

Silicon Carbide Power Schottky Diode

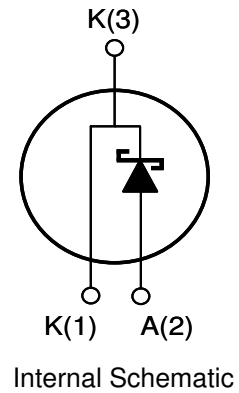
Features:

- Positive Temperature Coefficient for Ease of Paralleling
- Temperature Independent Switching Behavior
- 175 °C Maximum Operating Temperature
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage

Product Summary		
V_{DC}	1200	V
I_F	10	A
Q_c	40	nC

Applications:

- Solar Inverter
- SMPS
- Power Factor Correction
- Induction Heating
- UPS
- Motor Drive



MAXIMUM RATINGS

Parameter	Symbol	Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	$T_j = 25\text{ °C}$	1200	V
DC Blocking Voltage	V_{DC}		1200	
Continuous Forward Current	I_F	$T_C < 145\text{ °C}$	10	A
		$T_C < 100\text{ °C}$	17	
Peak Repetitive Forward Current	I_{FRM}	$T_C = 125\text{ °C}, D = 0.1$	50	
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25\text{ °C}, t_p = 10\text{ ms}$	45	
		$T_C = 25\text{ °C}, t_p = 10\text{ us}$	250	
Power Dissipation	P_{TOT}	$T_C = 25\text{ °C}$	136	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Thermal Resistance, junction-case	R_{thJC}		-	1.1	-	°C / W
Thermal Resistance, junction-ambient	R_{thJA}		-	62	-	

ELECTRICAL CHARACTERISTICS, at $T_j = 25\text{ C}$ unless otherwise stated

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Forward Voltage	V_F	$I_F = 10\text{ A}, T_j = 25\text{ °C}$	-	1.6	1.8	V
		$I_F = 10\text{ A}, T_j = 175\text{ °C}$	-	2.4	2.9	
Reverse Current	I_R	$V_R = 1200\text{ V}, T_j = 25\text{ °C}$	-	10	100	uA
		$V_R = 1200\text{ V}, T_j = 175\text{ °C}$	-	200	-	
Total Capacitive Charge	Q_C	$V_R = 400\text{ V}, I_F = 10\text{ A}, di/dt = 500\text{A/us}$	-	40	-	nC
Total Capacitance	C	$V_R = 1\text{ V}, f = 100\text{kHz}$	-	1153	-	pF
		$V_R = 300\text{ V}, f = 100\text{kHz}$	-	48	-	
		$V_R = 600\text{ V}, f = 100\text{KHz}$	-	33	-	

