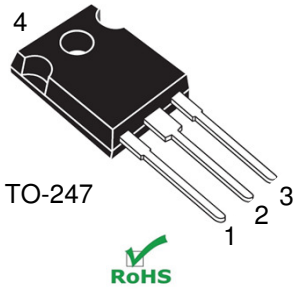
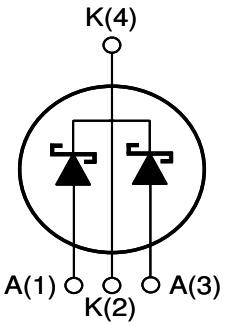
Silicon Carbide Power Schottky Diode

Product Summary		
V_{DC}	1200	V
I_F	20	A
Q_c	80	nC

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





Internal Schematic

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 ℃	1200	V
DC Blocking Voltage	V_{DC}		1200	
Continuous Forward Current (Per Leg / Per Device)	I_F	T_C < 145 ℃	10 / 20	A
		T_C < 100 ℃	17 / 34	
Peak Repetitive Forward Current	I_{FRM}	T_C = 125 ℃, D = 0.1	47 / 94	
Non-Repetitive Forward Surge Current (Per Leg / Per Device)	I_{FSM}	T_C = 25 ℃, t_P = 10 ms	45 / 90	
		T_C = 25 ℃, t_P = 10 us	225 / 450	
Power Dissipation (Per Leg / Per Device)	P_{TOT}	T_C = 25 ℃	125 / 250	W
Operating and Storage Temperature	T_j, T_{stg}		-55 to +175	℃

THERMAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Thermal Resistance, junction-case	$R_{th\ JC}$	Per Leg	-	1.2	-	℃ / W
		Both Legs		0.6		
Thermal Resistance, junction-ambient	$R_{th\ JA}$		-	62	-	

