TECHNICAL DATA
DATASHEET 5279, Rev. -

Three-Phase IGBT BRIDGE
BRAKE IGBT + INRUSH SCR

DESCRIPTION:

- 1200 VOLT, 150 AMP, THREE PHASE IGBT BRIDGE AND BRAKE IGBT.
- NEAR HERMETIC PACKAGE.
- USE OF LATEST 4TH GENERATION IGBT AND DIODE TO MINIMIZE TOTAL LOSSES.
- 1200 VOLT, 133 AMP INRUSH THYRISTOR (SCR).
- AlSiC BASE PLATE FOR HIGH TEMPERATURE CYCLE CAPABILITY.
- LOW PROFILE LIGHTWEIGHT PACKAGE.
- INTERNAL BUSBAR LAYOUT MINIMIZES INDUCTANCE.
- INTERNAL GATE SOURCE PROTECTION ZENERS

THREE PHASE AND BRAKE IGBT SECTION

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
INVERTER AND BRAKE IGBT SPECIFICATIONS					
Collector to Emitter Breakdown Voltage I_C = 4mA, V_{GE} = 0V	BV_{CES}	1200	-	-	V
Gate Threshold Voltage I_C = 5.3mA, V_{CE} = V_{GE}	V_{GETH}	5.2	5.8	6.4	V
Continuous Collector Current T_C = 25 ^{O}C T_C = 80 ^{O}C	I_C	-	-	150 95	A
Zero Gate Voltage Collector Current V_{CE} = 1200V, V_{GE} = 0V T_i = 25^{o}C V_{CE} = 800V, V_{GE} = 0V T_i = 125^{o}C	I_{CES}	-	-	 1 25	 mA mA
Collector to Emitter Saturation Voltage, T_j = 25 ^{O}C I_C = 150A, V_{GE} = 15V T_j = 125 ^{O}C	$V_{CE(SAT)}$	-	1.9 2.2	2.4	V
Gate to Emitter Leakage Current V_{CE} = 0V, V_{GE} = 15V	I_{GES}			10	µA
IGBT Internal Gate Resistance		-	5	-	Ohm
IGBT turn-on switching loss V_{CE} = 600V, I_C = 150A, T_j = 25^{o}C		-	5	-	mJ
IGBT turn-off switching loss V_{CE} = 600V, I_C = 150A, T_j = 25^{o}C		-	10	-	mJ
Short Circuit Withstand Time, Conditions 600V DC link, V_{GE}=15V, I_{SC} = 600A, T_{start} < 175 ^{O}C		-	10	-	µs
Junction To Case Thermal Resistance	$R_{\theta JC}$	-	-	0.24	^{o}C/W
INVERTER DIODE SPECIFICATIONS					
Diode Peak Inverse Voltage	PIV	1200	-	-	V
Continuous Forward Current, T_C = 80 ^{O}C	I_F	-	-	95	A
Diode Forward Voltage I_F = 150A, T_j = 25 ^{O}C	V_F	-	1.8	2.2	V
Diode Peak Reverse Recovery Current I_F=150A, V_{RR}=600V, di/dt = 6000 A/µs, T_j = 25 ^{O}C	t_{rr}	-	220	-	A
Diode switching loss I_F=150A, V_{RR}=600V, di/dt = 6000 A/µs, T_j = 25 ^{O}C		-	7	-	mJ
Junction To Case Thermal Resistance	$R_{\theta JC}$	-	-	0.42	^{o}C/W

INRUSH THYRISTOR (SCR) SPECIFICATIONS

Peak Inverse Voltage	PIV	1200	-	-	V
Continuous Forward Current (I_{RMS}) T_C = 80 ^{O}C	I_T	-	-	133	A
Inrush Current, T_j = 25 ^{O}C, V_R = 0, t = 8.3msec	I_{FSM}	-	-	2400	A
Forward Voltage, T_j = 25 ^{O}C, I_{GT} = 150mA, I_T = 300A pulse	V_{AK}	-	-	1.8	V
Latching Current, T_C = 25 ^{O}C	I_L	-	-	450	mA
Holding Current, T_C = 25 ^{O}C	I_H	-	-	200	mA
Gate Trigger Current, V_D = 6V T_C = 25 ^{O}C T_C = - 55 ^{O}C	I_{GT}	-	-	150 240	mA
Junction To Case Thermal Resistance	$R_{\theta JC}$	-	-	0.27	^{o}C/W

