

TD5G05120A

Silicon Carbide Schottky Diode

V_{RRM}	=	1200 V
$I_F (T_c=158\text{ }^\circ\text{C})$	=	5 A
Q_C	=	36 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



Part Number	Package	Marking
TD5G05120A	TO-220-2	TD5G05120A

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	20 9.7 5	A	$T_c=25\text{ }^\circ\text{C}$ $T_c=135\text{ }^\circ\text{C}$ $T_c=158\text{ }^\circ\text{C}$	Fig. 3
I_{FSM}	Non-Repetitive Forward Surge Current	51	A	$T_c=25\text{ }^\circ\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
P_{tot}	Power Dissipation	117 51	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	$^\circ\text{C}$		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.4 2	1.65 2.5	V	$I_F = 5\text{ A}, T_J = 25\text{ }^\circ\text{C}$ $I_F = 5\text{ A}, T_J = 175\text{ }^\circ\text{C}$	Fig. 1
I_R	Reverse Current	2 11	100 300	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	36		nC	$V_R = 800\text{ V}, I_F = 5\text{ A},$ $T_J = 25\text{ }^\circ\text{C}$	Fig. 6
C	Total Capacitance	410 36 26		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	9.5		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		1.28		$^\circ\text{C/W}$	Fig.8

Typical Performance

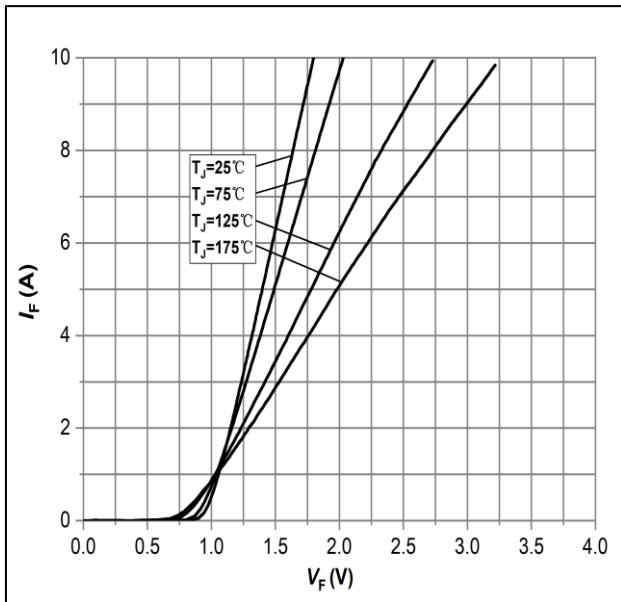


Figure 1: Forward Characteristics

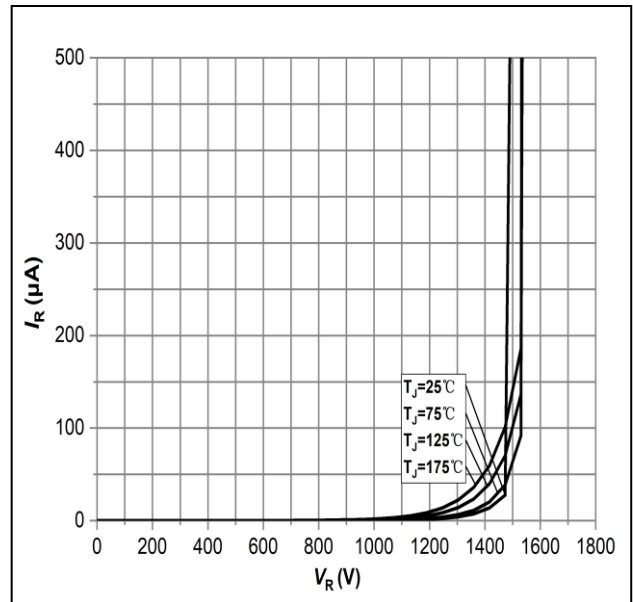


Figure 2: Reverse Characteristics

