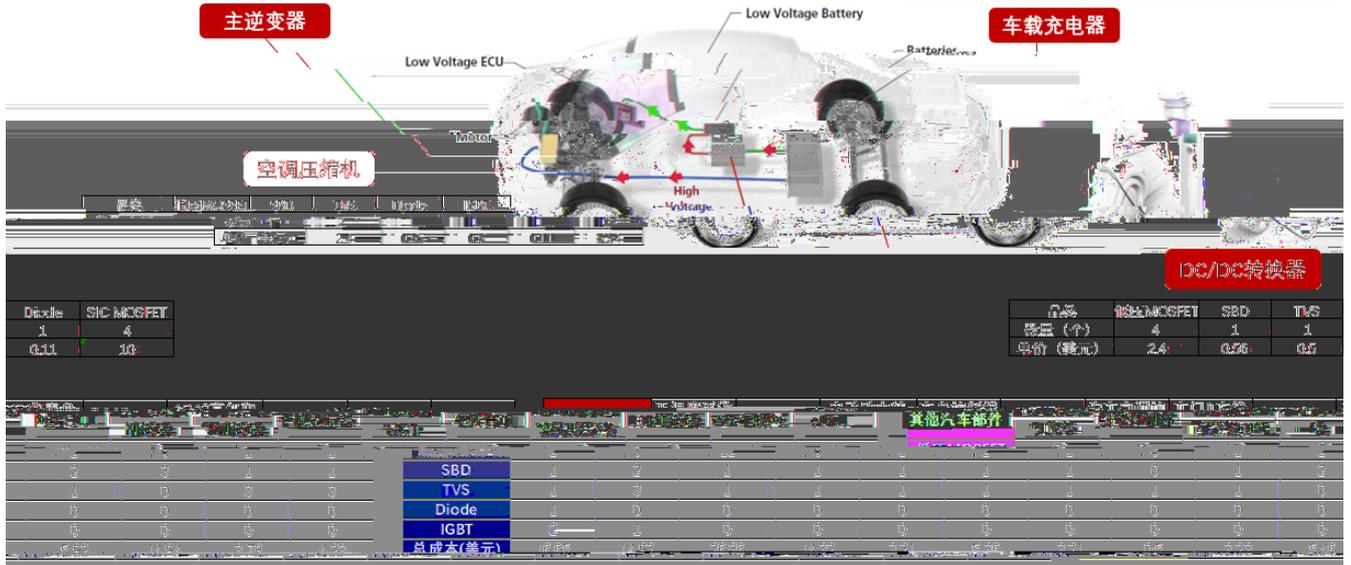






品类	低压MOSFET	SBD	TVS	Diode	SiC MOSFET
数量 (个)	2	1	1	1	6
单价 (美元)	2.4	0.56	0.5	0.11	10

品类	低压MOSFET	SBD	Diode	SiC MOSFET
数量 (个)	2	1	1	6
单价 (美元)	2.4	0.56	0.11	10



\* SiC MOSFET IGBT  
ROHM

	90	HEV/PHEV-	/		305
BEV-			350	5	

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数据来源：英飞凌

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		<b>2019-2025</b>			<b>70%</b>
			2025	288	
		/			2900
		500		2025	271
2020	2025	CAGR	13%		