ELECTRICAL CHARACTERISTICS (Per Leg), at T_j = 25 C unless otherwise stated

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

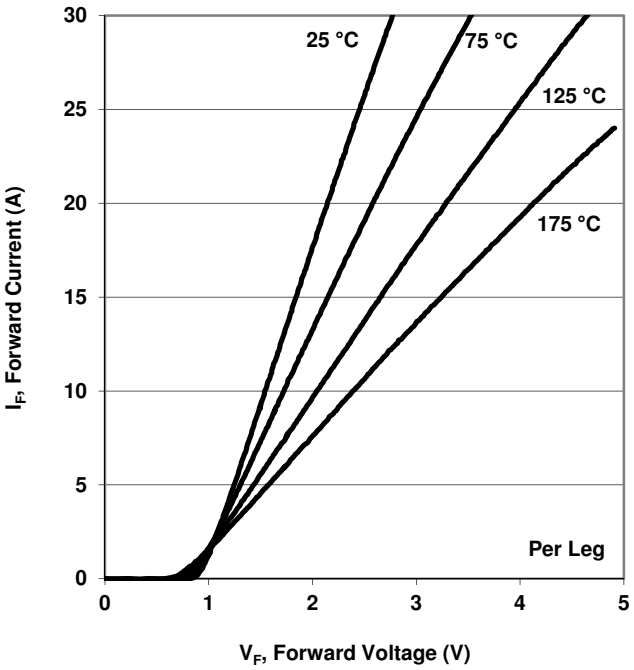


Figure 1. Typ. Forward Characteristics
$I_F = f(V_F)$; parameter: T_j

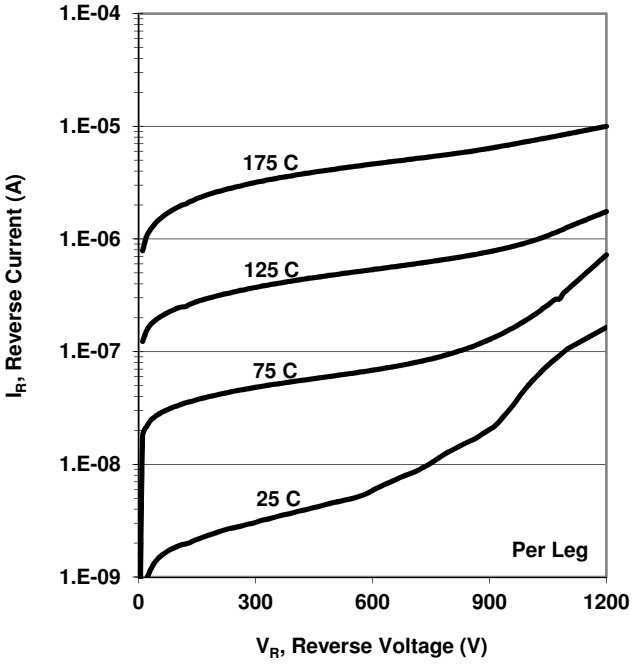


Figure 2. Typ. Reverse Characteristics
$I_R = f(V_R)$

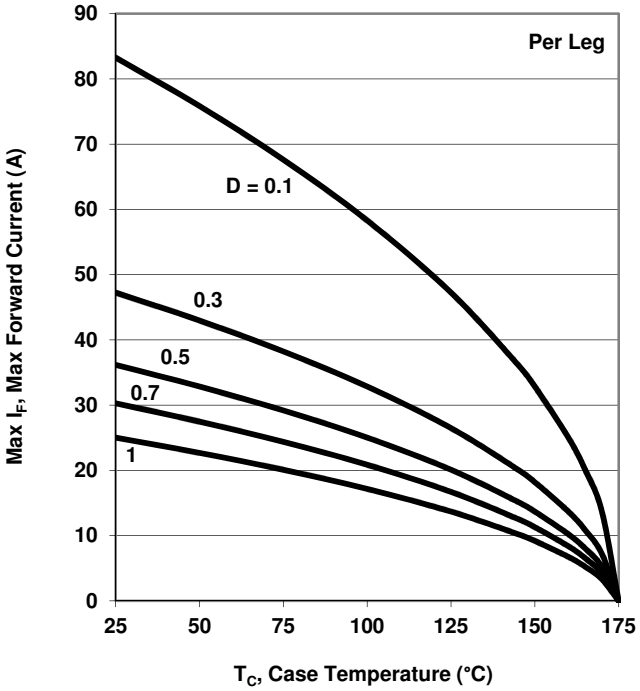


Figure 3. Max Forward Current
$I_F = f(T_C)$; T_j = 175 °C; $R_{th,JC(max)}$

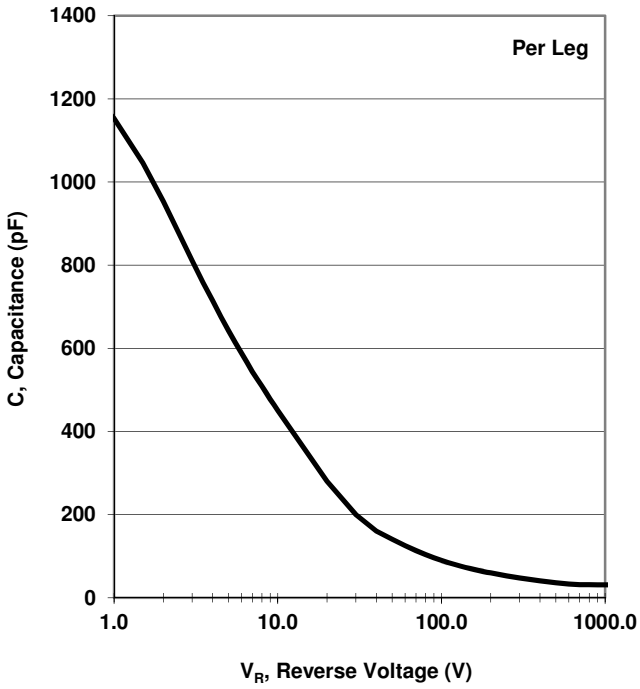


Figure 4. Typ. Capacitance vs. Reverse Voltage
$C = f(V_R)$; T_C = 25 °C; f = 1 MHz

