Silicon Carbide Schottky Diode

V_{RRM}	=	650 V
I_F (T_C=155 ˚C)	=	8A
Q_C	=	37nC

Features

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

Package



Halogen-Free

RoHS

Benefits

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



Applications

- Switch Mode Power Supplies (SMPS)
- Power Factor Correction
- Motor Drives

Maximum Rated Values (T_C=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_R	DC Peak Reverse Voltage	650	V		
I_F	Continuous Forward Current	29	A	T_C=25˚C	Fig. 3
		14		T_C=135˚C	
		8		Tc=155˚C	
I_{FRM}	Repetitive Peak Forward Surge Current	44.8	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		36.4		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	56	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		49		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	500	A	T_C=25˚C, t_P=10μs, Square Wave Pulse	
		469		T_C=110˚C, t_P=10μs, Square Wave Pulse	
P_{tot}	Power Dissipation	100	W	T_C=25˚C	Fig. 4
		43		T_C=110˚C	
T_J	Operating Temperature	-55 to +175	˚C		
T_{stg}	Storage Temperature	-55 to +175	˚C		

Electrical Characteristics (T_J=25℃)

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
V_F	Forward Voltage		1.45		V	I_F=8A, T_J=25°C	Fig. 1
			1.60			I_F=8A, T_J=175°C	
I_R	Reverse Current		1		μA	V_R=650V, T_J=25°C	Fig. 2
			9			V_R=650V, T_J=175°C	
Q_C	Total Capacitive Charge		37		nC	V_R=650V,T_J=25°C	Fig. 5
C	Total Capacitance		554		pF	V_R=0V, T_J=25°C, f=1MHz	Fig. 6
			47			V_R=400V, T_J=25°C, f=1MHz	
			46			V_R=650V, T_J=25°C, f=1MHz	
E_C	Capacitance Stored Energy		7		μJ	V_R=650 V	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
R_{eJC}	Thermal Resistance(Junction to Case)	1.5	°C/W	Fig. 8

