

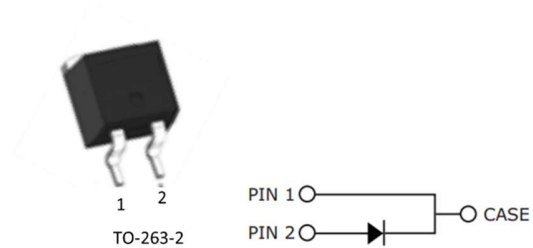
NW6510TY1

Silicon Carbide Schottky Diode

Parameter	Value	Unit
V_{RRM}	650	V
Q_C	36	nC
$I_F (T_C=153\text{ }^{\circ}\text{C})$	10	A

Features

- 650 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 NW6510TY1 is a 650V, 10 A SiC Schottky Barrier Diode (SBD) is 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 Number	Package	Marking
NW6510TY1	TO-263-2	NW6510TY1

Absolute Maximum Ratings

$T_J = 25\text{ }^{\circ}\text{C}$ except as noted. Exceeding the maximum ratings may damage the device.

Parameter	Symbol	Value	Unit	Test conditions
Repetitive Peak Reverse Voltage	V_{RRM}	650	V	
Surge Peak Reverse Voltage	V_{RSM}	650	V	
DC Peak Reverse Voltage	V_R	650	V	
Continuous Forward Current	I_F	33 15 10	A	$T_C = 25\text{ }^{\circ}\text{C}$ $T_C = 135\text{ }^{\circ}\text{C}$ $T_C = 153\text{ }^{\circ}\text{C}$
Non-Repetitive Forward Surge Current	I_{FSM}	80	A	$T_C = 25\text{ }^{\circ}\text{C}$, $t_p = 10\text{ ms}$, Half Sine Pulse
Power Dissipation	P_{tot}	117 50	W	$T_C = 25\text{ }^{\circ}\text{C}$ $T_C = 110\text{ }^{\circ}\text{C}$
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	Value	Unit
Thermal Resistance from Junction to Case	$R_{TH,J-C}$	1.28	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Condition
Forward Voltage	V_F		1.4 1.65	1.7 2.2	V	$I_F=10\text{ V}$, $T_J=25\text{ }^{\circ}\text{C}$ $I_F=10\text{ V}$, $T_J=175\text{ }^{\circ}\text{C}$
Reverse Current	I_R	-	2 10	50 200	μA	$V_R=650\text{ V}$, $T_J=25\text{ }^{\circ}\text{C}$ $V_R=650\text{ V}$, $T_J=175\text{ }^{\circ}\text{C}$

Total Capacitive Charge	Q_C	-	36		nC	$V_R=400\text{ V}, I_F=10\text{ A}, T_J=25\text{ }^{\circ}\text{C}$
Total Capacitance	C	-	695 69 52		pF	$V_R=0\text{ V}, f=1\text{ MHz}, T_J=25\text{ }^{\circ}\text{C}$ $V_R=200\text{ V}, f=1\text{ MHz}, T_J=25\text{ }^{\circ}\text{C}$ $V_R=400\text{ V}, f=1\text{ MHz}, T_J=25\text{ }^{\circ}\text{C}$
Capacitance Stored Energy	E_C		4.6		μJ	$V_R=400\text{ V}$