Typical Performance

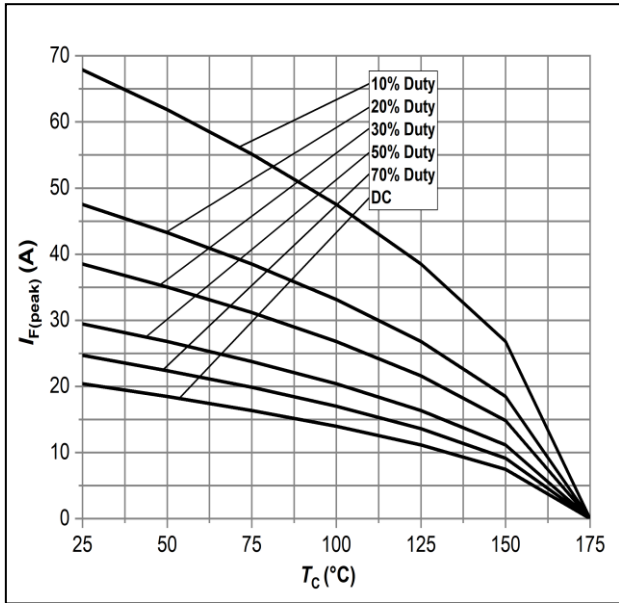


Figure 3: Current Derating

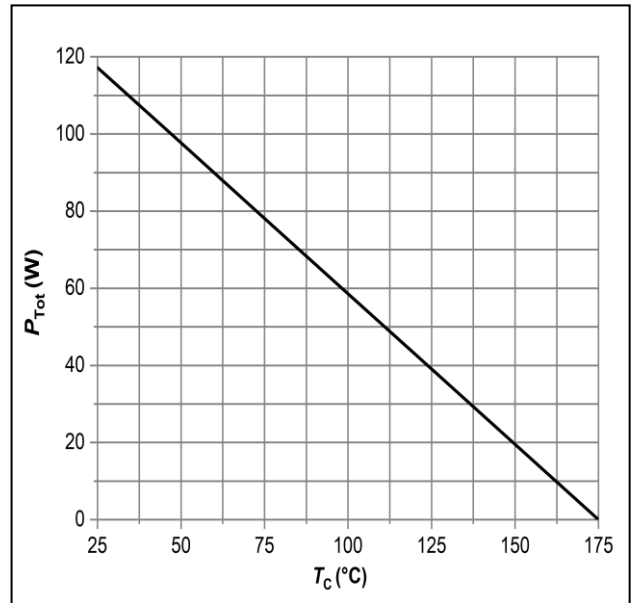


Figure 4: Power Derating

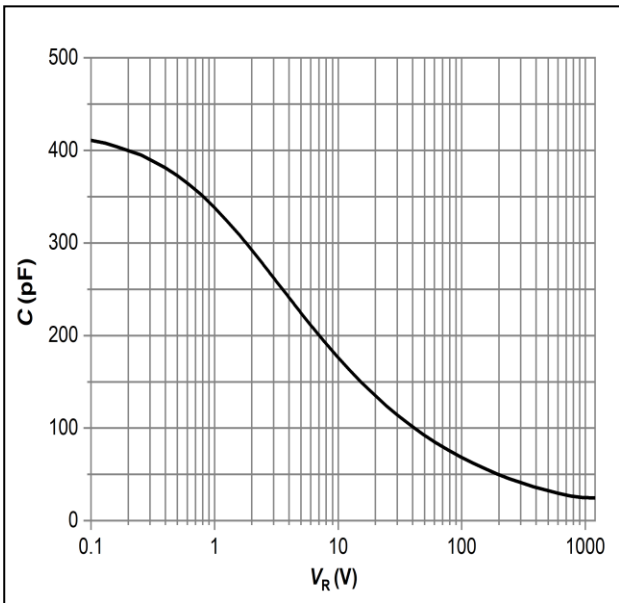


Figure 5: Capacitance vs. Reverse Voltage

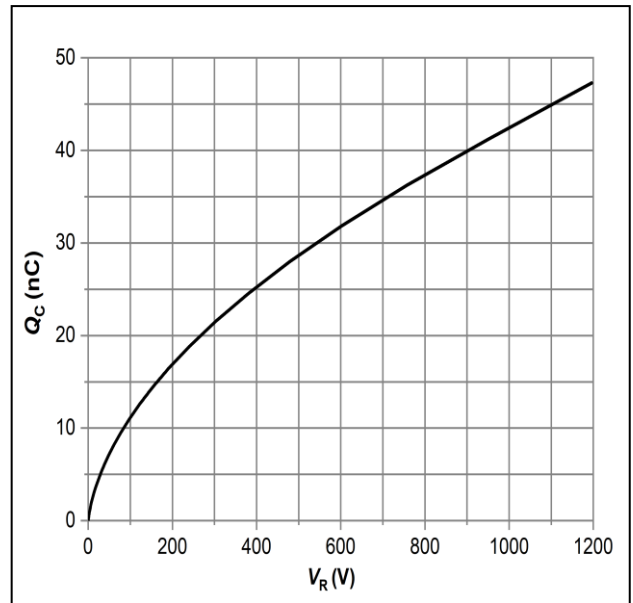


Figure 6: Total Capacitance Charge vs. Reverse Voltage

Typical Performance

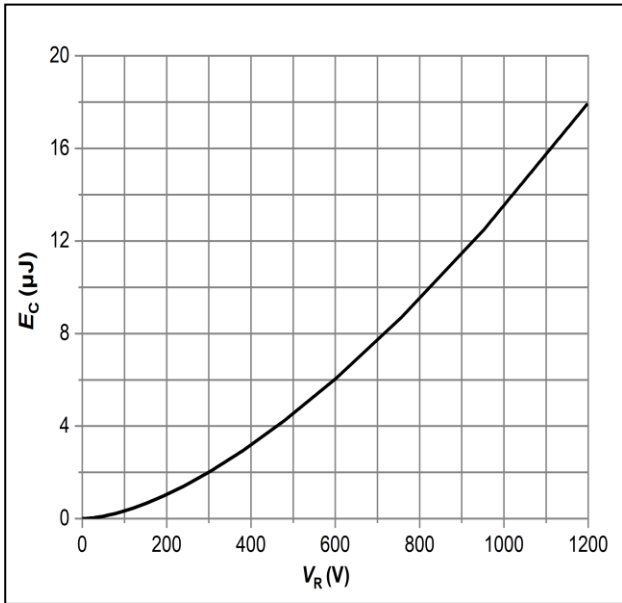


Figure 7: Typical Capacitance Stored Energy

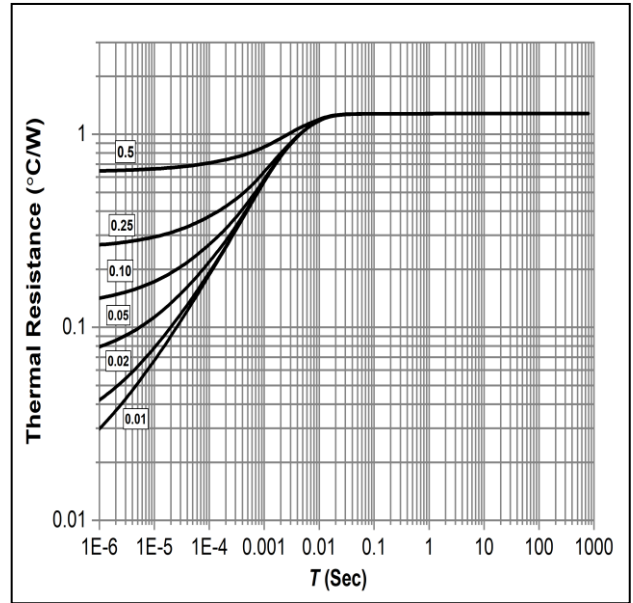


Figure 8: Transient Thermal Impedance

Revision History

Document Version	Description of Changes
Rev.1.0	Released

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