

Silicon Carbide Schottky Diode

Features

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

V_{RRM}	=	1200V
$I_F (T_C=155^\circ\text{C})$	=	20A
t_c	=	107 nC

Benefits

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

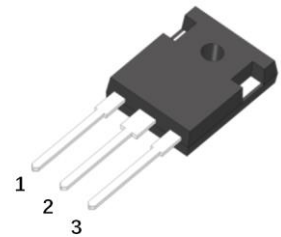
Applications

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

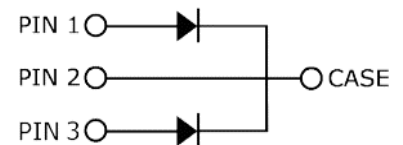


Package

TO-247-3L



Equivalent circuit



Maximum ratings ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit	Note
Repetitive Peak Reverse Voltage	V_{RRM}		1200	V	
DC Peak Reverse Voltage	V_R		1200	V	
Continuous Forward Current	I_F	$T_C=25^{\circ}\text{C}$	67	A	Fig.3
		$T_C=135^{\circ}\text{C}$	32		
		$T_C=155^{\circ}\text{C}$	20		
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}\text{C}$, $t_P=10\text{ ms}$, Half Sine Pulse	119	A	
		$T_C=110^{\circ}\text{C}$, $t_P=10\text{ ms}$, Half Sine Pulse	78		
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C=25^{\circ}\text{C}$, $t_P=10\text{ ms}$, Half Sine Pulse	140	A	
		$T_C=110^{\circ}\text{C}$, $t_P=10\text{ ms}$, Half Sine Pulse	120		
Non-Repetitive Forward Surge Current	$I_{F,MAX}$	$T_C=25^{\circ}\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse	872	A	
		$T_C=110^{\circ}\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse	753		
i^2t value	$\int i^2dt$	$T_C=25^{\circ}\text{C}$, $t_P=10\text{ ms}$	98	A^2s	
		$T_C=110^{\circ}\text{C}$, $t_P=10\text{ ms}$	72		
Power Dissipation	P_{tot}	$T_C=25^{\circ}\text{C}$	319	W	Fig.4
		$T_C=110^{\circ}\text{C}$	138		
Operating Temperature	T_J		-55 to +175	$^{\circ}\text{C}$	
Storage Temperature	T_{stg}		-55 to +175	$^{\circ}\text{C}$	
TO-247 Mounting Torque		M3 Screw 6-32 Screw	1 8.8	Nm lbf-in	

Electrical Characteristics (T_J=25°C)

Parameter	Symbol	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Forward Voltage	V _F	I _F =20A, T _J =25°C		1.40	1.9	V	Fig.1
		I _F =20A, T _J =175°C		1.90			
Reverse Current	I _R	V _R =1200V, T _J =25°C		10	200	μA	Fig.2
		V _R =1200V, T _J =175°C		147			
Total Capacitive Charge	Q _C	V _R =800V, T _J =25°C		107		nC	Fig.5
Total Capacitance	C	V _R =0V, T _J =25°C, f=1MHz		1615		pF	Fig.6
		V _R =400V, T _J =25°C, f=1MHz		94			
		V _R =800V, T _J =25°C, f=1MHz		88			
Capacitance Stored Energy	E _C	V _R =800 V		27		μJ	Fig.7

Thermal Characteristics

Parameter	Symbol	Value	Unit	Note
Thermal Resistance(Junction to Case)	R _{eJC}	0.47	°C/W	Fig. 8

