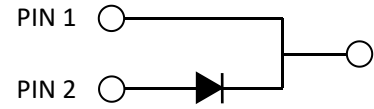


# N3D20120H

## 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	20	A	$T_C = 150^\circ\text{C}$	Fig. 7
$I_{FRM}$	Repetitive Peak Forward Surge Current	100	A	$T_C = 25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave,	
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	140	A	$T_C = 25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	1200	A	$T_C = 25^\circ\text{C}$ , $t_p = 10$ $\mu\text{s}$ , Pulse	
$P_{tot}$	Power Dissipation	272 118	W	$T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	Fig. 6
$\int i^2 dt$	$I^2t$ value	50	$\text{A}^2\text{s}$	$T_C = 25^\circ\text{C}$	
$T_J, T_{stg}$	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 2.2	1.8 3	V	$I_F = 20$ A $T_J = 25^\circ\text{C}$ $I_F = 20$ A $T_J = 175^\circ\text{C}$	Fig. 1
$I_R$	Reverse Current	10 20	50 100	$\mu\text{A}$	$V_R = 1200$ V $T_J = 25^\circ\text{C}$ $V_R = 1200$ V $T_J = 175^\circ\text{C}$	Fig. 2
$Q_C$	Total Capacitive Charge	95		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	1430 89 65		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	50		$\mu\text{J}$	$V_R = 800$ V	Fig. 5

### Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.55	$^\circ\text{C}/\text{W}$	

