600 VOLT, 16 AMP LOW LOSS ULTRAFAST IGBT THREE PHASE BRIDGE MODULE

Features

- Isolated base plate
- Light weight low profile standard package
- Aluminum Nitride substrate
- High temperature engineering plastic shell construction

ELECTRICAL CHARACTERISTICS PER IGBT LEG

(Tj=25^{0}C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I_C = 200 μA, V_{GE} = 0V	BV_{CES}	600	-	-	V
Continuous Collector Current T_C = 25 ^{O}C T_C = 100 ^{O}C	I_C	- -	- -	30 16	A
Pulsed Collector Current, 1ms	I_{CM}	-	-	90	A
Gate to Emitter Voltage	V_{GE}	-	-	+/-20	V
Gate-Emitter Leakage Current , V_{GE} = +/-20V	I_{GES}	-	-	+/- 100	nA
Gate Threshold Voltage, I_C = 0.43 mA	$V_{GE(TH)}$	4.1	-	5.7	V
Zero Gate Voltage Collector Current V_{CE} = 600 V, V_{GE}=0V T_i=25^{o}C V_{CE} = 480 V, V_{GE}=0V T_i=125^{o}C	I_{CES}	- -	- -	0.1 1.0	mA mA
Collector to Emitter Saturation Voltage T_C = 25 ^{O}C I_C = 16A, V_{GE} = 15V T_C = 125 ^{O}C I_C = 16A, V_{GE} = 15V	$V_{CE(SAT)}$	- -	- -	2.2 2.6	V V
Input Capacitance Output Capacitance Reverse Transfer Cap. V_{CE} = 25 V, V_{GE} = 0 V, f = 1 MHz	C_{ies} C_{oes} C_{res}	- - -	1630 108 50	- - -	pF
Turn On Delay Time Rise Time Turn Off Delay Time Fall Time	$t_{d(on)}$ t_r $t_{d(off)}$ t_f	- - - -	23 35 220 26	- - - -	ns
Turn on Energy Loss Turn off Energy Loss (Including diode reverse recovery) (T_j = 25^{O}C, I_C = 16A, V_{GE} = 15V, V_{CE} = 400 V, R_G = 10 Ω)	E_{on} E_{off}	- -	0.69 0.33	- -	mJ mJ

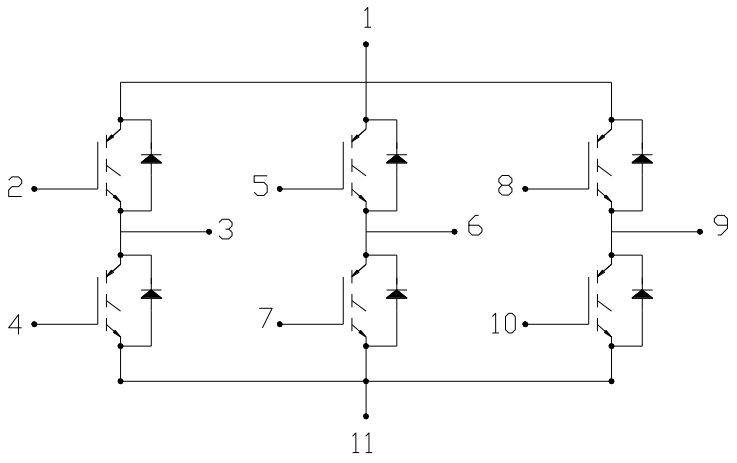
ULTRAFAST DIODES RATING AND CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Diode Peak Inverse Voltage	PIV	600	-		V
Continuous Forward Current, T_C = 25 °C T_C = 100 °C	I_F			20 12	A
Forward Surge Current, t_p = 1ms	I_{FSM}			90	A
Diode Forward Voltage, I_F = 16A T_C = 25 °C I_F = 16A T_C = 125 °C	V_F	- -	- -	1.9 1.8	V V
Diode Reverse Recovery Time I_F = 16A T_C = 25 °C	t_{rr}	-	180	-	ns
Diode Reverse Recovery Charge (I_F=16A, V_{RR}=200V , di/dt=200 A/µs T_C = 25 °C)	Q_{rr}	-	1.6	-	µC

