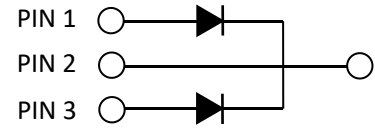


N3D20120D

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	10*/ 20**	A	$T_C=150^\circ\text{C}$	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	50*	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Wave	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	80*	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	600*	A	$T_C=25^\circ\text{C}$, $t_p=10$ μs , Pulse	
P_{tot}	Power Dissipation	153* 66*	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$	Fig. 6
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		

*Per Leg, ** Per Device

Electrical Characteristics (Per Leg)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 2.2	1.8 3	V	$I_F = 10$ A $T_J=25^\circ\text{C}$ $I_F = 10$ A $T_J=175^\circ\text{C}$	Fig. 1
I_R	Reverse Current	10 20	50 100	μA	$V_R = 1200$ V $T_J=25^\circ\text{C}$ $V_R = 1200$ V $T_J=175^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	50		nC	$V_R = 800$ V, $T_J = 25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$	Fig. 4
C	Total Capacitance	610 46 36		pF	$V_R = 0$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz $V_R = 400$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz $V_R = 800$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz	Fig. 3
E_C	Capacitance Stored Energy	25		μJ	$V_R = 800$ V	Fig. 5

Thermal Characteristics (Per Leg)

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.98	$^\circ\text{C}/\text{W}$	Fig. 5

Typical Performance(Per Leg)

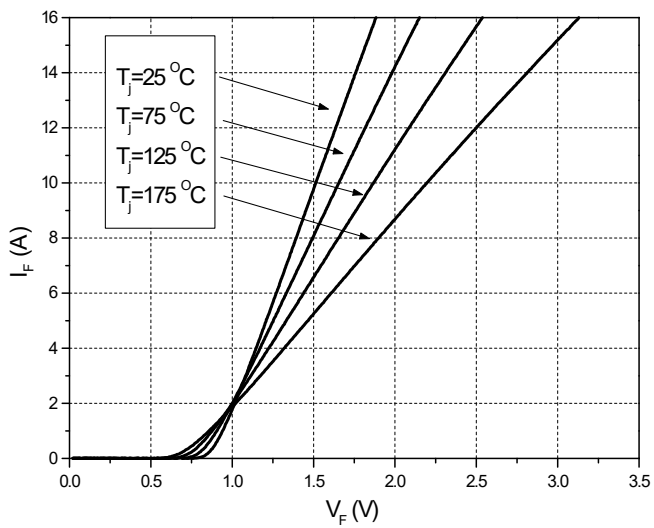
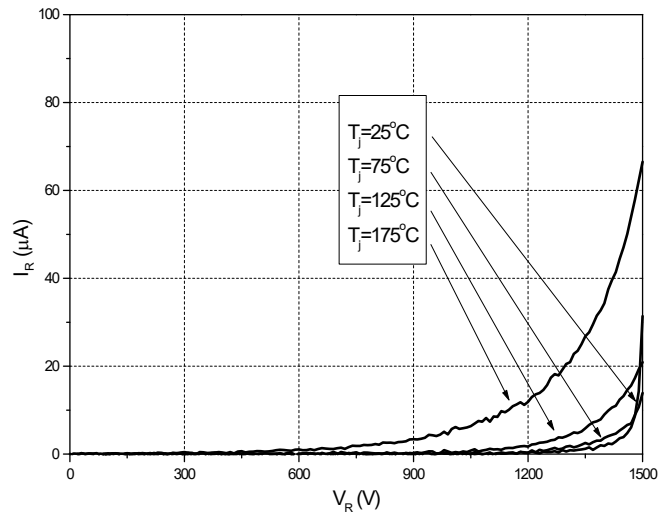