> /

2  
3

1/2

2021

24



EVTank

25

2021



MOSFET

EVTank

	2022			500			
	30%	50%	70%	MOSFET	1.13	1.38	1.63
2019		2.7	3.1	3.5			

26 MOSFET



\* EVTank MOSFET EVTank

EVTank

GB 17761-2018

2018	5
2019	4
2022-2024	15

2.25

4,000

90%

50%

7000

2019

55kg

ZDC

2013 6.7%

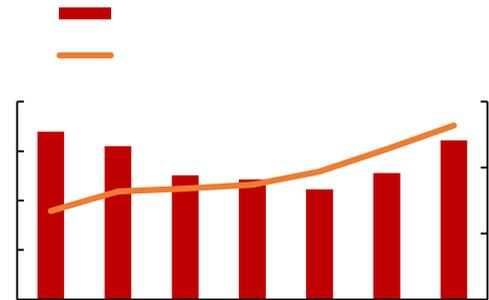
2019 13.2%

MOSFET MOSFET

27



28

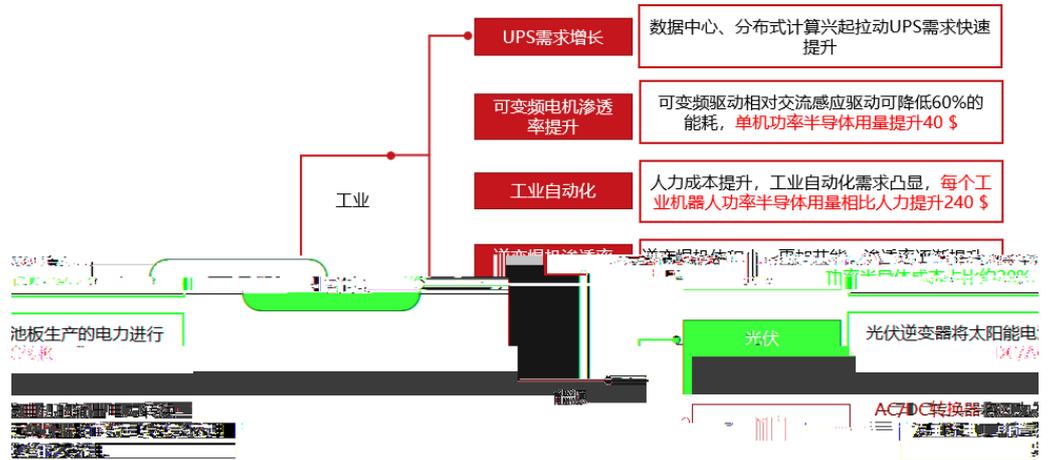


ZDC

> /

/ 240 /

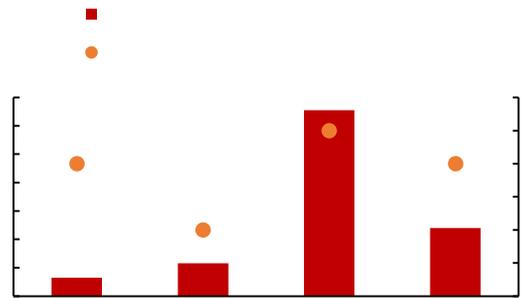
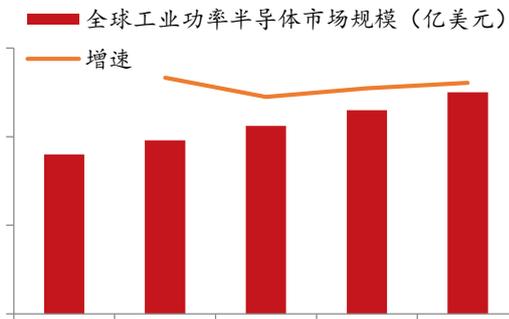
AC/DC DC/AC 40



