NWK220TZ1

1200V Silicon Carbide Schottky Diode

Parameter	Value	Unit
V_{RRM}	1200	V
$V_F(T_J=25℃)$	1.45	V
I_F (T_C = 154℃)	20	A

Features

- 1200 V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching

TO-220-2

Applications

- Switch Mode Power Supplies
- Boost Diodes in PFC
- DC/DC Converters
- AC/DC Converters
- Free Wheeling Diodes in Inverter

Description

The NWK220TZ1 is a 1200V, SiC Schottky Barrier Diode (SBD) based on NovaWave's advanced SiC power technology resulting in high performance and long-term reliability. It supports high-temperature operation while showing minimal losses, zero reverse recovery, and low leakage current.

Part Description

Part Number	Package	Marking
NWK220TZ1	TO-220-2	NWK220TZ1

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Absolute Maximum Ratings

T_J = 25 ˚C except as noted. Exceeding the maximum ratings may damage the device.

Parameter	Symbol	Value	Unit	Test conditions
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	
Surge Peak Reverse Voltage	V_{RSM}	1300	V	
DC Peak Reverse Voltage	V_R	1200	V	
Continuous Forward Current	I_F	69 32 20	A	T_C = 25 °C T_C = 135 °C T_C = 154 °C
Non-Repetitive Forward Surge Current	I_{FSM}	160	A	T_C = 25 °C, t_p = 10 ms, Half Sine Pulse
Power Dissipation	P_{tot}	333 144	W	T_C = 25 °C T_C = 110 °C
Operating Junction Range	T_J	-55 to +175	˚C	-
Storage Temperature Range	T_S	-55 to +175	˚C	-

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance from Junction to Case	$R_{TH,J-C}$		0.45		˚C/W

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Electrical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Condition
Forward Voltage	V_F	--	1.45 2	1.7 2.6	V	I_F=20 A, T_C = 25 °C I_F=20 A, T_C = 175 °C
Reverse Current	I_R	--	15 50	200 500	µA	V_R=1200 V, T_C = 25 °C V_R=1200 V, T_C = 175 °C
Total Capacitive Charge	Q_c	--	126	--	nC	V_R=800 V, I_F=20 A, T_C = 25 °C
Total Capacitance	C	--	1702 120 95	--	pF	V_R=0 V, T_C = 25 °C, f= 1 MHz V_R=400 V, T_C = 25 °C, f= 1 MHz V_R=800 V, T_C = 25 °C, f= 1 MHz
Capacitance Stored Energy	E_C	--	32.5	--	µJ	V_R=800 V, T_C = 25 °C

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Electrical Performance Graphs

