

## HERMETIC SILICON CARBIDE RECTIFIER

**DESCRIPTION:** A 1200-VOLT, 50 AMP POWER SILICON CARBIDE RECTIFIER IN A CERAMIC HERMETIC TO-258 PACKAGE

**FEATURES:**

- NO RECOVERY TIME OR REVERSE RECOVERY LOSSES
- NO TEMPERATURE INFLUENCE ON SWITCHING BEHAVIOR
- SCREENED VERSIONS ARE AVAILABLE

**MAXIMUM RATINGS**

ALL RATINGS ARE @  $T_C = 25^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED.

RATING	SYMBOL	MAX.	UNITS
PEAK INVERSE VOLTAGE	PIV	1200	Volts
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65^\circ\text{C}$ , for part numbers with P and N suffixes)	$I_O$	100	Amps
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65^\circ\text{C}$ , for part number with D suffix or without suffix)	$I_O$	50	Amps
MAXIMUM REPETITIVE FORWARD SURGE CURRENT (t = 8.3ms, Sine) per leg, $T_C = 25^\circ\text{C}$	$I_{FRM}$	120	Amps
MAXIMUM POWER DISSIPATION, $T_C = 25^\circ\text{C}$	$P_d$	136	W
MAXIMUM THERMAL RESISTANCE, Junction to Case	$R_{\theta JC}$	1.1	$^\circ\text{C/W}$
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE*	Top, Tstg	-55 to +175	$^\circ\text{C}$

\* Note: SiC semiconductors will handle at or above this operating and storage temperature. However, extended operational use of the packaged device above 175C may reduce its future performance. All qualification testing and screening per MIL-PRF-19500 will only be performed to 175C.

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**ELECTRICAL CHARACTERISTICS**

CHARACTERISTIC	TYP	MAX.	UNITS
MAXIMUM FORWARD VOLTAGE DROP ( $I_f=50A$ PER LEG) $V_f$ $T_J=25\text{ }^\circ\text{C}$ $T_J=175\text{ }^\circ\text{C}$	1.80 2.40	2.00 2.90	Volts
MAXIMUM FORWARD VOLTAGE DROP ( $I_f=25A$ PER LEG) $V_f$ $T_J=25\text{ }^\circ\text{C}$ $T_J=175\text{ }^\circ\text{C}$	1.40 1.70	1.80 2.20	Volts
MAXIMUM REVERSE CURRENT (1200V PIV PER LEG) $I_r$ $T_J=25\text{ }^\circ\text{C}$ $T_J=175\text{ }^\circ\text{C}$	0.10 0.30	0.50 1.00	mA
TOTAL CAPACITIVE CHARGE ( $V_R=800V$ ) $Q_C$ , per leg	250		nC
TOTAL JUNCTION CAPACITANCE ( $V_f=400V$ , $f=1MHz$ PER LEG) $C_T$	230		pF

