DONGGUAN NANJING ELECTRONICS LTD.,

TO-247-3 Silicon Carbide Schottky Diode

NJ12020T3 SiC Diode 1200V, 20A, 124nC

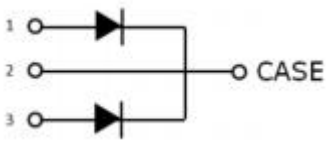
General Description

This product family offers state of the art performance. It is designed for high frequency applications here high efficiency and high reliability are required.

Features

- Max junction temperature 175°C
- High surge current capacity
- Zero reverse recovery current
- Zero forward recovery voltage
- High frequency operation
- Temperature independent switching behavior
- Positive temperature coefficient on V_F

TO-247-3
Pin definition



Applications

- Solar booster
- Inverter free wheeling diode
- Vienna 3-Phase PFC
- AC/DC Converters
- Switch Mode Power Supplies

Key performance parameters

Type	V_{RRM}	I_F T_C=155℃	Q_C
NJ12020T3	1200V	20A	124nC

Caution: This device is sensitive to electrostatic discharge .Users should follow ESD handing procedures.

Maximum Ratings

T_C=25℃, unless otherwise specified

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V
DC Peak Reverse Voltage	V_{DC}	1200	V

Maximum Ratings

T_C=25℃, unless otherwise specified

Parameter	Symbol	Value	Unit
Continuous Forward Current: T_C = 25°C T_C = 135°C T_C = 155°C	I_F	30* 15.2* 10*	A
Non-Repetitive Forward Surge Current： Sine half wave T_C = 25°C tp =10ms	I_{FSM}	72*	A
Power Dissipation: T_C = 25°C T_C = 150°C	P_{tot}	176* 29*	W
i^2t value : T_C = 25°C tp =10ms	∫i2 dt	26*	A^2S
Operating Junction temperature Range	T_j	-55 to +175	°C
Storage temperature Range	T_{stg}	-55 to +175	°C

*Per Leg

Thermal Resistance

*Per Leg

Parameter	Symbol	Typ.	Unit
Thermal resistance of crust	R_{thJC}	0.85*	°C/W

Electrical Characteristics

T_C =25℃, unless otherwise specified

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V_F		1.56 2.2	1.8 3	V	I_F = 20A T_j = 25°C T_j = 175°C
Reverse Current	I_R		5 25	100 350	uA	V_R = 1200V T_j = 25°C T_j = 175°C
Total Capacitive Charge	Q_C		124		nC	V_R = 800V T_j = 25°C $Q_C = \int_0^{V_R} C(V)dV$
Total Capacitance	C		1150 118 85		pF	T_j = 25℃, f = 1MHz V_R = 1V V_R = 400V V_R = 800V

