

TECHNICAL DATA
DATA SHEET 4141, REV. D

HERMETIC SILICON CARBIDE RECTIFIER

DESCRIPTION/FEATURES:

600V, 40A, POWER SILICON CARBIDE RECTIFIER AVAILABLE SCREENED TO ANY REQUIRED LEVEL

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

RATING	SYMBOL	MAX.	UNITS
PEAK INVERSE VOLTAGE	PIV	600	Volts
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65\text{ }^\circ\text{C}$, for part numbers with P and N suffixes)	I_O	40	Amps
MAXIMUM DC OUTPUT CURRENT (With $T_C = 65\text{ }^\circ\text{C}$, for part numbers with Single and D suffixes)	I_O	20	Amps
MAXIMUM REPETITIVE FORWARD SURGE CURRENT PER LEG ($t = 8.3\text{ms}$, Sine) per leg, $T_C = 25\text{ }^\circ\text{C}$	I_{FRM}	80	Amps
MAXIMUM POWER DISSIPATION, $T_C = 25\text{ }^\circ\text{C}$	P_d	80	W
MAXIMUM THERMAL RESISTANCE, Junction to Case PER LEG	$R_{\theta JC}$	1.25	$^\circ\text{C/W}$
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE*	Top, Tstg	-55 to +200	$^\circ\text{C}$

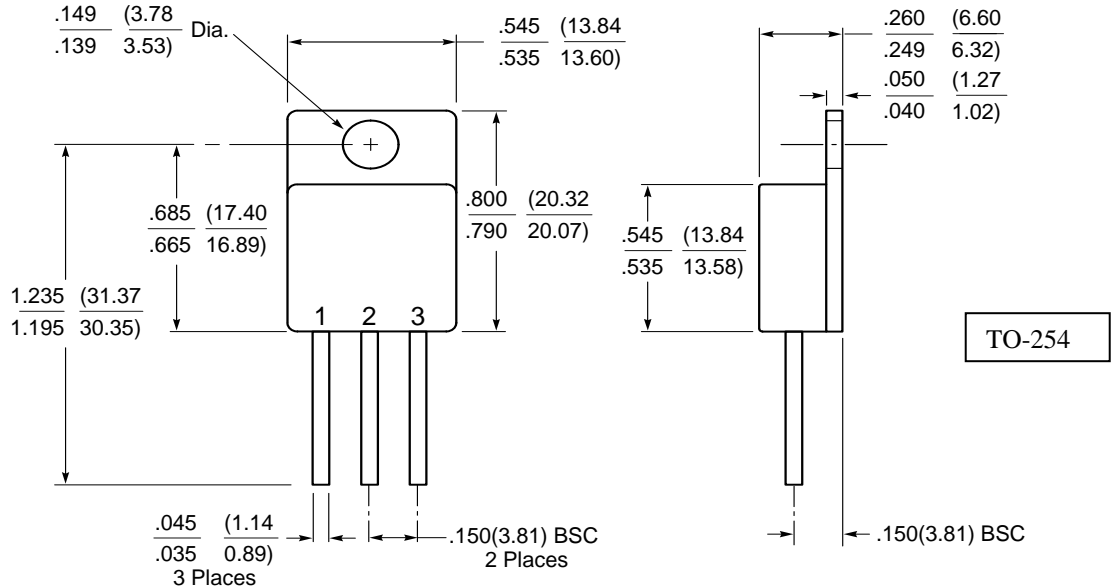
* Note: SiC semiconductors will handle at or above this operating and storage temperature. However, extended operational use of the packaged device above 175C may reduce its future performance. All qualification testing and screening per MIL-PRF-19500 will only be performed to 175C.

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC		TYP	MAX.	UNITS
MAXIMUM FORWARD VOLTAGE DROP, Pulsed ($I_f = 12\text{ A PER LEG}$) V_f	$T_J = 25\text{ }^\circ\text{C}$	1.35	1.45	Volts
	$T_J = 150\text{ }^\circ\text{C}$	1.60	1.70	
MAXIMUM FORWARD VOLTAGE DROP, Pulsed ($I_f = 20\text{ A PER LEG}$) V_f	$T_J = 25\text{ }^\circ\text{C}$	1.65	1.80	Volts
	$T_J = 150\text{ }^\circ\text{C}$	2.05	2.20	
MAXIMUM REVERSE CURRENT (I_r @ 600V PIV PER LEG)	$T_J = 25\text{ }^\circ\text{C}$	0.08	0.30	mA
	$T_J = 150\text{ }^\circ\text{C}$	0.15	1.00	
JUNCTION CAPACITANCE ($V_r = 5\text{V}$) per leg	C_T	500	700	pF
TOTAL CAPACITIVE CHARGE ($V_R = 600\text{V}$ $I_F = 20\text{A}$ $di/dt = 500\text{A}/\mu\text{s}$ $T_J = 25\text{ }^\circ\text{C}$) This is design information only	Q_C per leg	70	N/A	nC

