[Table_Ma[redacted] 0 1 0 0 Tm 0 Tr /RelativeColorimetric ri 1 i /

2020.09.25

(688396)

	81.07
	81.07
	55.19

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1. ..... **4**
2. MOS
..... **5**
2.1.
6
2.2. 6
2.3. “ ” “ ” 8
2.3.1. 8
2.3.2. MOSFET 9
2.3.3. &
11
2.4.
..... 12
3. IGBT IGBT
15
3.1. “ ”
..... 15
3.1.1. IGBT
..... 15
3.1.2. “ IGBT” 17
3.2. “ ” “ ” 19
3.2.1. IGBT

1.

3

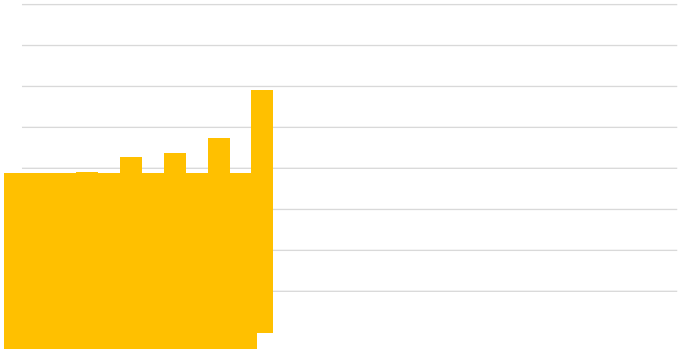
MOSFET

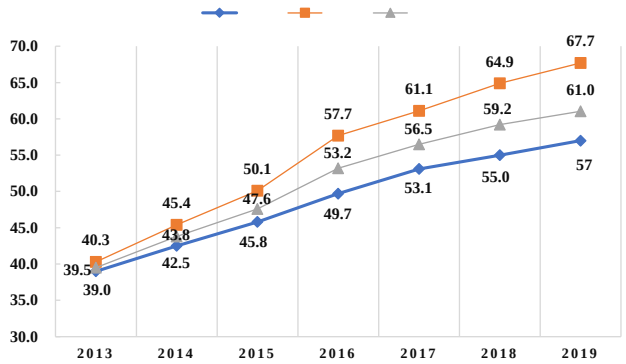
MOSFET **IGBT** 2020

1 2014-2019

2005-2013 2014-2017 2018-2019
6-7 2012-
2013
/
2015-2019 3100
-3600 2
2016 57.7 / 2019
67.7 / 2016 49.7 / 2019
57 /

4 2014-2019 **5** **2** /
3 / /





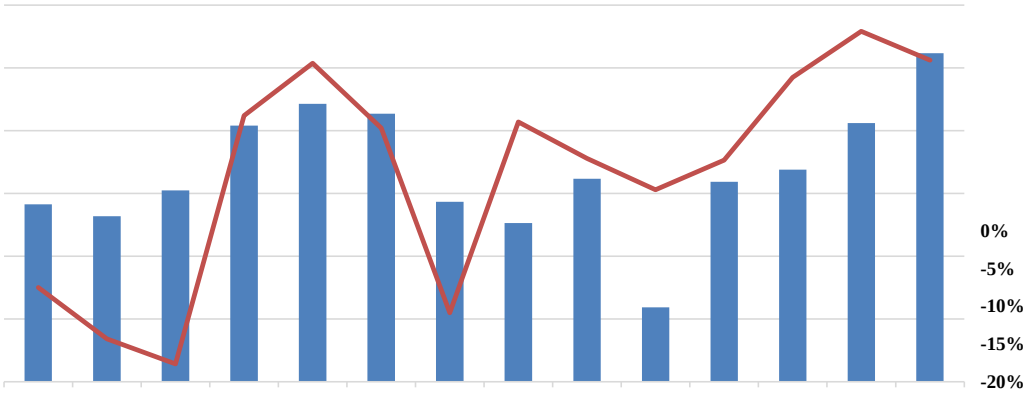
2020

2.3

7 **20%**
2019
MOSFET
20Q2 Q2 821.2
120% 7
374.1 22.7% 21.7%

MOSFET
MOSFET

6 7 **20%+** **2019**



wind

2.3.

