



M.S.KENNEDY CORP.

600V/300A SCR/DIODE PEM

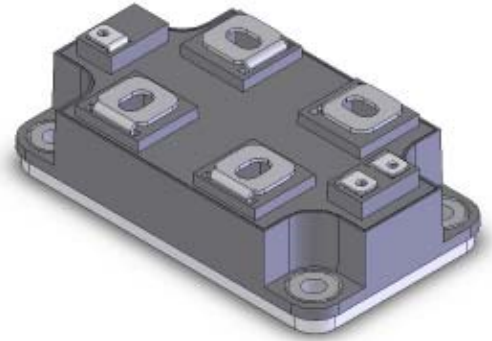
4891

4707 Dey Road Liverpool, N.Y. 13088

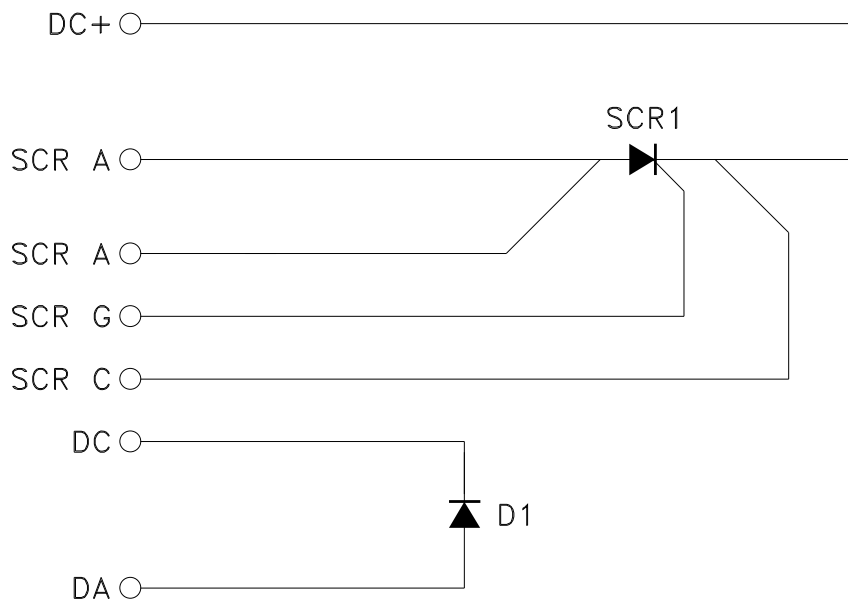
(315) 701-6751

FEATURES:

- SCR/DIODE Topology
- 600V Rated Voltage
- 300A Continuous Current
- Proprietary Encapsulation Provides Near Hermetic Performance
- HI-REL Screening Available (Modified 38534)
- Light Weight Domed ALSIC Baseplate
- Robust Mechanical Design for Hi-Rel Applications
- Ultra-Low Inductance Internal Layout
- Withstands 96 Hours HAST and Thermal Cycling (-55°C to +125°C)

**DESCRIPTION:**

The MSK 4891 is one of a family of plastic encapsulated modules (PEM) developed specifically for use in military, aerospace and other severe environment applications. The SCR/DIODE configuration and 600 volt/300 amp rating make it ideal for use in high current motor drive and inverter brake applications. The Aluminum Silicon Carbide (AlSiC) baseplate offers superior flatness and light weight; far better than the copper or copper alloys found in most high power plastic modules. The high thermal conductivity materials used to construct the MSK 4891 allow high power outputs at elevated baseplate temperatures. Our proprietary coating, SEES™ - Severe Environment Encapsulation System - protects the internal circuitry of MSK PEM's from moisture and contamination, allowing them to pass the rugged environmental screening requirements of military and aerospace applications. MSK PEM's are also available with industry standard silicone gel coatings for a lower cost option.