Electrical Performance Graphs

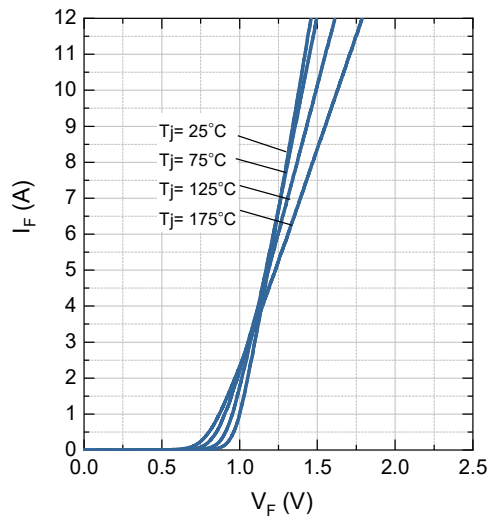


Figure 1: Forward Characteristics

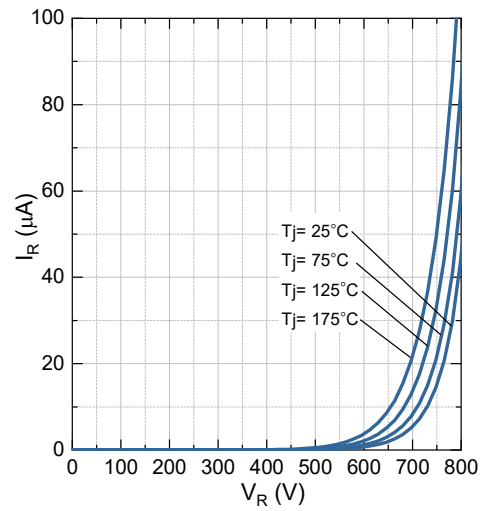


Figure 2: Reverse Characteristics

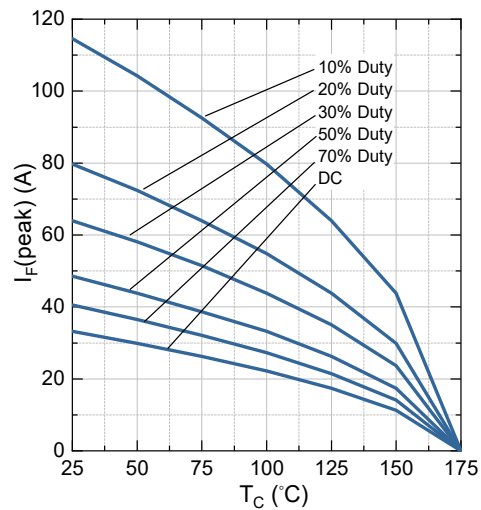


Figure 3: Current Derating

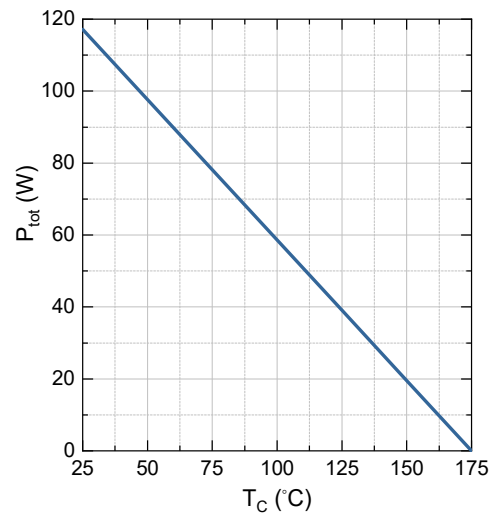


Figure 4: Power Derating

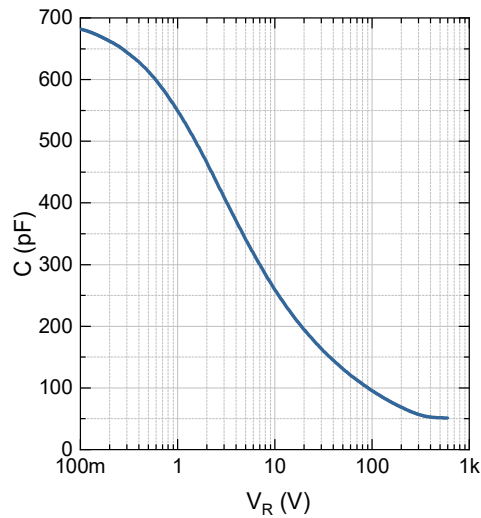


Figure 5: Capacitance vs. Reverse Voltage

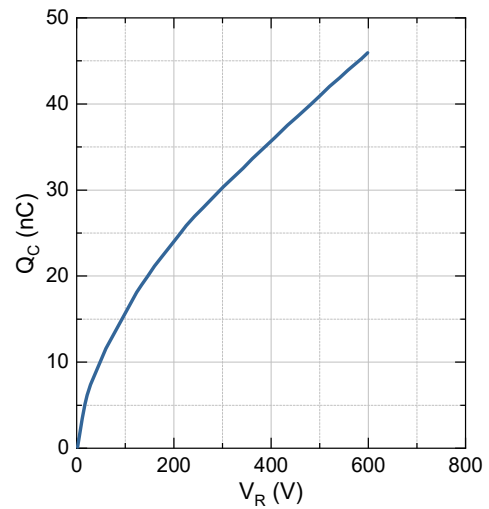


Figure 6: Total Capacitance Charge vs. reverse Voltage

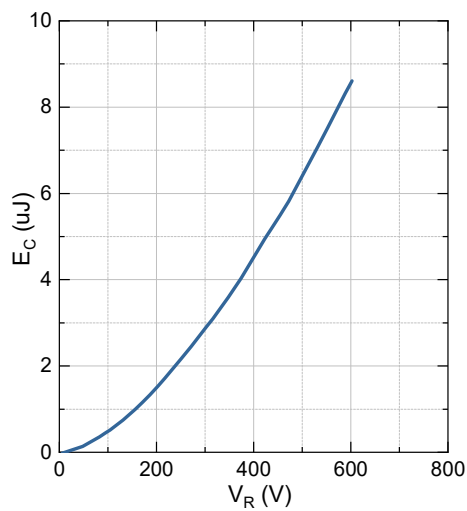