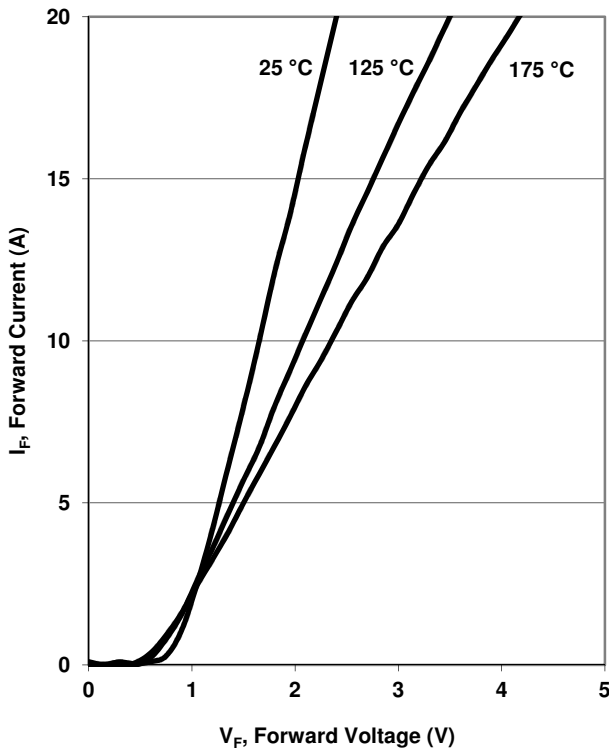


Figure 1. Typ. Forward Characteristics
 $I_F = f(V_F)$; parameter: T_j

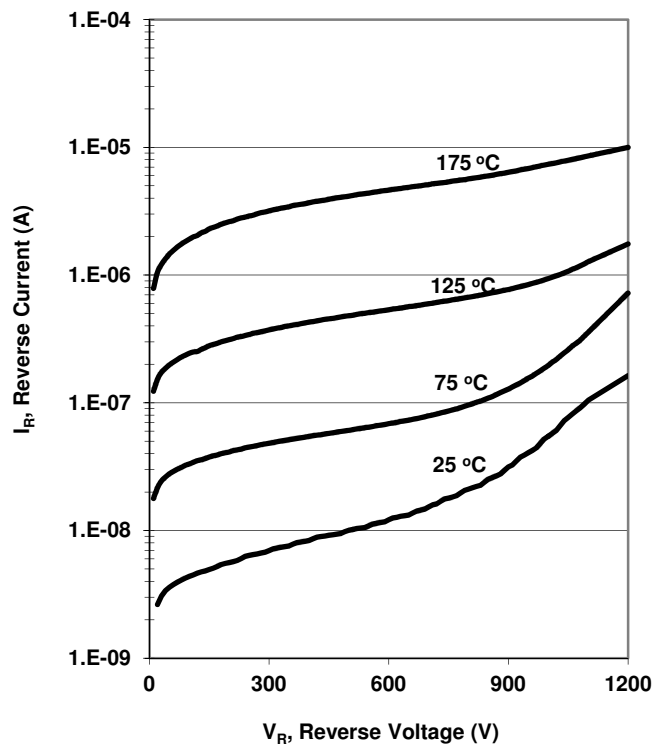


Figure 2. Typ. Reverse Characteristics
 $I_R = f(V_R)$

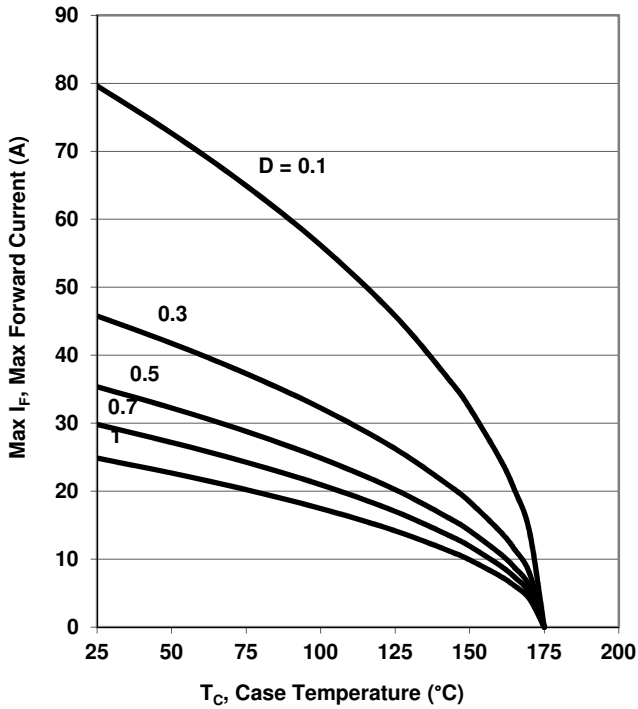


Figure 3. Max Forward Current
 $I_F = f(T_C); T_j < 175\text{ }^\circ\text{C}; R_{th,jc(max)}$

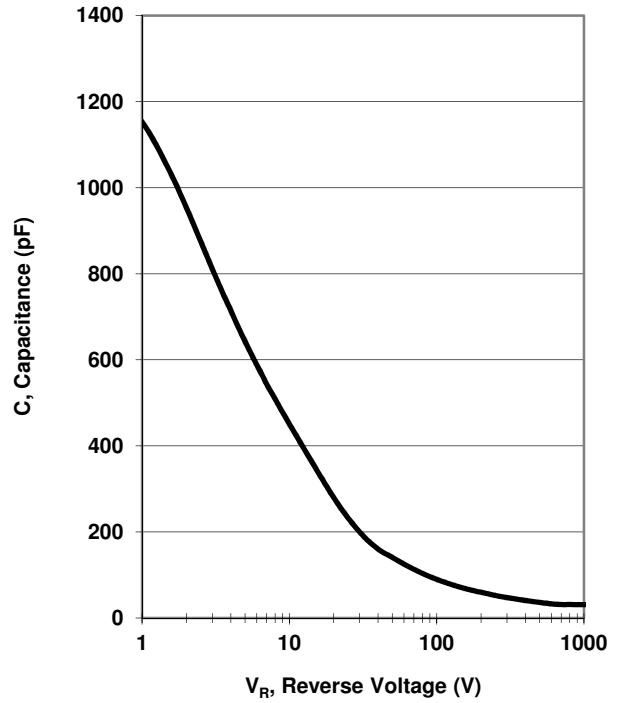


Figure 4. Typ. Capacitance vs. Reverse Voltage
 $C = f(V_R); T_C = 25\text{ }^\circ\text{C}; f = 1\text{ MHz}$