Typical Performance

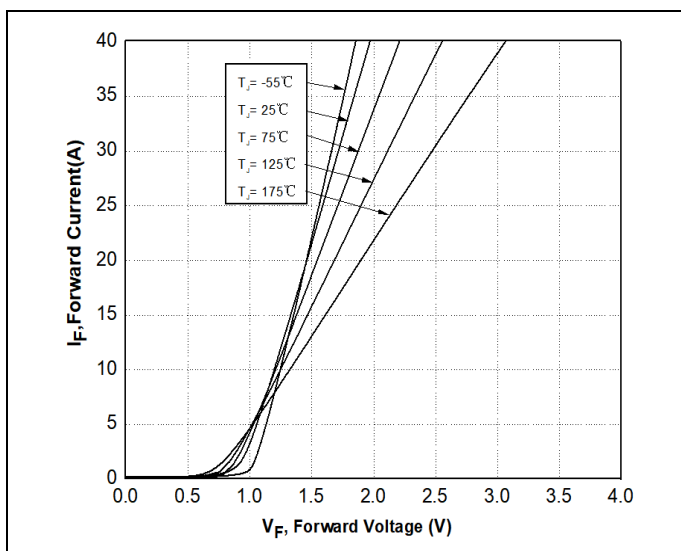


Figure 1. Forward Characteristics

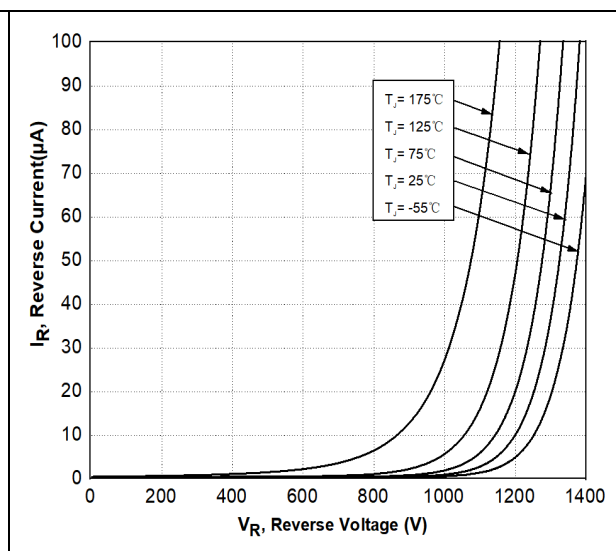


Figure 2. Reverse Characteristics

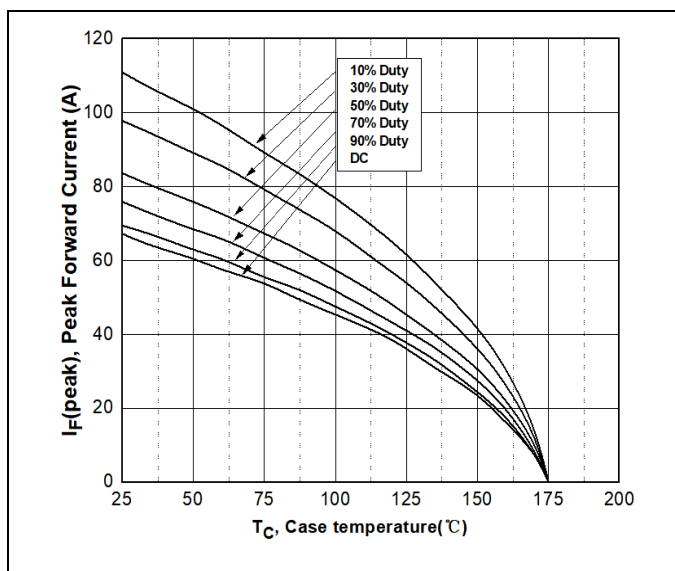


Figure 3. Current Derating

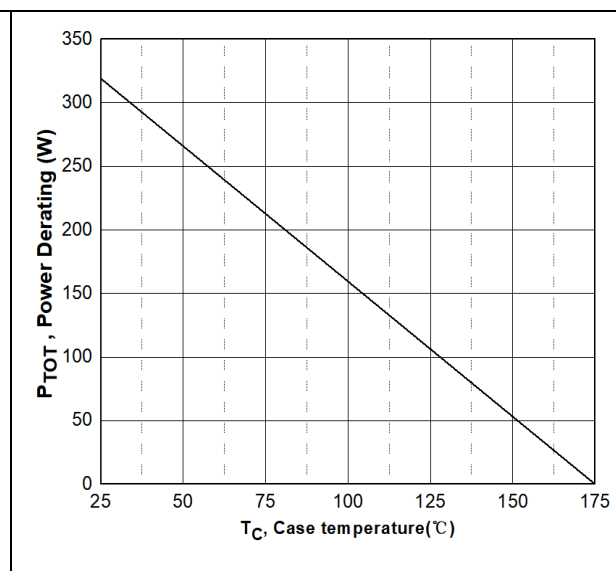


Figure 4. Power Derating

Typical Performance

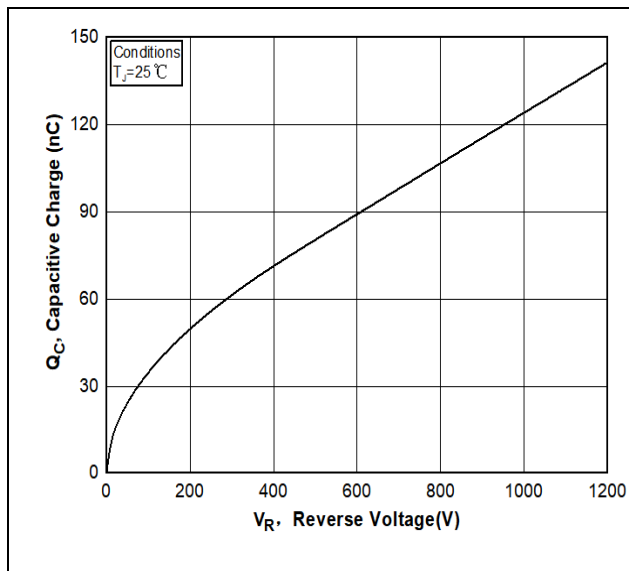


