

TECHNICAL DATA
DATA SHEET 4074, REV. G

HERMETIC SILICON CARBIDE RECTIFIER

DESCRIPTION: A 600-VOLT, 20 AMP POWER SILICON CARBIDE RECTIFIER IN A HERMETIC TO-257 PACKAGE AVAILABLE SCREENED TO ANY REQUIRED LEVEL

FEATURES:

- NO RECOVERY TIME OR REVERSE RECOVERY LOSSES
- NO TEMPERATURE INFLUENCE ON SWITCHING BEHAVIOR
- **High Frequency Option** - Non-magnetic Glidcop leads are available for improved performance at high frequency; use part number prefix SHDG
- **Ceramic Seal Option** – For ceramic seals use part number prefix SHDC

MAXIMUM RATINGS

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

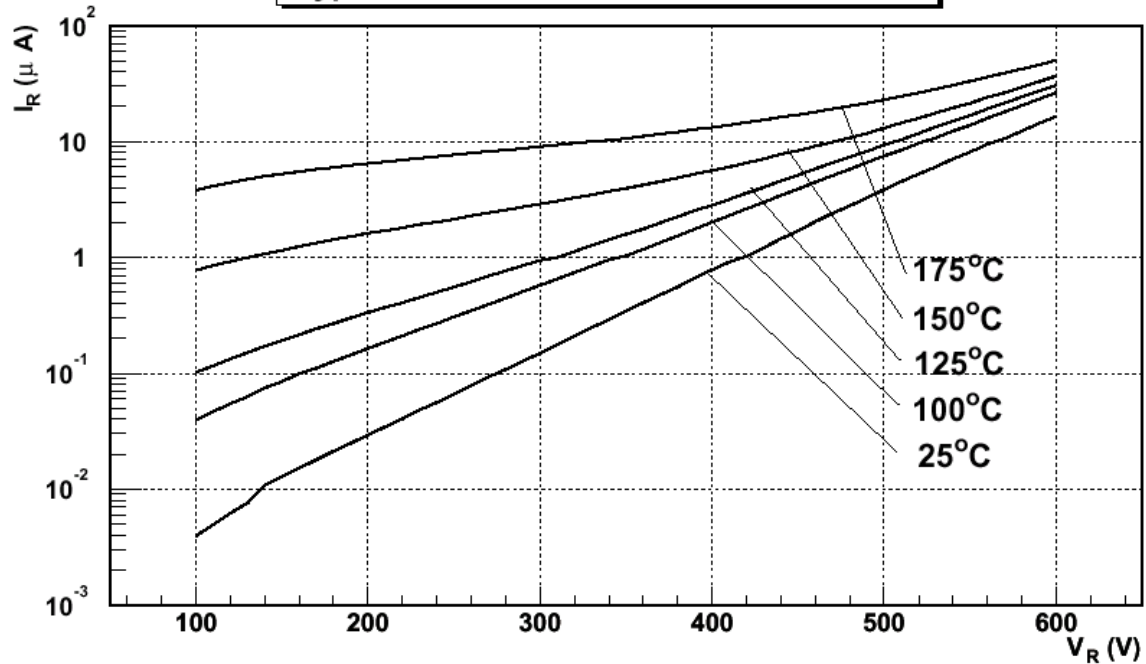
RATING	SYMBOL	MAX.	UNITS
PEAK INVERSE VOLTAGE	PIV	600	Volts
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65^\circ\text{C}$ for P and N suffixes)	I_O	20	Amps
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65^\circ\text{C}$ for Single and D suffixes)	I_O	10	Amps
MAXIMUM REPETITIVE FORWARD SURGE CURRENT PER LEG ($t = 8.3\text{ms}$, Sine) per leg, $T_C = 25^\circ\text{C}$	I_{FRM}	50	Amps
MAXIMUM POWER DISSIPATION, $T_C = 25^\circ\text{C}$,	P_d	40	W
MAXIMUM THERMAL RESISTANCE, Junction to Case PER LEG	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE*	Top, 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

