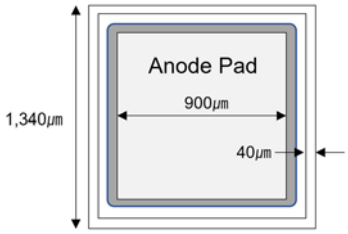
SiC Schottky Barrier Diode

SN0610G3 V_{RRM} = 650 V $I_F(T_C$=150℃) = 10 A Q_C = 24 nC

Features

- Silicon Carbide Schottky Barrier Diode
- Small Die Size
- Low I_R
- High-Recovery Speed

Die Structure & Pattern Diagram



Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Secondary Side Rectification
- PV Power Conditioners

Chip Information

Wafer size	6 inch
Chip size	1,340 * 1,340㎛
Chip thickness	350㎛
Scribe line width	80㎛
Pad diameter	900 * 900㎛
Top metallization	Al (for Wire)
Back metallization	Ti-Ni-Ag (for Solder)
Chip quantity	8,328 pcs/wafer

Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Conditions	Limit	Unit
Repetitive peak reverse voltage	V_{RM}		650	V
Reverse voltage (DC)	V_R		650	V
Forward voltage (DC)	I_F		10	A
Peak surge forward current	I_{FSM}	10 μs Sinusoidal	60	A
Junction temperature	T_j		175	℃
Storage temperature	T_{stg}		-55 to +175	℃

Electrical Characteristics (T_a = 25℃)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
DC blocking voltage	V_{DC}	I_R = 50 μA	650	-	-	V
Forward voltage	V_F	I_F = 10A, Ta = 25℃	-	1.49	1.91	V
		I_F = 10A, Ta = 150℃	-	1.93	-	V
		I_F = 10A, Ta = 175℃	-	2.09	-	V
Reverse current	I_R	V_R = 650V, Ta = 25℃	-	0.1	50	μA
		V_R = 650V, Ta = 150℃	-	1.5	-	μA
		V_R = 650V, Ta = 175℃	-	3.5	-	μA
Total capacitance	C	V_R = 1V, f = 1㎒	-	250	-	pF
Total capacitive charge	Q_C	V_R = 400V, di/dt = 350 A/μs	-	24	-	nC
Switching time	T_C	V_R = 400V, di/dt = 350 A/μs	-	15	-	ns

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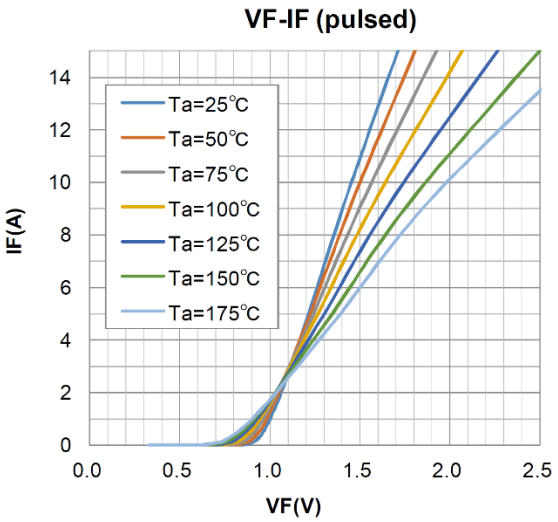
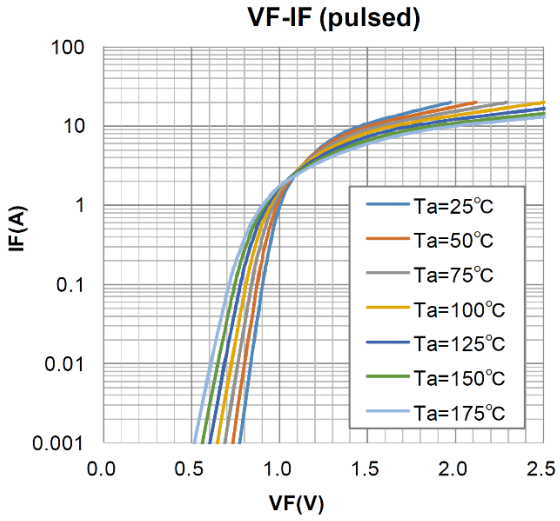
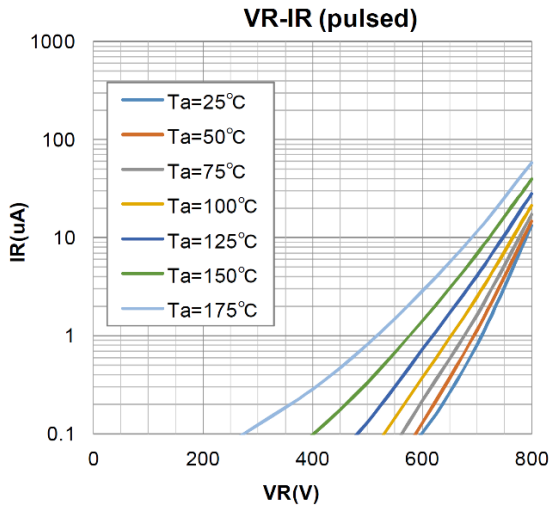
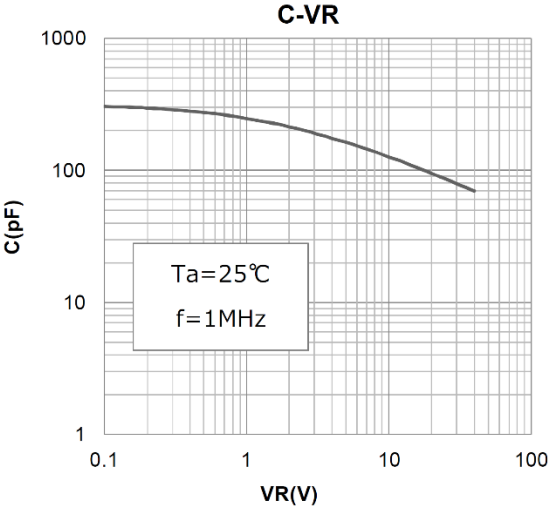
Electrical characteristic curves