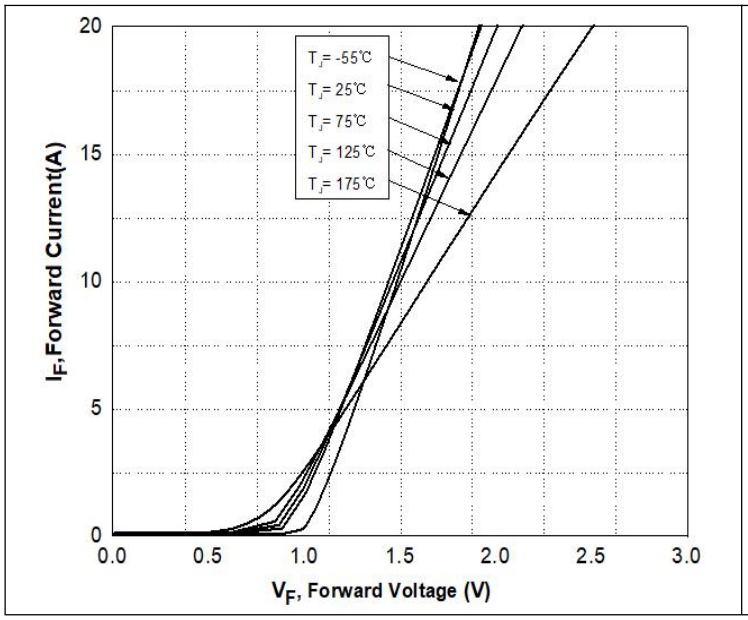


Figure 1. Forward Characteristics

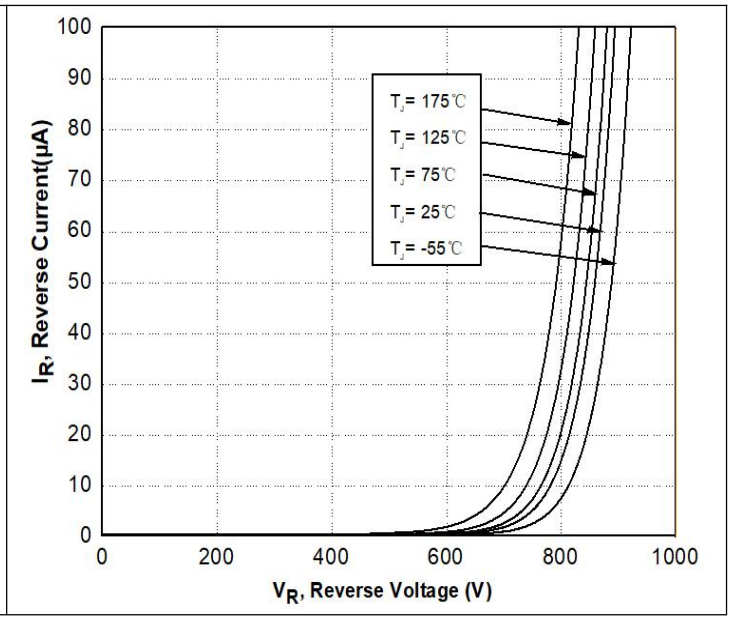


Figure 2. Reverse Characteristics

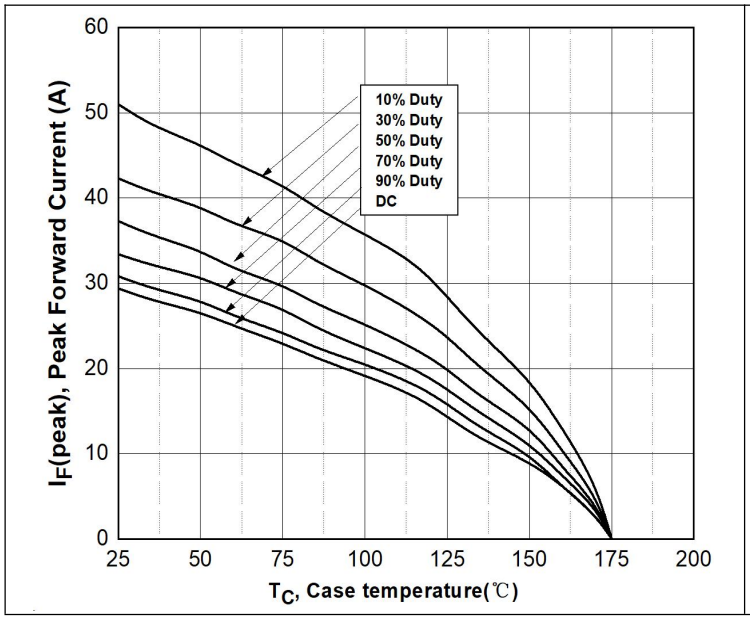


Figure 3. Current Derating

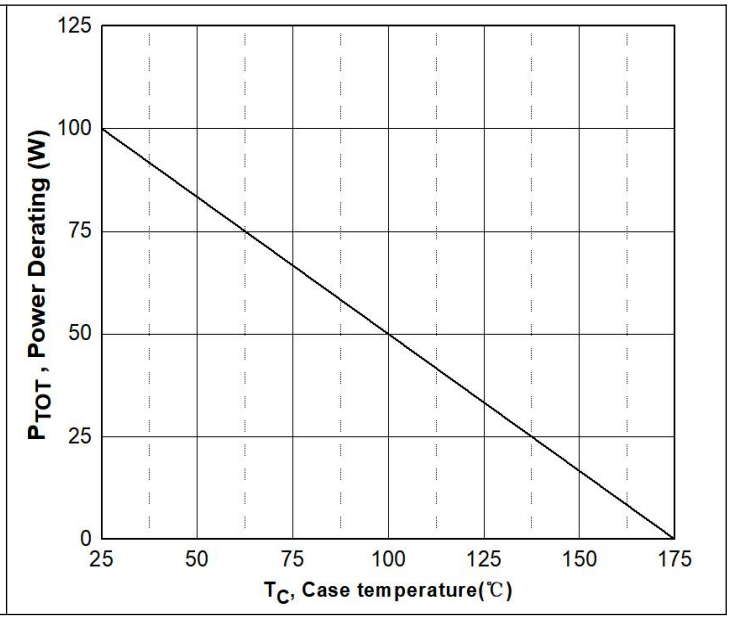


Figure 4. Power Derating

Typical Performance

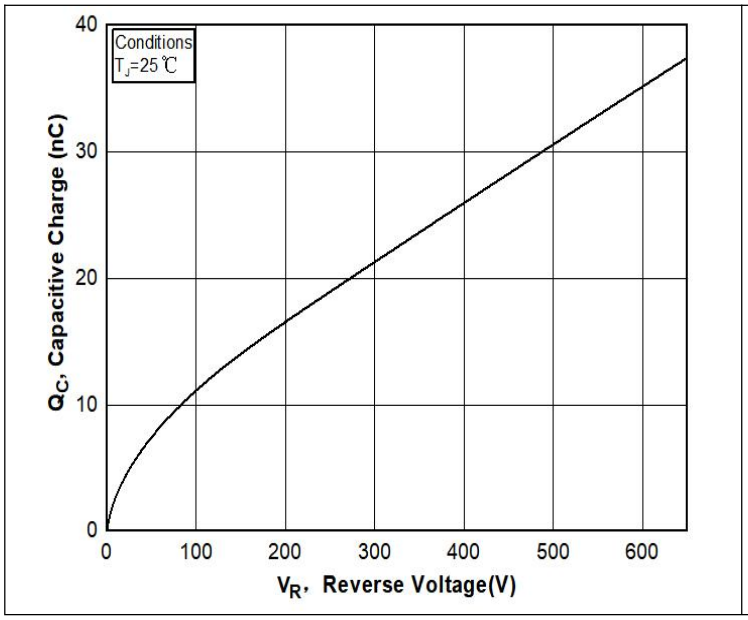


Figure 5. Capacitance Charge Vs. Reverse Voltage

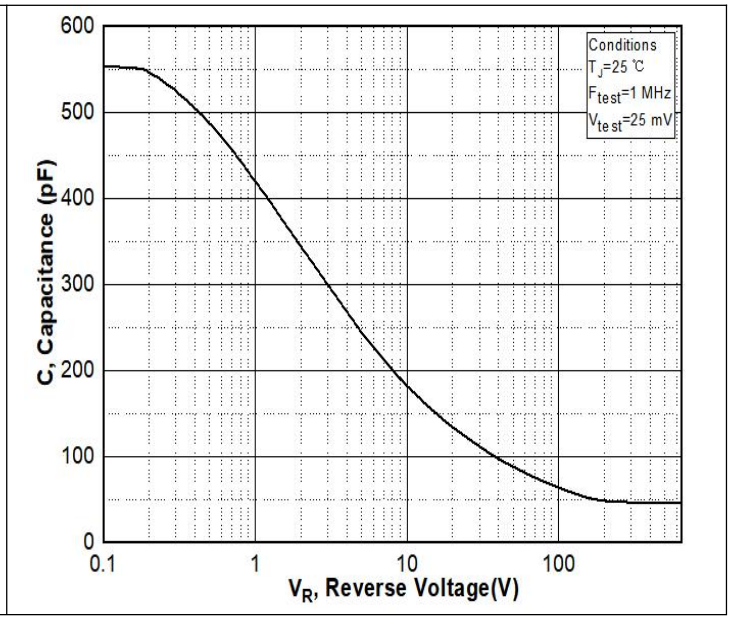


Figure 6. Capacitance Vs. Reverse Voltage

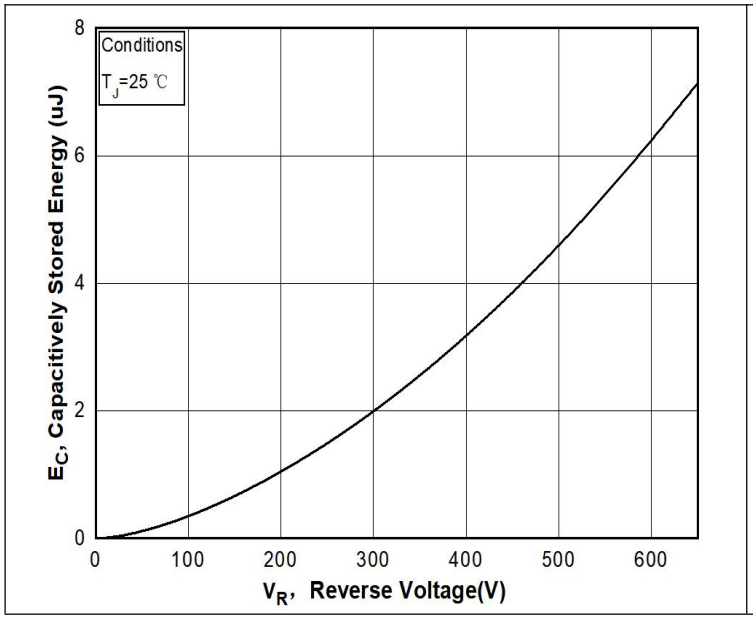


Figure 7. Capacitance Stored Energy

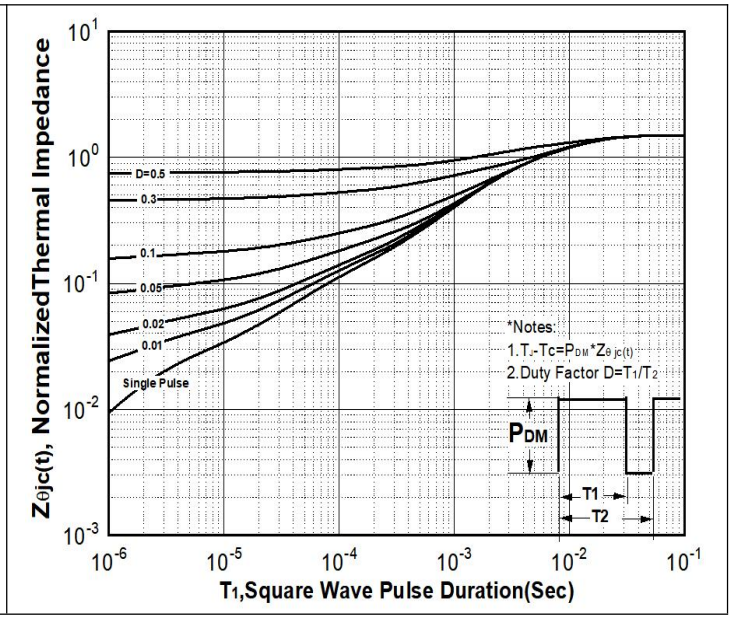
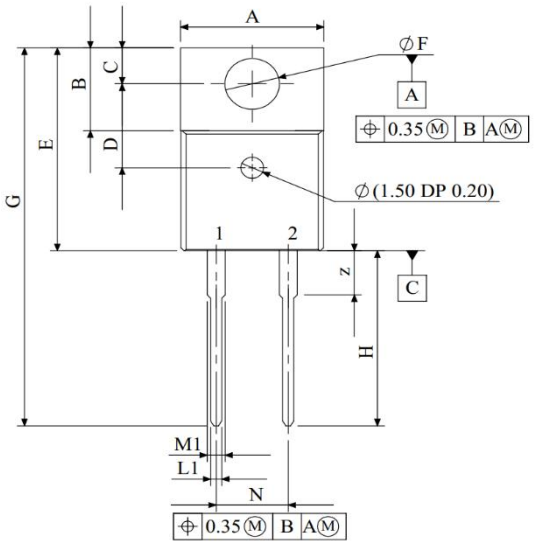
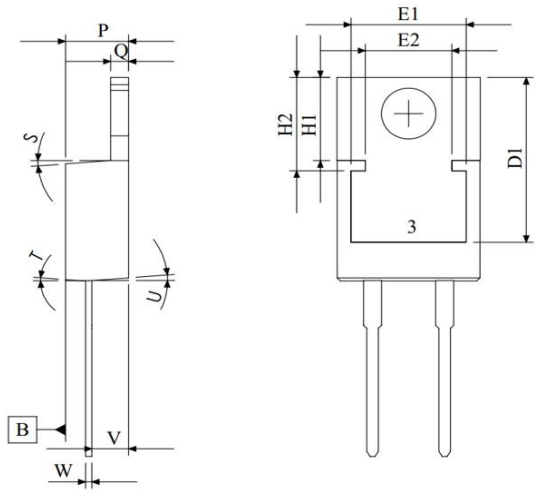


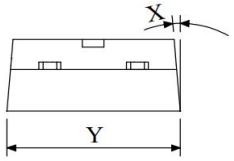
Figure 8. Transient Thermal Response Curve(Junction-to-Case)

Package Dimensions

Package TO-220-2L







SYMBOL	MIN (mm)	MAX (mm)
A	9.677	10.414
B	5.969	6.477
C	2.540	3.048
D	5.664	8.560
D1	12.450 REF	
E	14.986	15.621
E1	8.120 REF	
E2	6.100 REF	
F	3.632	3.886
G	28.067	29.134
H	12.700	13.970
H1	6.223 REF	
H2	7.040 REF	
L1	0.635	0.914
M1	1.143	1.397
N	4.953	5.207
P	4.191	4.699
Q	1.219	1.372
S	3°	6°
T	3°	6°
U	3°	6°
V	2.388	2.794
W	0.356	0.635
W1	0.356	0.520
X	3°	5.5°
Y	9.779	10.414
Z	3.302	3.810