2.3.1.

3 **2021-2022**

/

25km/h 25km/h

55kg

48V

400W

2018

11

3 2021-

2024

3 5

7

1

2019 4

55kg 20AH

1/3

48V+12AH 48V+15AH

48V+20AH

48V+24AH

2

2020 **6 TnEMC /P /MCID 56/hgnS)/P /M**

2.3.3. &

2020

2020 2 320

37.27 2020 4

Q8 2020 6

400 300 100 2020

2019 100

2025 800

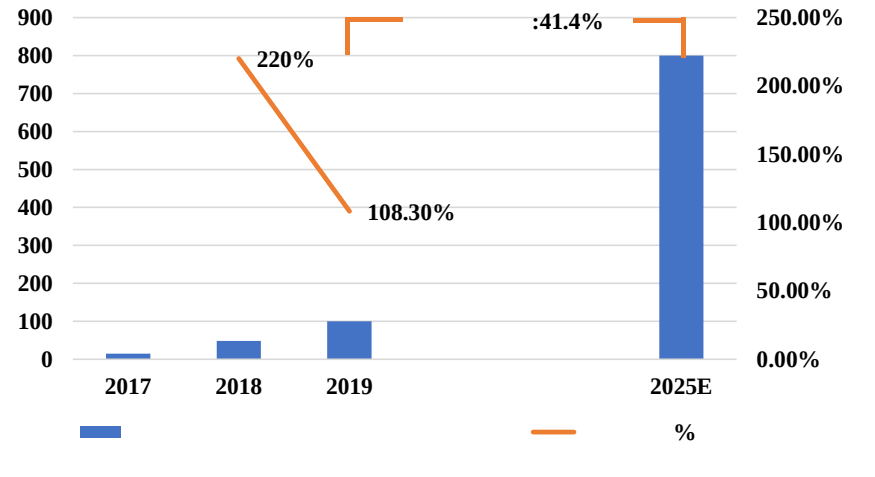
2019 2019 8

1950 360

2019 100 2025 800 2020-

2022 150 200 250

10 2025 800



5 2020-2025 3000

2018 136.5 2017 58%;

2019 193.4 2018 41.6%;

2020 228.4 2019 18.1% 2021

313.6 37%

2019

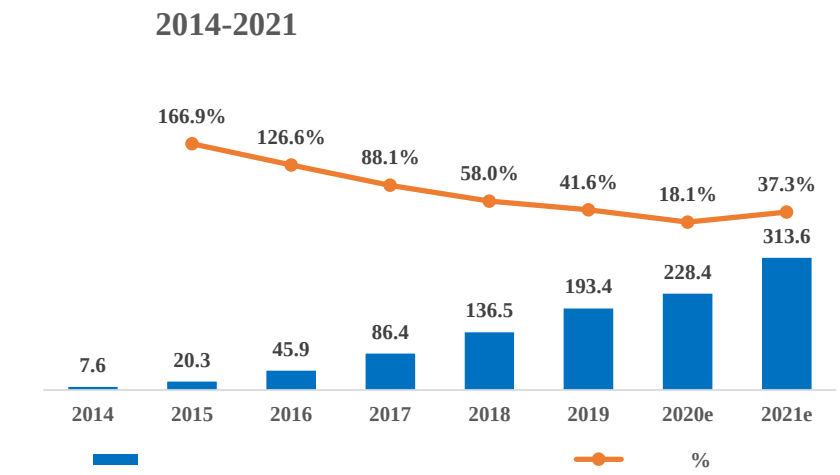
399 2020

1 5 120

60

2019 KA

11 2014-2021



2.4.