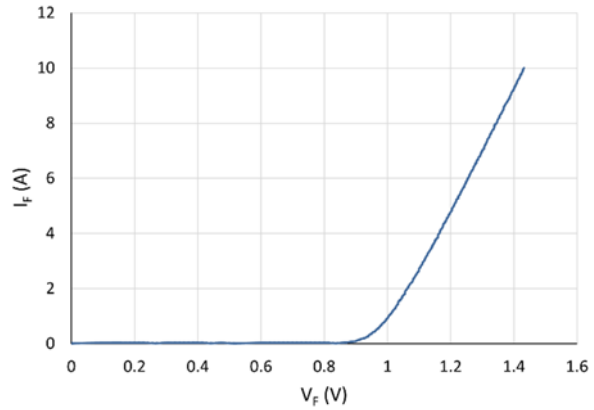


Package (TO220-2L) Electrical Characteristics (T_a = 25℃)

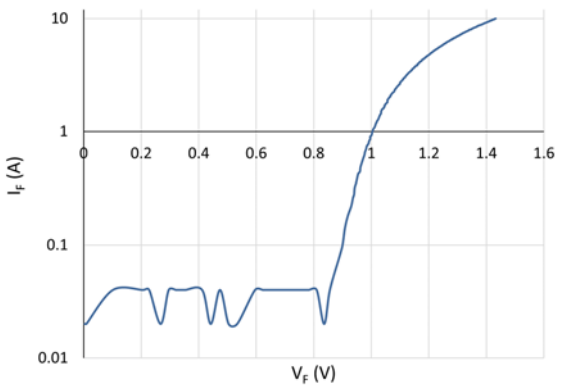
Parameter	Symbol	Conditions		Unit
Forward voltage	V_F	I_F = 10A	1.44	V
Reverse current	I_R	V_{BR} = 650V	0.265	μA
Breakdown voltage	V_{BR}	I_R = 1 μA	829	V
Total capacitance	C	V_R = 1V, f = 1㎒	210	pF
Total capacitive charge	Q_C	V_R = 400V, di/dt = 200 A/μs	2.4	nC
Switching time	T_C	V_R = 400V, di/dt = 200 A/μs	8.7	ns
Peak surge forward current	I_{FSM}	10 μs Sinusoidal, f = 50㎐	30.3	A

Package (TO220-2L) Electrical characteristic curves (T_a = 25℃)

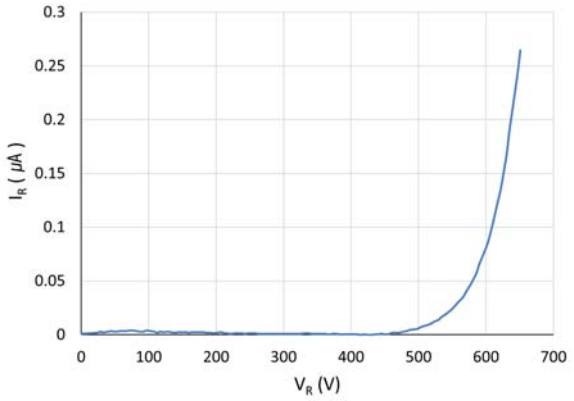
Forward Voltage (V_F)



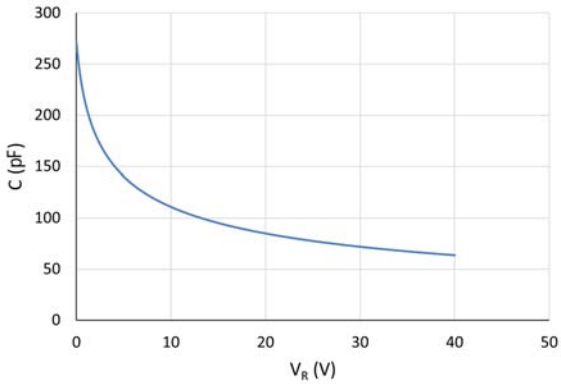
Forward Voltage (V_F)



