

Silicon Carbide Schottky Diode

V_{RRM}	=	1200 V
$I_F (T_C=151\text{ }^\circ\text{C})$	=	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

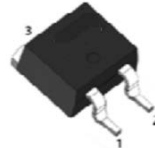
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

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

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	61 28 20	A	$T_C=25\text{ }^\circ\text{C}$ $T_C=135\text{ }^\circ\text{C}$ $T_C=151\text{ }^\circ\text{C}$	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	267 116	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	$^\circ\text{C}$		

Package


TO-263-2



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Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.45	1.7	V	$I_F = 20\text{ A}, T_J = 25\text{ }^\circ\text{C}$	Fig. 1
		2	2.6		$I_F = 20\text{ A}, T_J = 175\text{ }^\circ\text{C}$	
I_R	Reverse Current	15	200	μA	$V_R = 1200\text{ V}, T_J = 25\text{ }^\circ\text{C}$	Fig. 2
		50	500		$V_R = 1200\text{ V}, T_J = 175\text{ }^\circ\text{C}$	
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		pF	$V_R = 0\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	Fig. 5
		120			$V_R = 400\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
		95			$V_R = 800\text{ V}, T_J = 25\text{ }^\circ\text{C}, f = 1\text{ MHz}$	
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		0.56		$^\circ\text{C/W}$	Fig.8