BRAKE DIODE SPECIFICATIONS

Diode Peak Inverse Voltage	PIV	1200	-	-	V
Continuous Forward Current, T_C = 80 ^{O}C	I_F	-	-	63	A
Diode Forward Voltage, I_F = 100A, T_j = 25 ^{O}C	V_F	-	-	1.3	V
Diode Leakage Current @ 1200V T_j = 25 ^{O}C T_j = 125 ^{O}C	I_{RM}	-	-	0.05 2	mA
Junction To Case Thermal Resistance	$R_{\theta JC}$	-	-	0.63	^{o}C/W

MODULE TOTAL WEIGHT

Total Weight	W	-	-	440	gms

MODULE STORAGE AND OPERATING CONDITIONS

Operating Junction Temperature	T_j	-55	-	150	^{o}C
Storage Ambient Temperature	T_S	-55	-	150	^{o}C
Operating Case Temperature	T_c	-55	-	125	^{o}C
Operating Ambient Temperature	T_A	-40	-	100	^{o}C
Operating Altitude		-	-	50000	ft.

MODULE ISOLATION

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

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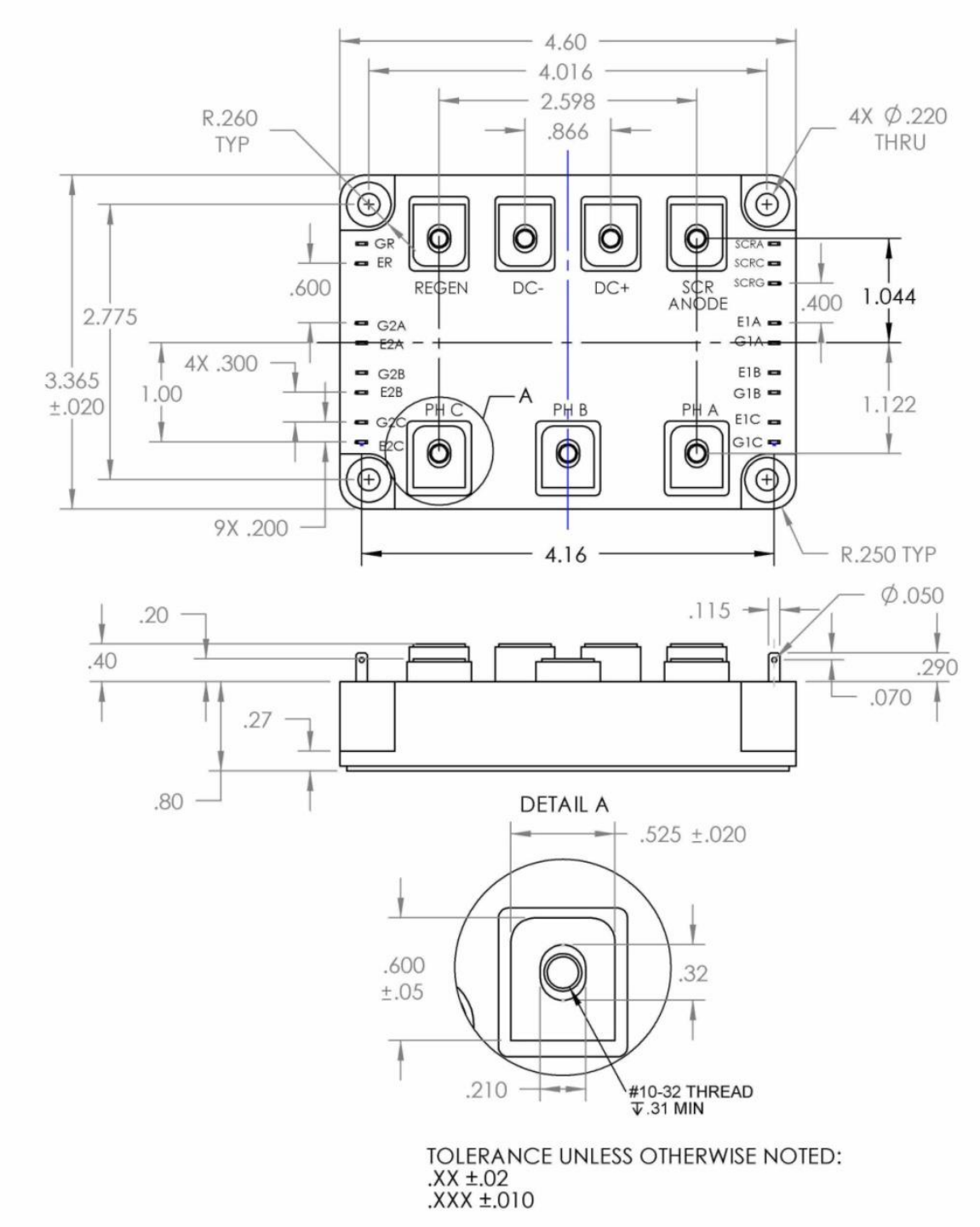
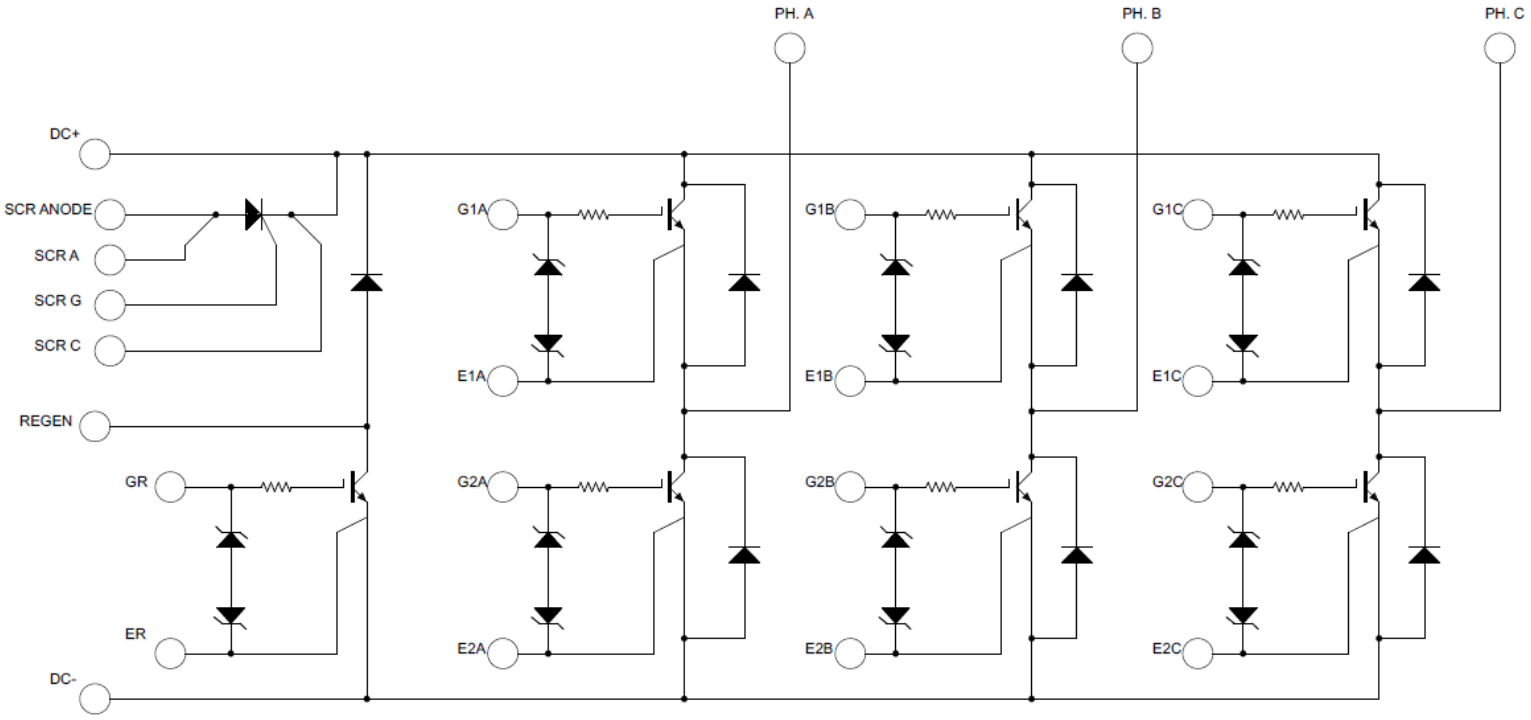
MECHANICAL OUTLINE



SCHEMATIC



All zener diodes are 18V.

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