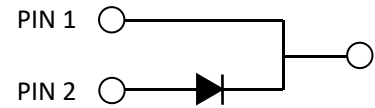


N3D10065A

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	650	V		
V_{RSM}	Surge Peak Reverse Voltage	650	V		
V_{DC}	DC Blocking Voltage	650	V		
I_F	Continuous Forward Current	10	A	$T_C = 150^\circ\text{C}$	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	80	A	$T_C = 25^\circ\text{C}$, $t_P = 10$ ms, Half Sine Wave,	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	105	A	$T_C = 25^\circ\text{C}$, $t_P = 10$ ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	840	A	$T_C = 25^\circ\text{C}$, $t_P = 10$ μs , Pulse	
P_{tot}	Power Dissipation	138 60	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	1.40 1.70	1.70 2.00	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	1 20	20 200	μA	$V_R = 650$ V $T_J = 25^\circ\text{C}$ $V_R = 650$ V $T_J = 175^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	28		nC	$V_R = 400$ V, $I_F = 10$ A, $T_J = 25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$	Fig. 4
C	Total Capacitance	550 53 48		pF	$V_R = 0$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz $V_R = 200$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz $V_R = 400$ V, $T_J = 25^\circ\text{C}$, $f = 1$ MHz	Fig. 3
E_C	Capacitance Stored Energy	7.0		μJ	$V_R = 400$ V	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.09	$^\circ\text{C}/\text{W}$	Fig. 8

