

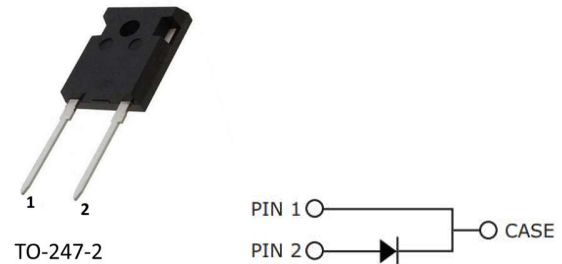
NWK240TJ1-2

1200V Silicon Carbide Schottky Diode

Parameter	Value	Unit
V_{RRM}	1200	V
Q_C	274	nC
I_F ($T_C = 155^\circ\text{C}$)	40	A

Features

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



Applications

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

Description

The NWK240TJ1-2 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
NWK240TJ1-2	TO-247-2	NWK240TJ1-2

Absolute Maximum Ratings

$T_J = 25^\circ\text{C}$ 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	136 64 40	A	$T_C = 25^\circ\text{C}$ $T_C = 135^\circ\text{C}$ $T_C = 155^\circ\text{C}$
Non-Repetitive Forward Surge Current	I_{FSM}	340	A	$T_C = 25^\circ\text{C}$, $t_p = 10\text{ ms}$, Half Sine Pulse
Power Dissipation	P_{tot}	671 292	W	$T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$
Operating Junction Range	T_J	-55 to +175	$^\circ\text{C}$	-
Storage Temperature Range	T_S	-55 to +175	$^\circ\text{C}$	-

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance from Junction to Case	$R_{TH,J-C}$		0.223		$^\circ\text{C/W}$

Electrical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Condition
Forward Voltage	V_F	--	1.47 2.1	1.8 2.6	V	$I_F=40\text{ A}$, $T_C = 25\text{ }^\circ\text{C}$ $I_F=40\text{ A}$, $T_C = 175\text{ }^\circ\text{C}$
Reverse Current	I_R	--	10 150	200 500	μA	$V_R=1200\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$ $V_R=1200\text{ V}$, $T_C = 175\text{ }^\circ\text{C}$
Total Capacitive Charge	Q_C	--	274	--	nC	$V_R=800\text{ V}$, $I_F=40\text{ A}$, $T_C = 25\text{ }^\circ\text{C}$
Total Capacitance	C	--	5274 249 181	--	pF	$V_R=0\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$, $f=1\text{ MHz}$ $V_R=400\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$, $f=1\text{ MHz}$ $V_R=800\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$, $f=1\text{ MHz}$
Capacitance Stored Energy	E_C	--	71.8	--	μJ	$V_R=800\text{ V}$, $T_C = 25\text{ }^\circ\text{C}$

