



PRELIMINARY

# SOLID STATE DEVICES, INC.

14005 Stage Road \* Santa Fe Springs, Ca 90670  
Phone: (562) 404-4474 \* Fax: (562) 404-1773

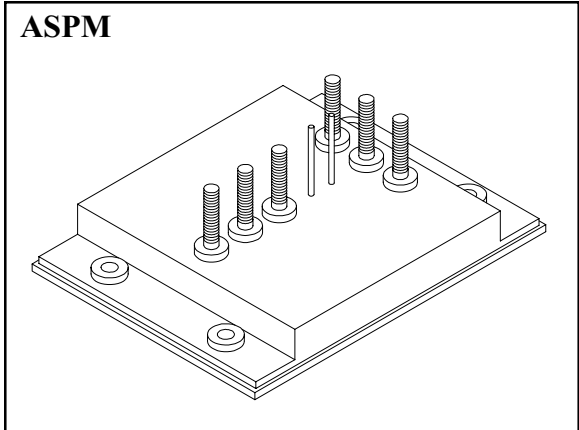
## DESIGNER'S DATA SHEET

### FEATURES:

- High Current Switching for Motor Drives and Inverters for Space Applications.
- Push-Pull Configuration with Freewheeling Diodes.
- Low Saturation Voltage at High Currents.
- Low Mechanical Stress Design.
- Hermetic Sealed Construction for Aerospace Applications.
- Excellent Thermal Management.
- Full Power Screened Hermetic Discretes.
- TX, TXV, and S-Level Screening Available.
- Consult Factory for:
  - Faster Switching Speeds;
  - Other Bridge Configurations and Terminal Styles.

**SPMQ496-01**

**400 AMP/600 VOLTS  
IGBT POWER MODULE  
FOR SPACE APPLICATIONS**

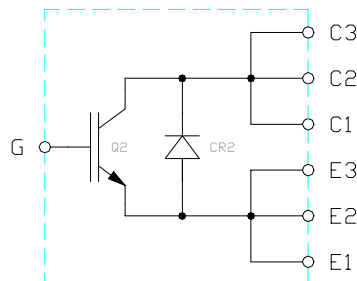


## MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	VALUE	UNIT
Collector to Emitter Voltage	$V_{CES}$	600	Volts
Gate to Collector Voltage	$V_{GES}$	$\pm 20$	Volts
Continuous Collector Current $T_B = 25^\circ C$ $T_B = 90^\circ C$	$I_{C1}$ $I_{C2}$	400 200	Amps
Pulse Collector Current <sup>1/</sup>	$I_{CM}$	600	Amps
Clamped Inductive Load Current ( $T_B = 125^\circ C$ , $V_{CC} = 480V$ , $V_{GE} = 15V$ , $L = 30\mu H$ , $R_G = 10\Omega$ )	$I_{LM}$	200	Amps
Reverse Voltage Avalange Energy <sup>1/</sup> ( $I_C = 200A$ )	$E_{ARV}$	5.6	mJ
Operating and Storage Temperature	$T_{OP} \& T_{STG}$	-55 TO +150	$^\circ C$
Thermal Resistance, Junction to Base	$\theta_{JB}$	0.14	$^\circ C/W$
Total Module Dissipation @ $T_B = 25^\circ C$ Dissipation Derating from $T_B = 25^\circ C$ to $T_B = 150^\circ C$	$P_{D1}$ $P_{D2}$	1250 10	W W/ $^\circ C$

<sup>1/</sup> Pulse Duration Limited by  $T_{JMAX}$ ; Repetative Rating

## ELECTRICAL SCHEMATIC



**NOTE:** All specifications are subject to change without notification. SCD's for these devices should be reviewed by SSDI prior to release.

**DATA SHEET #: PM0010A**

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**ELECTRICAL CHARACTERISTICS @  $T_J = 25^\circ\text{C}$  (Unless Otherwise Specified)**

RATING	SYMBOL	MIN	MAX	UNIT
<b>Collector - Emitter Breakdown Voltage</b> ( $I_{CES} = 250\mu\text{A}$ , $V_{GE} = 0\text{V}$ )	$BV_{CES}$	600	-	Volts
<b>Gate - Emitter Threshold Voltage</b> ( $I_C = 5\text{mA}$ , $V_{CE} = V_{GE}$ )	$V_{GE(th)}$	2.0	6	Volts
<b>Collector-Emitter Saturation Voltage</b> ( $I_C = 200\text{A}$ , $V_{GE} = 15\text{V}$ )	( $T_B = 25^\circ\text{C}$ ) $V_{CE(sat)2}$	-	3.1	Volts
	( $T_B = 90^\circ\text{C}$ ) $V_{CE(sat)1}$	-	2.5	
<b>Gate-Emitter Leakage Current</b> ( $V_{GE} = \pm 20\text{V}$ , $V_{CE} = 0\text{V}$ )	$I_{GES}$	-	2.0	$\mu\text{Amps}$
<b>Collector Leakage Current</b> ( $V_{CE} = 480\text{V}$ , $V_{GE} = 0\text{V}$ )	( $T_B = 25^\circ\text{C}$ ) $I_{CES1}$	-	225	$\mu\text{Amps}$
	( $T_B = 125^\circ\text{C}$ ) $I_{CES1}$	-	20	mAmps
<b>Anti-Parallel Diode Forward Voltage</b> ( $I_F = 200\text{A}$ , $T_B = 25^\circ\text{C}$ )	$V_F$	-	1.6	Volts
<b>Insulation Resistance</b> (All terminals to Base @1500V)	$R_{INSUL1}$	1	-	$\text{G}\Omega$

**PACKAGE OUTLINE: ASPM<sup>+</sup>**

Tolerances  
(Unless specified):

.XX  $\pm .03$   
.XXX  $\pm .010$