EQUIVALENT SCHEMATIC**TYPICAL APPLICATIONS**

- Motor Drives
- Inverters

ABSOLUTE MAXIMUM RATING

⑥

IT	SCR Forward Current (Continuous)	300A
ITSM	SCR Peak Surge Current (1/2 Cycle 60Hz)	1100A
IF	Diode Current (Continuous)	300A
IFP	Diode Current Pulsed (1mS)	600A
VCASE	Case Isolation Voltage	2500V

TST	Storage Temperature Range	-55°C to +125°C
TJ	Junction Temperature	150°C
Tc	Case Operating Temperature Range	
	MSK 4891H	-55°C to +125°C
	MSK 4891	-40°C to +85°C

ELECTRICAL SPECIFICATIONS

Parameter	Test Conditions	Group A	MSK 4891 H			MSK 4891			Units
		Subgroup	Min.	Typ.	Max.	Min.	Typ.	Max.	
Diode Leakage Current	VCE = 600V	1	-	0	2	-	0	3	mA
		2	-	0.5	4	-	0.5	5	mA
		① 3	-	0	2	-	0	3	mA
Diode Forward Voltage	IF = 300A	1	-	1.55	1.7	-	1.55	1.8	V
		2	-	1.3	1.5	-	1.3	1.6	V
		3	-	1.7	1.9	-	1.7	2.0	V
	IF = 150A	1	-	1.3	1.5	-	1.3	1.6	V
		2	-	1.1	1.3	-	1.1	1.4	V
		3	-	1.5	1.7	-	1.5	1.8	V
SCR Leakage Current	VRRM = 600V	1	-	0	10	-	0	15	mA
		2	-	0.4	15	-	0.4	20	mA
		① 3	-	0	10	-	0	15	mA
SCR On Voltage	IF = 300A	1	-	1.3	1.5	-	1.3	1.6	V
		2	-	1.3	1.5	-	1.3	1.6	V
		3	-	1.3	1.5	-	1.3	1.6	V
	IF = 150A	1	-	1.1	1.3	-	1.1	1.4	V
		2	-	1.0	1.3	-	1.0	1.4	V
		3	-	1.1	1.3	-	1.1	1.4	V
Thermal Resistance ①	DIODE @ TJ = 125°C	4	-	0.09	0.120	-	0.09	0.125	°C/W
	SCR @ TJ = 125°C	4	-	0.1	0.120	-	0.1	0.125	°C/W

NOTES:

- ① Guaranteed by design but not tested. Typical parameters are representative of actual device performance but are for reference only.
- ② Industrial grade devices shall be tested to subgroup 1 unless otherwise specified.
- ③ HI-REL grade devices ("H" suffix) shall be 100% tested to subgroups 1, 2 and sample tested to subgroup 3.
- ④ Subgroup 4 testing available upon request.
- ⑤ Subgroup 1, 4 TA = +25°C
2, 5 TA = +125°C
3, 6 TA = -55°C
- ⑥ Continuous operation at or above absolute maximum ratings may adversely effect the device performance and/or life cycle.