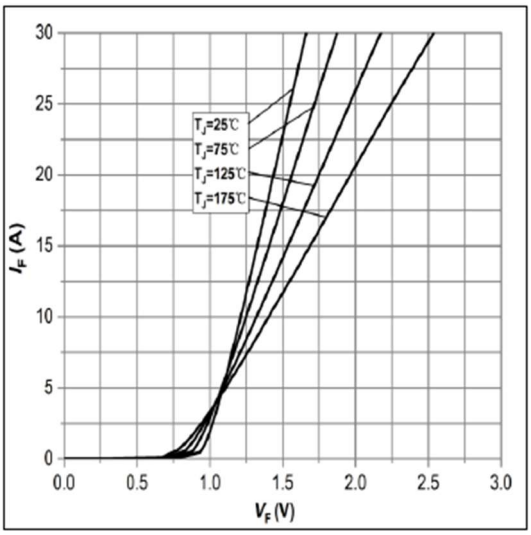


Figure 1: Forward Characteristics

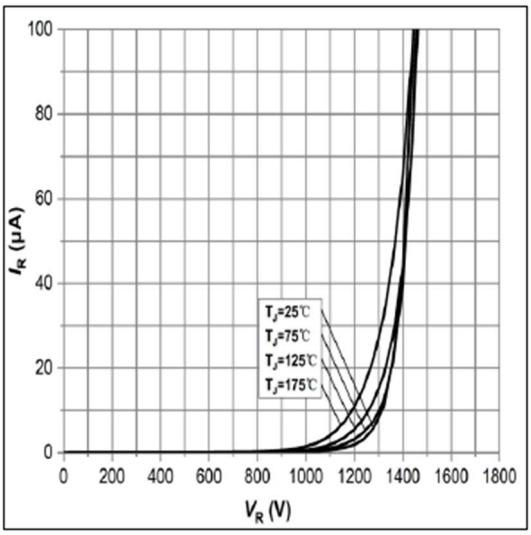


Figure 2: Reverse Characteristics

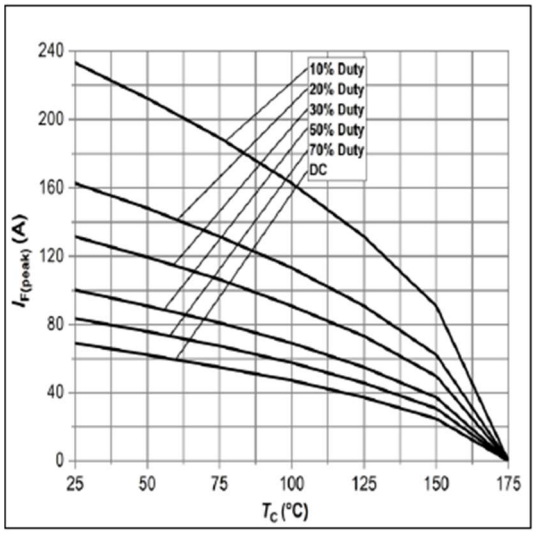


Figure 3: Current Derating

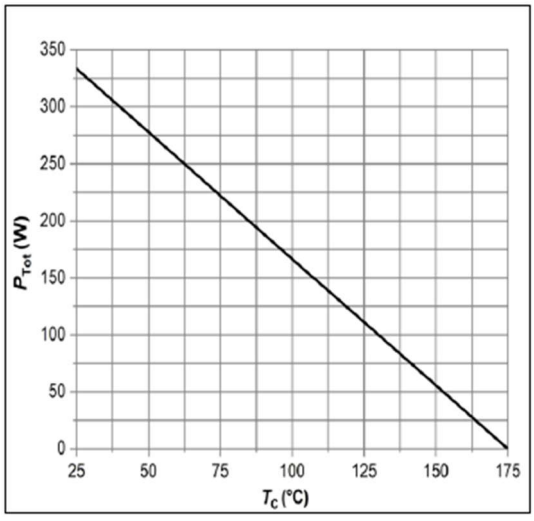


Figure 4: Power Derating

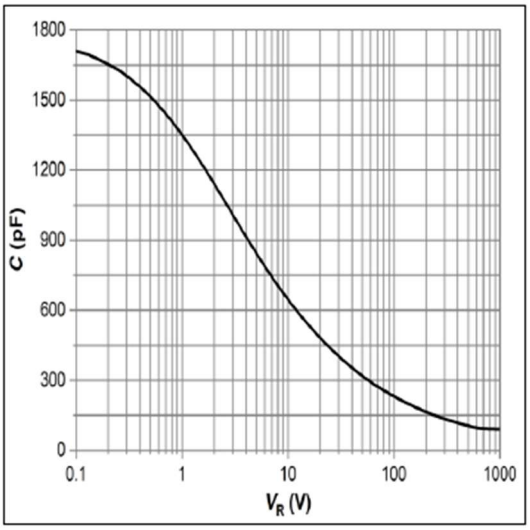


Figure 5: Capacitance vs. Reverse Voltage

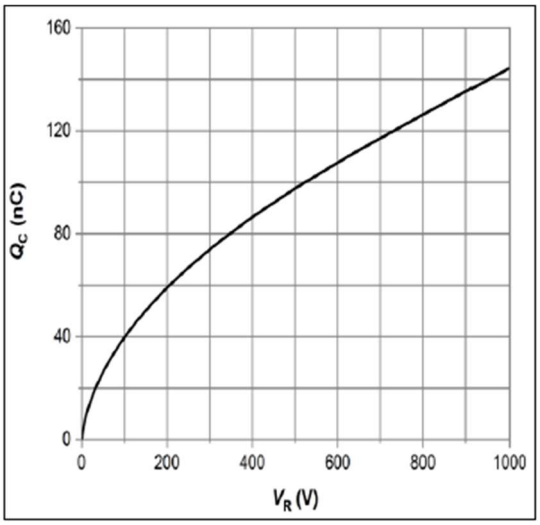


Figure 6: Total Capacitance Charge vs. Reverse Voltage

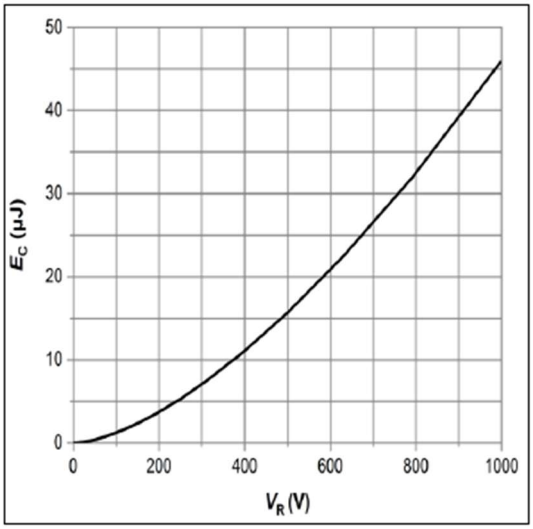


Figure 7: Typical Capacitance Stored Energy

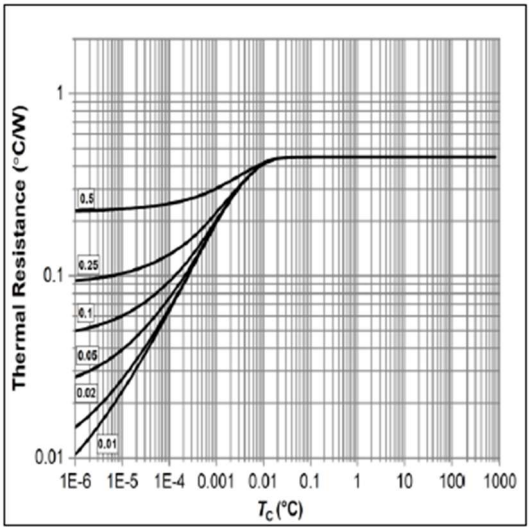