数据来源：

20-22	CAGR	8%	2019
115	2020	125	9%
UPS			
13	23	131	48
20-22	CAGR	8%	215

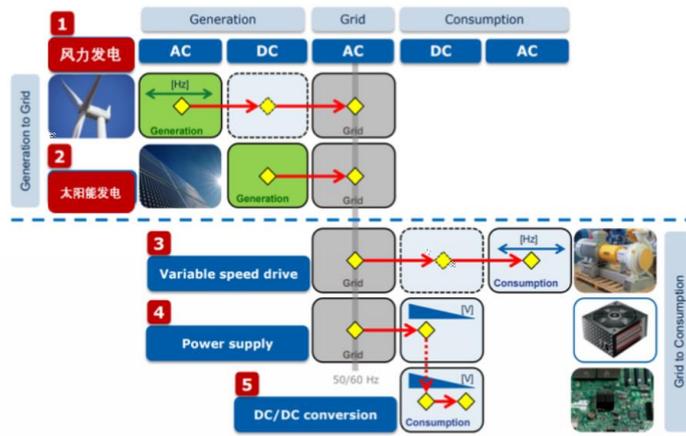
3



\* UPS  
26.5% 19%

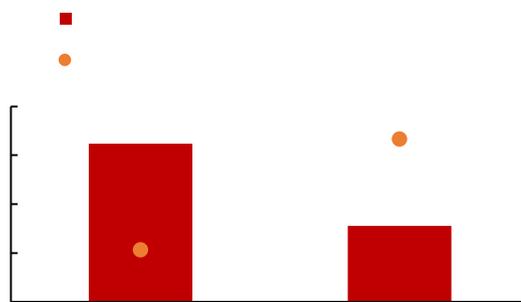
20% 20%

AC/DC



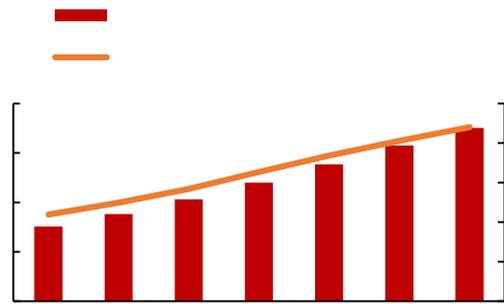
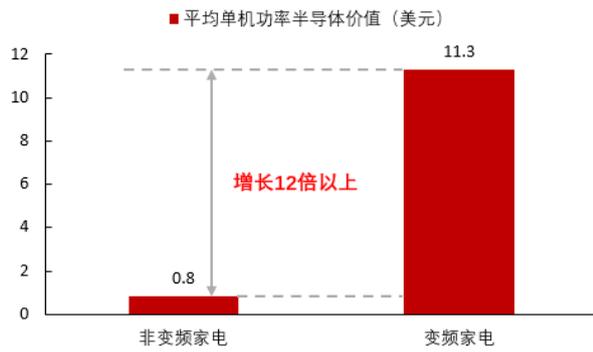
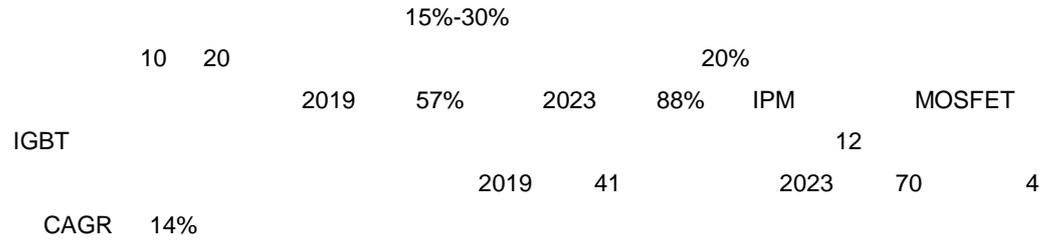
数据来源：英飞凌。

		50		
	2018		36%	
2023		124GW	20GW	2019-
30	2018		25%	
	2022		385GW	
2022	20	19-22	CAGR	10%

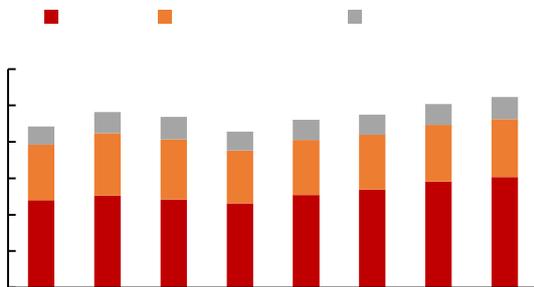
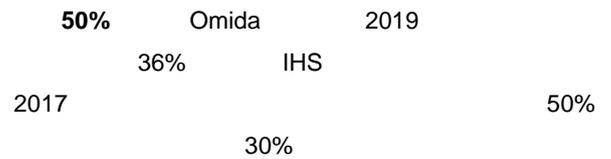
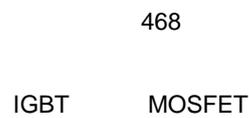