Typical Performance

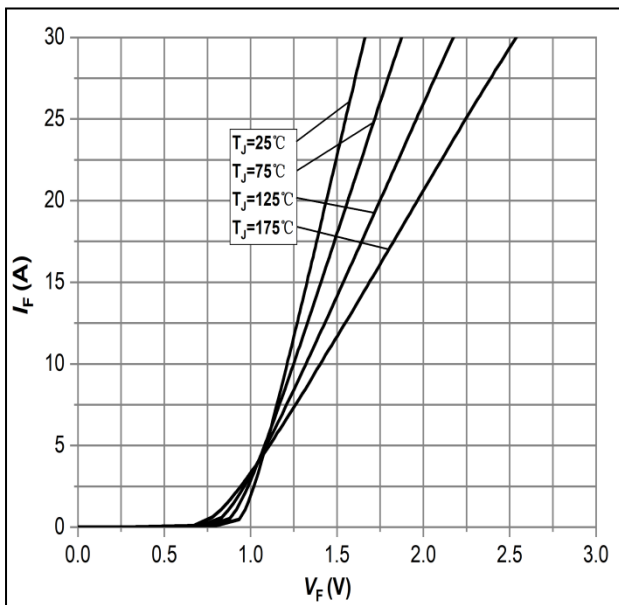


Figure 1: Forward Characteristics

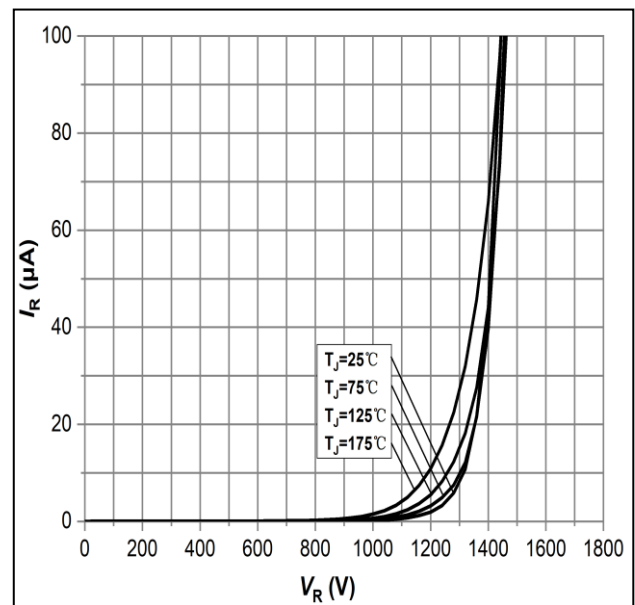


Figure 2: Reverse Characteristics

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Typical Performance

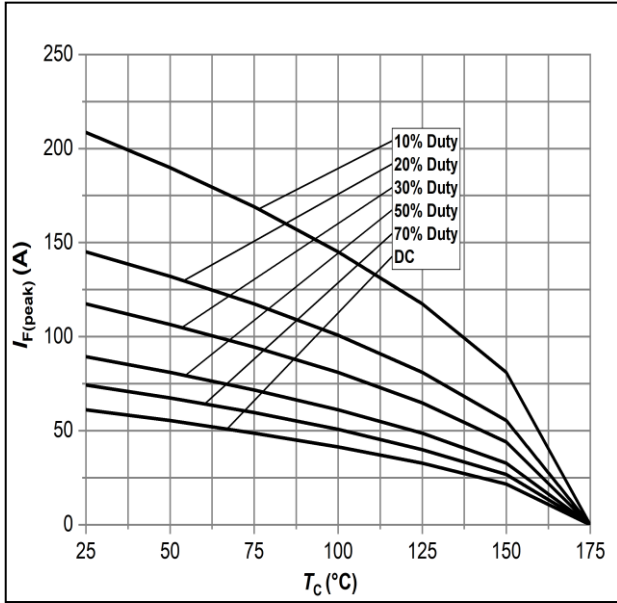


Figure 3: Current Derating

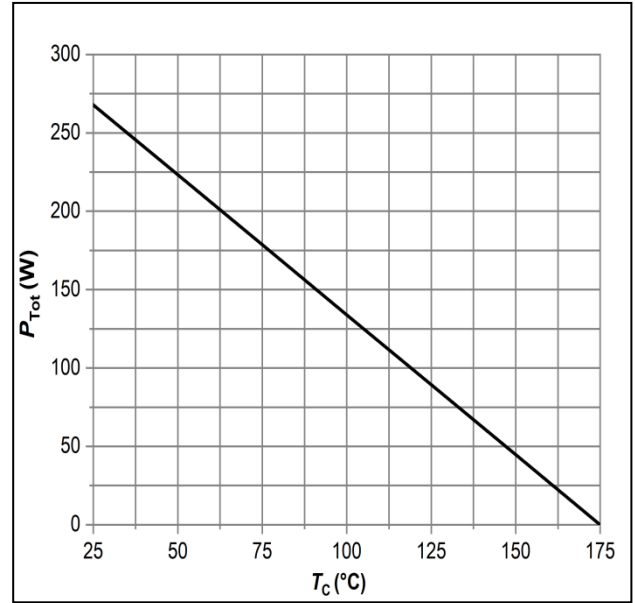


Figure 4: Power Derating

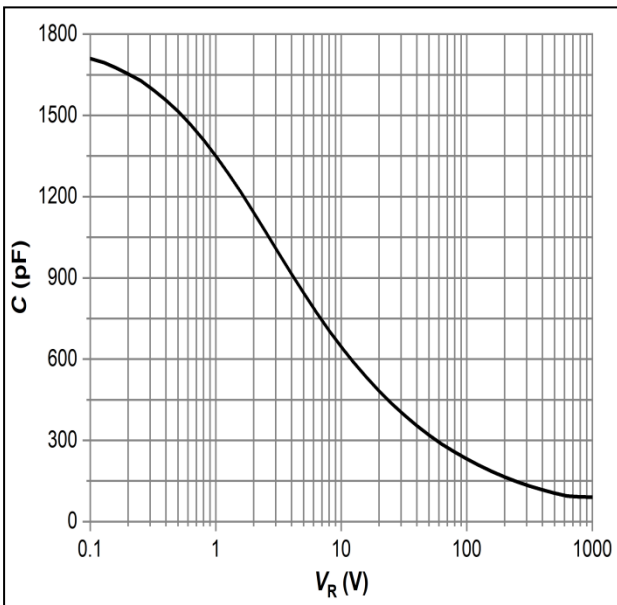


Figure 5: Capacitance vs. Reverse Voltage

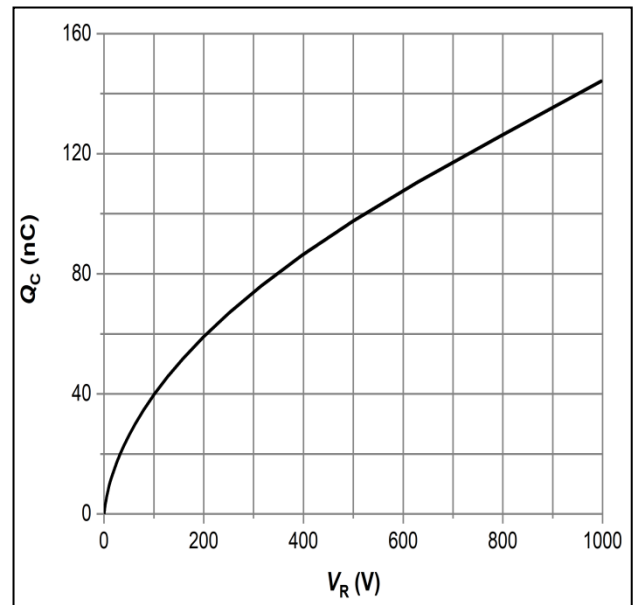


Figure 6: Total Capacitance Charge vs. Reverse Voltage

