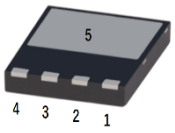
Silicon Carbide Schottky Diode

V_{RRM}	=	650 V
I_F (T_C=159 ℃)	=	6 A
Q_C	=	22 nC

Features

- 650 V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching

Package



DFN 8*8

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 （Tc = 25 ℃ 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_R	DC Peak Reverse Voltage	650	V		
I_F	Continuous Forward Current	28 13 6	A	T_C=25 ℃ T_C=135 ℃ T_C=159 ℃	Fig. 3
I_{FSM}	Non-Repetitive Forward Surge Current	48	A	T_C=25 ℃，t_p=10 ms，Half Sine Pulse	
P_{tot}	Power Dissipation	143 63	W	T_C=25 ℃ T_C=110 ℃	Fig. 4
T_J	Operating Junction Range	-55 to +175	℃		
T_{stg}	Storage Temperature Range	-55 to +175	℃		

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Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.38 1.8	1.65 2.4	V	I_F = 6 A， T_J = 25 ℃ I_F = 6 A， T_J = 175 ℃	Fig. 1
I_R	Reverse Current	2 15	50 180	μA	V_R = 650 V， T_J = 25 ℃ V_R = 650 V， T_J = 175 ℃	Fig. 2
Q_C	Total Capacitive Charge	22		nC	V_R = 400 V， I_F = 6 A， T_J = 25 ℃	Fig. 6
C	Total Capacitance	398 43 33		pF	V_R = 0 V， T_J = 25 ℃， f = 1 MHz V_R = 200 V， T_J = 25 ℃， f = 1 MHz V_R = 400 V， T_J = 25 ℃， f = 1 MHz	Fig. 5
E_C	Capacitance Stored Energy	2.8		μJ	V_R = 400 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		1.05		℃/W	Fig.8