PACKAGE CHARACTERISTICS

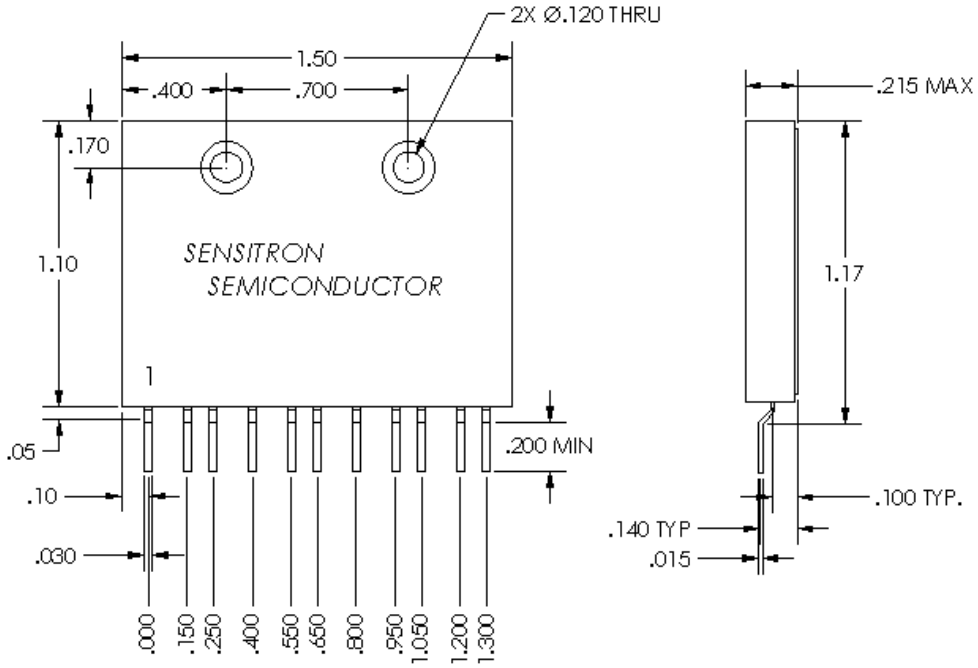
Diode Maximum Junction-to-Case Thermal Resistance Per Leg	$R_{\theta JC}$	-	-	3.0	°C/W
IGBT Maximum Junction-to-Case Thermal Resistance Per Leg	$R_{\theta JC}$	-	-	1.0	
Maximum and Storage Junction Temperature	T_{jmax}	-55	-	150	°C
Isolation to Base Plate	V_{iso}	-	-	2500	V

Schematic Diagram:



Mechanical Outline (inches):

SPM1009



NOTES:

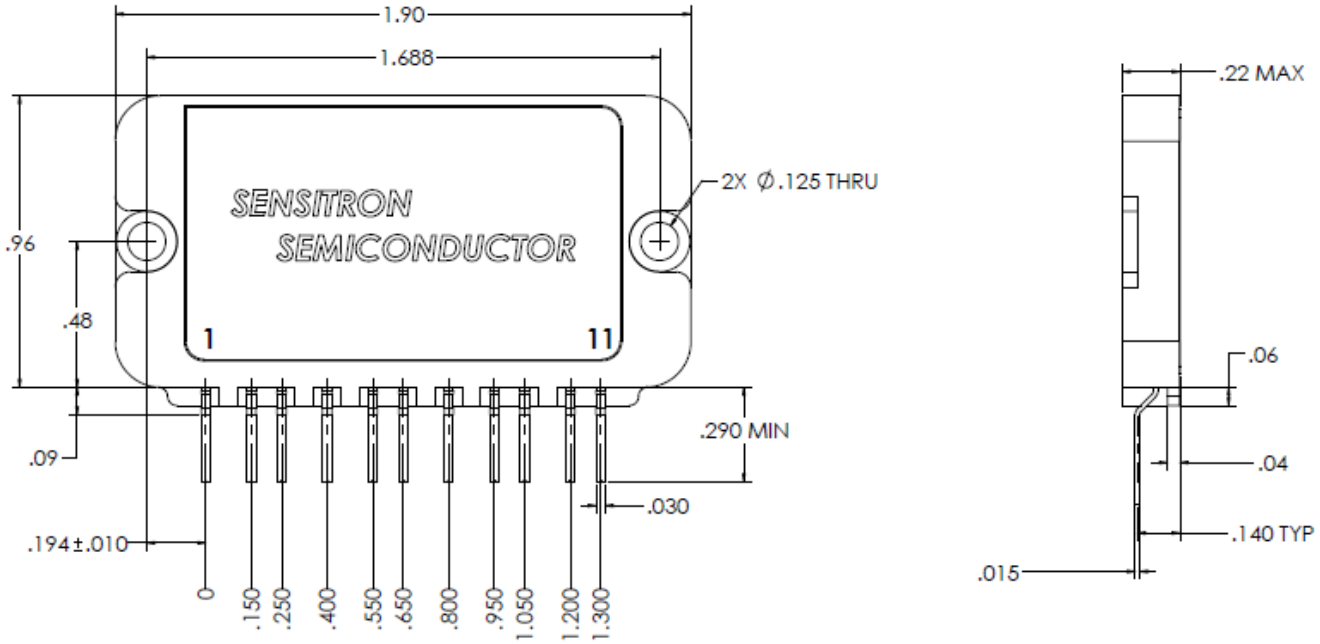
1. TOLERANCE UNLESS OTHERWISE NOTED:
.XX = ±.010
.XXX = ±.005