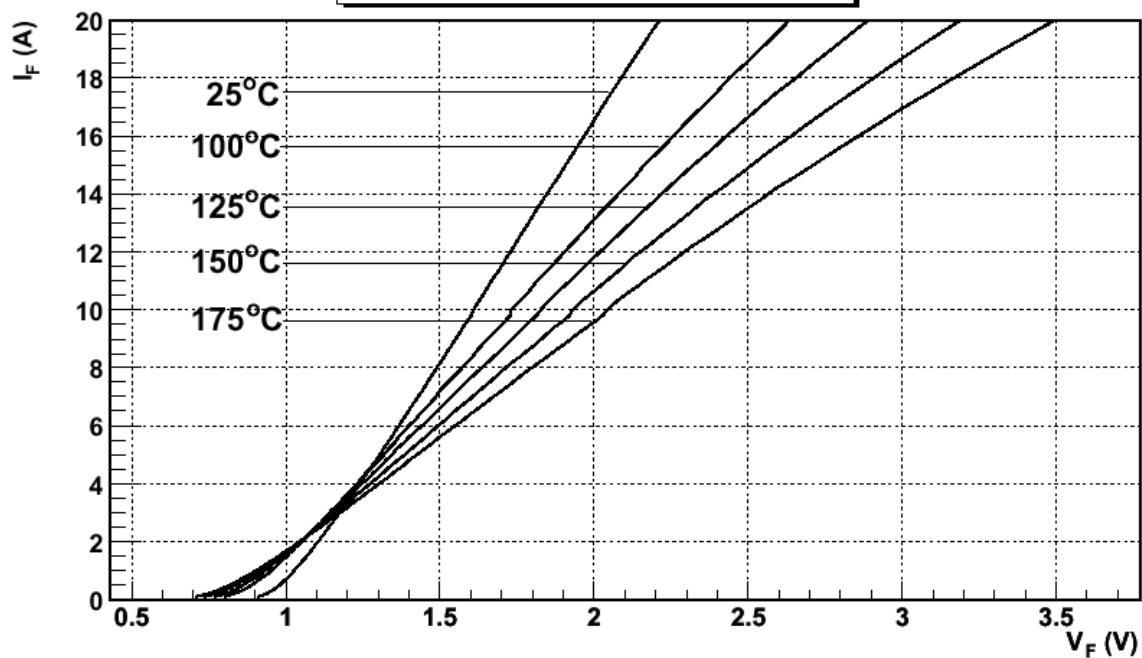
CHARACTERISTIC		TYP	MAX.	UNITS
MAXIMUM FORWARD VOLTAGE DROP Pulsed ($I_f = 10\text{ A PER LEG}$) V_f	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	1.65 2.05	1.80 2.20	Volts
MAXIMUM FORWARD VOLTAGE DROP Pulsed ($I_f = 6\text{ A PER LEG}$) V_f	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	1.35 1.60	1.45 1.70	Volts
MAXIMUM REVERSE CURRENT (I_r @ 600V PIV PER LEG)	$T_J = 25^\circ\text{C}$ $T_J = 150^\circ\text{C}$	0.04 0.08	0.15 0.50	mA
JUNCTION CAPACITANCE C_T ($V_r = 5\text{V}$) per leg	C_T	250	350	pF
TOTAL CAPACITIVE CHARGE ($V_R = 600\text{V}$ $I_F = 20\text{A}$ $di/dt = 500\text{A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$) This is design information only	Q_C per leg	35	N/A	nC

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Typical Reverse Current Characteristics



Typical Forward Characteristics



MECHANICAL DIMENSIONS

Technical drawing of a 3-pin connector. The drawing includes two views: a front view on the left and a side view on the right. Dimensions are provided in inches (top) and millimeters (bottom) for each feature.

Front View Dimensions:

- Overall width: $\frac{.150}{.140}$ (3.81 / 3.56)
- Top width: $\frac{.420}{.410}$ (10.67 / 10.41)
- Top hole diameter: Dia.
- Top hole position from left edge: $\frac{.537}{.527}$ (13.64 / 13.39)
- Top hole position from right edge: $\frac{.665}{.645}$ (16.89 / 16.38)
- Pin 1 position from left edge: $\frac{1.132}{1.032}$ (28.75 / 26.21)
- Pin 1 width: $\frac{.035}{.025}$ (0.89 / 0.63)
- Pin 1 position from pin 2: $\frac{.100}{.100}$ (2.54 / 2.54) BSC 2 Places
- Pin 2 width: $\frac{.035}{.025}$ (0.89 / 0.63)
- Pin 3 width: $\frac{.035}{.025}$ (0.89 / 0.63)
- Pin 3 position from pin 2: $\frac{.100}{.100}$ (2.54 / 2.54) BSC 2 Places

Side View Dimensions:

- Overall height: $\frac{.200}{.190}$ (5.08 / 4.82)
- Top flange height: $\frac{.045}{.035}$ (1.14 / 0.89)
- Top flange position from right edge: $\frac{.430}{.410}$ (10.92 / 10.41)
- Pin 1 position from right edge: $\frac{.120}{.120}$ (3.05 / 3.05) BSC 2 Places

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

The diagrams show four diode configurations with three input terminals (1, 2, 3) and one output terminal:

- SINGLE:** A single diode with its cathode connected to terminal 1 and its anode connected to terminal 2. Terminal 3 is also connected to the anode.
- COMMON CATHODE:** Two diodes with their cathodes connected to terminal 1. The anodes are connected to terminal 2 and terminal 3.
- COMMON ANODE:** Two diodes with their anodes connected to terminal 1. The cathodes are connected to terminal 2 and terminal 3.
- DOUBLER:** Two diodes with their cathodes connected to terminal 1 and terminal 2. The anodes are connected to terminal 3.

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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