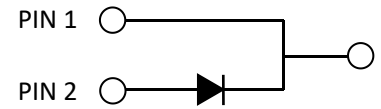


# N3D10120E

## 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	A	$T_C=140^\circ\text{C}$	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	70	A	$T_C=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Wave, $D=0.3$	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	600	A	$T_C=25^\circ\text{C}$ , $t_p= 10$ $\mu\text{s}$ , Pulse	
$P_{tot}$	Power Dissipation	205 90	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	$^\circ\text{C}$		

### Electrical Characteristics

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	2 20	5 40	$\mu\text{A}$	$V_R = 1200$ V $T_J=25^\circ\text{C}$ $V_R = 1200$ V $T_J=175^\circ\text{C}$	Fig. 2
$Q_C$	Total Capacitive Charge	50		nC	$V_R = 600$ 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	23.8		$\mu\text{J}$	$V_R = 800$ V	Fig. 5

### Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.73	$^\circ\text{C}/\text{W}$	Fig.8

# Typical Performance

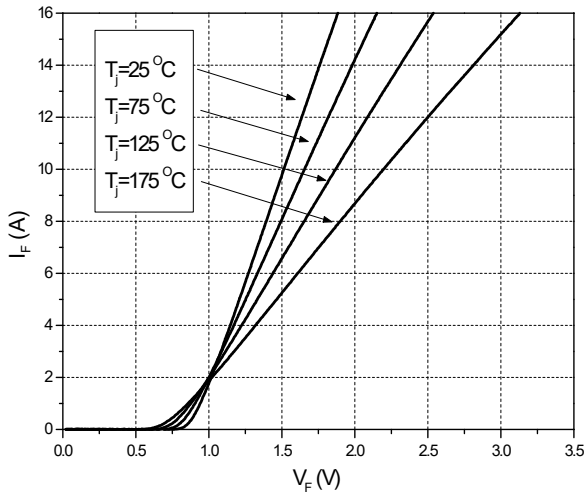
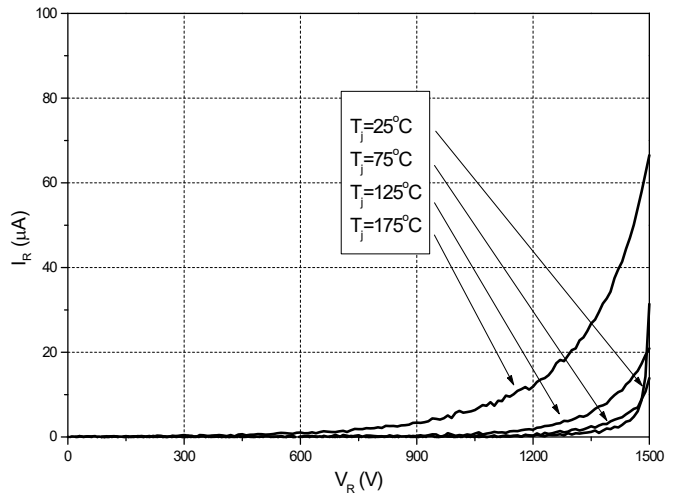