Electrical Performance Graphs

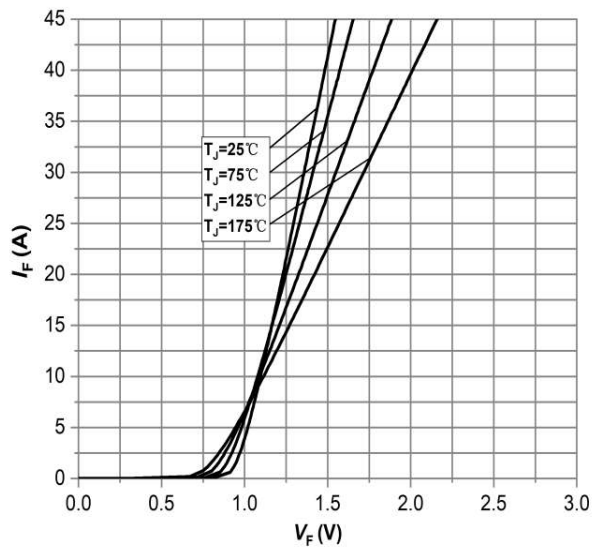


Figure 1: Forward Characteristics

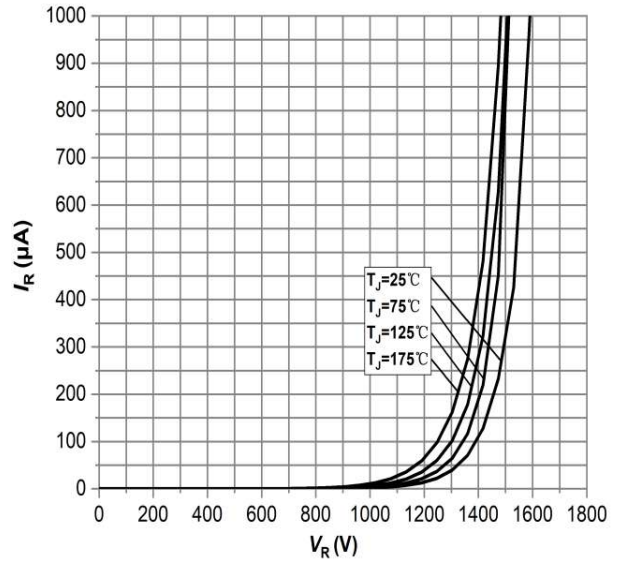


Figure 2: Reverse Characteristics

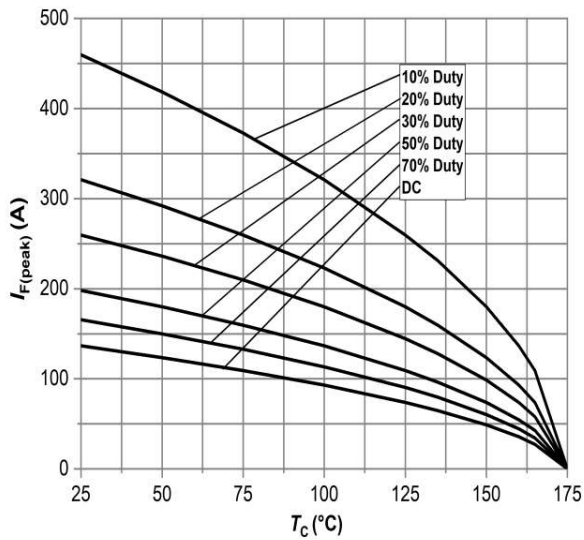


Figure 3: Current Derating

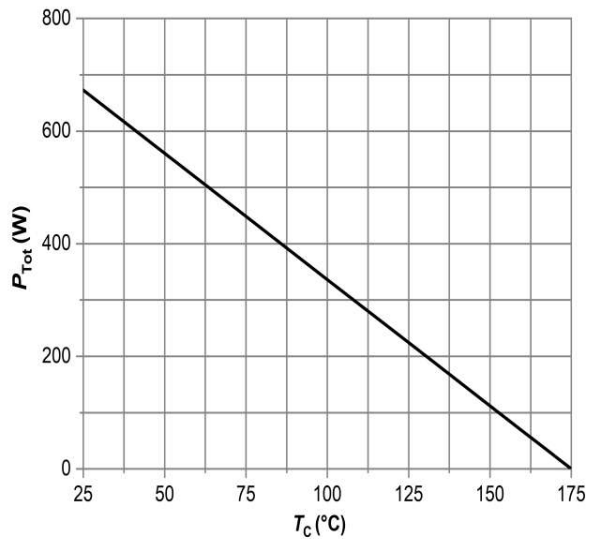


Figure 4: Power Derating

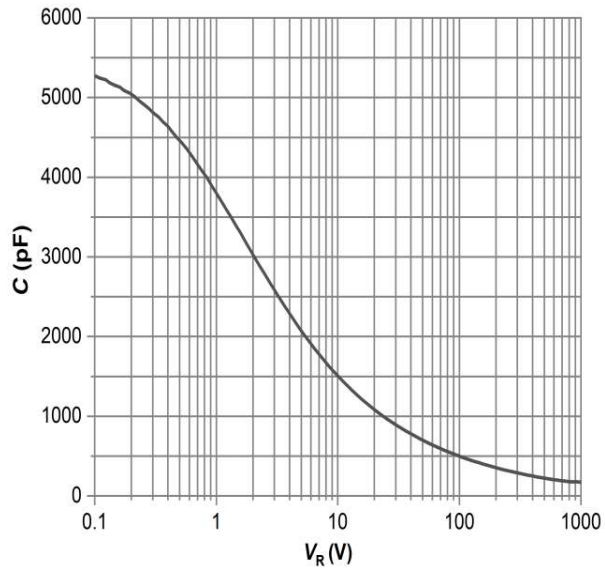


Figure 5: Capacitance vs. Reverse Voltage

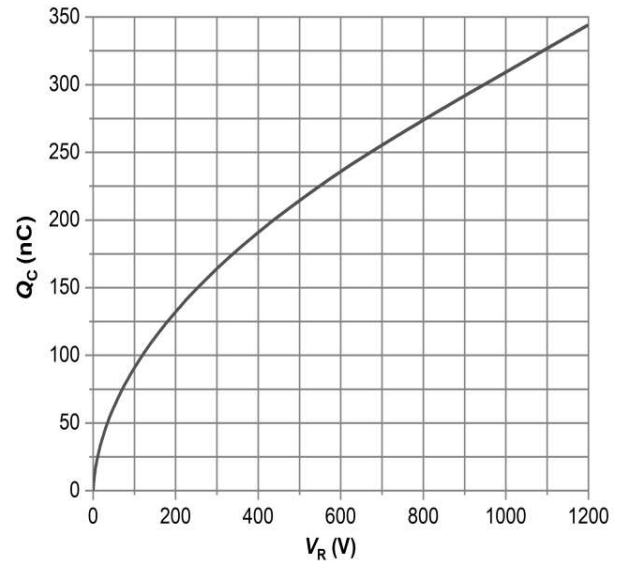


