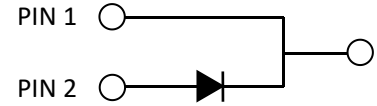


N3D40120H

Silicon Carbide Schottky Diode



Maximum Ratings ($T_c = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1200	V		
V_{DC}	DC Blocking Voltage	1200	V		
I_F	Continuous Forward Current	40	A	$T_C=150^\circ\text{C}$	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	280	A	$T_C=25^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Wave	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	350	A	$T_C=25^\circ\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	2000	A	$T_C=25^\circ\text{C}$, $t_p=10\ \mu\text{s}$, Pulse $T_C=110^\circ\text{C}$, $t_p=10\ \mu\text{s}$, Pulse	
P_{tot}	Power Dissipation	550 240	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	Fig. 6
$\int i^2 dt$	I^2t value	600	A^2s	$T_C=25^\circ\text{C}$	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 2.1	1.8 3	V	$I_F = 40\text{ A}$ $T_J=25^\circ\text{C}$ $I_F = 40\text{ A}$ $T_J=175^\circ\text{C}$	Fig. 1
I_R	Reverse Current	10 50	100 400	μA	$V_R = 1200\text{ V}$ $T_J=25^\circ\text{C}$ $V_R = 1200\text{ V}$ $T_J=175^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	226		nC	$V_R = 800\text{ V}$, $T_J = 25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$	Fig. 4
C	Total Capacitance	3930 209 159		pF	$V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 400\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$ $V_R = 800\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1\text{ MHz}$	Fig. 3
E_C	Capacitance Stored Energy	120		μJ	$V_R = 800\text{ V}$	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.27	$^\circ\text{C}/\text{W}$	Fig. 8

