

TECHNICAL DATA, PROVISIONAL DATA ONLY
DATA SHEET 4179, REV. B

HERMETIC SILICON CARBIDE RECTIFIER

DESCRIPTION: A 1200-VOLT, 10 AMP POWER SILICON CARBIDE RECTIFIER IN A CERAMIC HERMETIC LCC-5 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 Cathode Maintained @ $T_C = 65^\circ\text{C}$, for Single Package) | I_o | 10 | Amps |
| MAXIMUM DC OUTPUT CURRENT (With Cathode Maintained @ $T_C = 65^\circ\text{C}$, for Dual Package) | I_o | 20 | Amps |
| MAXIMUM REPETITIVE FORWARD SURGE CURRENT ($t = 8.3\text{ms}$, Sine) $T_C = 25^\circ\text{C}$ | I_{FRM} | 50 | Amps |
| MAXIMUM NON-REPETITIVE FORWARD SURGE CURREN ($t = 10\mu\text{s}$, pulse) $T_C = 25^\circ\text{C}$ | I_{FSM} | 250 | Amps |
| MAXIMUM POWER DISSIPATION, $T_C = 25^\circ\text{C}$ | P_d | 20 | W |
| MAXIMUM THERMAL RESISTANCE, Junction to Case | $R_{\theta JC}$ | 1.8 | $^\circ\text{C/W}$ |
| MAXIMUM OPERATING TEMPERATURE RANGE | Top | -55 to +200 | $^\circ\text{C}$ |
| MAXIMUM STORAGE TEMPERATURE RANGE | Tstg | -55 to +200 | $^\circ\text{C}$ |

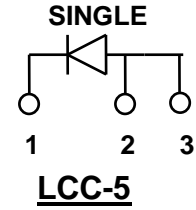
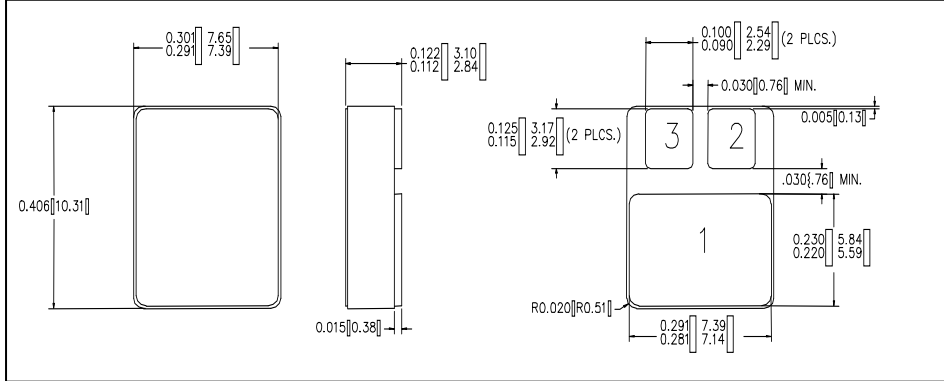
* Note: SiC semiconductors will handle at or above this operating and storage temperature. However, extended operational use of the packaged device above 175°C may reduce its future performance. All qualification testing and screening per MIL-PRF-19500 will only be performed to 175°C .

ELECTRICAL CHARACTERISTICS

| CHARACTERISTIC | TYP | MAX. | UNITS |
|--|---|--------------|-------|
| MAXIMUM FORWARD VOLTAGE DROP ($I_f = 10\text{A}$) V_f | $T_J = 25^\circ\text{C}$ $T_J = 175^\circ\text{C}$ | 1.6 2.5 | Volts |
| MAXIMUM REVERSE CURRENT (1200V PIV) I_r | $T_J = 25^\circ\text{C}$ $T_J = 175^\circ\text{C}$ | 0.01 0.02 | mA |
| MAXIMUM JUNCTION CAPACITANCE ($V_r = 400\text{V}$) | C_T | 70 | PF |
| TOTAL CAPACITIVE CHARGE ($V_R = 1200\text{V}$ $I_F = 10\text{A}$ $di/dt = 500\text{A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$) Q_C | | 60 | nC |

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MECHANICAL DIMENSIONS: IN Inches / mm



PINOUT TABLE

| DEVICE TYPE | PIN 1 | PIN 2 | PIN 3 |
|------------------------------------|----------------|---------|---------|
| SINGLE RECTIFIER | CATHODE | ANODE | ANODE |
| DUAL RECTIFIER, COMMON CATHODE (P) | COMMON CATHODE | ANODE 1 | ANODE 2 |

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.

Figure 1. Forward Characteristics

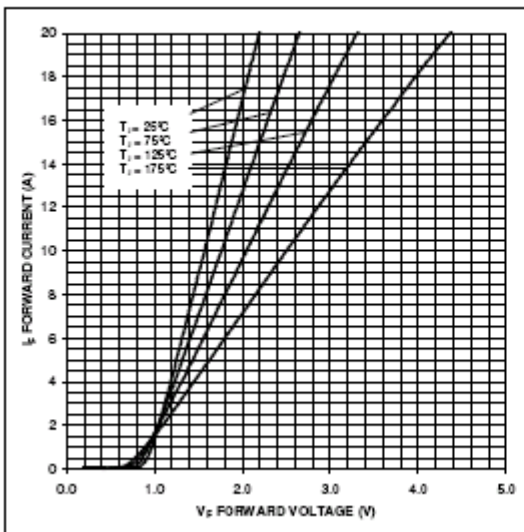
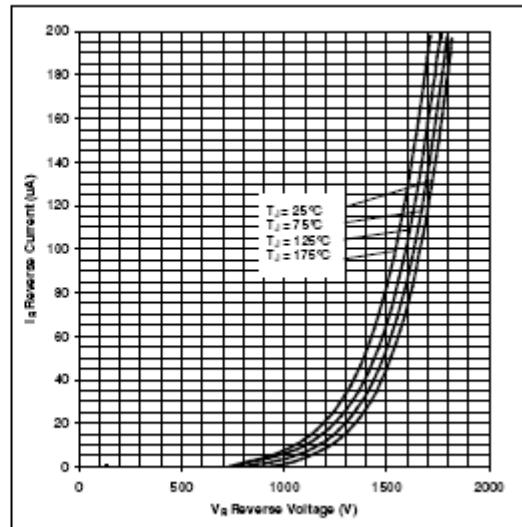


Figure 2. Reverse Characteristics



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