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Typical Performance

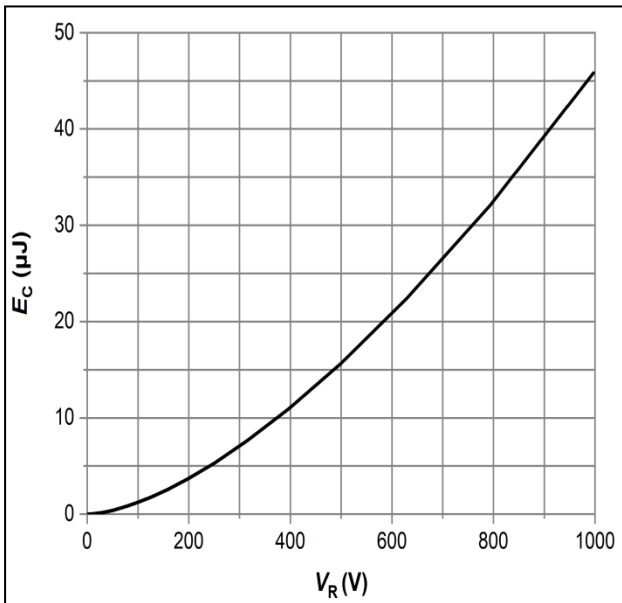


Figure 7: Typical Capacitance Stored Energy

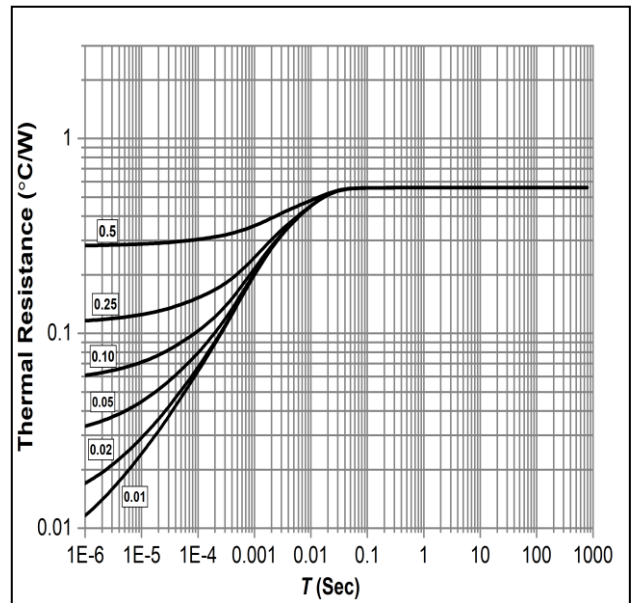
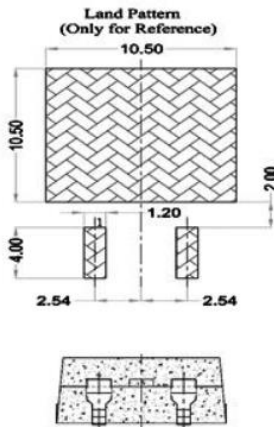
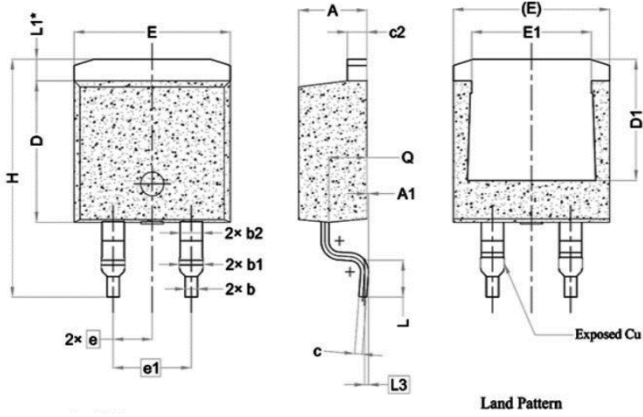


Figure 8: Transient Thermal Impedance

Silicon Carbide Schottky Diode
Package Dimensions

Package: TO-263-2



单位 : mm

SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	---
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70