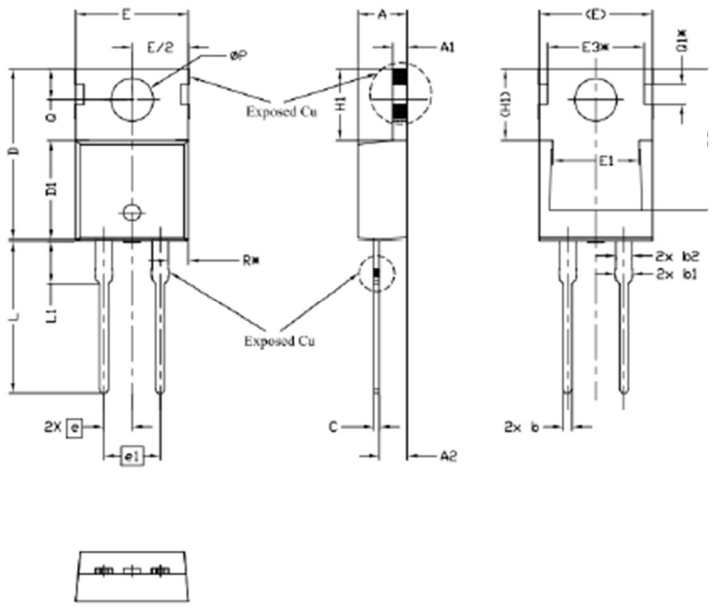


Figure 8: Transient Thermal Impedance

Package Dimensions

Package： TO-220-2



SYMBOL	DIMENSIONS			NOTES
	Min.	NOM	Max.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.43	12.73	12.83	5
E	9.96	10.16	10.36	4.5
E1	6.86	7.77	8.89	5
E3*	8.70 REF			
e	2.54 BSC			
e1	5.08 BSC			
H1	6.30	6.45	6.60	5.6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
ØP	3.75	3.84	3.93	
Q	2.60	2.80	3.00	
Q1*	1.73 REF			
R*	1.82 REF			

NOTE : Dimension L, M, W apply for Solder Dip Finish

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