

Silicon Carbide Schottky Diode

V_{RRM}	=	1200 V
$I_F (T_C=154\text{ }^\circ\text{C})$	=	20 A
Q_C	=	126 nC

Features

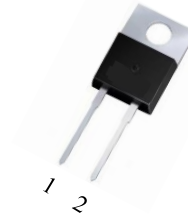
- 1.2kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switching Mode Power Supply
- Boost Diodes in PFC
- DC/DC Converters
- AC/DC Converters
- Free Wheeling Diodes in Inverter

Package


TO-220-2


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

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1300	V		
V_R	DC Peak Reverse Voltage	1200	V		
I_F	Continuous Forward Current	69 32 20	A	$T_C=25\text{ }^\circ\text{C}$ $T_C=135\text{ }^\circ\text{C}$ $T_C=154\text{ }^\circ\text{C}$	Fig. 3
I_{FSM}	Non-Repetitive Forward Surge Current	160	A	$T_C=25\text{ }^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
P_{tot}	Power Dissipation	333 144	W	$T_C=25\text{ }^\circ\text{C}$ $T_C=110\text{ }^\circ\text{C}$	Fig. 4
T_J	Operating Junction Range	-55 to +175	$^\circ\text{C}$		
T_{stg}	Storage Temperature Range	-55 to +175	$^\circ\text{C}$		

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Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.45 2	1.7 2.6	V	$I_F = 20\text{ A}, T_J = 25\text{ }^\circ\text{C}$ $I_F = 20\text{ A}, T_J = 175\text{ }^\circ\text{C}$	Fig. 1
I_R	Reverse Current	15 50	200 500	μA	$V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$ $V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	126		nC	$V_R = 800\text{ V}, I_F = 20\text{ A},$ $T_J = 25\text{ }^\circ\text{C}$	Fig. 6
C	Total Capacitance	1702 120 95		pF	$V_R = 0\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$ $V_R = 400\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$ $V_R = 800\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	Fig. 5
E_C	Capacitance Stored Energy	32.5		μJ	$V_R = 800\text{ V}$	Fig. 7

Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case		0.45		$^\circ\text{C/W}$	Fig.8

