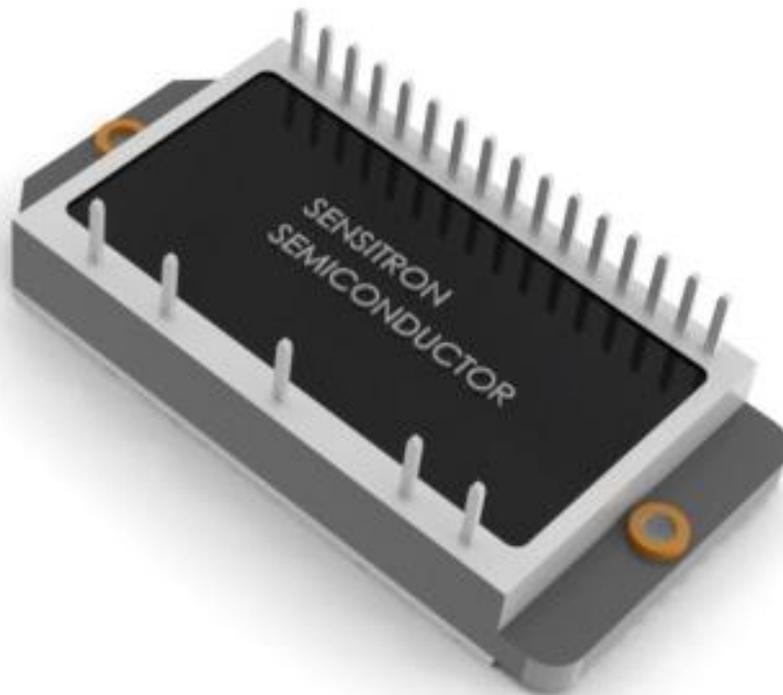

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THREE-PHASE IGBT BRIDGE with SiC DIODES, BRAKE MOSFET and INTEGRATED BRAKE RESISTOR

DESCRIPTION:

- 600 VOLT, 30 AMP, THREE PHASE IGBT BRIDGE
- FAST SWITCHING 3RD GENERATION IGBT
- 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 (-70⁰C to 200⁰C range)
- AISiC BASE PLATE FOR HIGH TEMPERATURE CYCLING CAPABILITY
- LOW PROFILE LIGHT WEIGHT PACKAGE



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THREE PHASE IGBT SECTION

ELECTRICAL CHARACTERISTICS PER IGBT DEVICE

(T_j=25°C UNLESS OTHERWISE SPECIFIED)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
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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}	4.1	5.1	5.7	V
Continuous Collector Current T _C = 25 °C T _C = 80 °C	I _C	-	-	30 19	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}	-	-	0.3 3.0	mA mA
Collector to Emitter Saturation Voltage, I _C = 30A, V _{GE} = 15V T _j = 25 °C T _j = 125 °C	V _{CE(SAT)}	-	2.1 2.4	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 (when used with SiC diode) V _{CE} = 400V, I _C = 30A, R _G = 10 Ω, T _j = 25°C	E _{ON}	-	0.75	-	mJ
IGBT turn-off switching loss V _{CE} = 400V, I _C = 30A, R _G = 10 Ω, T _j = 25°C	E _{OFF}	-	0.45	-	mJ
Junction To Case Thermal Resistance	R _{θJC}	-	-	1.0	°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

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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 = 1 k Ω at 0 $^\circ\text{C}$)

Temperature coefficient (0 $^\circ\text{C}$ – 100 $^\circ\text{C}$)	K_T		3850		ppm/K
Resistance at -55 $^\circ\text{C}$	R_{-55}		788.3		Ω
Resistance at 125 $^\circ\text{C}$	R_{125}		1481.3		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