# Typical Performance

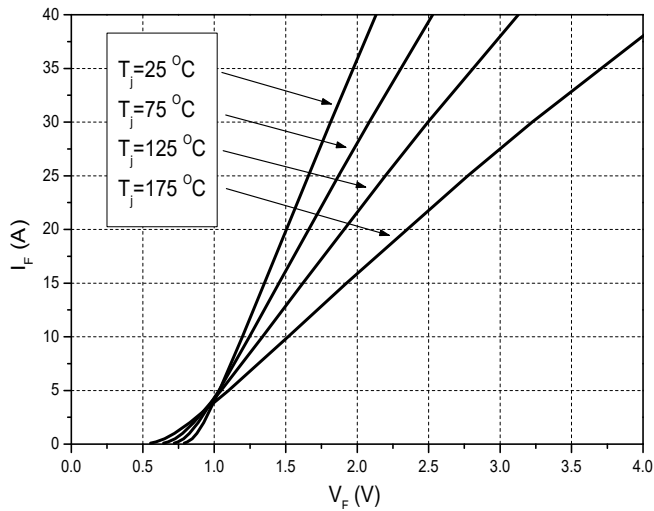


Figure 1. Forward Characteristics

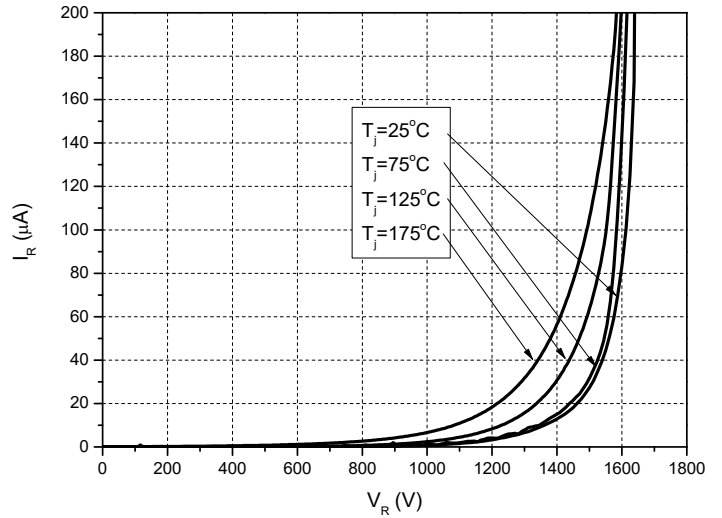


Figure 2. Reverse Characteristics

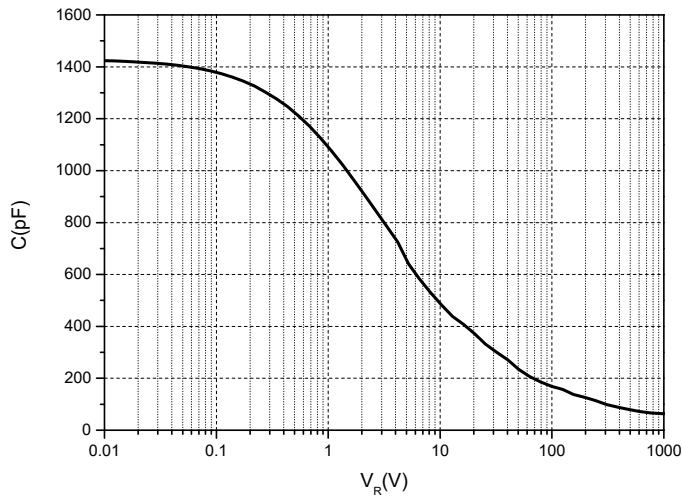


Figure 3. Capacitance vs. Reverse Voltage

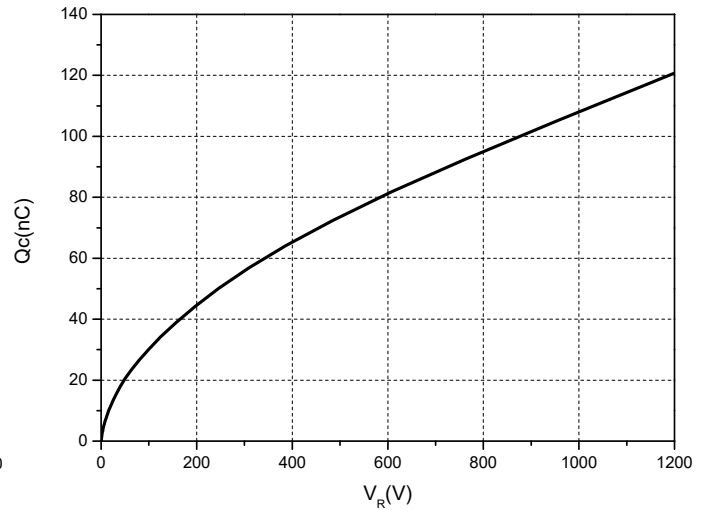


Figure 4. Total Capacitance Charge vs. Reverse Voltage

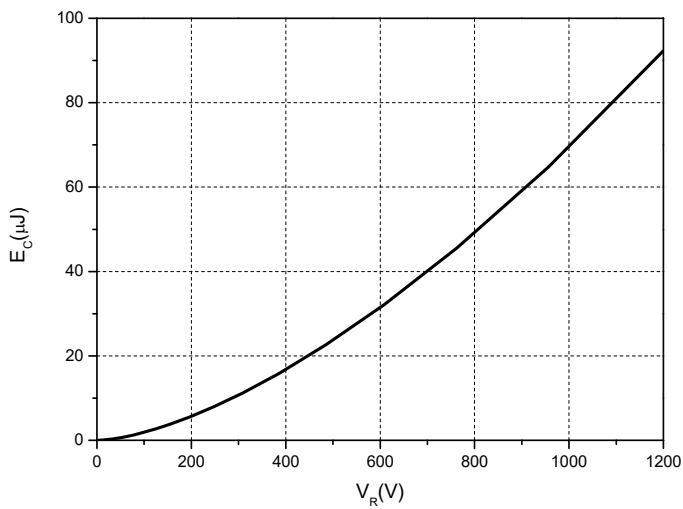


Figure 5. Capacitance Stored Energy

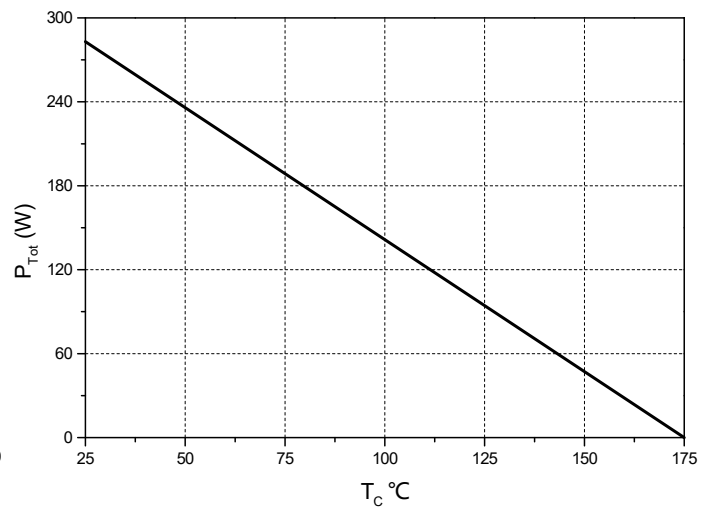


Figure 6. Power Derating

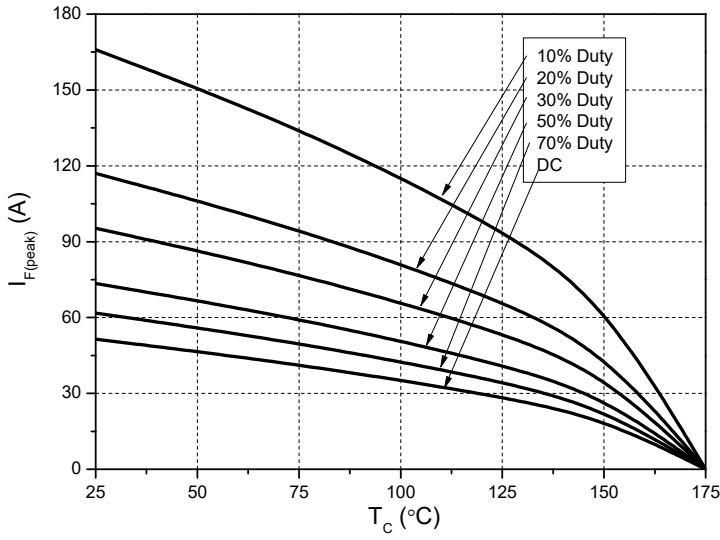


Figure 7. Current Derating

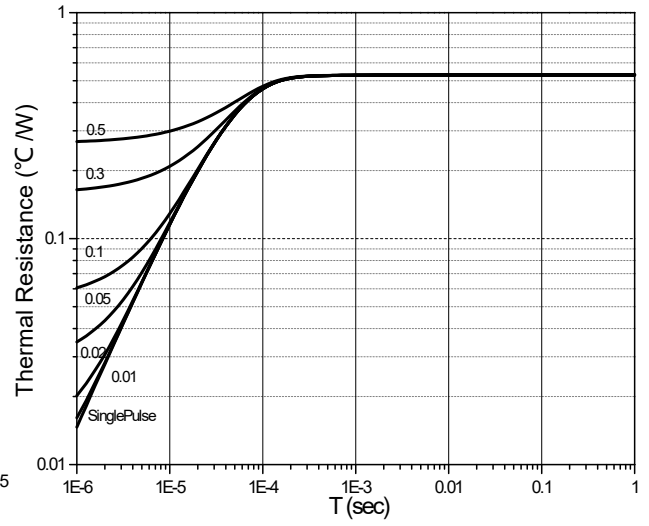


Figure 8. Transient Thermal Impedance

**Package Dimensions: TO-247-2L**