\* 2.45 /MW      0.13 /W   0.2 /W      1 /MW

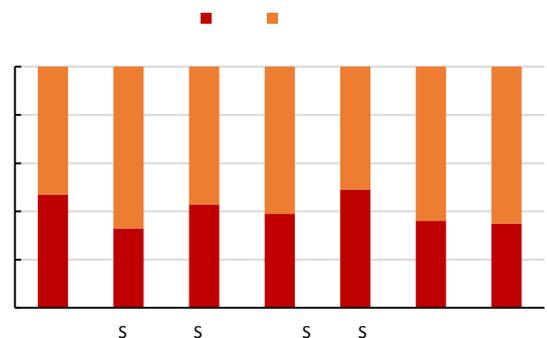




### 2.3



Omdia

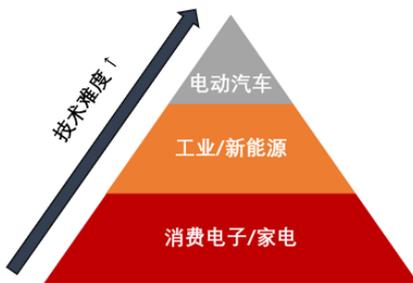


Yole

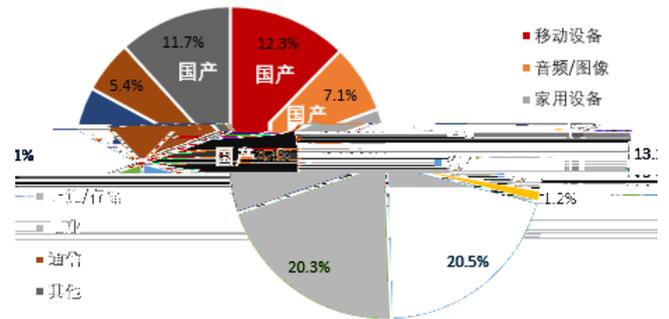
10

MOSFET 2016

/



评估项目	工业级要求	汽车级要求
温度冲击周次数	-40°C-150°C, 50次	-40°C-150°C, 1000次
温度循环周次数	ΔTc=80°C, 12000次	ΔTc=80°C, 30000次
功率循环周次数	ΔTj=80°C, 100000次	ΔTj=80°C, 400000次
最高结温	125°C/150°C	175°C



### 3.

#### 3.1

MOSFET IGBT SJNFET /

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**MOSFET** -100V  
 1500V MOSFET MOSFET  
MOS VDMOS  
 MOS MOSFET

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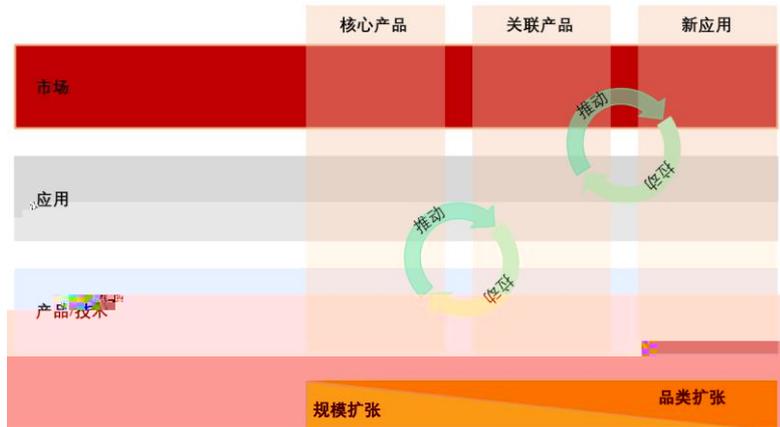


