TECHNICAL DATA
DATASHEET 4109, REV ENG-

Three-Phase IGBT BRIDGE, With Gate Driver and Optical Isolation

DESCRIPTION: A 1200 VOLT, 250 AMP, THREE PHASE IGBT BRIDGE

ELECTRICAL CHARACTERISTICS PER IGBT DEVICE (Tj=25^{0}C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I_C = 250 µA, V_{GE} = 0V	BV_{CES}	1200	-	-	V
Continuous Collector Current T_C = 25 ^{O}C T_C = 90 ^{O}C	I_C	-	-	250 240	A
Pulsed Collector Current, 1mS	I_{CM}	-	-	600	A
Gate to Emitter Voltage	V_{GE}	-	-	+/-20	V
Gate-Emitter Leakage Current , V_{GE} = +/-20V	I_{GES}	-	-	+/- 300	nA
Gate Threshold Voltage, I_C=2mA	$V_{GE(TH)}$	3.0	-	6.0	V
Zero Gate Voltage Collector Current V_{CE} = 1200 V, V_{GE}=0V T_j=25^{o}C V_{CE} = 900 V, V_{GE}=0V T_j=125^{o}C	I_{CES}	-	-	 5 40	 mA mA
Collector to Emitter Saturation Voltage, T_C = 25 ^{O}C I_C = 200A, V_{GE} = 15V,	$V_{CE(SAT)}$	-	2.5	2.8	V
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.10	^{o}C/W
Brake IGBT 60A Maximum Current				0.20	^{o}C/W
Brake IGBT SPECIFICATIONS					
Continuous Collector Current T_C = 25 ^{O}C T_C = 90 ^{O}C	I_C	-	-	150 120	A
Pulsed Collector Current, 0.5mS	I_{CM}	-	-	300	A
Over-Temperature Shutdown					
Over-Temperature Shutdown	Tsd	100	110	120	^{o}C
Over-Temperature Shutdown Hysteresis			20		^{o}C
Over-Temperature Output	Tso		10		10mV/^{o}C

SENSITRON

TECHNICAL DATA

DATASHEET 4109, REV ENG-

ULTRAFAST DIODES RATING AND CHARACTERISTICS					
Diode Peak Inverse Voltage	PIV	1200	-	-	V
Continuous Forward Current, T_C = 90 ^{O}C	I_F	-	-	240	A
Forward Surge Current, t_p = 10 msec	I_{FSM}	-	-	700	A
Diode Forward Voltage, I_F = 200A	V_F	-	2.0	2.3	V
Diode Reverse Recovery Time (I_F=200A, V_{RR}=600V , di/dt=200 A/µs)	t_{rr}	-	180	250	nsec
Maximum Thermal Resistance	$R_{\theta JC}$	-	-	0.15	^{o}C/W
Gate Driver					
Supply Voltage	VCC	10	15	20	V
Input On Current	HIN, LIN	2		5.0	mA
Opto-Isolator Logic High Input Threshold	I_{th}	-	1.6	-	mA
Input Reverse Breakdown Voltage	BV_{in}	5.0	-	-	V
Input Forward Voltage @ I_{in} = 5mA	V_F	-	1.5	1.7	V
Under Voltage Lockout	VCCUV	7.0	-	9.7	V
ITRIP Refernce Voltage (1)	Itrip-ref	1.45	1.5	1.55	V
Desaturation Over-Current Protection Blanking time (2)		3	5	TBD	µsec
Input-to-Output Turn On Delay Output Turn On Rise Time Input-to-Output Turn Off Delay Output Turn Off Fall Time At VCC=300V, IC=50A, T_C = 25	t_{ond} t_r t_{offd} t_f	- - - -		800 180 1000 160	nsec
Input-Output Isolation Voltage	-	1000	-	-	V
Hall Current Sensors Gain, at DC bus, Phase A, and Phase		TBD	TBD	TBD	V/A

Maximum operating Junction Temperature	T_{jmax}	-40	-	150	^{o}C
Maximum Storage Junction Temperature	T_{jmax}	-55	-	150	^{o}C

(1) ITRIP Cycle-by cycle current limit is internally set to 200A peak. The set point can be lowered by connecting a resistor between Itrip-ref and Gnd. The set point can be increased by connecting a resistor between Itrip-ref and +5V ref

(2) Desaturation blanking maximum time is TBD and is only provided at the low-side IGBTs.

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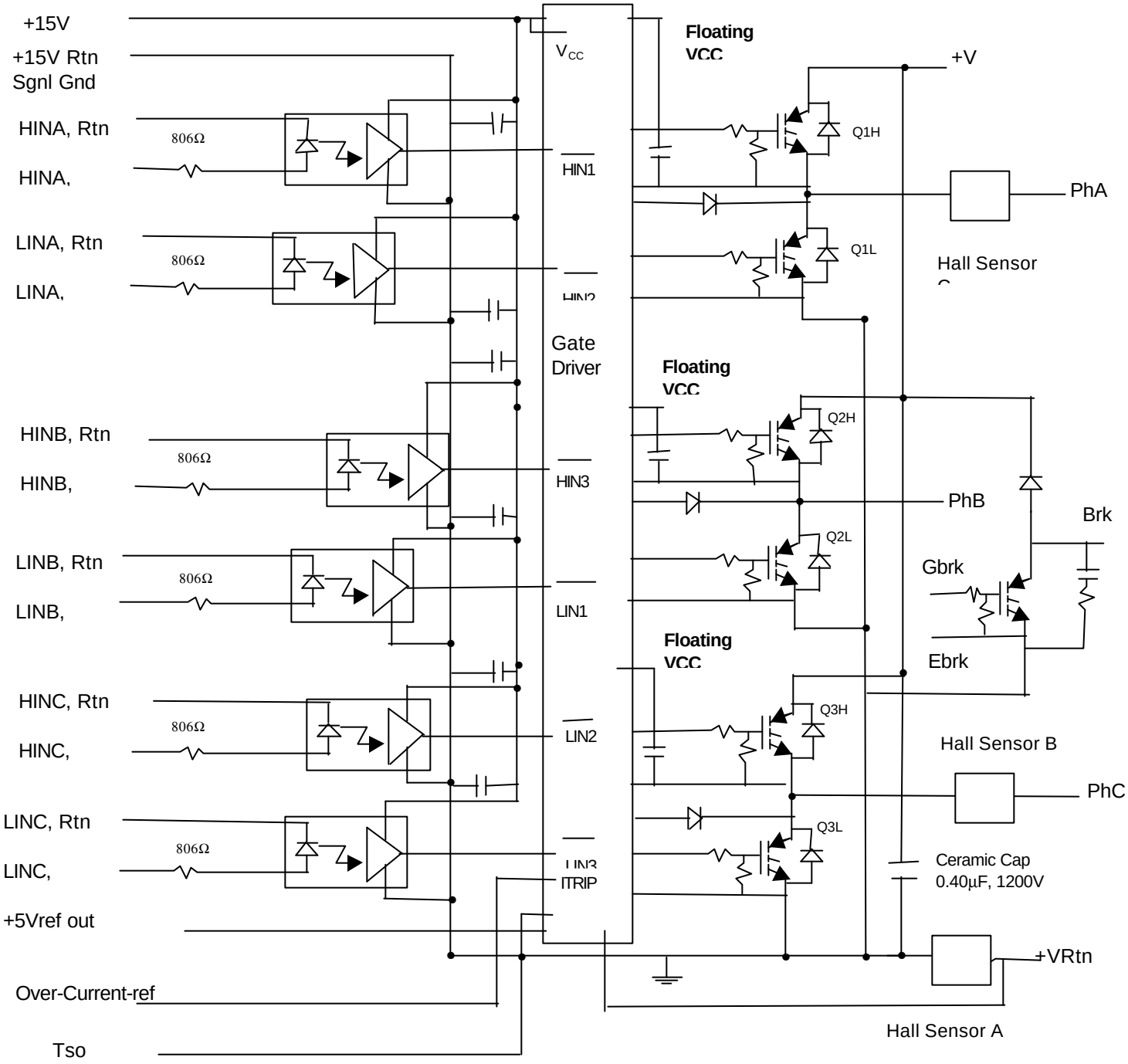
TECHNICAL DATA

DATASHEET 4109, REV ENG-

Schematic Diagram:



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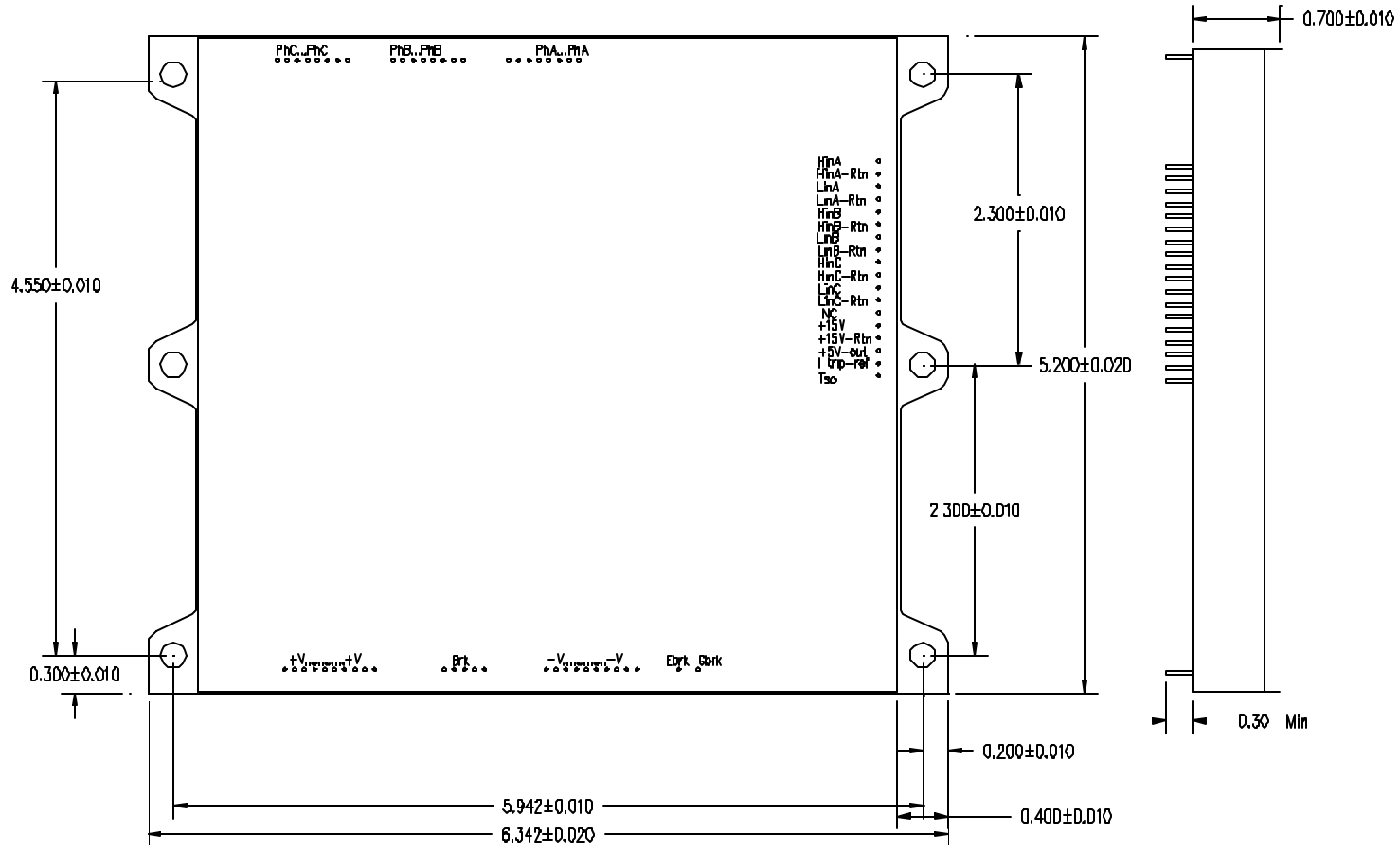
DATASHEET 4109, REV ENG-

Package Drawing:



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