**Typical Performance**

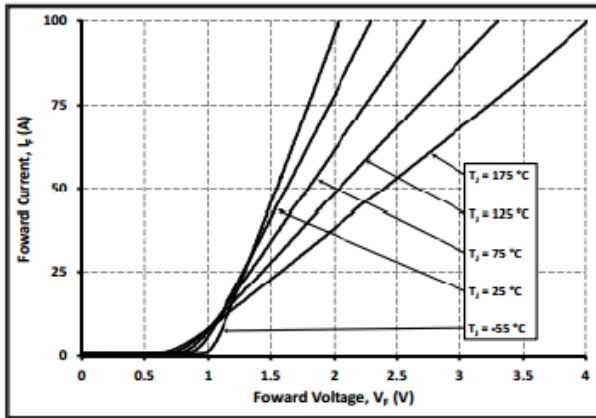


Figure 1. Typical Forward Characteristics

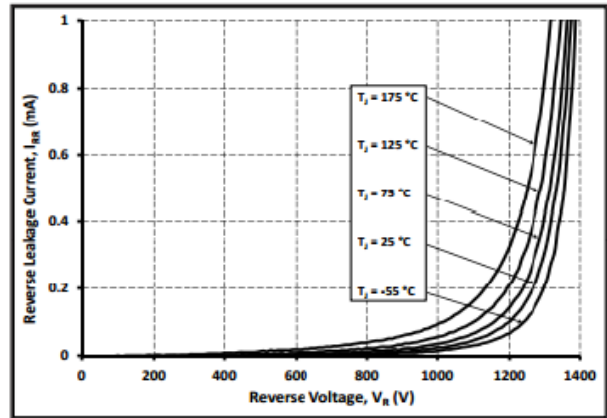
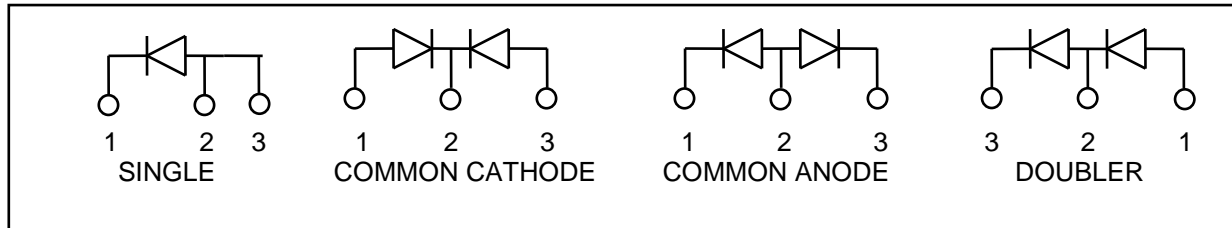


Figure 2. Typical Reverse Characteristics

**SCHEMATIC**



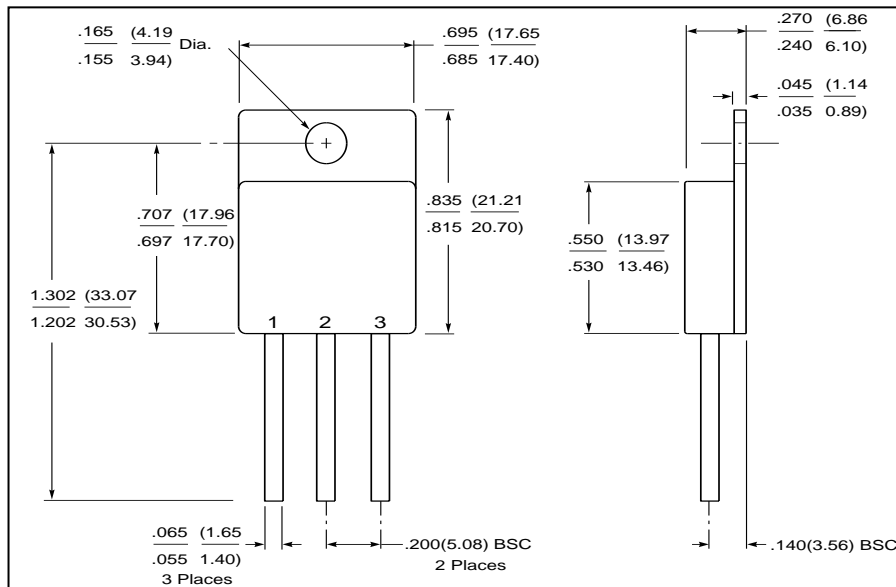
Application Note: Customers should be aware that at the current stage of technical development of SiC, the reverse avalanche capabilities of the device are limited.

Customer designs will need to accommodate these limitations and avoid exposure of the device to this and other potentially damaging conditions in their applications.

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**MECHANICAL DIMENSIONS**

**TO-258**



**PINOUT TABLE**

TYPE	PIN 1	PIN 2	PIN 3
SINGLE RECTIFIER	CATHODE	ANODE	ANODE
DUAL RECTIFIER/COMMON CATHODE (P)	ANODE 1	COMMON CATHODE	ANODE 2
DUAL RECTIFIER/COMMON ANODE (N)	CATHODE 1	COMMON ANODE	CATHODE 2
DUAL RECTIFIER/DOUBLER (D)	ANODE	ANODE/CATHODE	CATHODE

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