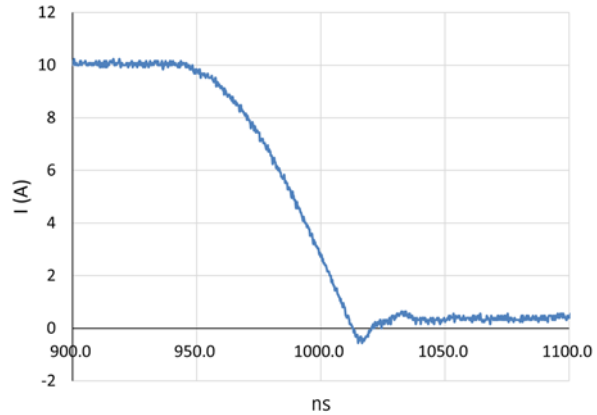
Reverse Current (I_R)



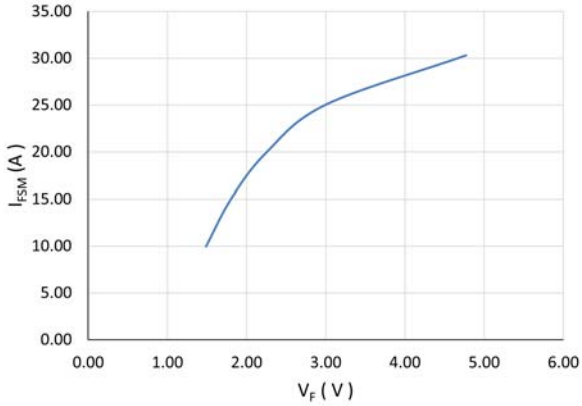
Total Capacitance (pF)



Swtiching Time (T_C)



Peak surge forward current (I_{FSM})



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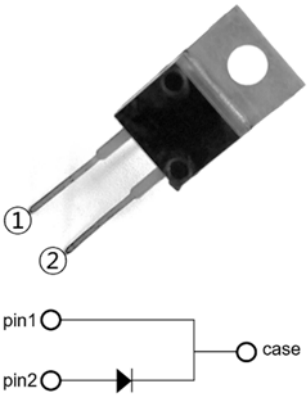
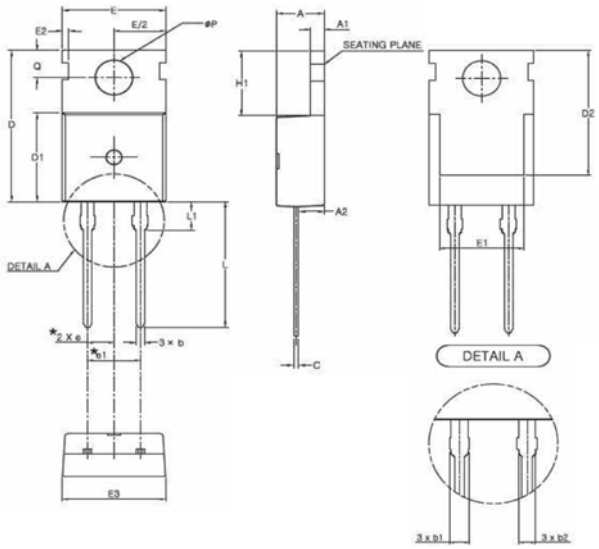
Package: TO220-2L



① Company Logo
② Lot Number: year, week
③ Device Code: SN(SiC Diode), 06(650V), 10(10A), G2(generation)



symbol	min	nom	max
A	4.30	4.50	4.70
A1	1.25	1.30	1.40
A2	2.20	2.40	2.60
b	0.70	0.80	0.90
b1	1.42	1.52	1.62
b2	1.17	1.27	1.37
C	0.45	0.50	0.60
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
D2		12.70	
E	9.70	9.90	10.10
E1		8.00	
E2		0.60	
E3	9.70	9.90	10.10
e		2.54 BSC	
e1		5.08 BSC	
H1	6.30	6.50	6.70
L	12.88	13.08	13.28
L1		3.00	
ΦP	3.50	3.60	3.70
Q	2.70	2.80	2.90

Notes

1. This document is for reference only.
2. Please request for the specification sheet before use.
3. Since the products are in wafer form, the values in this document are for reference only.
4. Although we strive to improve the quality of our products, they may malfunction or fail. When using this product, please implement a safety design suitable for the system within your responsibility.
5. Although this document has been prepared with great care, we assume no responsibility for any damages incurred due to errors in the provided information.
6. If the operating environment (ex. high temperature, high voltage, high current) is severe, the reverse current may become excessively large, and the device may be destroyed due to the increased reverse.
7. The absolute maximum ratings must not be exceeded even momentarily. Do not exceed the absolute maximum ratings for any of the multiple ratings.

8. When evaluating or using the product in a resin-encapsulated package or in a sealed environment, be sure to measure the temperature and confirm that the maximum junction temperature designated as the maximum ratings is not exceeded.
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