



# SOLID STATE DEVICES, INC.

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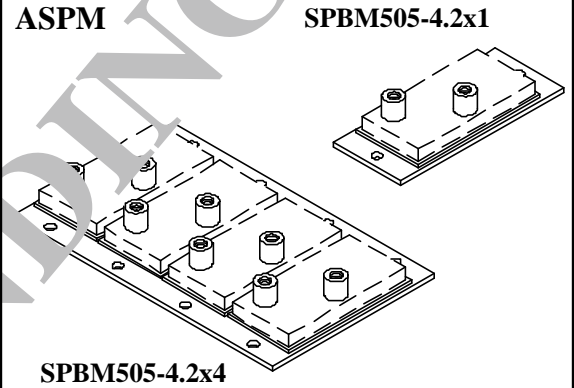
## DESIGNER'S DATA SHEET

**SPBM505-4.2x1**  
**SPBM505-4.2x4**

**300 AMPS DISCHARGE**  
**20 AMPS CHARGE CURRENT**  
**PROGRAMMABLE**  
**BATTERY BYPASS MODULE**

### FEATURES:

- Programable Charge Voltage ( $V_{FC}$ ), Consult Factory
- Optimized for Use with Lithium Ion Batteries
- Radiation Tolerant Design
- High Charge/Discharge Current
- Low Forward Discharge Voltage ( $V_{FD}$ )
- Compact and Rugged Construction Offering Weight and Space Savings
- Very Low Mechanical Stress and Thermal Resistance
- Hermetic Sealed Discrete Elements
- TX, TXV, and S-Level Screening Available Upon Request
- Available with Male or Female and Inch or Metric Terminals

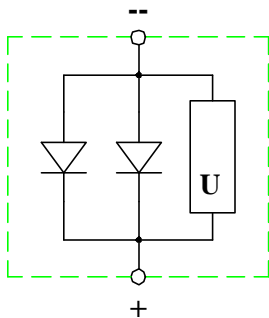


### MAXIMUM RATINGS

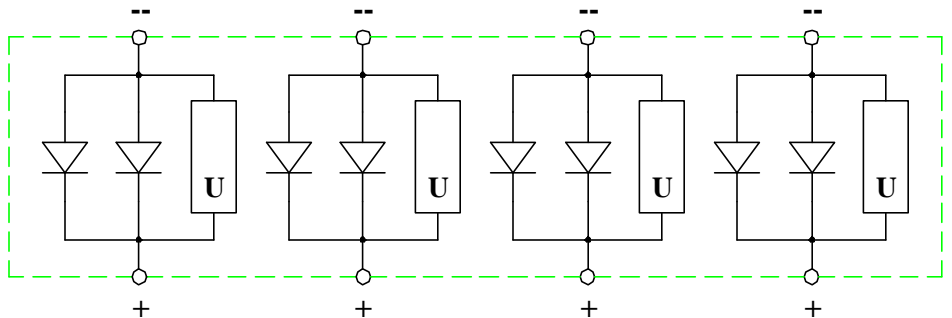
| CHARACTERISTIC   | SYMBOL                           | VALUE   | UNIT          |
|--|----------------------------------|---|---------------|
| Discharge Current  | $I_D$                            | 300   | Amps          |
| Charge Current   | $I_C$                            | 20  | Amps          |
| Surge Current<br>(Non-repetitive, $t = 8.3$ ms Pulse)    | $I_{FSM}$                        | Discharging Leg<br>1000<br>Charging Leg<br>40   | Amps          |
| Operating Temperature Range<br>Storage Temperature Range | $T_{OP}$<br>$T_{STG}$            | -40 TO +125<br>-55 TO +175                      | $^{\circ}C$   |
| Thermal Resistance, Junction to Base                     | $\theta_{JBd}$<br>$\theta_{JBc}$ | Discharging Leg<br>0.40<br>Charging Leg<br>0.80 | $^{\circ}C/W$ |

### ELECTRICAL SCHEMATIC

SPBM505-4.2x1



SPBM505-4.2x4



**NOTE:**  
 U - Charge Circuit

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

**DATA SHEET #: PM0013A**

**SPBM505-4.2x1**  
**SPBM505-4.2x4**



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**ELECTRICAL CHARACTERISTICS (per Section)**

