

Technical Data
Datasheet 5066, Rev. A

Silicon Carbide Single Phase Full Wave Bridge

DESCRIPTION: 600-VOLT, 4 AMP POWER SILICON CARBIDE SINGLE PHASE FULL WAVE BRIDGE IN A HERMETIC 5-LEAD TO-258 (MO-078) PACKAGE

FEATURES:

- NO RECOVERY TIME OR REVERSE RECOVERY LOSSES
- NO TEMPERATURE INFLUENCE ON SWITCHING BEHAVIOR

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 $T_C = 65\text{ }^\circ\text{C}$) WHEN USED AS A BRIDGE	I_O	8	Amps
MAXIMUM REPETITIVE FORWARD SURGE CURRENT ($t = 8.3\text{ms}$, Sine) per leg, $T_C = 25\text{ }^\circ\text{C}$	I_{FRM}	20	Amps
MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT ($t = 10\mu\text{s}$, pulse) per leg, $T_C = 25\text{ }^\circ\text{C}$	I_{FSM}	110	Amps
MAXIMUM POWER DISSIPATION, $T_C = 25\text{ }^\circ\text{C}$	P_d	20	W
MAXIMUM THERMAL RESISTANCE, Junction to Case (Connected as a BRIDGE)	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$
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 ($I_f = 4\text{A}$ PER LEG) V_f $T_J = 25\text{ }^\circ\text{C}$	1.55	1.90	Volts
$T_J = 150\text{ }^\circ\text{C}$	2.05	2.45	
MAXIMUM REVERSE CURRENT (600V PIV PER LEG) I_r $T_J = 25\text{ }^\circ\text{C}$	0.03	0.20	mA
$T_J = 150\text{ }^\circ\text{C}$	0.05	0.50	
JUNCTION CAPACITANCE ($V_r = 5\text{V}$) per leg C_J	220		pF
TOTAL CAPACITANCE CHARGE ($V_R = 600\text{V}$, $I_f = 4\text{A}$, $di/dt = 500\text{A}/\mu\text{s}$ and $T_J = 25\text{ }^\circ\text{C}$) Q_C per leg	10	N/A	nC

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Note: The following curves are for individual legs of the bridge.