Typical Performance

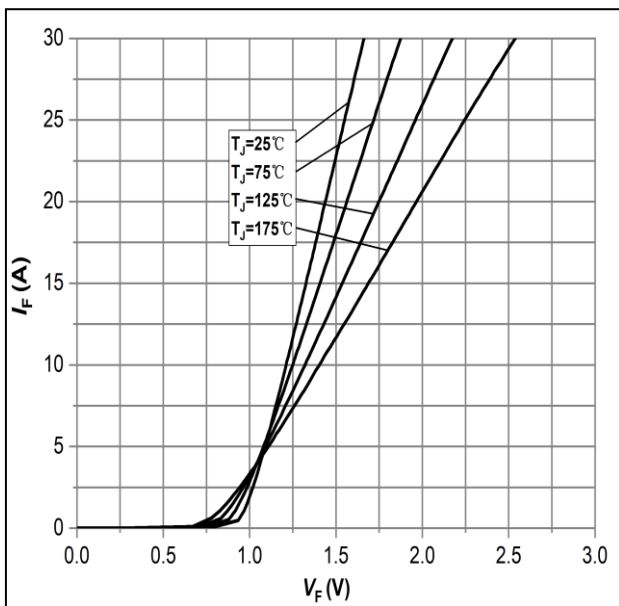


Figure 1: Forward Characteristics

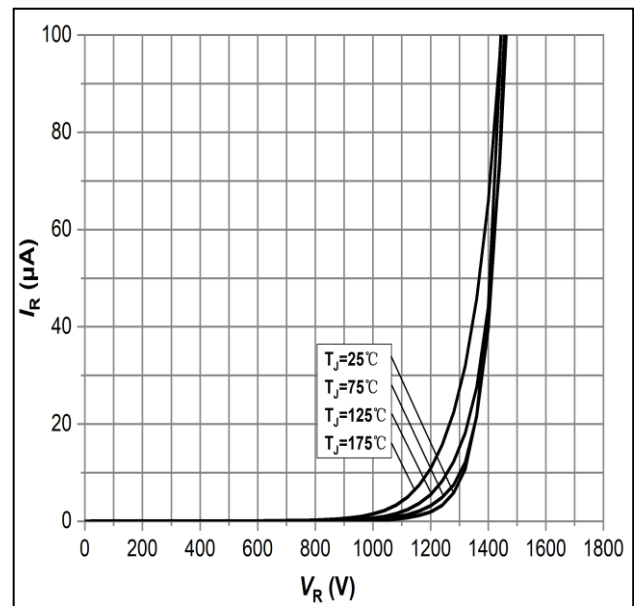


Figure 2: Reverse Characteristics

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Typical Performance

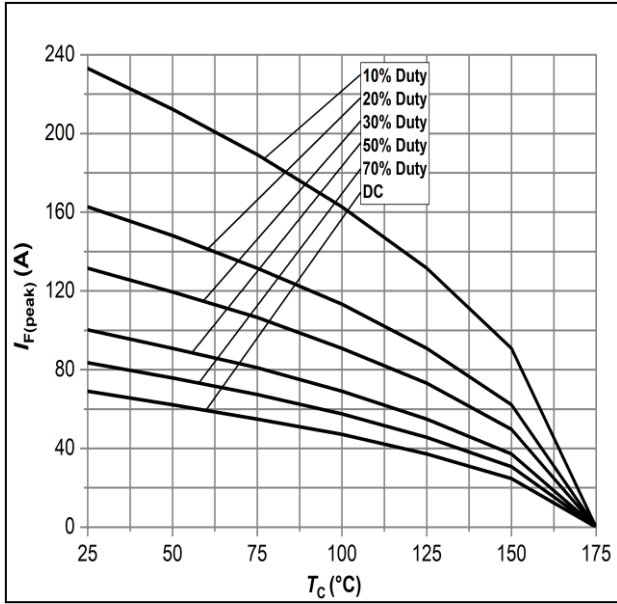


Figure 3: Current Derating

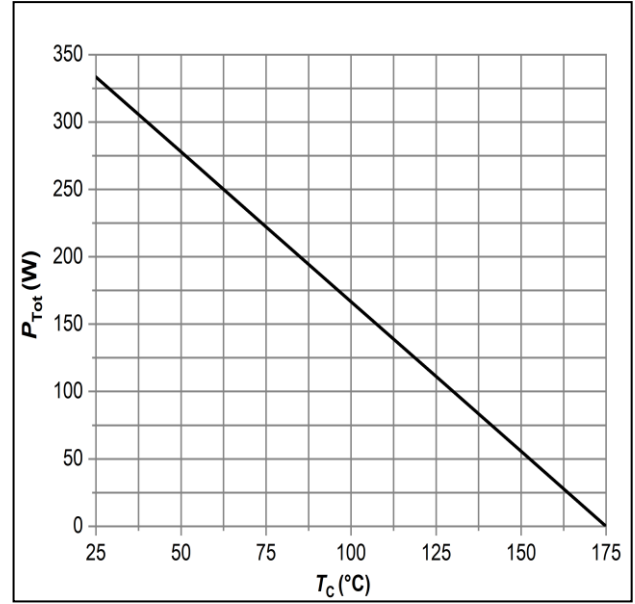


Figure 4: Power Derating