| RATING  |  | SYMBOL    | MIN  | MAX  | UNIT  |
|---|--|-----------|------|------|-------|
| Discharge Voltage<br>( $T_A = 25^\circ\text{C}$ )   | $I_F = 100\text{A}$                          | $V_{FD1}$ | --   | .52  | Volts |
|   | $I_F = 200\text{A}$                          | $V_{FD2}$ | --   | .55  |       |
|   | $I_F = 300\text{A}$                          | $V_{FD3}$ | --   | .67  |       |
| Discharge Voltage<br>( $I_F = 300\text{A}$ )        | $T_A = -40^\circ\text{C}$                    | $V_{FD4}$ | --   | .70  | Volts |
|   | $T_A = +100^\circ\text{C}$                   | $V_{FD5}$ | --   | .62  |       |
| Charge Voltage<br>( $T_A = 25^\circ\text{C}$ )      | $I_F = 15\text{mA}$                          | $V_{FC1}$ | 4.20 | --   | Volts |
|   | $I_F = 20\text{A}$                           | $V_{FC2}$ | 4.25 | 4.75 |       |
| Charge Voltage                                      | $I_F = 15\text{mA}, T_A = -40^\circ\text{C}$ | $V_{FC3}$ | 4.20 | --   | Volts |
|   | $I_F = 20\text{A}, T_A = -40^\circ\text{C}$  | $V_{FC4}$ | 4.25 | 4.75 |       |
|   | $I_F = 20\text{A}, T_A = +100^\circ\text{C}$ | $V_{FC5}$ | 4.25 | 4.75 |       |
| Charge Leakage Current<br>( $V_R = 4.0\text{V}$ )   | $T_A = 25^\circ\text{C}$                     | $IRC1$    | --   | 10   | mA    |
|   | $T_A = -40^\circ\text{C}$                    | $IRC2$    | --   | 10   |       |
|   | $T_A = +100^\circ\text{C}$                   | $IRC3$    | --   | 10   |       |
| Insulation Resistance (All terminals to Base @200V) |  | $R_{INS}$ | 1.0  | --   | GS    |

**PACKAGE OUTLINE: SPBM505-4.2x1**

**NOTES:**

(Unless otherwise specified)

All dimensions are in inches

For -x4 Package Outline Contact Factory.

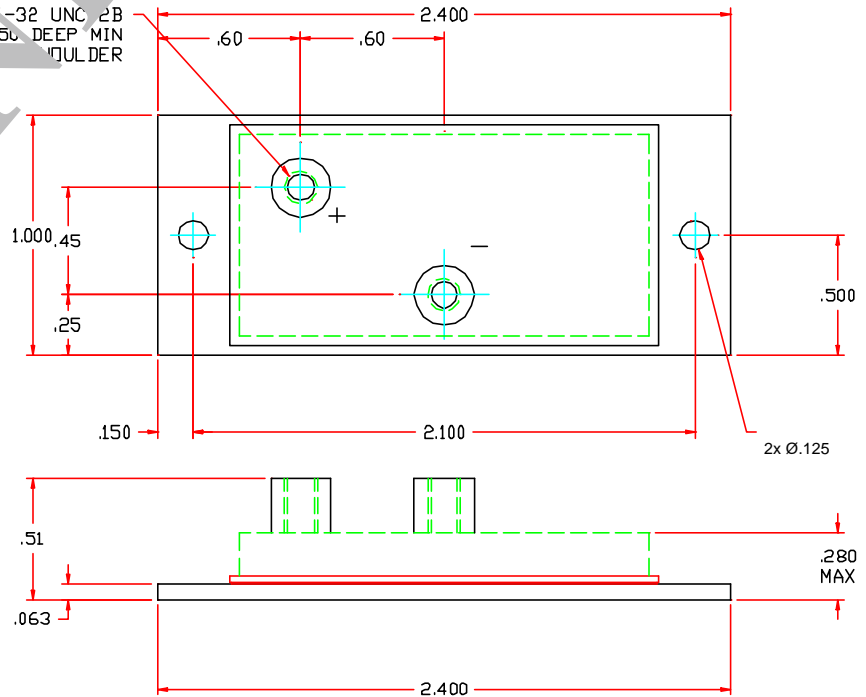
Tolerances

(Unless specified):

.XX ".03

.XXX ".010

2x #6-32 UNC-2B  
.250 DEEP MIN  
FULDER



**AVAILABLE TERMINAL CONFIGURATIONS**

| PART No.        | THREAD TYPE   | THREAD SIZE | PART No.        | THREAD TYPE   | THREAD SIZE |
|-----------------|---------------|-------------|-----------------|---------------|-------------|
| SPBM505-4.2x1   | INCH FEMALE   | 6-32 UNC-2B | SPBM505-4.2x4   | INCH FEMALE   | 6-32 UNC-2B |
| SPBM505-4.2x1A  | INCH MALE     | 6-32 UNC-2A | SPBM505-4.2x4A  | INCH MALE     | 6-32 UNC-2A |
| SPBM505-4.2x1M  | METRIC FEMALE | M4 x 0.7    | SPBM505-4.2x4M  | METRIC FEMALE | M4 x 0.7    |
| SPBM505-4.2x1MA | METRIC MALE   | M4 x 0.7    | SPBM505-4.2x4MA | METRIC MALE   | M4 x 0.7    |