Figure 5. Capacitance Charge Vs. Reverse

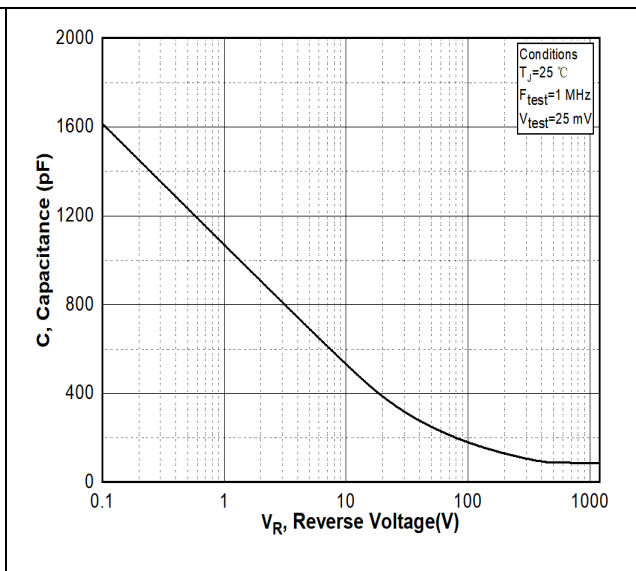


Figure 6. Capacitance Vs. Reverse Voltage

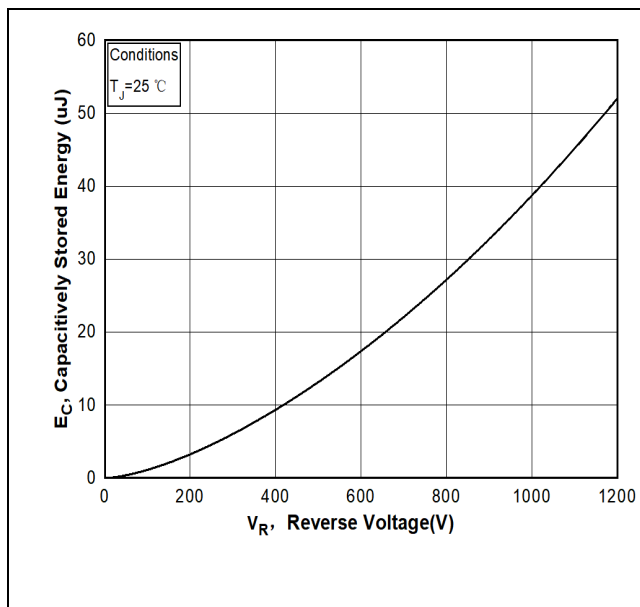


Figure 7. Capacitance Stored Energy

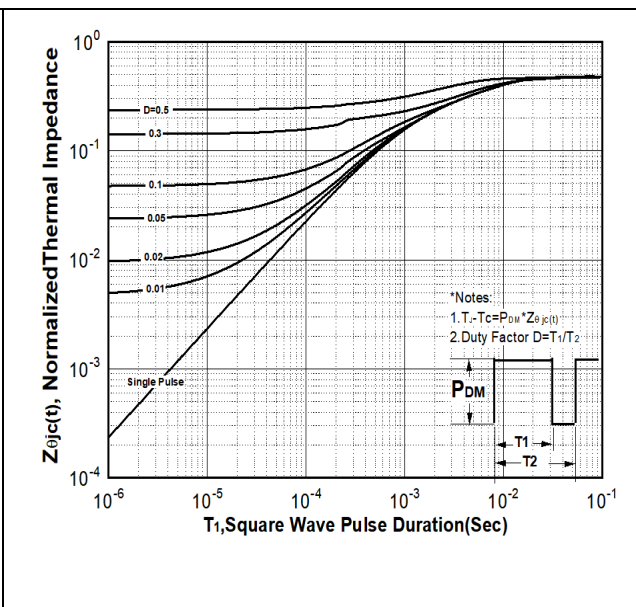


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

Package Dimensions

Package TO-247-3L