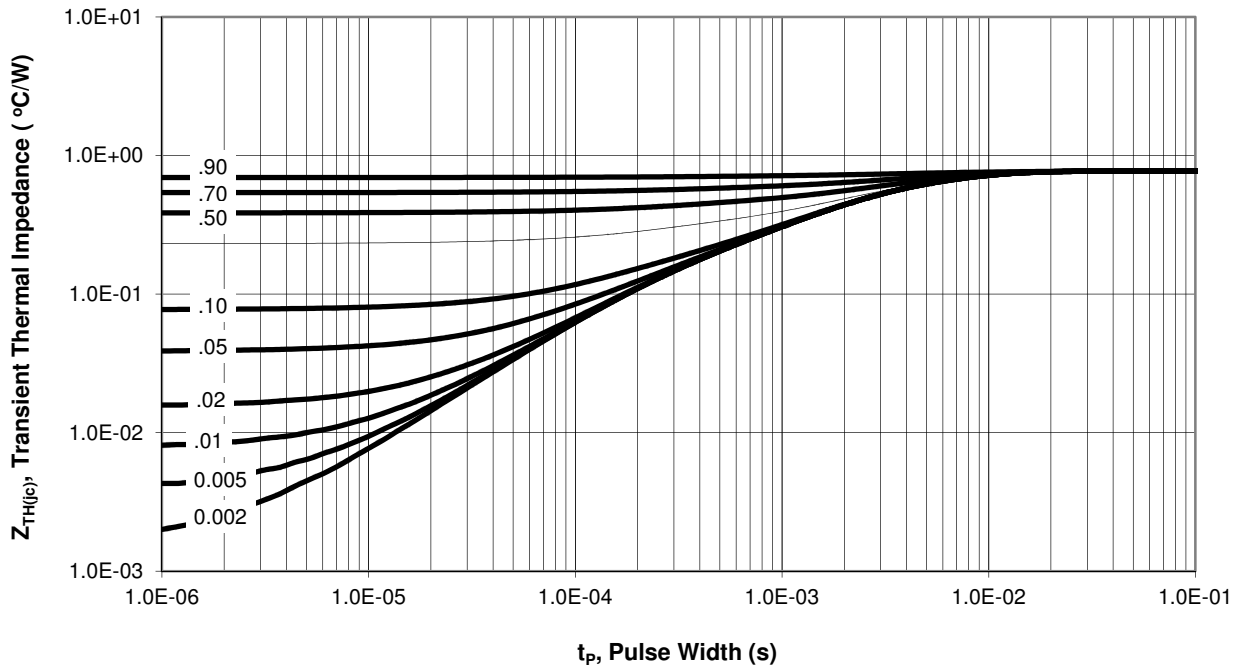
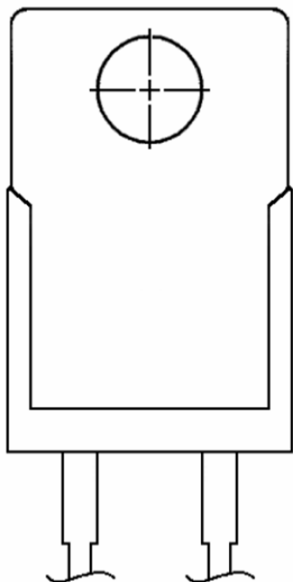
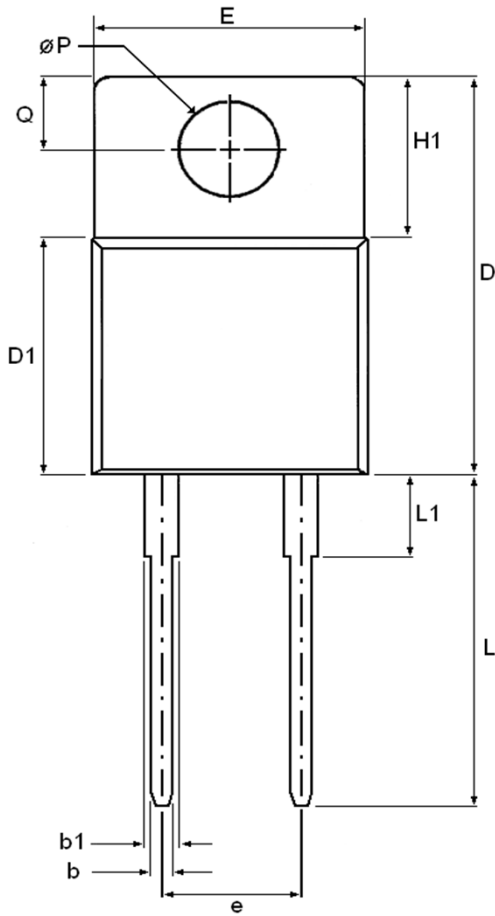


Figure 5. Transient Thermal Impedance
 $Z_{th(jc)} = f(t_p); \text{parameter: Duty Ratio}$

Package Dimensions: TO-220



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.191	4.699	0.165	0.185
A1	2.387	2.489	0.094	0.098
A2	1.219	1.321	0.048	0.052
b	0.635	0.889	0.025	0.035
b1	1.143	1.397	0.145	0.055
c	0.458	0.635	0.018	0.025
D	15.113	16.621	0.595	0.615
D1	9.017	9.271	0.355	0.365
e	5.080		0.200	
E	9.677	9.931	0.381	0.391
H1	6.096	6.350	0.240	0.250
L	12.700	12.954	0.500	0.510
L1	3.048	3.302	0.120	0.130
Q	2.540	3.048	0.100	0.120
ØP	3.632	3.734	0.143	0.147

Published by
SemiSouth Laboratories, Inc.
201 Research Boulevard
Starkville, MS 39759 USA
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