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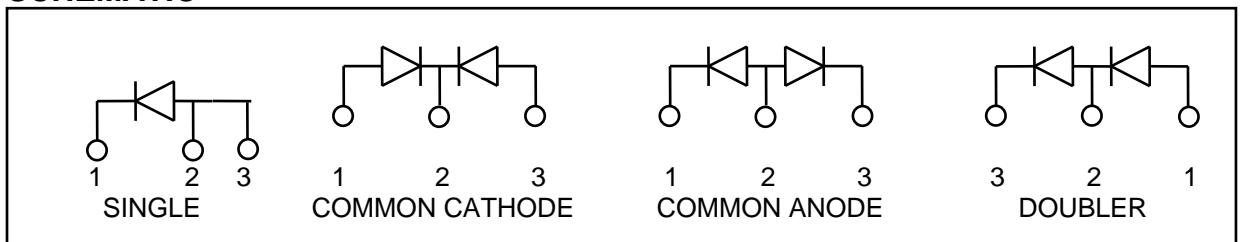
MECHANICAL DIMENSIONS



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

SCHEMATIC

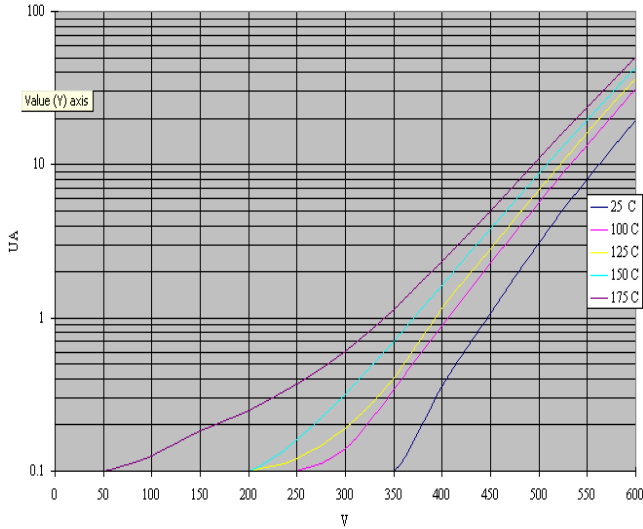


Application Note: Customers should be aware that at the current stage of technical development of SiC, the reverse avalanche capabilities of the device are limited.

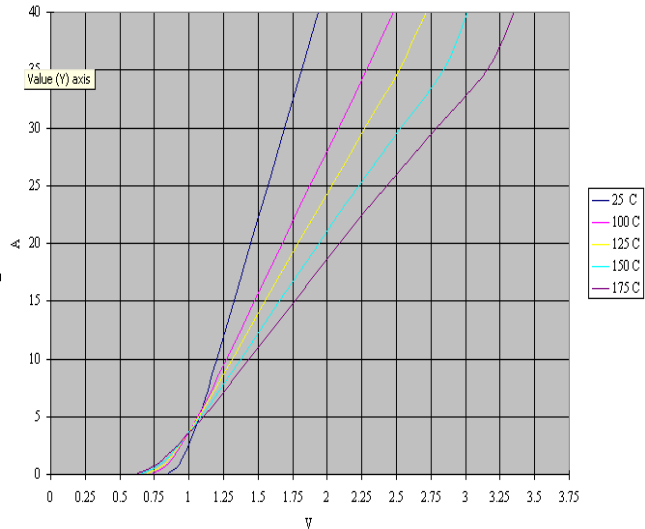
Customer designs will need to accommodate these limitations and avoid exposure of the device to this and other potentially damaging conditions in their applications.

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Typical Reverse Current Characteristics



Typical Forward Voltage Characteristics



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