Typical Performance

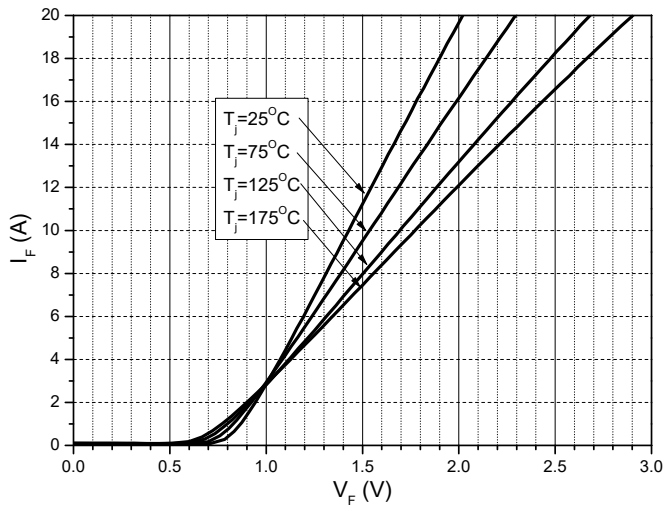


Figure 1. Forward Characteristics

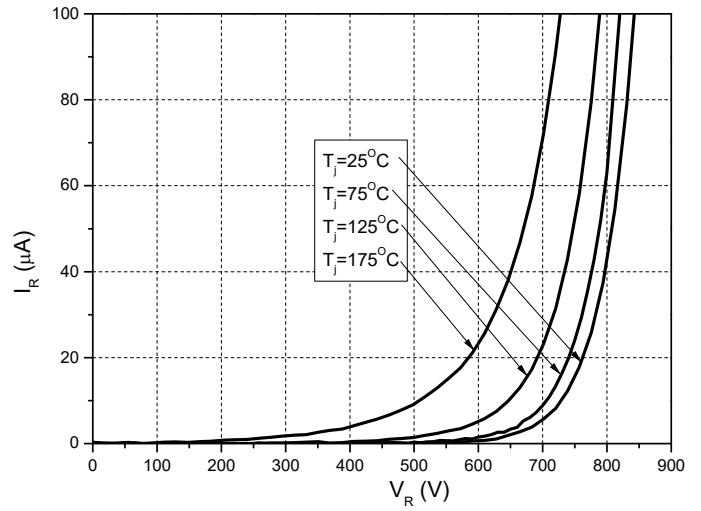


Figure 2. Reverse Characteristics

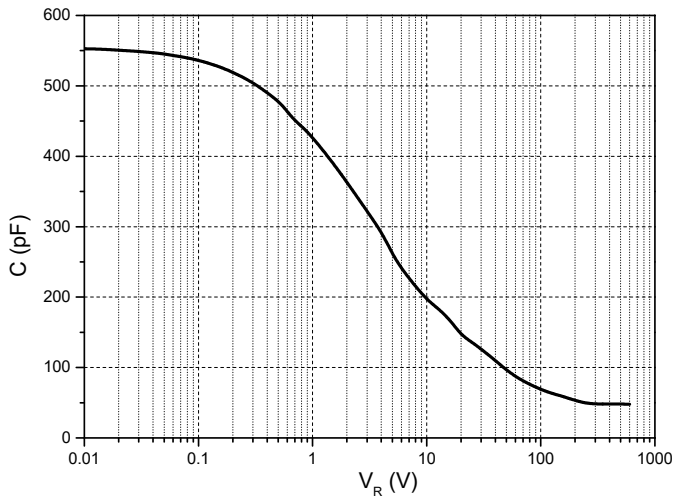


Figure 3. Capacitance vs. Reverse Voltage

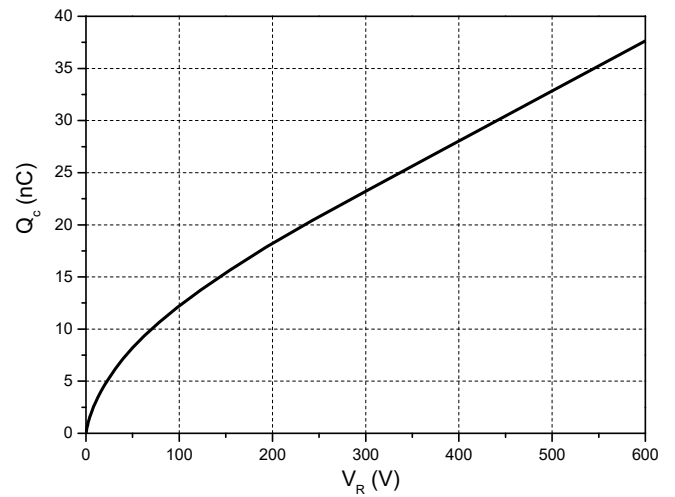


Figure 4. Total Capacitance Charge vs. Reverse Voltage

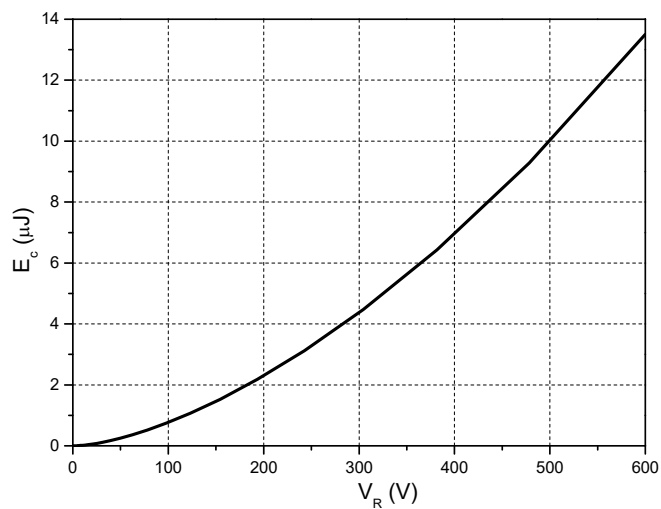


Figure 5. Capacitance Stored Energy

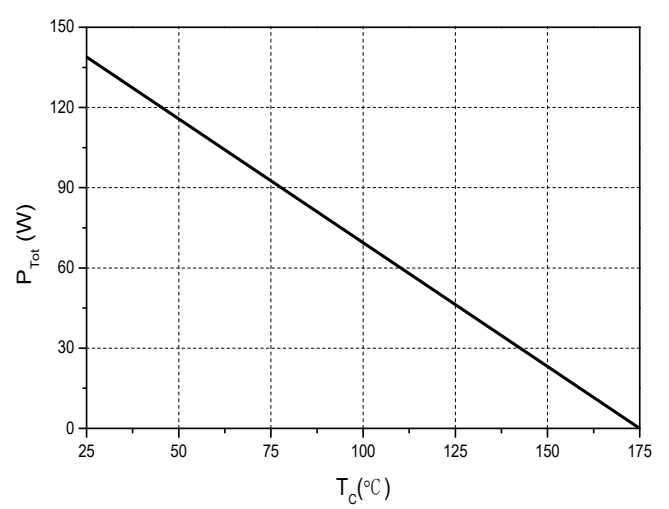


Figure 6. Power Derating

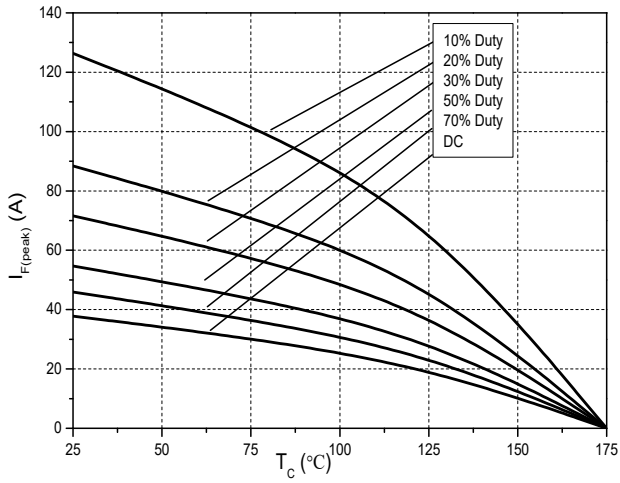


Figure 7. Current Derating

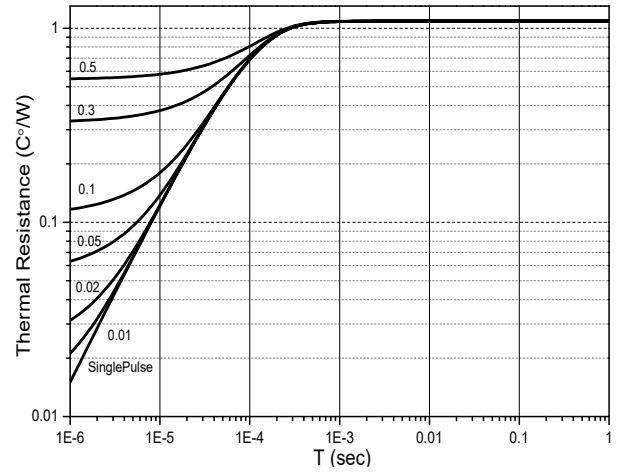


Figure 8. Transient Thermal Impedance

Package Dimensions:TO220A-2L