Typical Performance

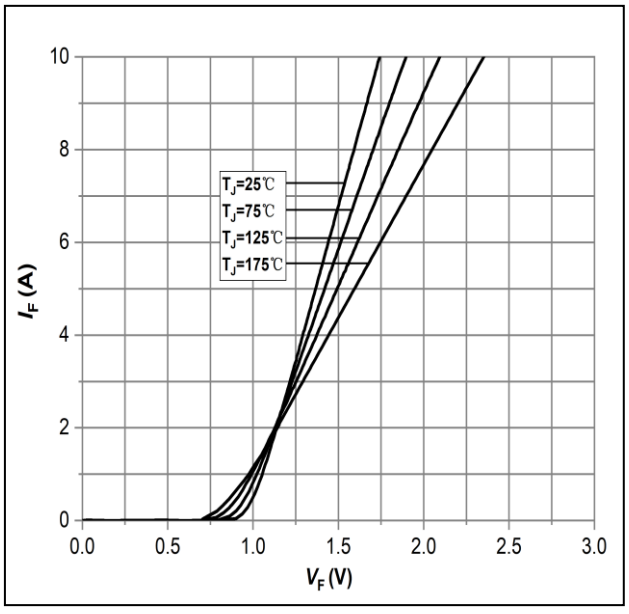


Figure 1: Forward Characteristics

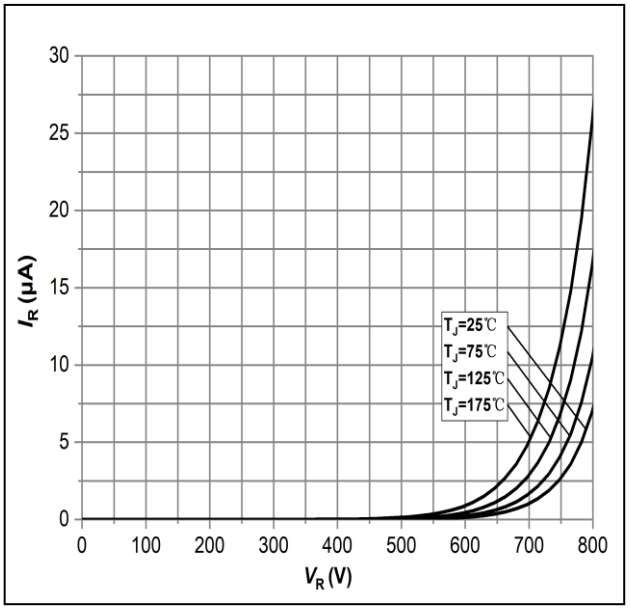


Figure 2: Reverse Characteristics

Typical Performance

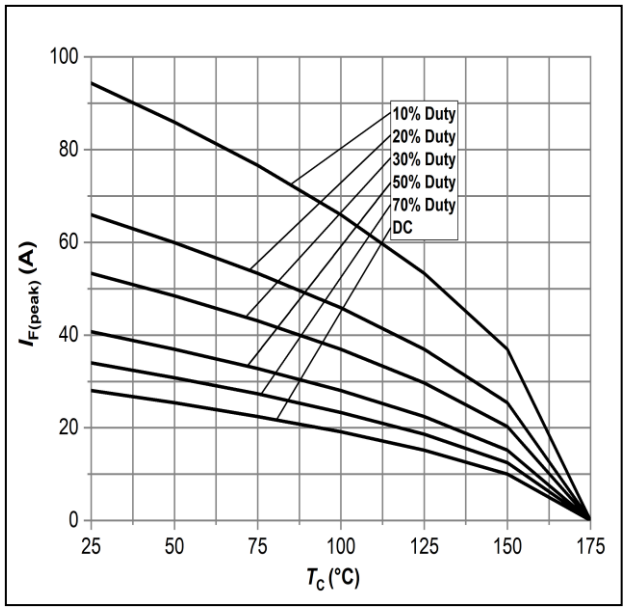


Figure 3: Current Derating

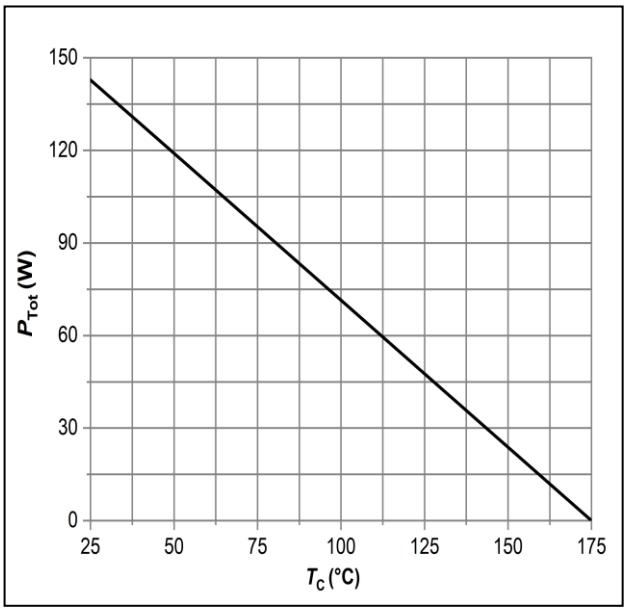


Figure 4: Power Derating

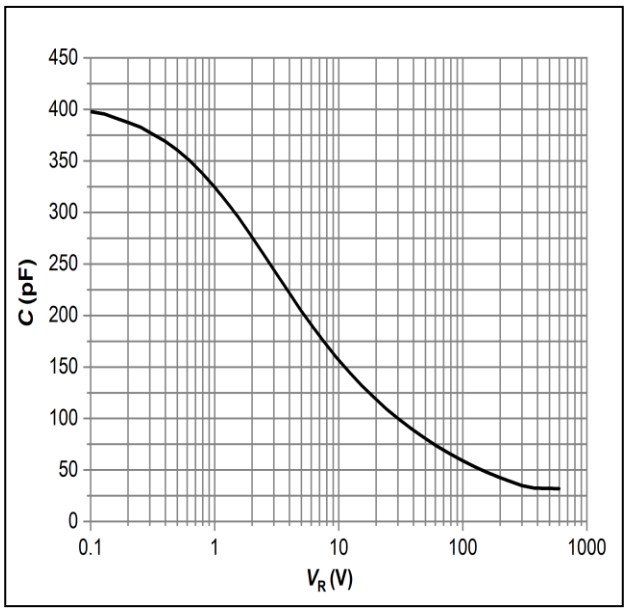


Figure 5: Capacitance vs. Reverse Voltage

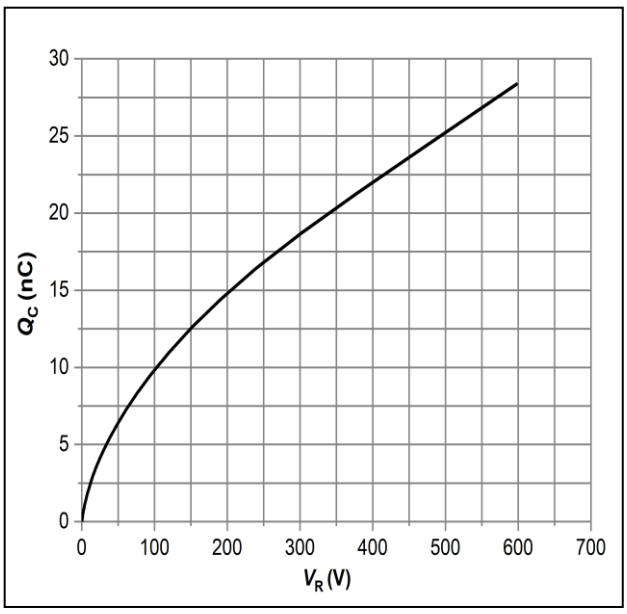


Figure 6: Total Capacitance Charge vs. Reverse Voltage