Figure 1. Forward Characteristics

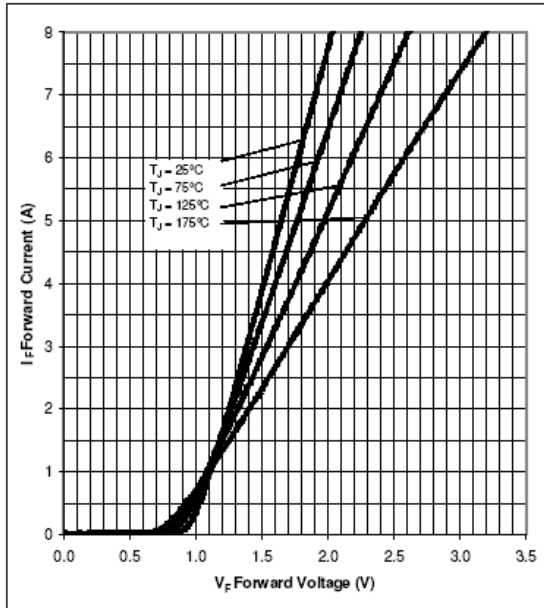


Figure 2. Reverse Characteristics

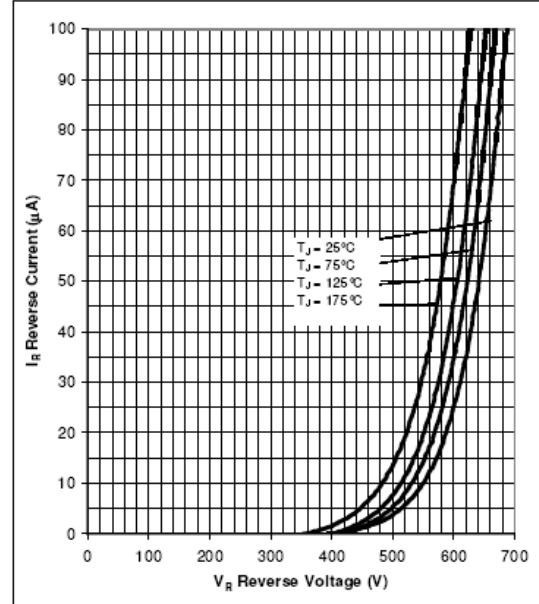


Figure 3. Current Derating

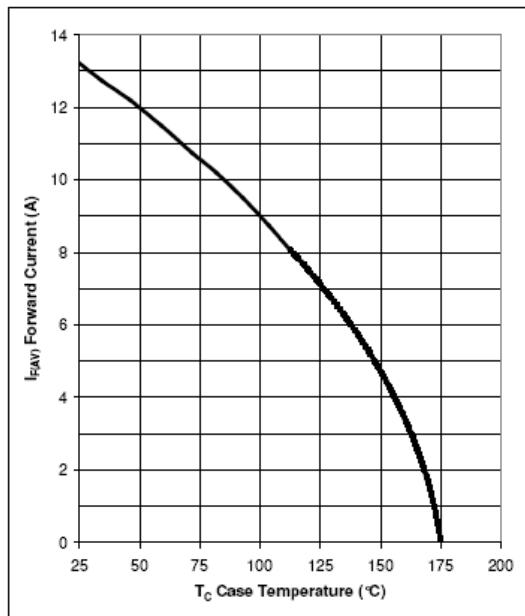
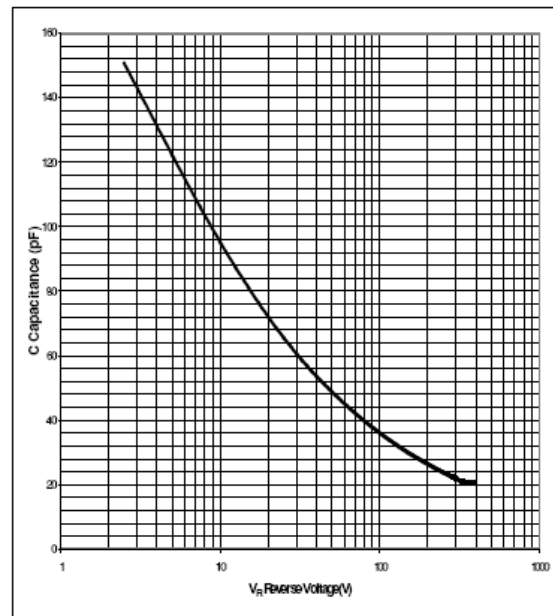


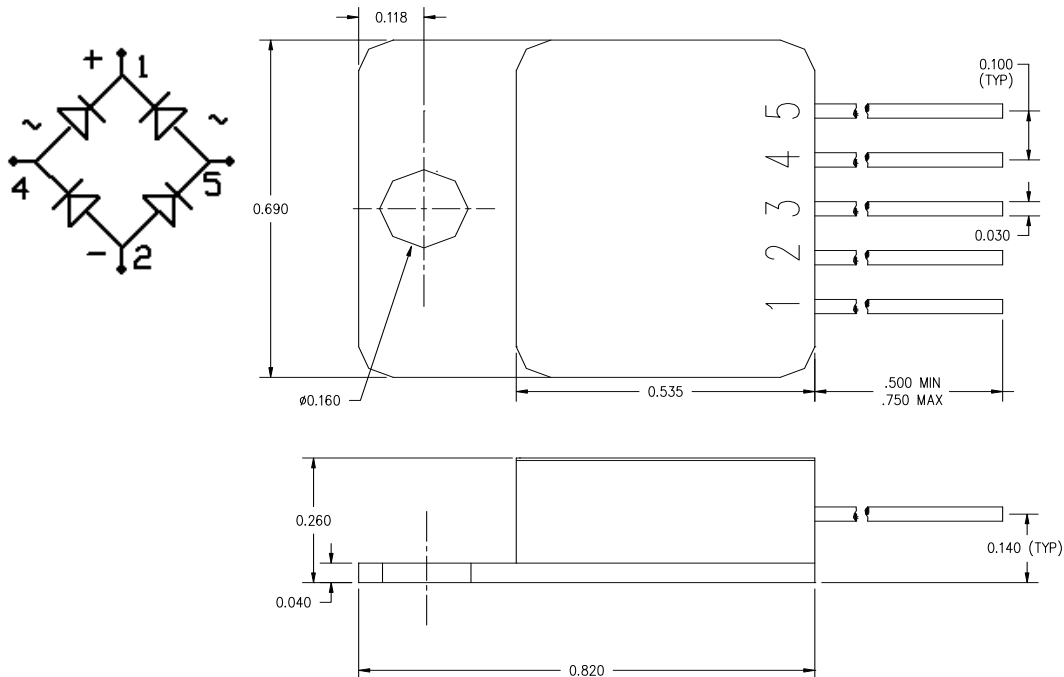
Figure 4. Capacitance vs. Reverse Voltage



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MECHANICAL DIMENSIONS (inches)
MO-078

**PINOUT TABLE**

DEVICE TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5
SINGLE PHASE FULL WAVE BRIDGE	DC(+)	DC(-)	NC	AC(1)	AC(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.

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