Characteristics Curves

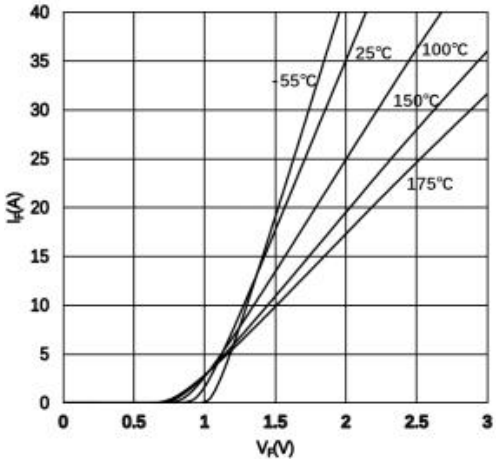


Fig. 1 Typical forward characteristic curve

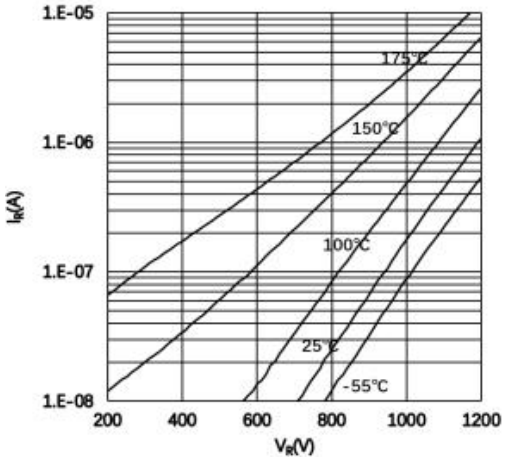


Fig. 2 Typical reverse characteristic curve

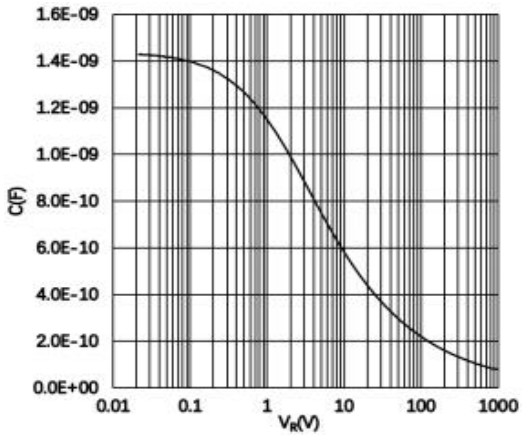


Fig. 3 Typical capacitance and reverse voltage curve

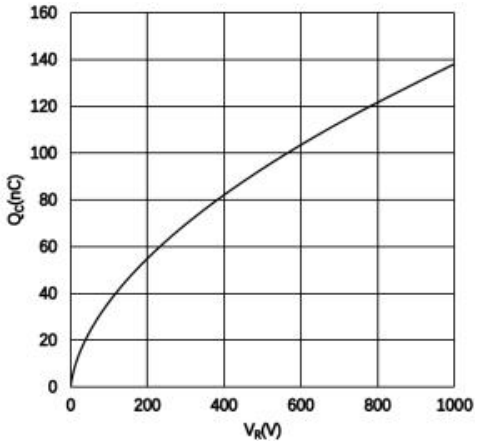


Fig. 4 Typical storage charge and reverse voltage curve

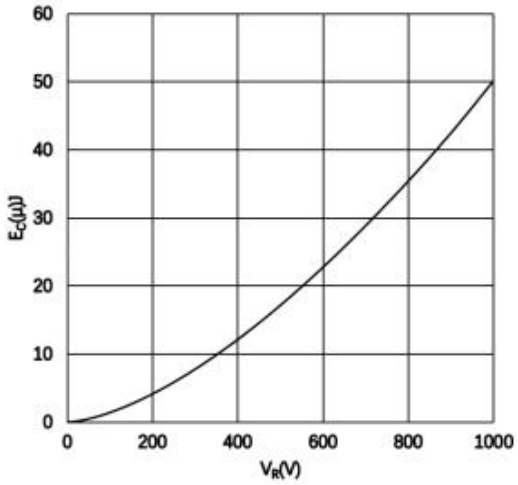


Fig. 5 Typical capacitance energy and reverse voltage curve

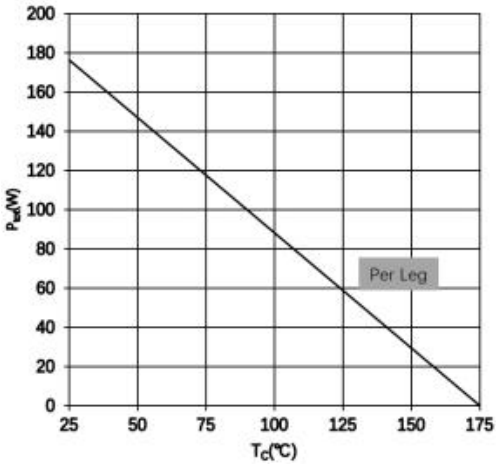