Typical Performance

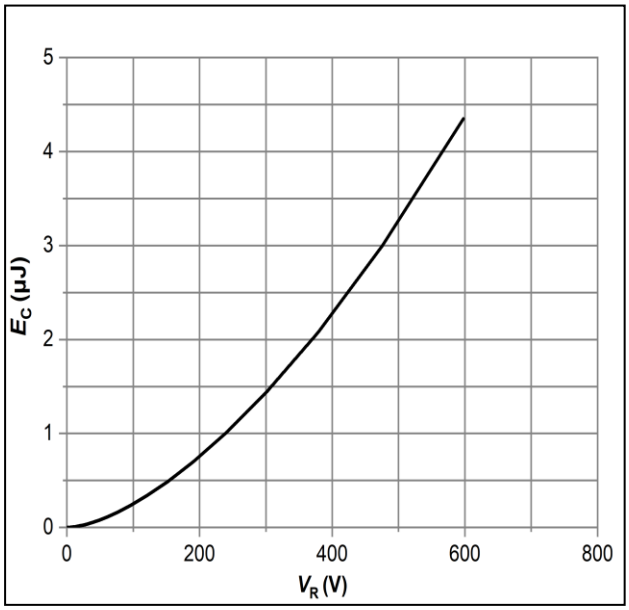


Figure 7:Typical Capacitance Stored Energy

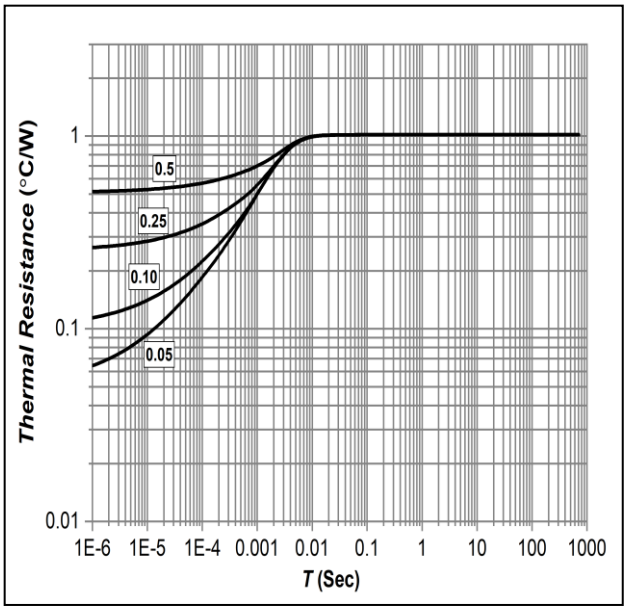
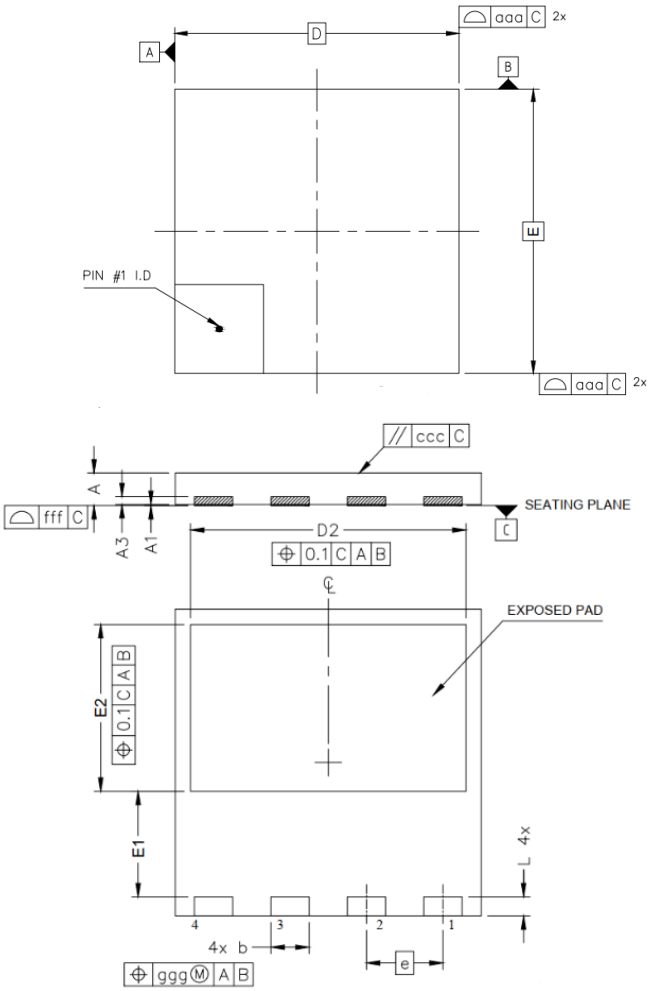


Figure 8: Transient Thermal Impedance

Package Dimensions

Package：DFN 8*8



SYMBOL	DIMENSIONS		
	Min.	NOM	Max.
A	0.75		0.95
A1	0.00		0.05
A3	0.10		0.30
b	0.90		1.10
D	7.90		8.10
E	7.90		8.10
D2	7.10		7.30
E1	2.65		2.85
E2	4.25		4.45
e	2.00 BSC		
L	0.40		0.60
aaa	0.10		
ggg	0.05		
ccc	0.05		
fff	0.05		