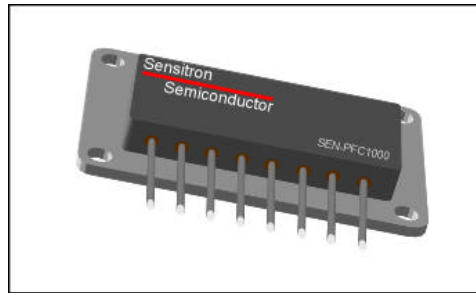


TECHNICAL DATA
DATA SHEET 4159, REV. –

NON-HERMETIC POWER FACTOR CORRECTION MODULE



Power Factor Correction Semiconductor Module

FEATURES:

- SEALED PACKAGE
- 600 VOLT, 0.21 OHM, 26.0A MOSFET
- ULTRAFAST DIODE
- RECTIFIER BRIDGE
- 1500/3000 WATT PFC
- HEAT SINK MOUNTING

MOSFET RATINGS

MAXIMUM RATINGS

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

RATING	SYMBOL	MIN.	TYP.	MAX.	UNITS
GATE TO SOURCE VOLTAGE	V_{GS}	-	-	± 30	Volts
ON-STATE DRAIN CURRENT @ $T_C = 25^\circ\text{C}$	I_D	-	-	26	Amps
ON-STATE DRAIN CURRENT @ $T_C = 100^\circ\text{C}$	I_D	-	-	17	Amps
OPERATING AND STORAGE TEMPERATURE	T_{OP}/T_{STG}	-55	-	+150	$^\circ\text{C}$
TOTAL DEVICE DISSIPATION @ $T_C = 25^\circ\text{C}$	P_D	-	-	470	Watts

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNITS
DRAIN TO SOURCE BREAKDOWN VOLTAGE $V_{GS} = 0V, I_D = 1.0mA$	BV_{DSS}	600	-	-	Volts
STATIC DRAIN TO SOURCE ON STATE RESISTANCE $V_{GS} = 10V, I_D = 16A$	$R_{DS(ON)}$	-	-	0.25	Ω
GATE THRESHOLD VOLTAGE $V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(th)}$	3.0	-	5.0	Volts
FORWARD TRANSCONDUCTANCE $V_{DS} = 50V, I_{DS} = 16.0A$	g_{fs}	13	-	-	$S(1/\Omega)$
ZERO GATE VOLTAGE DRAIN CURRENT $V_{DS} = 600V, V_{GS} = 0V$ $V_{DS} = 480V, V_{GS} = 0V, T_J = 125^\circ\text{C}$	I_{DSS}	-	-	50 2000	μA
GATE TO SOURCE LEAKAGE FORWARD GATE TO SOURCE LEAKAGE REVERSE	I_{GSS}	-	-	100 -100	nA
TURN ON DELAY TIME RISE TIME TURN OFF DELAY TIME FALL TIME	$t_{d(ON)}$ t_r $t_{d(OFF)}$ t_f	-	-	31 110 47 42	nsec
TOTAL GATE CHARGE $I_D = 26A,$	Q_g	-	-	180	nC

SENSITRON**TECHNICAL DATA**

DATA SHEET 4159, REV. –

ELECTRICAL CHARACTERISTICS – MOSFET RATINGS – Cont.

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNITS
GATE TO SOURCE CHARGE	$V_{GS} = 10V$	Q_{gs}	-	-	61	nC
GATE TO DRAIN CHARGE	$V_{DS} = 480V$	Q_{gd}	-	-	85	nC
DIODE FORWARD VOLTAGE	$T_C = 25^\circ C, I_S = 26A,$ $V_{GS} = 0V$	V_{SD}	-	-	1.5	Volts
REVERSE RECOVERY CHARGE	$T_J = 25^\circ C,$ $di/dt \leq 100A/\mu sec, V_{DD} \leq 50V$	Q_{RR}	-	-	10	μC
REVERSE RECOVERY TIME	$T_J = 25^\circ C,$ $I_F = 26A,$ $Di/dt \leq 100A/\mu sec$	t_{rr}	-	-	250	nsec
THERMAL RESISTANCE		R_{thjc}		.25		$^\circ C/W$
INPUT CAPACITANCE	$V_{GS} = 0V$	C_{iss}	-	5020	-	pF
OUTPUT CAPACITANCE	$V_{DS} = 25V$	C_{oss}		450		
REVERSE TRANSFER CAPACITANCE	$f = 1.0MHz$	C_{rss}		34		

DIODE BRIDGE RATINGS**MAX. RATINGS/ELECTRICAL CHARACTERISTICS**All ratings are at $T_A = 25^\circ C$ unless otherwise specified.