2. MAXIMUM MOUNTING TORQUE = 3 IN-LB

3. PRE-TORQUE BOTH FASTENERS TO 1.5 IN-LB MAX
BEFORE APPLYING FINAL TORQUE.

4. CONTACT FACTORY FOR THERMAL INTERFACE MATERIAL
SUGGESTIONS AND COMPATIBILITY.

SPM1009A



NOTES:

1. TOLERANCE UNLESS OTHERWISE NOTED:
   .XX = ±.010
   .XXX = ±.005

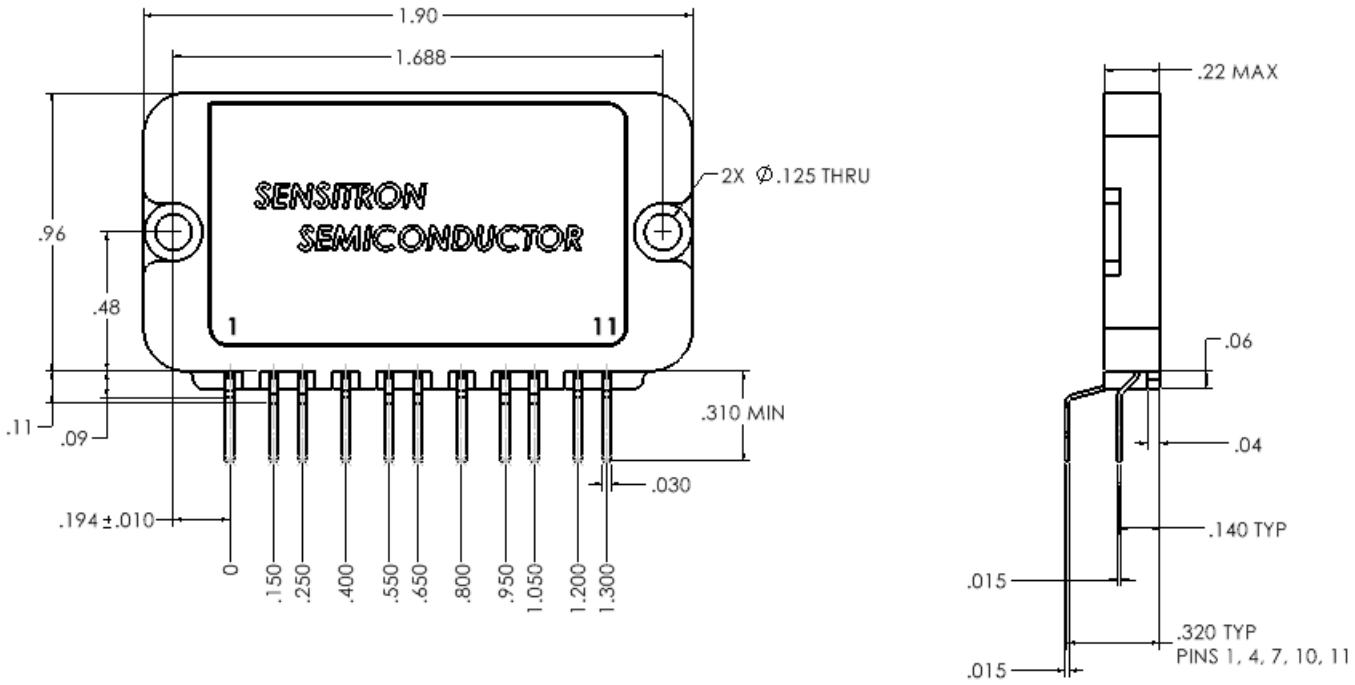
2. MAXIMUM MOUNTING TORQUE= 4 IN-LB

3. PRE-TORQUE BOTH FASTENERS TO 2 IN-LB MAX BEFORE APPLYING FINAL TORQUE.

4. CONTACT FACTORY FOR THERMAL INTERFACE MATERIAL SUGGESTIONS AND COMPATIBILITY

Package: EPAK1

SPM1009B



NOTES:

1. TOLERANCE UNLESS OTHERWISE NOTED:
.XX = ±.010
.XXX = ±.005

2. MAXIMUM MOUNTING TORQUE= 4 IN-LB

3. PRE-TORQUE BOTH FASTENERS TO 2 IN-LB MAX BEFORE APPLYING FINAL TORQUE.

4. CONTACT FACTORY FOR THERMAL INTERFACE MATERIAL SUGGESTIONS AND COMPATIBILITY

DISCLAIMER:
1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the Sensitron Semiconductor sales department for the latest version of the datasheet(s).
2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment) , safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement .
3- In no event shall Sensitron Semiconductor be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). Sensitron Semiconductor assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
4- In no event shall Sensitron Semiconductor be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
5- No license is granted by the datasheet(s) under any patents or other rights of any third party or Sensitron Semiconductor.
6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of Sensitron Semiconductor.
7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations.