

Silicon Carbide Schottky Diode

V_{RRM}	=	1200 V
$I_F (T_C=135^\circ\text{C})$	=	89 A
Q_C	=	294 nC

Features

- 1200V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching

Package



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	1200	V		
V _R	DC Peak Reverse Voltage	1200	V		
I _F	Continuous Forward Current	184	A	T _C =25°C	Fig. 3
		89		T _C =135°C	
		69		T _C =150°C	
I _{FRM}	Repetitive Peak Forward Surge Current	201	A	T _C =25°C, t _p =10 ms, Half Sine Pulse	
		122		T _C =110°C, t _p =10 ms, Half Sine Pulse	
I _{FSM}	Non-Repetitive Forward Surge Current	300	A	T _C =25°C, t _p =10 ms, Half Sine Pulse	
		197		T _C =110°C, t _p =10 ms, Half Sine Pulse	
I _{F,MAX}	Non-Repetitive Forward Surge Current	996	A	T _C =25°C, t _p =10μs, Square Wave Pulse	
		893		T _C =110°C, t _p =10μs, Square Wave Pulse	
P _{tot}	Power Dissipation	1071	W	T _C =25°C	Fig. 4
		464		T _C =110°C	
T _J	Operating Temperature	-55 to +175	°C		
T _{stg}	Storage Temperature	-55 to +175	°C		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics (T_J=25°C)

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
V _F	Forward Voltage		1.50	1.8	V	I _F =50A, T _J =25°C	Fig. 1
			1.95	3		I _F =50A, T _J =175°C	
I _R	Reverse Current		10	300	μA	V _R =1200V, T _J =25°C	Fig. 2
			174	500		V _R =1200V, T _J =175°C	
Q _C	Total Capacitive Charge		294		nC	V _R =800V, T _J =25°C	Fig. 5
C	Total Capacitance		4842		pF	V _R =0V, T _J =25°C, f=1MHz	Fig. 6
			263			V _R =400V, T _J =25°C, f=1MHz	
			258			V _R =800V, T _J =25°C, f=1MHz	
E _C	Capacitance Stored Energy		73		μJ	V _R =800 V	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
R _{θJC}	Thermal Resistance(Junction to Case)	0.14	°C/W	Fig. 8

Typical Performance

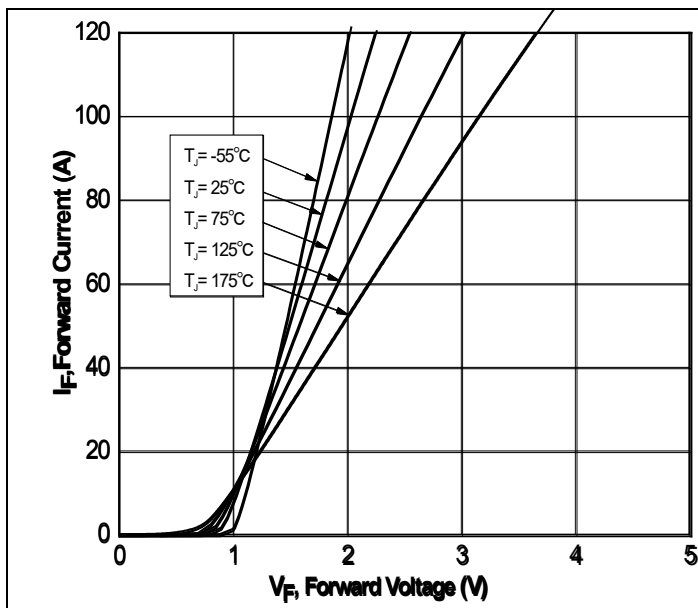


Figure 1. Forward Characteristics

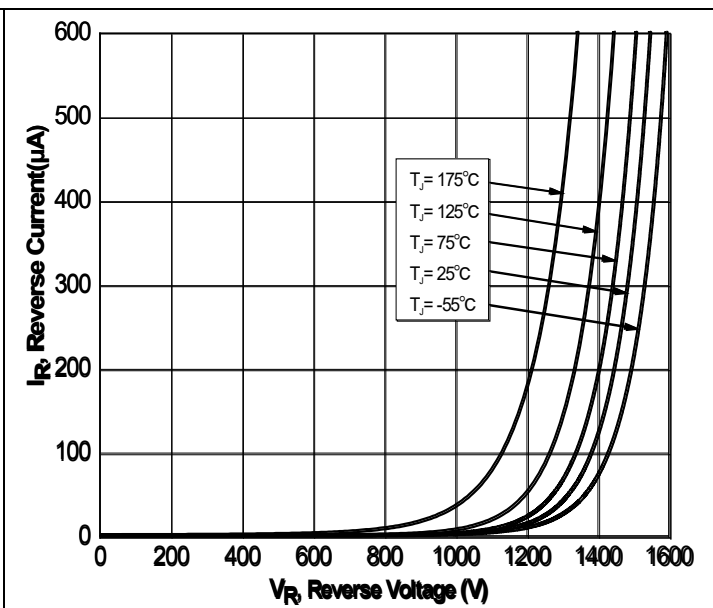


Figure 2. Reverse Characteristics

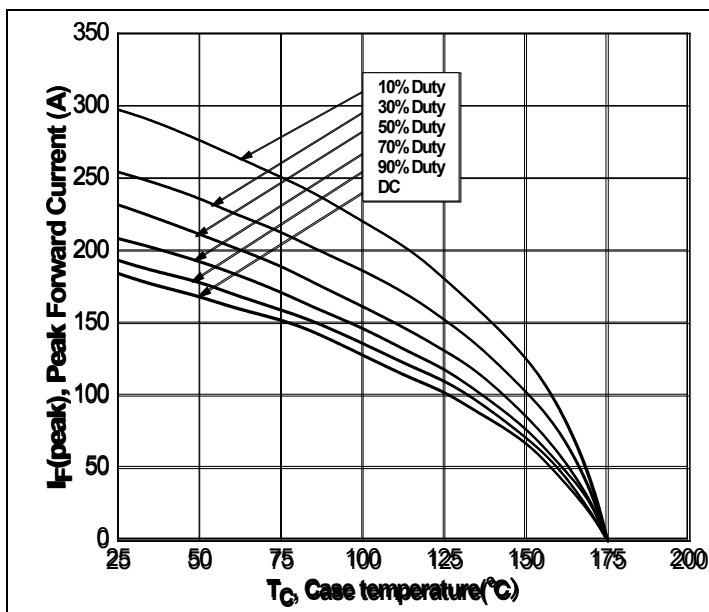


Figure 3. Current Derating

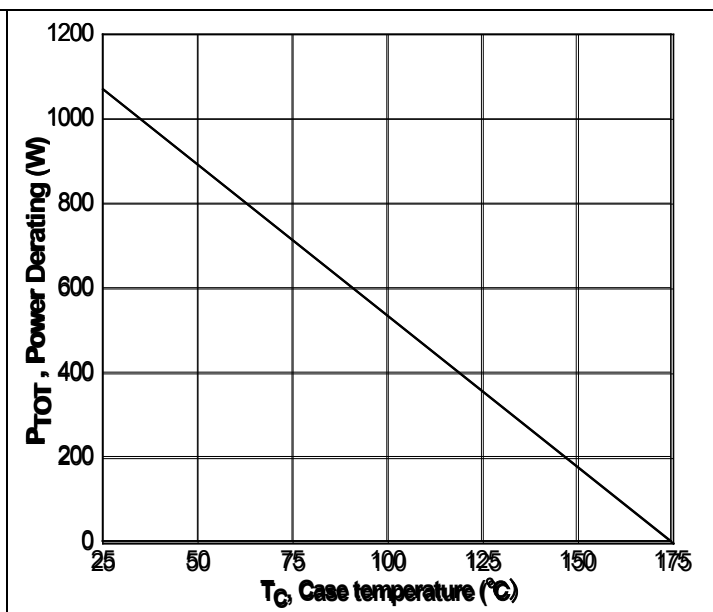


Figure 4. Power Derating

Typical Performance

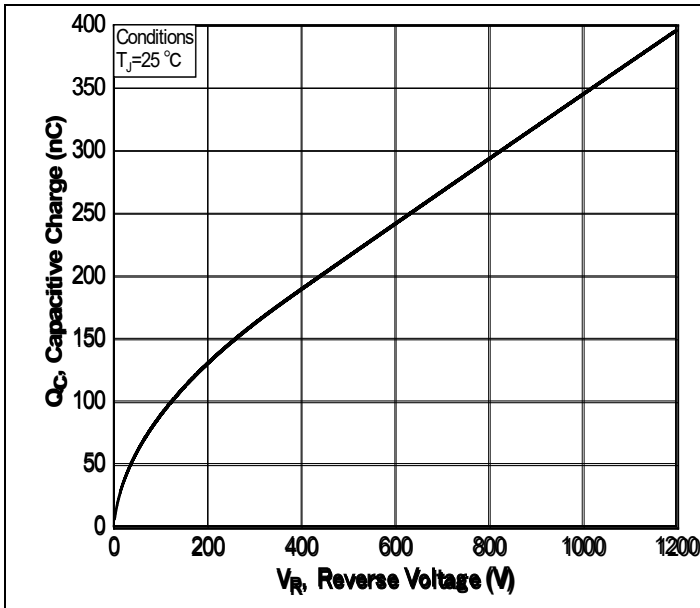


Figure 5. Capacitive Charge Vs. Reverse Voltage

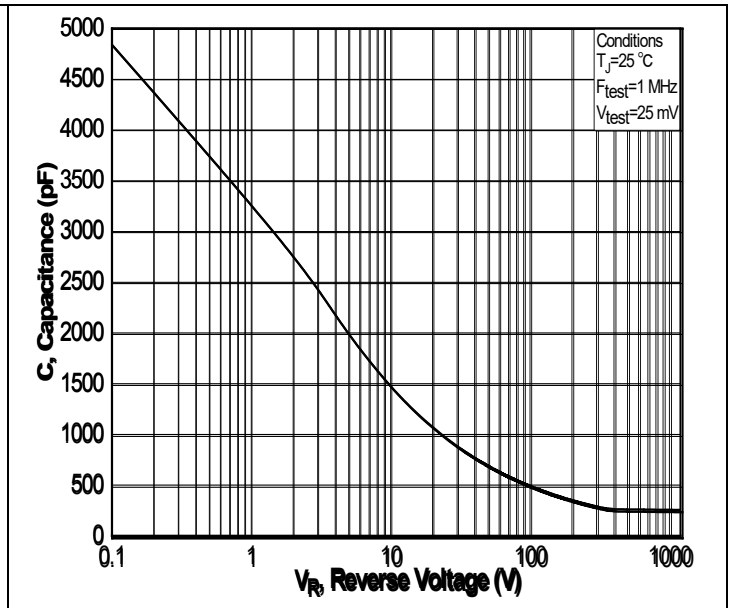


Figure 6. Capacitance Vs. Reverse Voltage

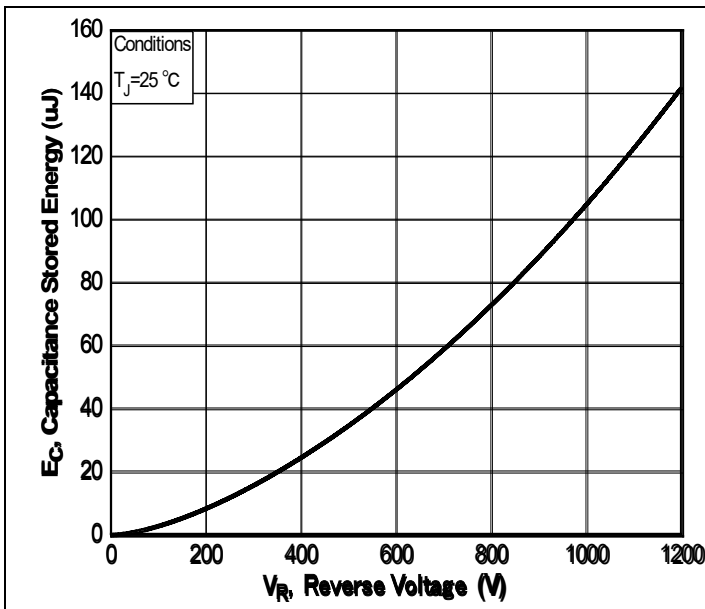


Figure 7. Capacitance Stored Energy

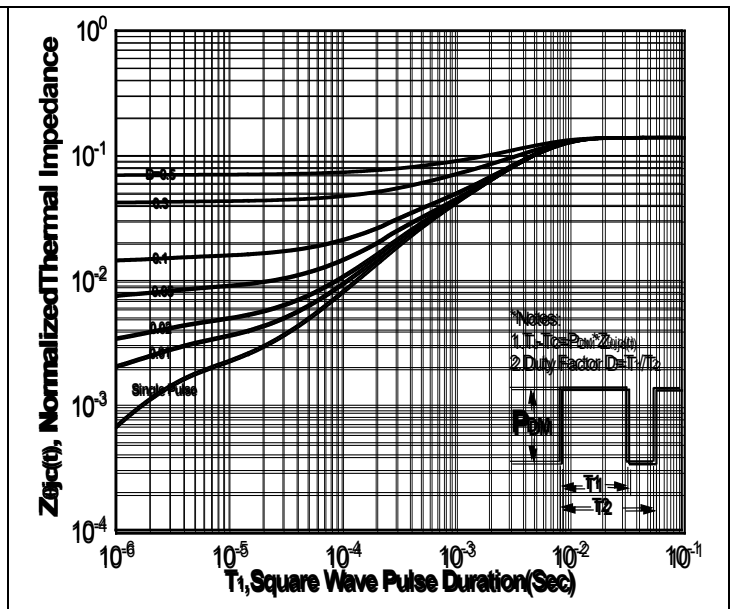
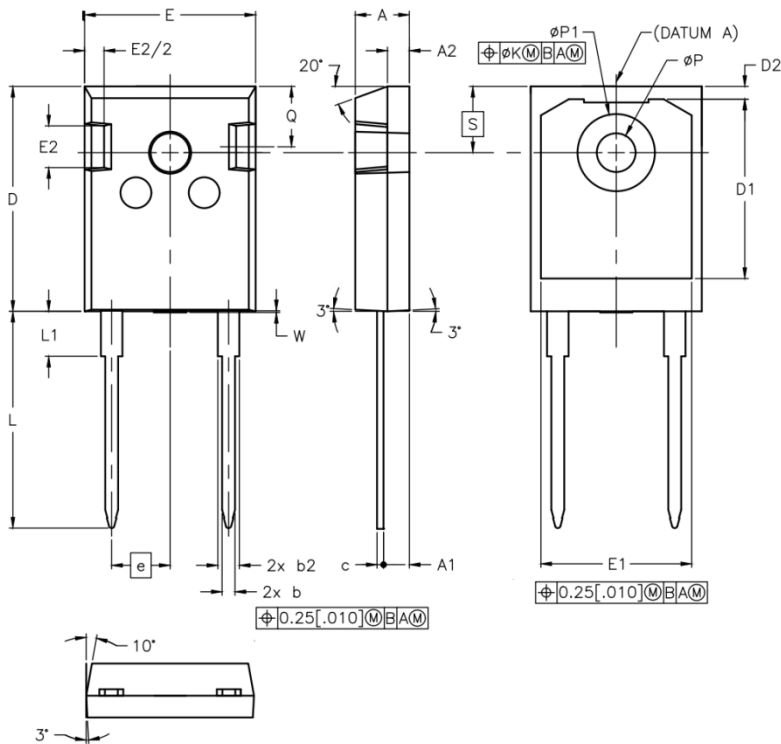


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

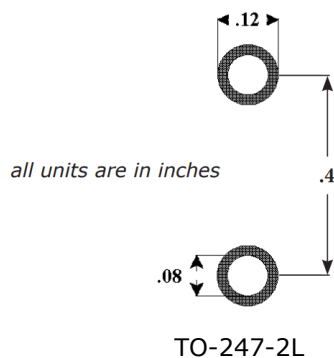
Package Dimensions

Package TO-247-2L



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.70	5.31
A1	.087	.102	2.21	2.59
A2	.059	.098	1.50	2.49
b	.039	.055	0.99	1.40
b2	.065	.094	1.65	2.39
c	.015	.035	0.38	0.89
D	.819	.845	20.80	21.46
D1	.515	-	13.08	-
D2	.020	.053	0.51	1.35
E	.620	.640	15.49	16.26
E1	.530	-	13.46	-
E2	.135	.157	3.43	3.99
e	.214		5.44	
ØK	.010		0.25	
L	.780	.800	19.81	20.32
L1	-	.177	-	4.50
ØP	.140	.144	3.56	3.66
ØP1	.278	.291	7.06	7.39
Q	.212	.244	5.38	6.20
S	.243		6.17	
W	-	.006	-	0.15

Recommended Solder Pad Layout



Part Number	Package	Marking
XXX	TO-247-2L	XXX