RATING	CONDITIONS	MIN	TYP	MAX	UNIT
Peak Inverse Voltage (PIV)	-	-	-	800	Vdc
Average DC Output Current (I_o) ($T_C = \text{Case Temp}$)	$T_C = 100^\circ C$	-	-	50	Amps
Peak Single Cycle Surge Current (I_{FSM})	$t_p = 8.3 \text{ ms}$ Single Half Cycle Sine Wave, Superimposed On Rated Load	-	-	500	Amps(pk)
Maximum Forward Voltage Per Leg (V_f)	$I_f = 50A_{dc}$ (300 μsec pulse, duty cycle < 2%)	-	-	1.2	Volts
THERMAL RESISTANCE				1.5	$^\circ C/W$
Maximum Instantaneous Reverse Current At Rated (PIV)	$T_A = 25^\circ C$ $T_A = 100^\circ C$	-	-	5.0 300	$\mu Amps$

SENSITRON

TECHNICAL DATA

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ULTRAFAST RECTIFIER RATINGS**MAXIMUM RATINGS**All ratings are @ $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified

RATING	SYMBOL	MAX	UNIT
PEAK INVERSE VOLTAGE PER LEG	PIV	800	Volts
MAX DC OUTPUT CURRENT ($T_C=100\text{ }^{\circ}\text{C}$) COMMON CATHODE / ANODE	I_O	25	Amps
MAXIMUM SURGE CURRENT ($T_C=25\text{ }^{\circ}\text{C}$, $T=8.3\text{ MSEC}$) PER LEG	I_{FSM}	100	Amps
REVERSE RECOVERY TIME ($I_f = 25\text{A}$, $di/dt = 100\text{A}/\mu\text{sec}$, $V_R = 30\text{V}$, $T_C=25\text{ }^{\circ}\text{C}$)		50	nsec
THERMAL RESISTANCE		1.5	$^{\circ}\text{C}/\text{W}$
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE	Top/Tstg	-55 to + 150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX	UNITS
MAXIMUM FORWARD VOLTAGE DROP, Pulsed, PER LEG ($T_C = 25\text{ }^{\circ}\text{C}$ ($I_f = 25\text{ A}$)	V_f	2.60	Volts
MAXIMUM FORWARD VOLTAGE DROP, Pulsed, PER LEG ($T_C = 100\text{ }^{\circ}\text{C}$ ($I_f = 25\text{ A}$)	V_f	2.45	Volts
MAXIMUM REVERSE CURRENT PER LEG ($T_C = 25\text{ }^{\circ}\text{C}$ I_r @ 800V PIV	I_r	200	μA
MAXIMUM REVERSE CURRENT PER LEG ($T_C = 100\text{ }^{\circ}\text{C}$ I_r @ 800V PIV	I_r	2	mA

