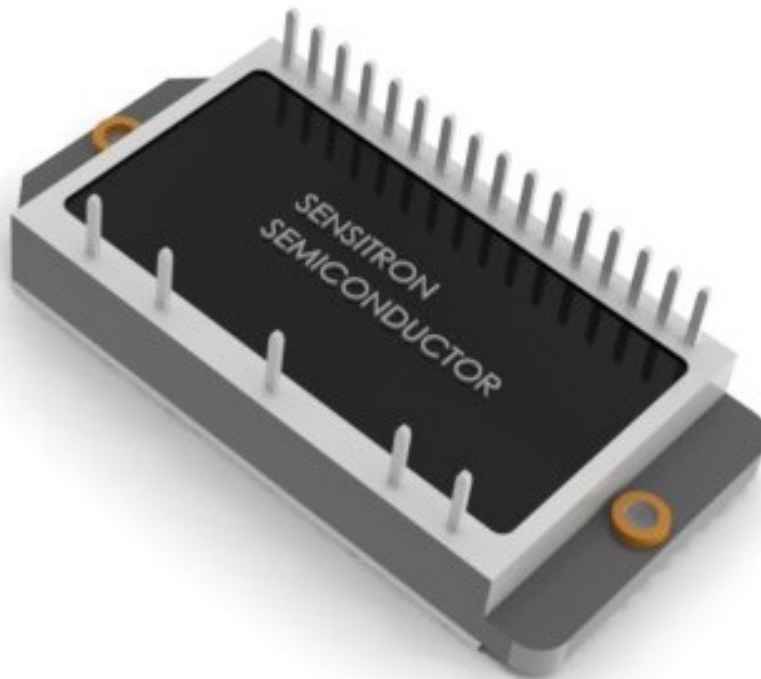

Technical Data
DATASHEET 5361, Rev. -

THREE-PHASE IGBT BRIDGE with SiC DIODES, BRAKE MOSFET and INTEGRATED BRAKE RESISTOR

DESCRIPTION:

- 600 VOLT, 50 AMP, THREE PHASE IGBT BRIDGE
- SILICON CARBIDE (SiC) 20A 600V ANTI PARALLEL DIODES – ZERO RECOVERY AND NO ADDITIONAL LOSSES ON COMPLIMENTARY IGBT
- 600V, 22A BRAKE MOSFET
- INTEGRATED G-E AND G-S RESISTORS FOR HIGHER ESD IMMUNITY
- INTEGRATED BRAKE RESISTOR WITH DIRECT HEAT TRANSFER TO BASE
- RTD TO MONITOR MODULE TEMPERATURE
- AISiC BASE PLATE FOR HIGH TEMPERATURE CYCLING CAPABILITY
- LOW PROFILE LIGHT WEIGHT PACKAGE



Technical Data
DATASHEET 5361, Rev. -

THREE PHASE IGBT SECTION

ELECTRICAL CHARACTERISTICS PER IGBT DEVICE

(T_j=25°C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
-----------	--------	-----	-----	-----	------

INVERTER IGBT SPECIFICATIONS

Collector to Emitter Breakdown Voltage I _C = 1mA, V _{GE} = 0V	BV _{CES}	600	-	-	V
Gate Threshold Voltage I _C = 1mA, V _{CE} = V _{GE}	V _{GETH}	4.5	5.5	6.5	V
Continuous Collector Current T _C = 25 °C T _C = 80 °C	I _C	-	-	50 28	A
Zero Gate Voltage Collector Current V _{CE} = 600V, V _{GE} = 0V T _i = 25°C V _{CE} = 480V, V _{GE} = 0V T _i = 125°C	I _{CES}	-	-	0.5 15	mA mA
Collector to Emitter Saturation Voltage, I _C = 50A, V _{GE} = 15V T _J = 25 °C T _J = 125 °C	V _{CE(SAT)}	-	2.1 2.3	2.5	V
Gate to Emitter Leakage Current V _{CE} = 0V, V _{GE} = 20V	I _{GES}			200	nA
IGBT Gate – Emitter Resistance		-	100	-	K Ohm
IGBT turn-on switching loss V _{CE} = 300V, I _C = 50A, T _J = 25°C	E _{ON}	-	0.6	-	mJ
IGBT turn-off switching loss V _{CE} = 300V, I _C = 50A, T _J = 25°C	E _{OFF}	-	1.6	-	mJ
Junction To Case Thermal Resistance	R _{θJC}	-	-	0.75	°C/W

INVERTER DIODE SPECIFICATIONS

Diode Peak Inverse Voltage	PIV	600	-	-	V
Continuous Forward Current, T _C = 80 °C	I _F	-	-	20	A
Diode Forward Voltage I _F = 20A, T _J = 25 °C T _J = 125 °C	V _F	-	1.8 2.1	2.0	V
Total Capacitive Charge I _F =20A, V _{RR} = 300V, T _J = 25 °C	Q _C	-	50	-	nC
Junction To Case Thermal Resistance	R _{θJC}	-	-	1.0	°C/W

Technical Data
DATASHEET 5361, Rev. -

BRAKE MOSFET SPECIFICATIONS

Drain to Source Breakdown Voltage $I_D = 1\text{mA}, V_{GS} = 0\text{V}$	V_{DS}	600	-	-	V
Continuous Drain Current $T_C = 25^\circ\text{C}$ $T_C = 80^\circ\text{C}$	I_D	-	-	22 12	A
Gate Threshold Voltage $I_D = 0.25\text{mA}, V_{DS} = V_{GS}$	V_{GSTH}	2	3	4	V
Zero Gate Voltage Drain Current $V_{DS} = 600\text{V}, V_{GS} = 0\text{V}, T_j = 25^\circ\text{C}$	I_{DSS}	-	-	0.1	mA
Drain to Source On Resistance, $I_D = 11\text{A}$ $T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	$R_{DS(ON)}$	-	0.19 0.32	0.22	Ω
Mosfet Gate – Source Resistance		-	100	-	K Ohm
Pulsed Collector Current, 0.5ms	I_{DM}	-	-	60	A
Total Gate Charge, , $I_D = 11\text{A}, V_{DS} = 10\text{V}$ $T_j = 25^\circ\text{C}$	Q_g	-	75	120	nC
Junction To Case Thermal Resistance	$R_{\theta JC}$	-	-	0.9	$^\circ\text{C/W}$

BRAKE RESISTOR SPECIFICATIONS

Resistor Value	B_R	-	300	-	Ω
Power Rating $T_C = 25^\circ\text{C}$ $T_C = 80^\circ\text{C}$	P_R	-	4 3	-	W

RTD SPECIFICATIONS (R = 1k Ω at 0 $^\circ\text{C}$)

Temperature coefficient (0 $^\circ\text{C}$ – 100 $^\circ\text{C}$)	K_T		3850		ppm/K
Resistance at -55 $^\circ\text{C}$ (temperature tolerance $\pm 0.58^\circ\text{C}$)	$R_{.55}$		783.19		Ω
Resistance at 125 $^\circ\text{C}$ (temperature tolerance $\pm 0.93^\circ\text{C}$)			1479.51		Ω

MODULE STORAGE AND OPERATING CONDITIONS

Operating Junction Temperature	T_j	-55	-	150	$^\circ\text{C}$
Storage Ambient Temperature	T_s	-55	-	150	$^\circ\text{C}$
Operating Case / Ambient Temperature	T_c	-55	-	100	$^\circ\text{C}$

MODULE ISOLATION

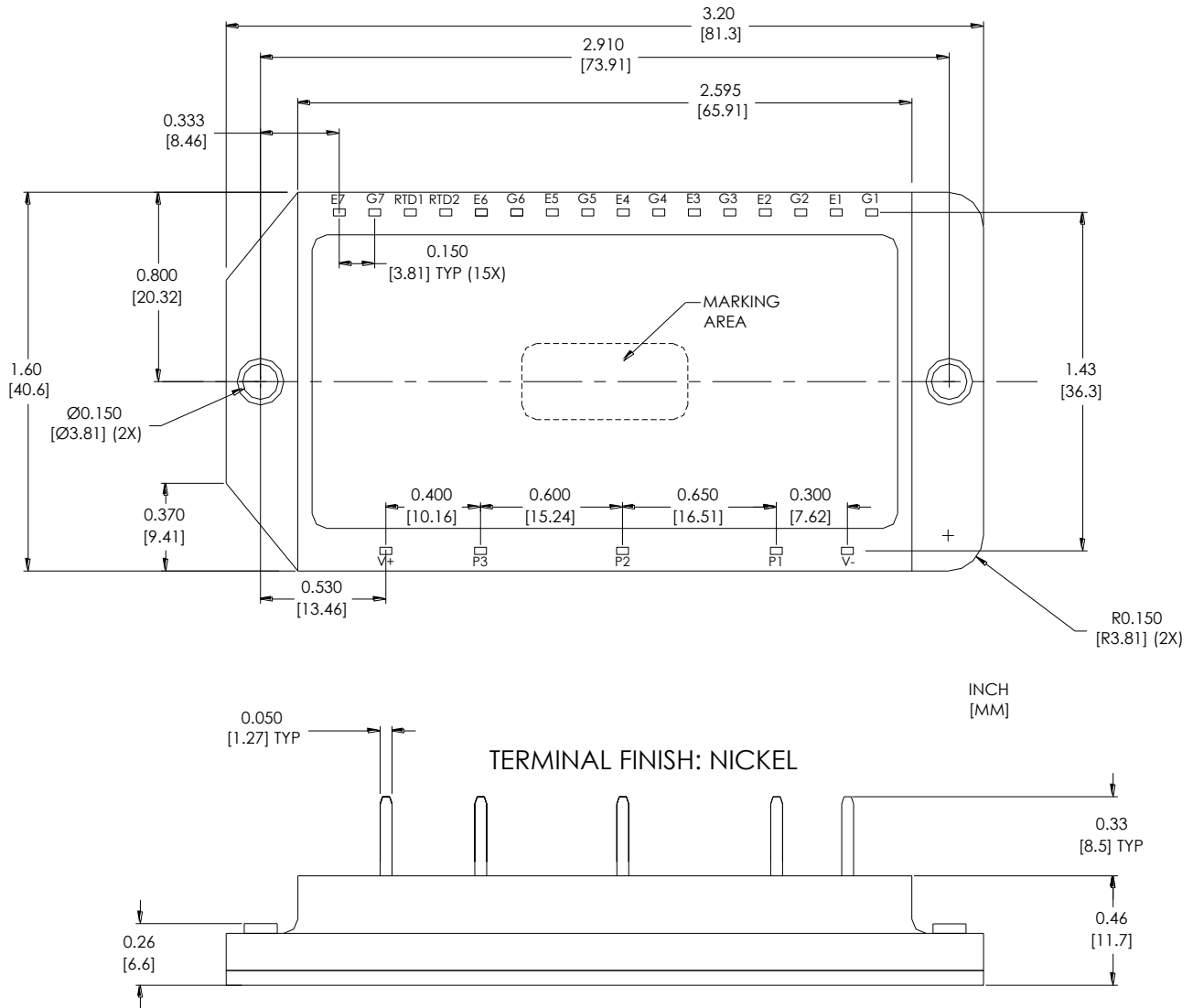
All pins to baseplate (sea level)	-	2500	-	-	VDC
-----------------------------------	---	------	---	---	-----

MODULE WEIGHT

Total Weight		-	-	95	grams
--------------	--	---	---	----	-------

Technical Data
DATASHEET 5361, Rev. -

MECHANICAL OUTLINE



TOLERANCES UNLESS OTHERWISE NOTED

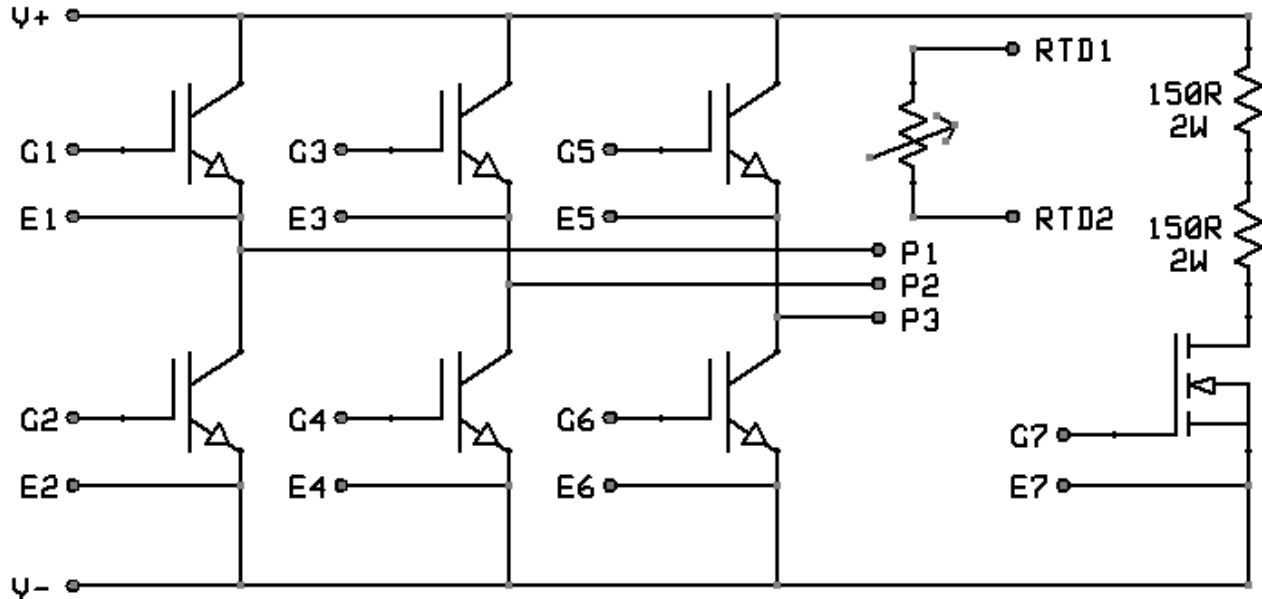
.XX= +/- .020 [.50]

.XXX= +/- .010 [.254]

RECOMMEND TORQUE VALUE : 10 IN-LBS.

Technical Data
DATASHEET 5361, Rev. -

SCHEMATIC



Note: The design includes G-E and G-S resistors for ESD protection as in table above (not shown in schematic).

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.