Figure 1. Forward Characteristics



2. Reverse Characteristics

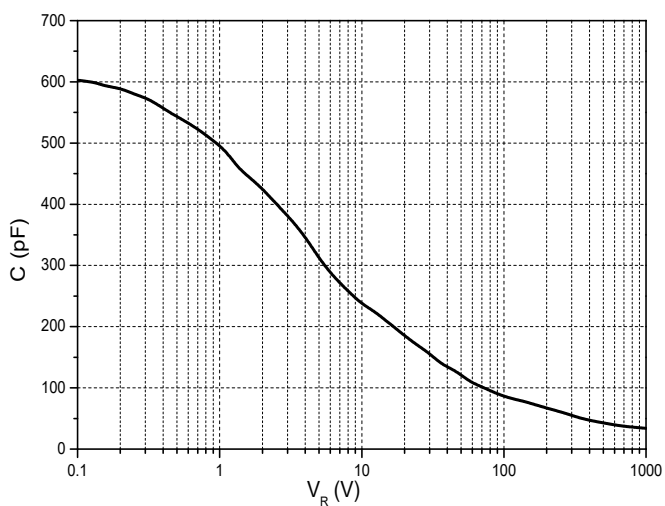


Figure 3. Capacitance vs. Reverse Voltage

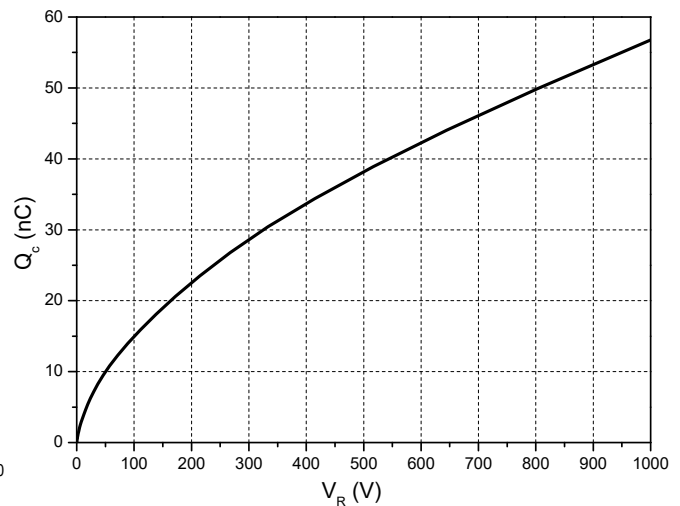


Figure 4. Total Capacitance Charge vs. Reverse Voltage

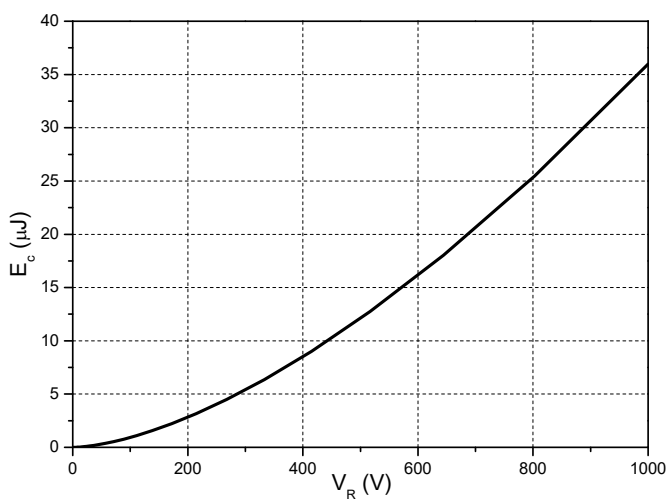


Figure 5. Capacitance Stored Energy

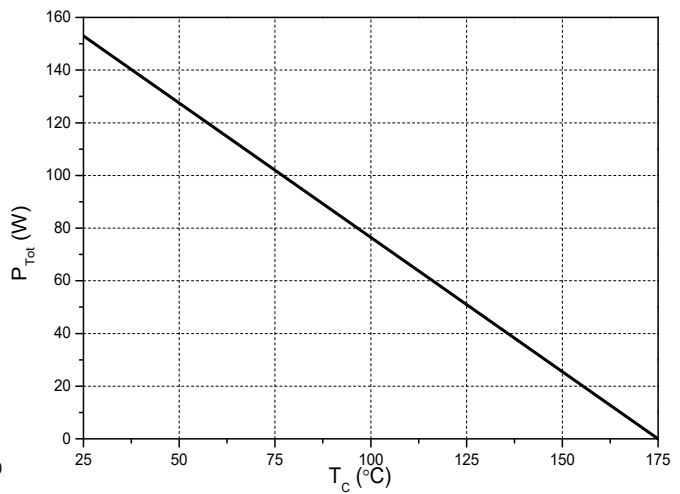


Figure 6. Power Derating

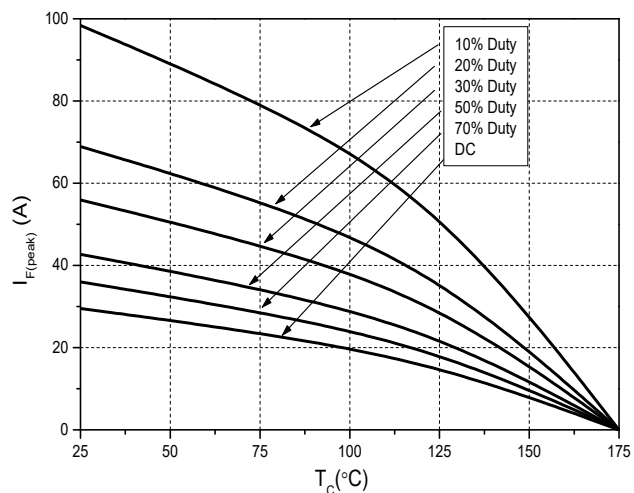


Figure 7. Current Derating

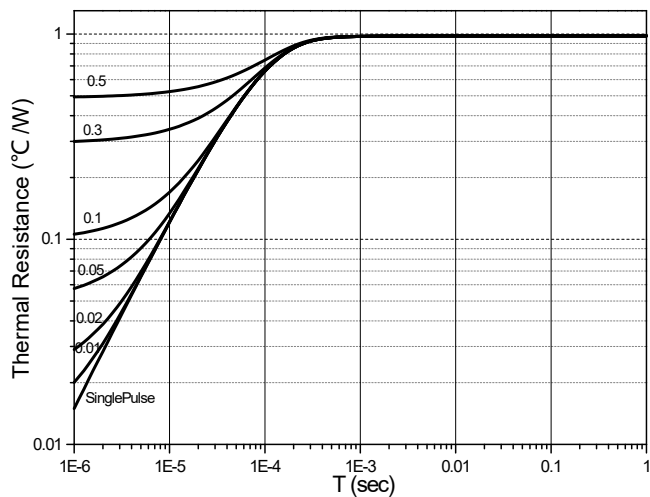


Figure 8. Transient Thermal Impedance

Package Dimensions: TO-247-3L