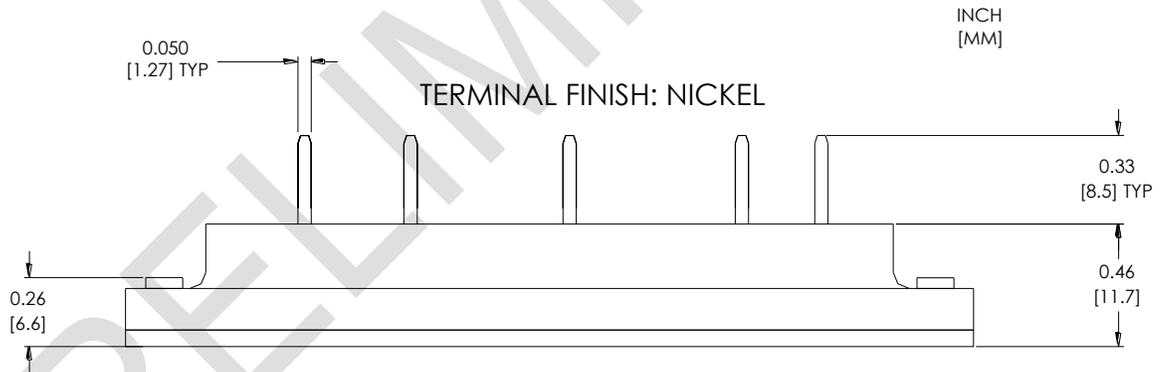
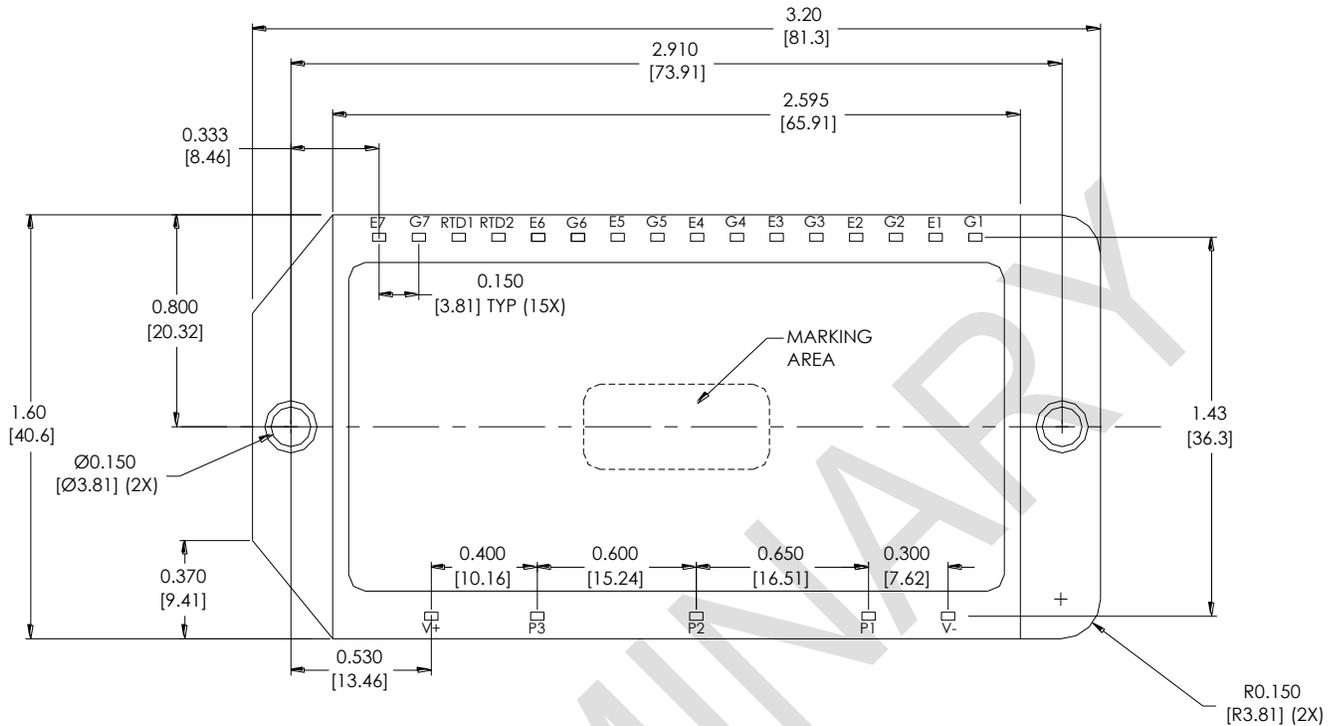
All pins to baseplate (sea level)	-	2500	-	-	VDC
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MODULE WEIGHT

Total Weight		-	-	95	grams
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MECHANICAL OUTLINE



TOLERANCES UNLESS OTHERWISE NOTED

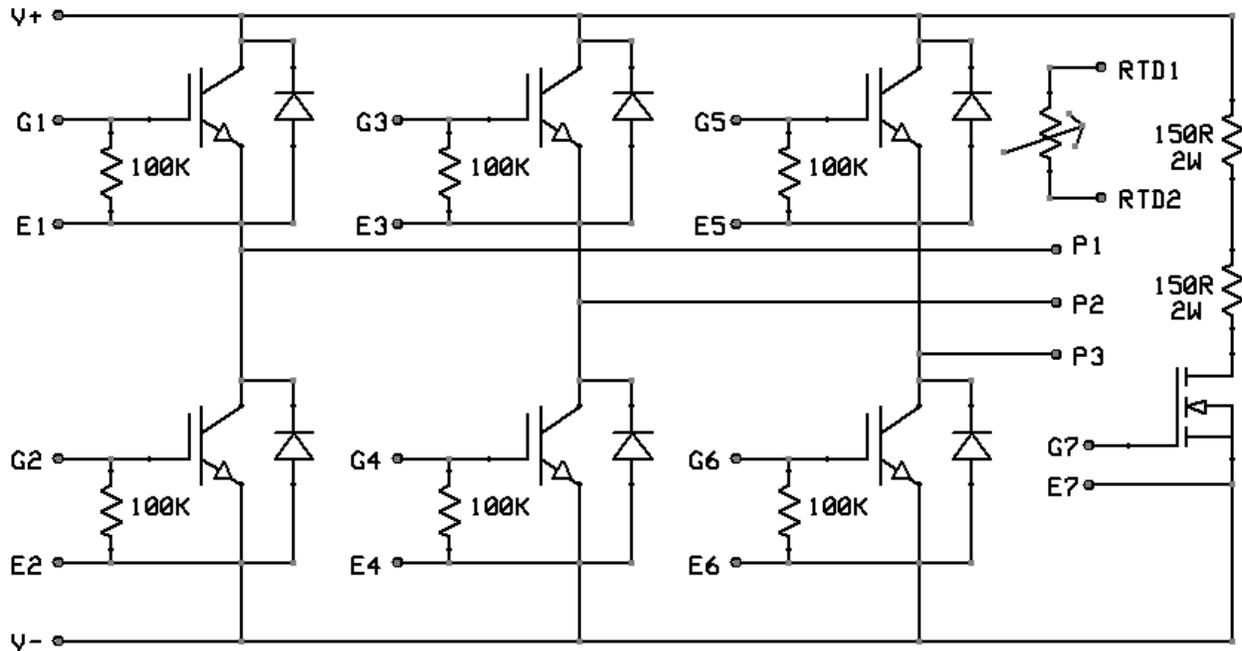
.XX= +/- .020 [.50]

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

RECOMMEND TORQUE VALUE : 10 IN-LBS.

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SCHMATIC



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