2020-2022

1 2

3 4

8

12.5 % 2020-2022

37.5%

2020-2022

1

2021-2022

2.8 57

1.54 2020-2022

37.5% 75% 15% 25%

35% 25%

40% 60%

2 / 2020-

2022 2.2 /

616

2

1.7

70 1.2

2020-2022 37.5% 55%

13% 15% 22%

%	75%	60%	40%
	2257.5	2763.6	2480.8
2			
a	780	900	1320
b	544	544	544
%	25%	40%	50%
	331	577.6	932
%	75%	60%	50%
	993	866.4	932
3			

3. IGBT IGBT

2020 4

+ IGBT

+ IGBT +

IGBT

IGBT

IGBT

IGBT Insulated Gate Bipolar Transistor, BJT MOSFET MOSFET

BJT IGBT

1

IGBT

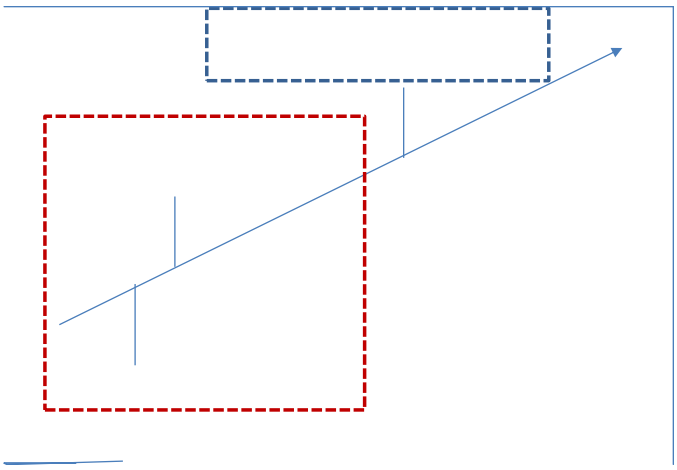
1

+ IGBT +
IGBT + IGBT

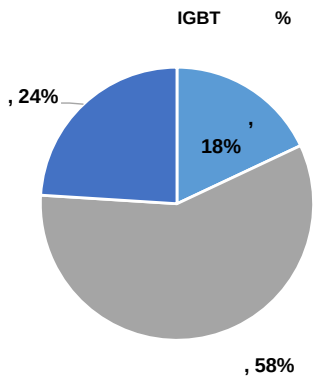
IGBT

1

15



16 **18%**



17 **IGBT**

18

IGBT

IGBT

IGBT **200** **IGBT** **11%**
22 **10%**

21 **IGBT** **2020** **22.4**

IHS

2020

1128 **IGBT**

1000

800

2019

22 »B(49.83 31 /P ⊀3363])11(Q)11(d)11(j)]TJ1 0 0 1 60 0 Tm EMC /P101 ⊀MCID 867

IGBT CPU

IGBT

IGBT

3

		IGBT

IGBT

IGBT	%	7.78	9.17	10.80	12.72	14.97	17.60	20.69
	%	0%	0.5%	20%	30%	40%	50%	60%

CAGR=40% IGBT

2020-2025 1% 10% 20% 30% 40% 50%

IGBT 2021 0.16

2025 3.68

5 IGBT

		IGBT	0.84	1.12	1.58	2.19	3.04	4.21	6.13
		%	0%	0.5%	20%	33.04			

9.75% 10.58% 8%

2 2020H2 2021 MOSFET

MOSFET IGBT

IDM 2020-2022

28.20% 22.92% 34.20%

28.20% 19.79% 32%

2020/2021/2022 17%/18%/22%

2020/2021/2022 27.20%/29.50% /31.90%

2020-2022 8.27 11.02 14.97

106% 33% 36% EPS 0.68 0.91 1.23

0.68 0.88 1.18

7

		2017	2018	2019	2020E	2021E	2022E
	%		1.48%	-10.87%	9.75%	13.46%	9.80%
	%	16.33%	18.57%	17.76%	20.00 %	22.00%	22.00%
	%		14.73%	-6.25%	28.20%	22.92%	34.20%
	%	19.59%	34.02%	29.48%	35.00%	37.00%	40.00%
	%		-8.17%	183.12%	-	-	-
	%	14.00%	28.46%	10.04%	-	-	-
		5875.59	6270.80	5742.78	6719.05	7928.48	9672.75
%			6.73%	-8.42%	17.00%	18.00%	22.00%
%		17.62%	25.21%	22.84%	27.20%	29.50%	31.90%

5.

A **IDM**

DFN/QFN SGT MOS

SBD JBS

“ ”

“ ”

“ ”

1. 12 12 300	300 15%
	300 5% 15%
	300 -5% 5%
	300 5%
2. 12 300	