Typical Performance

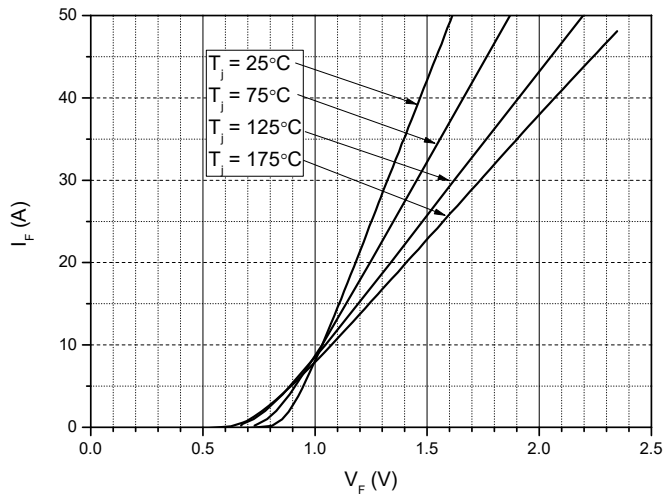


Figure 1. Forward Characteristics

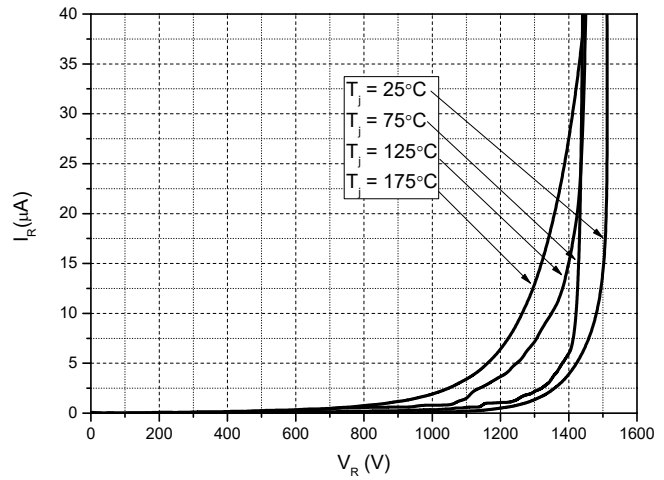


Figure 2. Reverse Characteristics

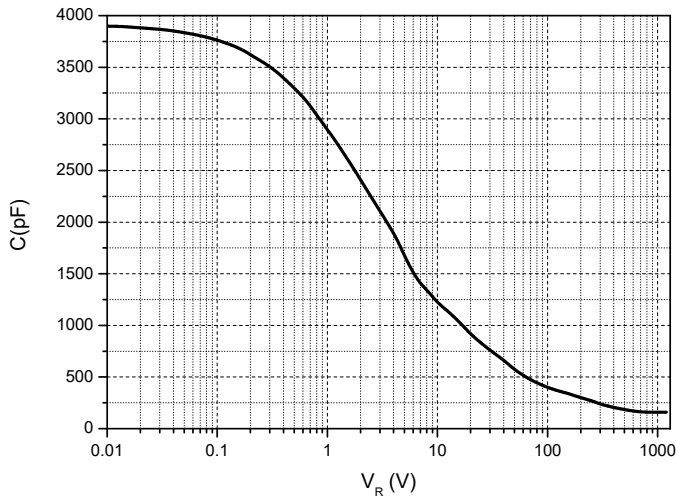


Figure 3. Capacitance vs. Reverse Voltage

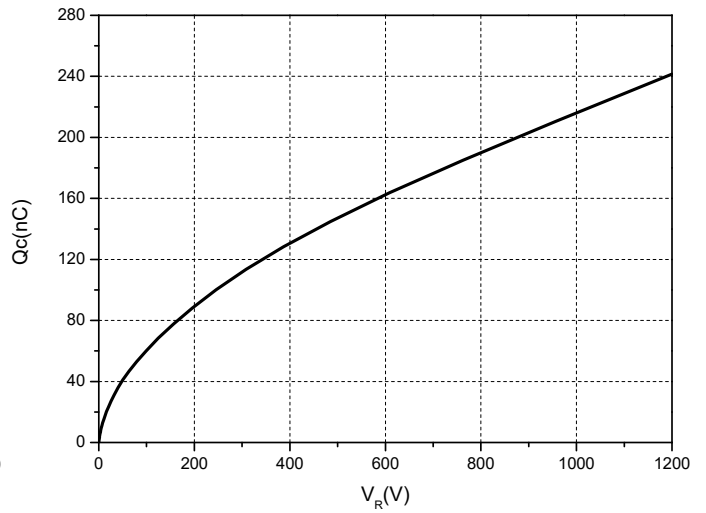


Figure 4. Total Capacitance Charge vs. Reverse Voltage

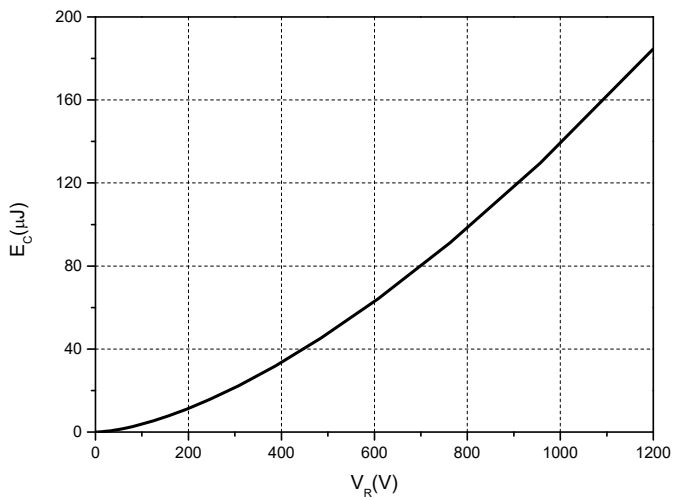


Figure 5. Capacitance Stored Energy

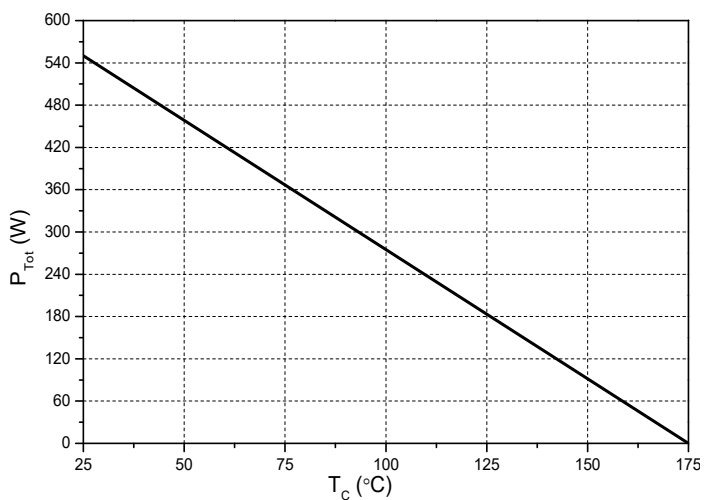


Figure 6. Power Derating

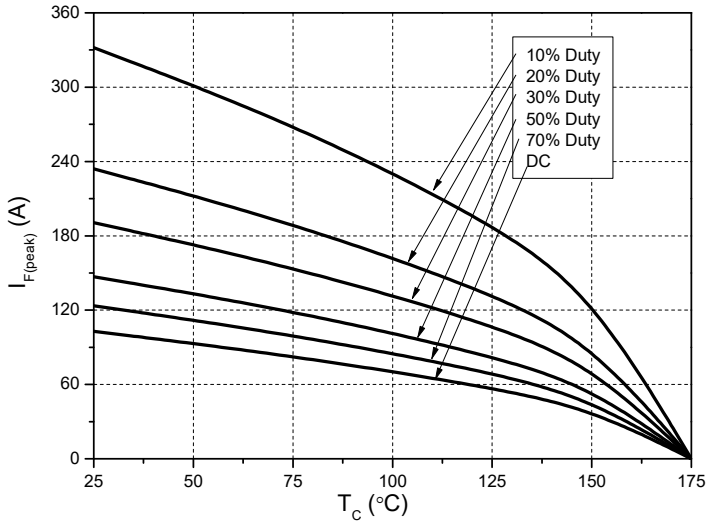


Figure 7. Current Derating

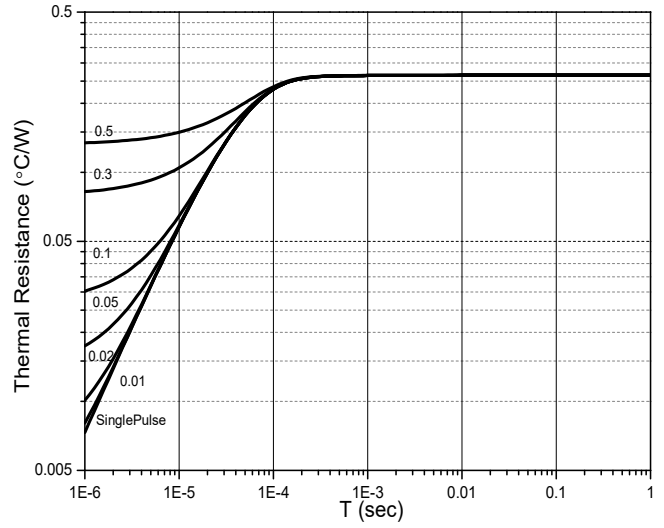


Figure 8. Transient Thermal Impedance

Package Dimensions:TO-247-2L