TYPICAL PERFORMANCE CURVES

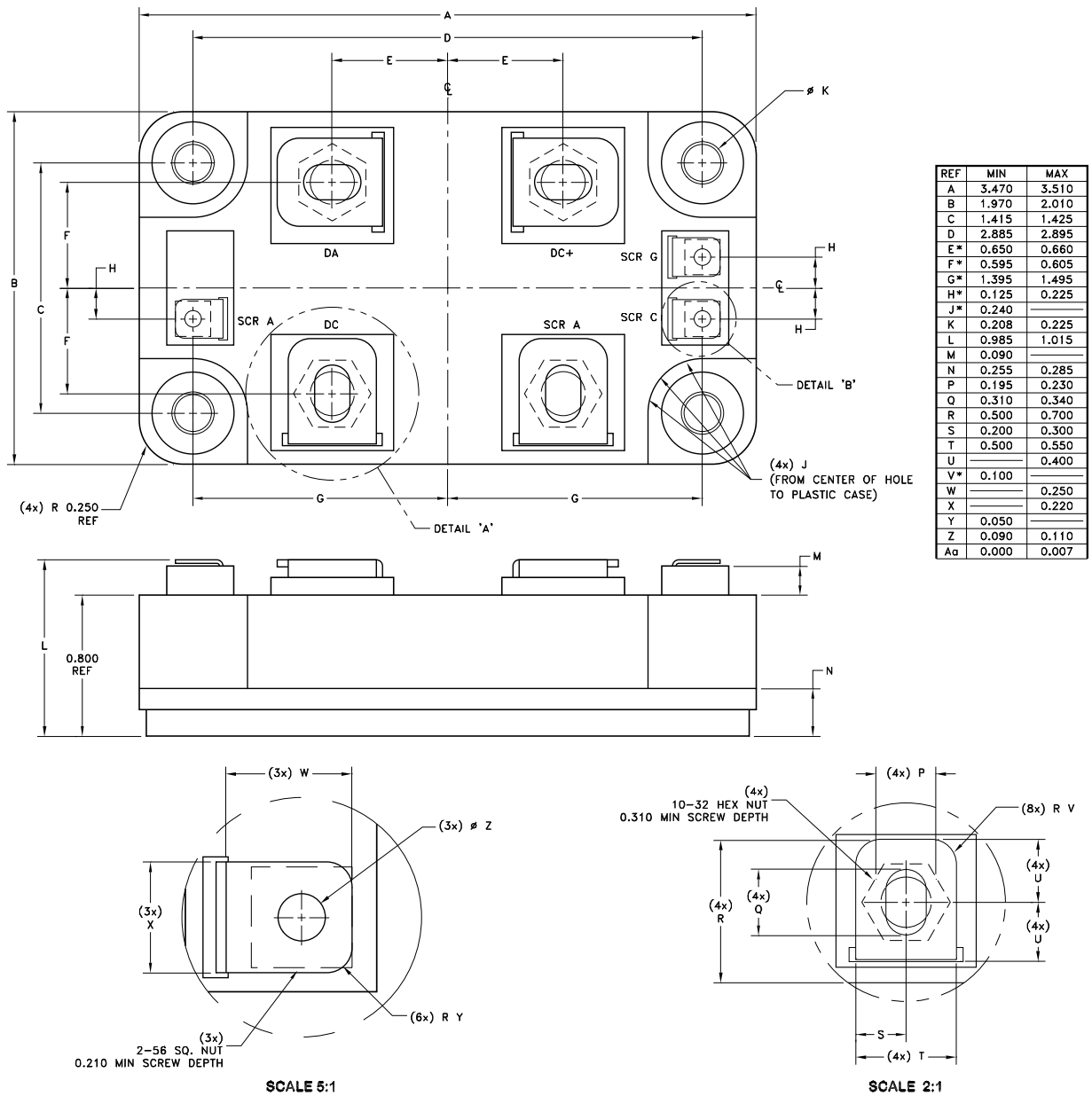
TBD

SCREENING CHART

OPERATION	INDUSTRIAL	H SUFFIX
QUALIFICATION (MODIFIED)	NO	YES
ELEMENT EVALUATION	NO	YES
CLEAN ROOM PROCESSING	YES	YES
NON DESTRUCT BOND PULL SAMPLE	YES	YES
CERTIFIED OPERATORS	NO	YES
MIL LINE PROCESSING	YES	YES
MAX REWORK SPECIFIED	NO	YES
ENCAPSULANT	GEL COAT	SEES TM
PRE-CAP VISUAL	YES - INDUSTRIAL	YES - CLASS H
TEMP CYCLE (-55°C TO +125°C)	NO	YES
BURN-IN	NO	YES - 160 HOURS
ELECTRICAL TESTING	YES - 25°C	YES - FULL TEMP
EXTERNAL VISUAL	YES - SAMPLE	YES
XRAY	NO	NO
PIN FINISH	NI	NI

NOTE: ADDITIONAL SCREENING IS AVAILABLE SUCH AS XRAY, CSAM, MECHANICAL SHOCK, ETC. CONTACT FACTORY FOR QUAL STATUS.

MECHANICAL SPECIFICATIONS



ORDERING INFORMATION

MSK4891 H

SCREENING

BLANK = INDUSTRIAL; H = HI-REL (MODIFIED 38534)

GENERAL PART NUMBER

THE ABOVE EXAMPLE IS A MILITARY SCREENED MODULE.

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