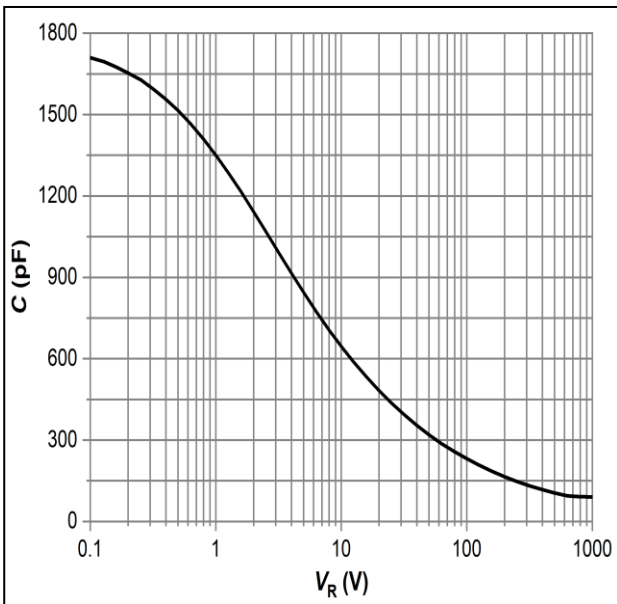


Figure 5: Capacitance vs. Reverse Voltage

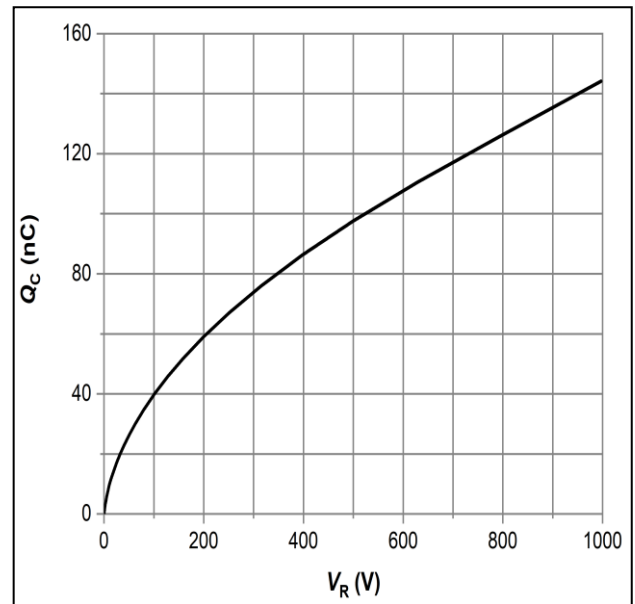


Figure 6: Total Capacitance Charge vs. Reverse Voltage

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Typical Performance

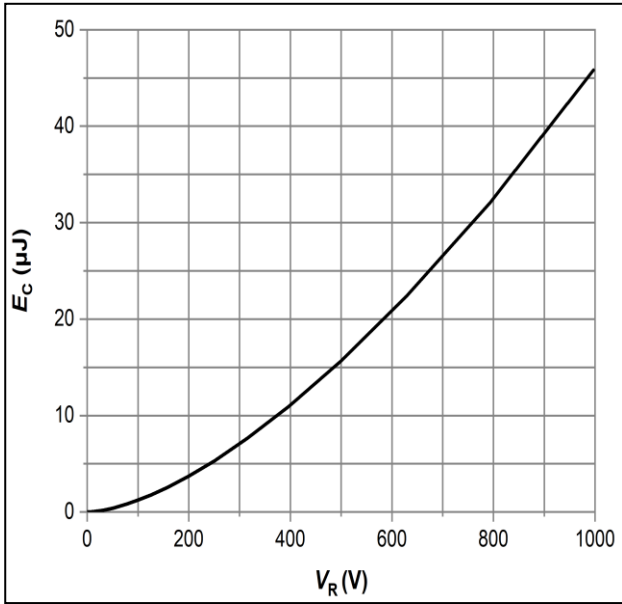


Figure 7: Typical Capacitance Stored Energy

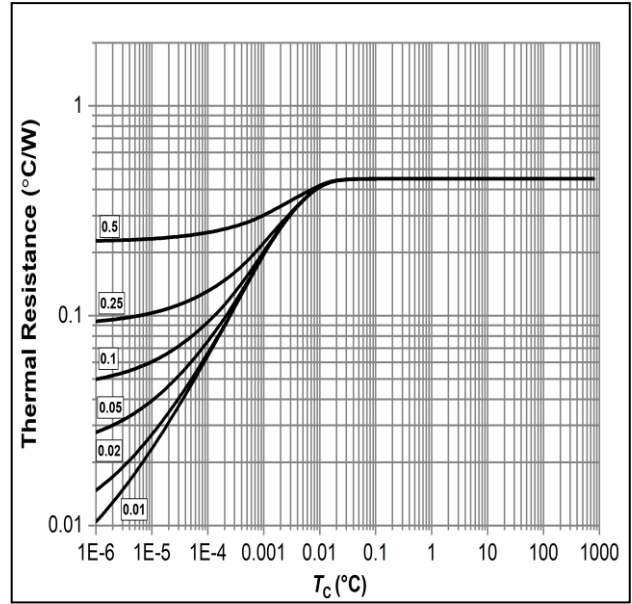


Figure 8: Transient Thermal Impedance