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**IGBT** 20 80 IGBT 6  
PT FS-Trench 600V 6500V  
IGBT  
IGBT

---





1

3

2



MOS

2.2

5000

MOS

MOS  
OBC/

/  
 50%  
 2020 7 4  
 650V SiC  
 IGBT 6000  
 IGBT  
 6 SiC  
 2020  
 1200V



>  
 GaN 650V  
 IC 650V  
 GaN  
 IC  
 GaN 2.44  
 GaN  
 MOCVD  
 IP  
 IC



## 3.3

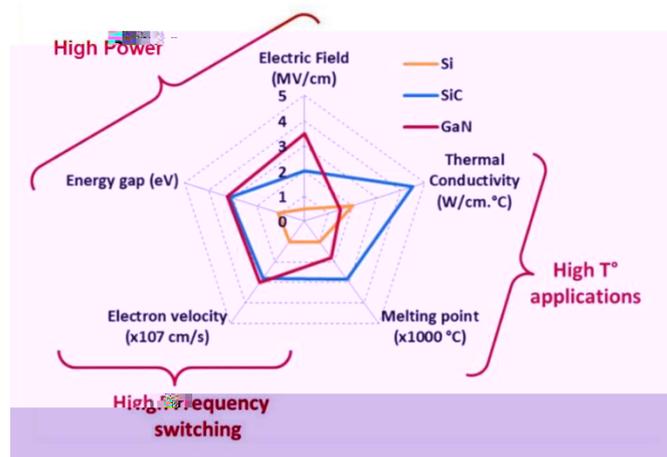
BCD

MEMS

技术	BCD	HV CMOS	Mixed-Signal	Logic/RF	e-NVM
0.13um/0.11um	○			●	○
0.18um/0.153um	●	●	●	●	●
0.25um			●		
0.35um			●		
0.5um	●	●	●	●	●
>0.5um	●	●	●	●	
>1.0um		●	●	●	
MEMS	压力传感器。有 Microphone 传感器和 Photoele MEMS。 陀螺仪和加速度计正在开发中。				
Power Discrete	包括平面 DMOS、Trench DMOS、IGBT、FRD、双极晶体管。IGBT 3300V 6500V 正在开发中。				

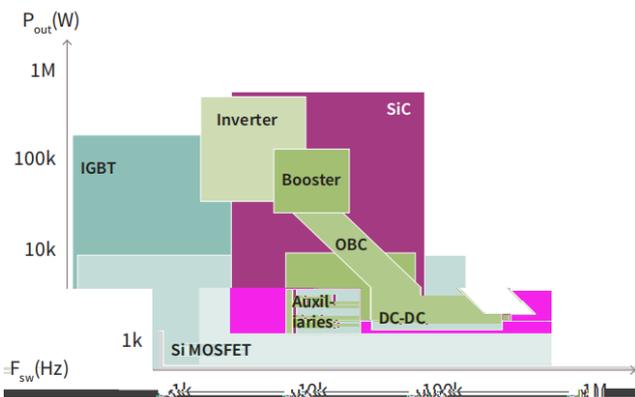
●表示可获得 ○表示开发中





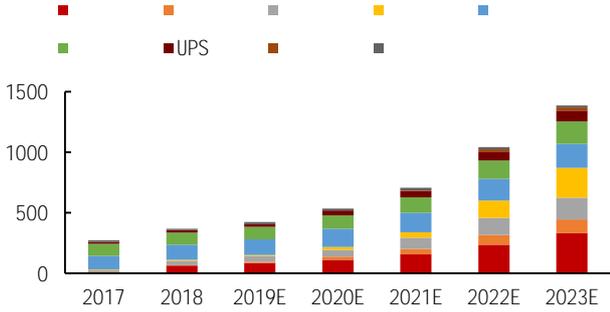
数据来源:

Application	Material	Current Status	Target Status
DC/AC	SiC	75%	20%
DC/DC	SiC	6	
Si	SiC		
OBC	SiC	6kg	3%
SiC	SiC	43%	2025
DC/AC	SiC		

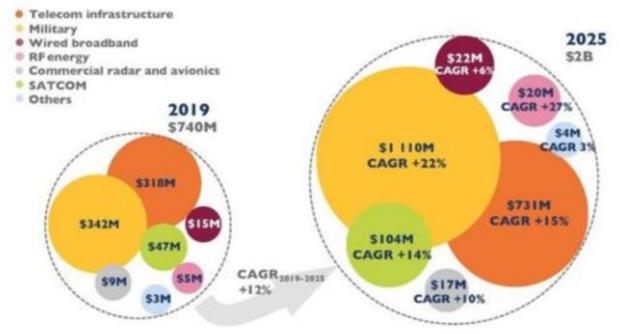


Material	IC	Yole CAGR
GaN	2023	14
SiC	2018	3.7

30% GaN 2019 7.4 2025 20 CAGR  
12%



Yole



Yole

SiC GaN  
1.42 2.44 6 650V 1200V SiC JBS  
SiC JBS MOSFET  
GaN 650V  
MOCVD SiC GaN

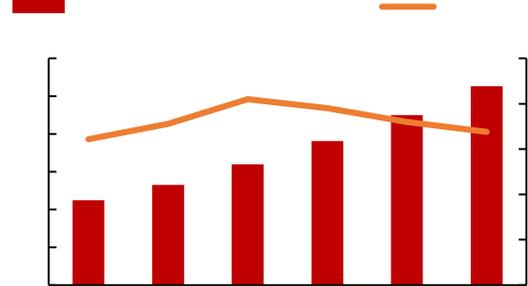
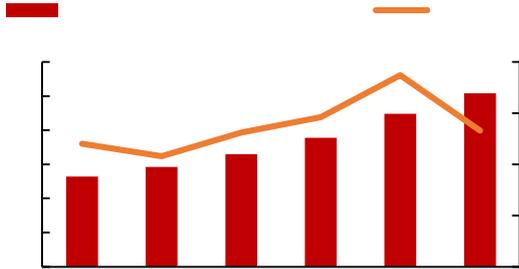

4.2

165 Yole 2019 MEMS 10%

2019

90  
MEMS

50%  
40%



Yole

MEMS

MEMS

8

6

MEMS

6

8

2019



4.3

62

PEP INNOVATION

5.5

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2020H1

1.27

35%

50

38

42

5G

AIOT

2020-2022

1)

2) 5G

20-22

22.7% 23.3% 23.7%

20-22 20-22 35.1% 35.7%

35.8%

20-22 28.3% 29.4% 30.2%

3) 20-22 1.64% 1.63% 1.58%

5.34% 5.3% 5.2%

20-22

7.36% 7.31% 7.26%

4) 20-22 3%

	2018A	2019A	2020E	2021E	2022E
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	6,270.8	5,742.8	6,887.9	7,935.6	8,892.8
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	2020-2022		0.83	1.07	1.25	
IDM	MOSFET	IGBT				
+	IGBT			IDM		MOSFET
	2021	72	PE		77	



1

MOSFET

MOSFET IGBT

2

3

4

10%

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	2018A	2019A	2020E	2021E	2022E
:	1,538	1,931	8,353	9,295	10,022

	2018A	2019A	2020E	2021E	2022E
:	6,271	5,743	6,888	7,936	8,893

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12

/

15%

5% 15%

-5% +5%

-5%

5%

-5% +5%

-5%