Figure 1. Forward Characteristics



2. Reverse Characteristics

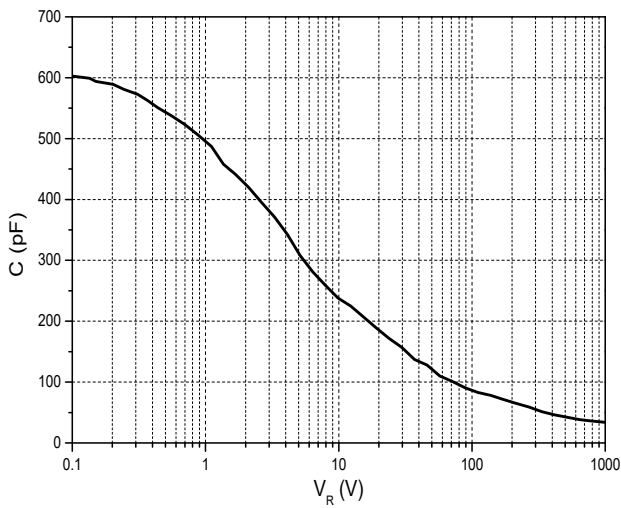


Figure 3. Capacitance vs. Reverse Voltage

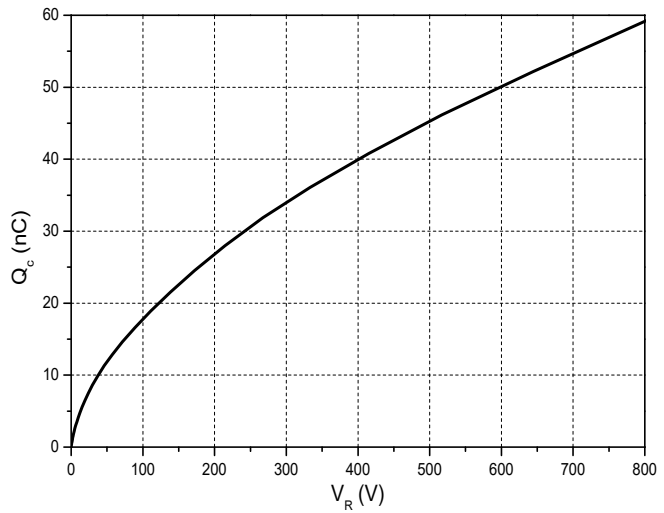


Figure 4. Total Capacitance Charge vs. Reverse Voltage

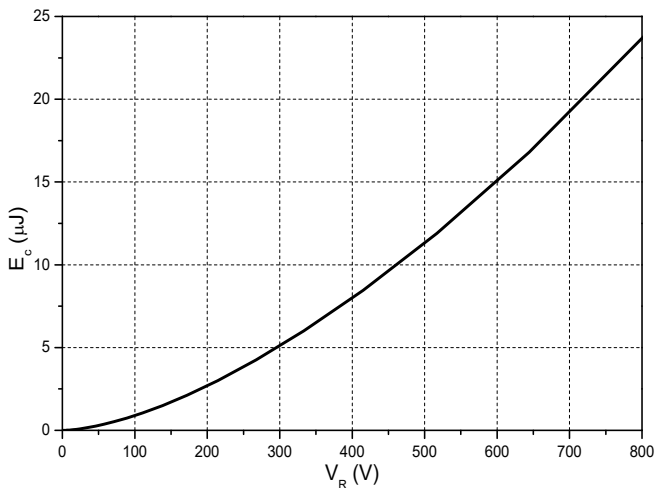


Figure 5. Capacitance Stored Energy

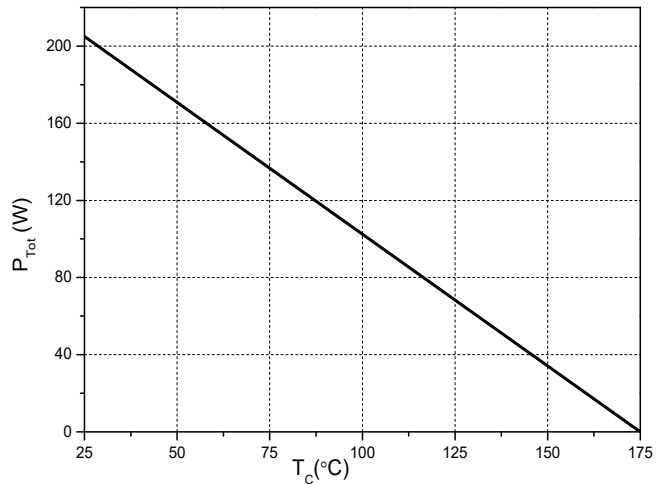


Figure 6. Power Derating

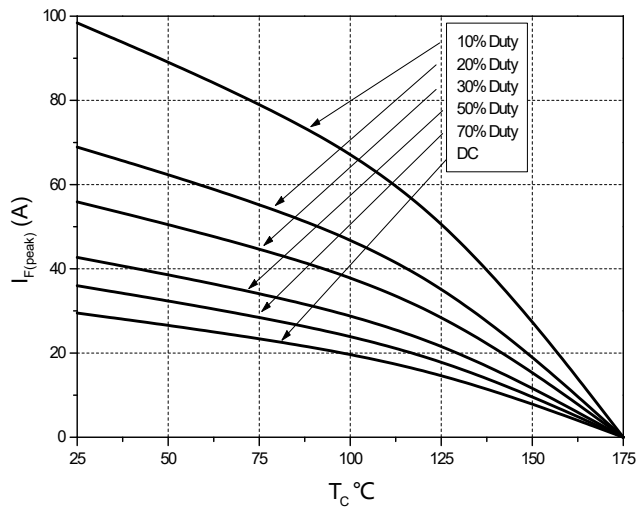


Figure 7. Current Derating

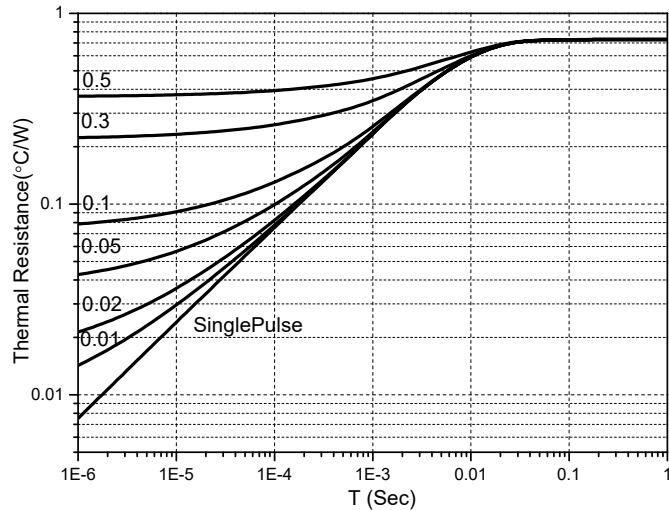


Figure 8. Transient Thermal Impedance

**Package Dimensions: TO-252-2L**