Figure 7: Typical Capacitance Stored Energy

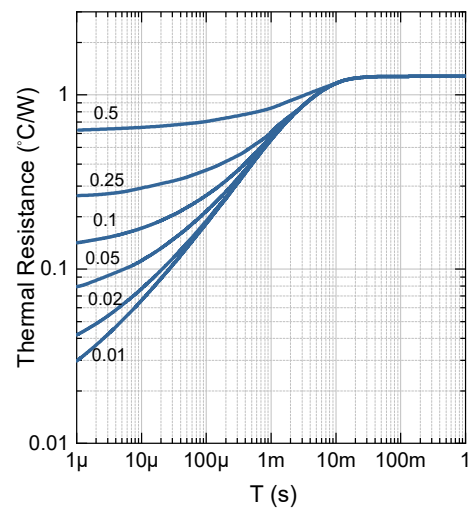
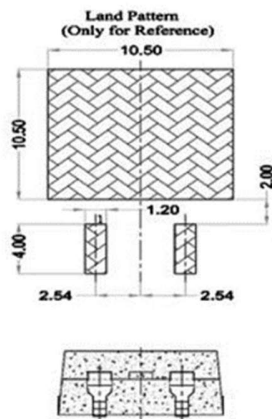
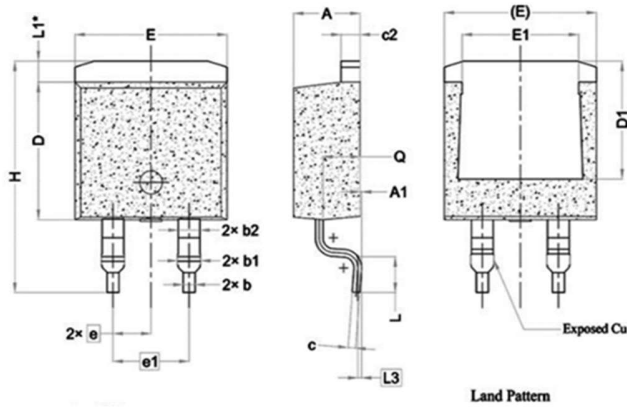


Figure 8: Transient Thermal Impedance

Package Dimensions

Package: TO-263-2



单位 : mm

SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
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
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	---
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70



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