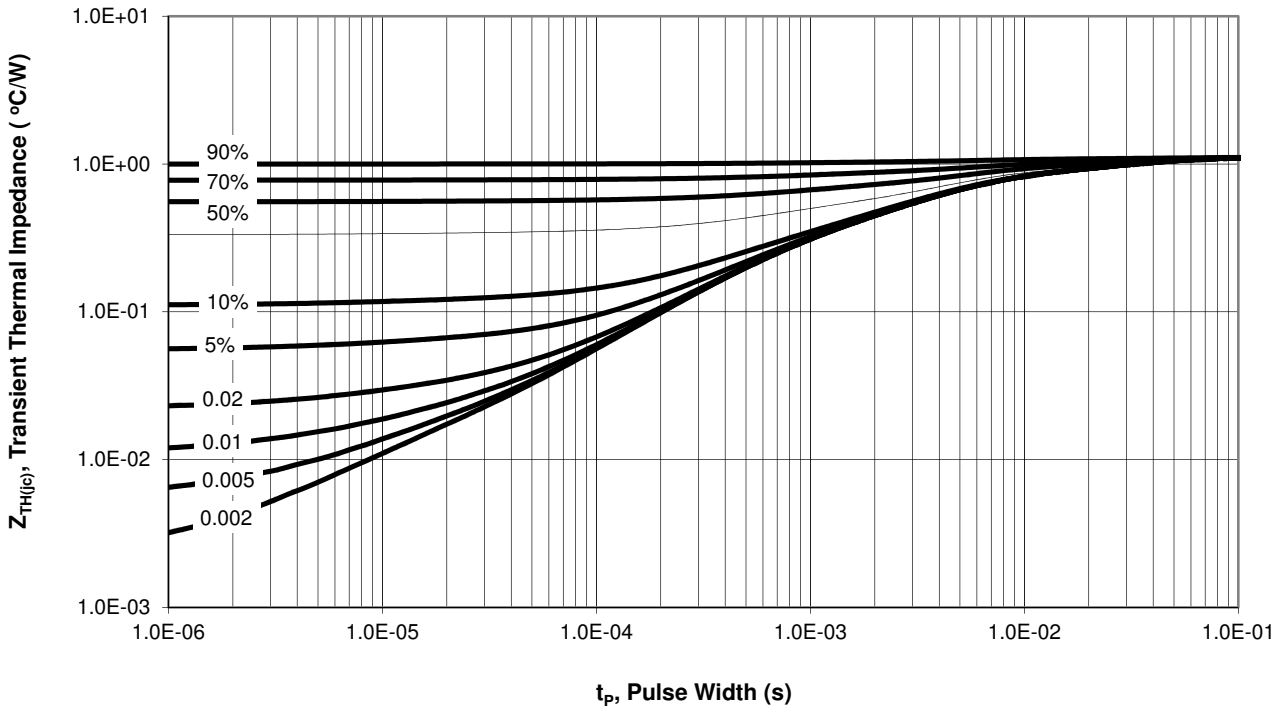
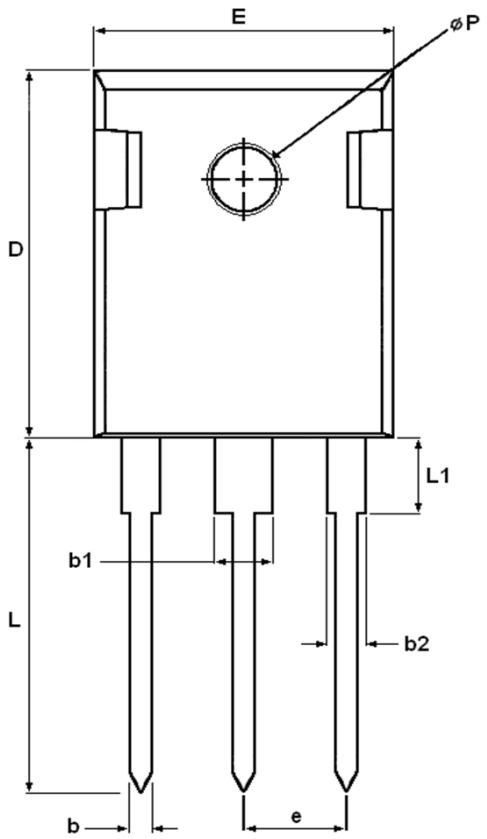
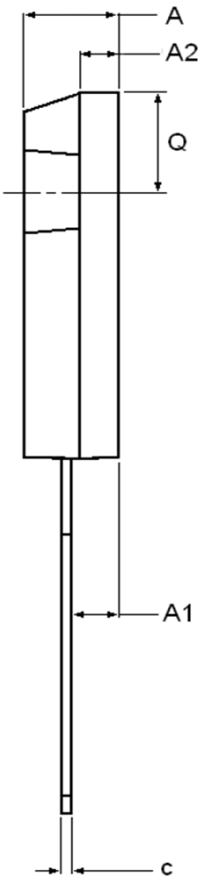
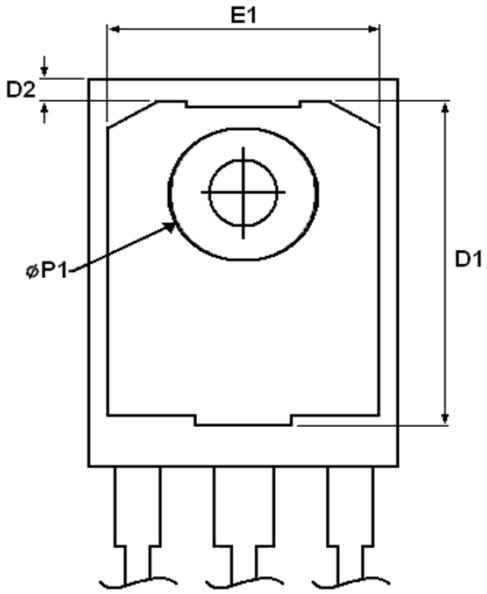


Figure 5. Transient Thermal Impedance
$Z_{th(jc)} = f(t_P)$; parameter: Duty Ratio

Package Dimensions: TO-247







DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.903	5.157	0.193	0.203
A1	2.273	2.527	0.090	0.100
A2	1.853	2.108	0.073	0.083
b	1.073	1.327	0.042	0.052
b1	2.873	3.381	0.113	0.133
b2	1.903	2.386	0.042	0.052
c	0.600	0.752	0.024	0.029
D	20.823	21.077	0.820	0.830
D1	17.393	17.647	0.685	0.695
D2	1.063	1.317	0.042	0.052
e	5.450		0.215	
E	15.773	16.027	0.621	0.631
E1	13.893	14.147	0.547	0.557
L	20.053	20.307	0.789	0.799
L1	4.168	4.472	0.165	0.175
Q	6.043	6.297	0.238	0.248
ØP	3.560	3.660	0.140	0.144
ØP1	7.063	7.317	0.278	0.288

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

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