Figure 6: Total Capacitance Charge vs. Reverse Voltage

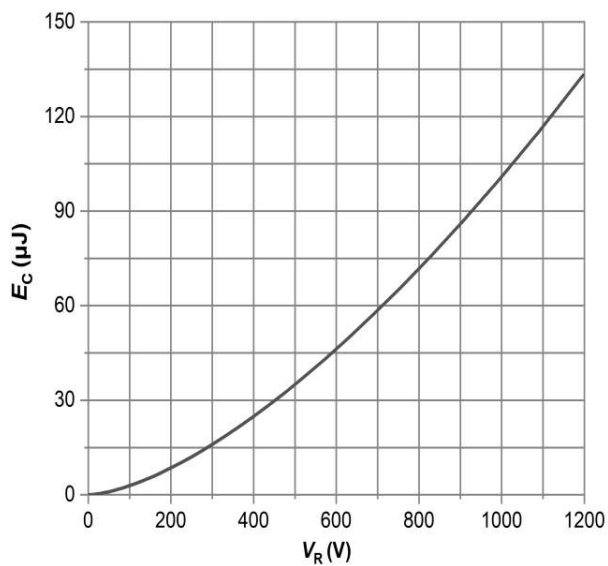


Figure 7: Typical Capacitance Stored Energy

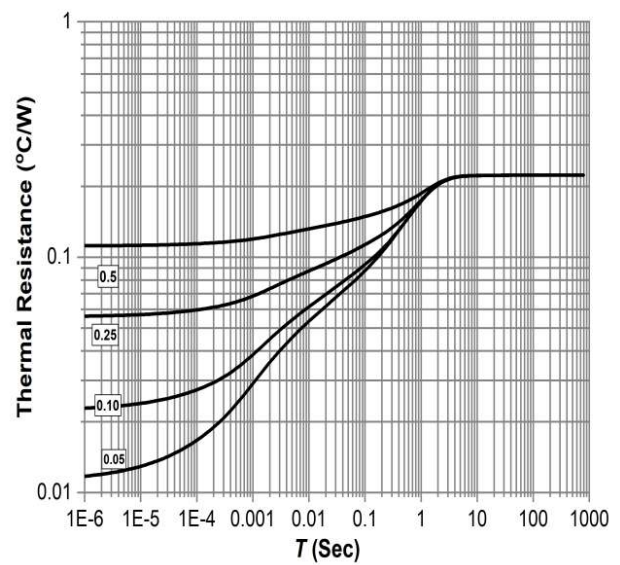
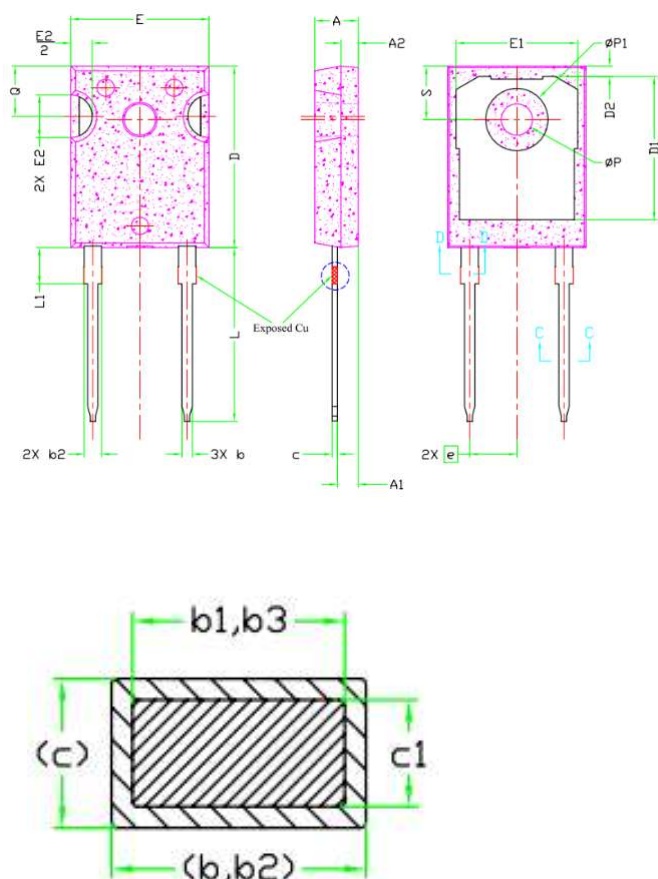


Figure 8: Transient Thermal Impedance

Package Dimensions

Package: TO-247-2



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	
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	

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