MODULE RATINGS

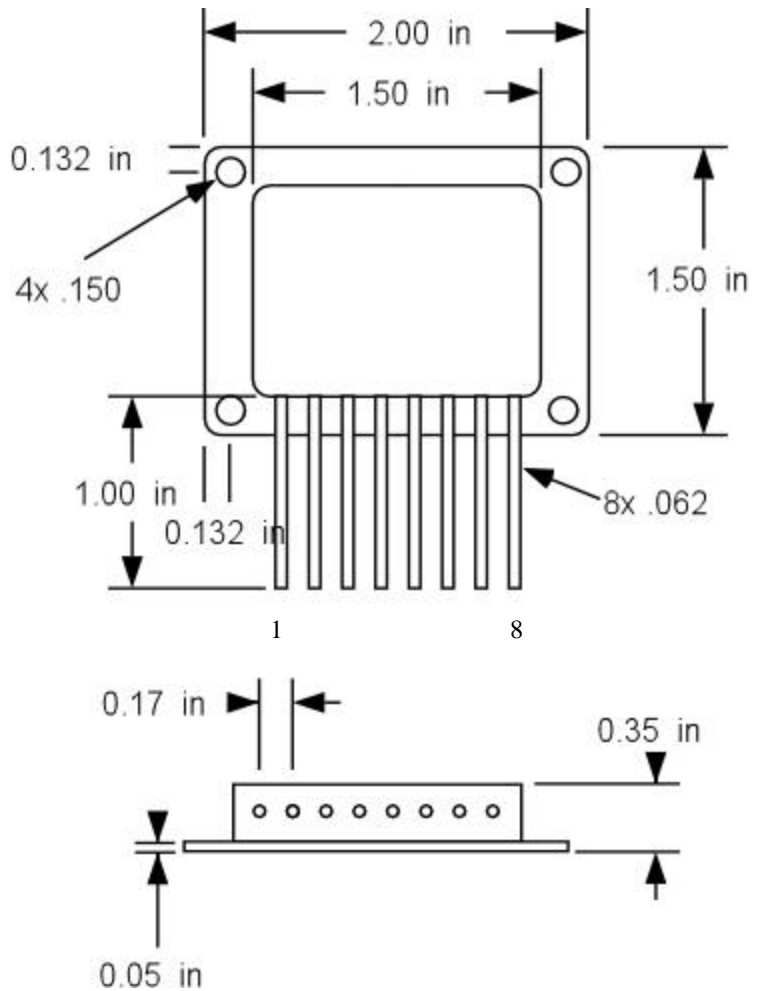
MAXIMUM OPERATING AND STORAGE TEMPERATURE RANGE	Top/Tstg	-55 to + 150	$^{\circ}\text{C}$
AVERAGE THERMAL RESISTANCE	$R_{\theta jc}$	1.1	$^{\circ}\text{C}/\text{W}$

SENSITRON

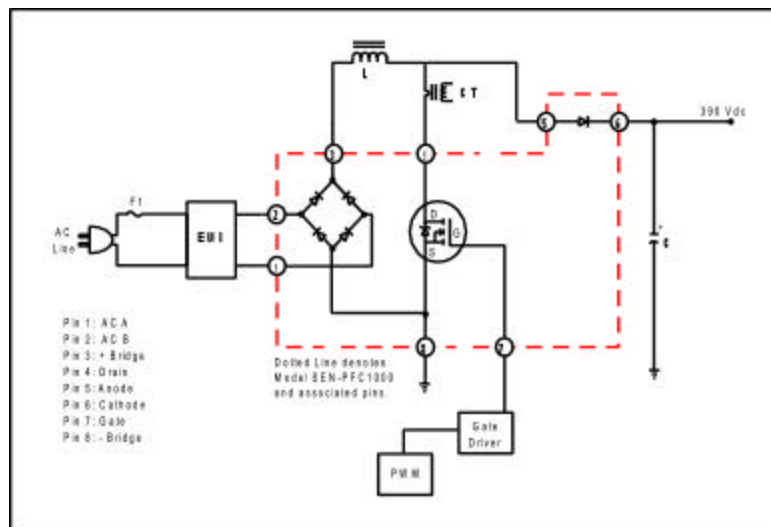
TECHNICAL DATA
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MECHANICAL DIMENSIONS: in Inches

PIN NUMBER	DEVICE	FUNCTION
1	BRIDGE RECTIFIER	AC INPUT
2	BRIDGE RECTIFIER	AC INPUT
3	BRIDGE RECTIFIER	+ DC OUTPUT
4	MOSFET	DRAIN
5	ULTRAFAST RECTIFIER	ANODE
6	ULTRAFAST RECTIFIER	CATHODE
7	MOSFET	GATE
8 (DUAL USE)	MOSFET	SOURCE
	BRIDGE RECTIFIER	- DC OUTPUT



SCHEMATIC DIAGRAM



TECHNICAL DATA

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