Fig. 6 Typical power derating curve

Typical Characteristics

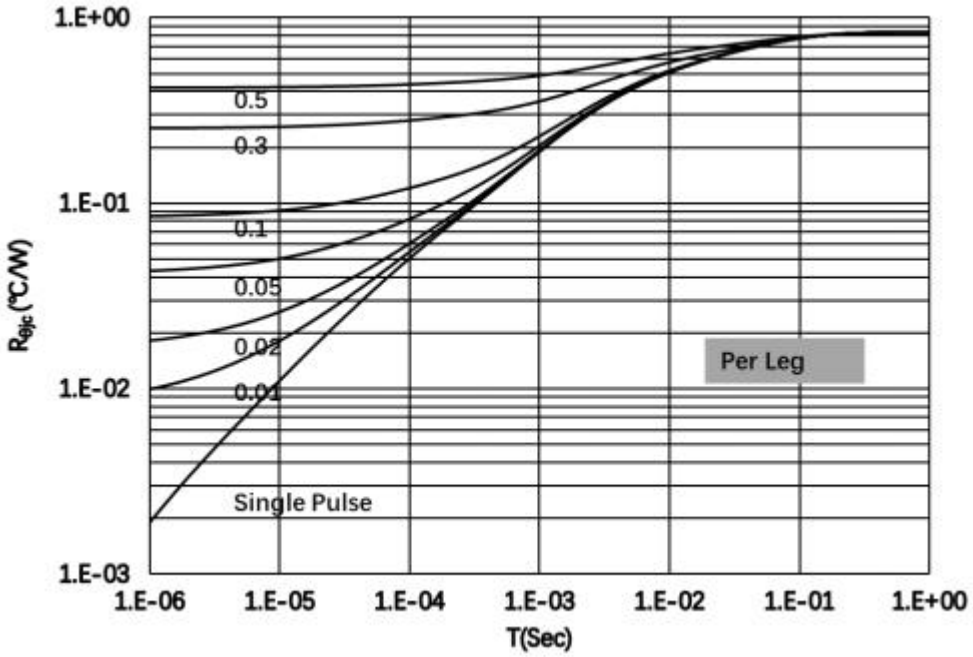
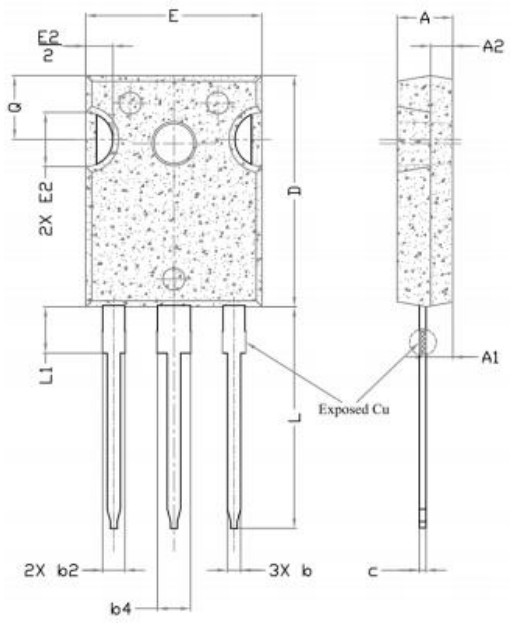
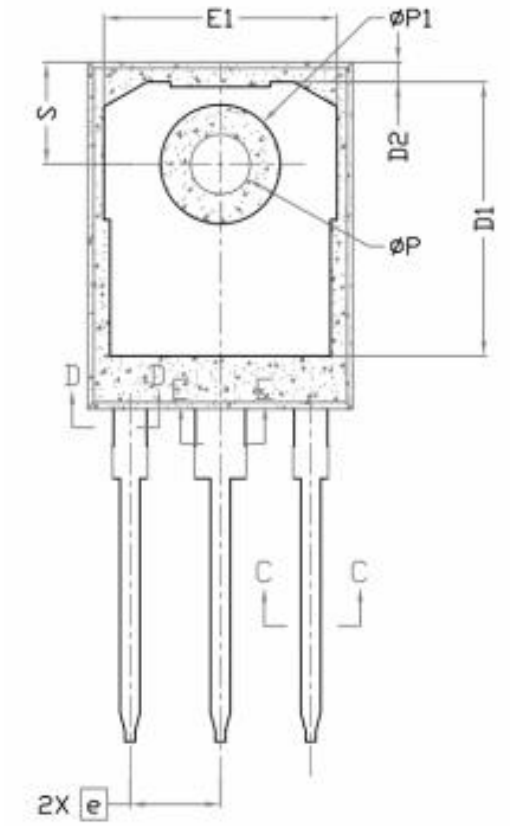


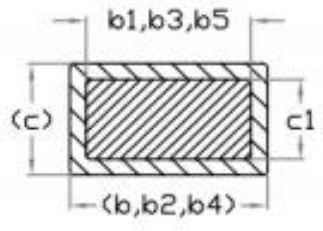
Fig. 7 Transient thermal impedance

Package Outline:TO-247-3





SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
b4	2.87	3.00	3.22	6, 8
b5	2.87	3.00	3.18	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ØP	3.56	3.61	3.65	7
ØP1	7.19REF.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	



Section C--C,D--D,E--E

Dimensions in (mm)