

## Three Phase Rectifier Bridges

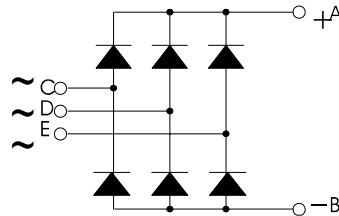
**PSD 112**

**$I_{dAVM}$**   
 **$V_{RRM}$**

**= 127 A**  
**= 800-1800 V**

Preliminary Data Sheet

| $V_{RSM}$<br>V | $V_{RRM}$<br>V | Type       |
|----------------|----------------|------------|
| 800            | 800            | PSD 112/08 |
| 1200           | 1200           | PSD 112/12 |
| 1400           | 1400           | PSD 112/14 |
| 1600           | 1600           | PSD 112/16 |
| 1800           | 1800           | PSD 112/18 |



| Symbol        | Test Conditions                   |                                   | Maximum Ratings |                       |
|---------------|-----------------------------------|-----------------------------------|-----------------|-----------------------|
| $I_{dAVM}$    | $T_C = 90^\circ\text{C}$ , module |                                   | 127             | A                     |
| $I_{FSM}$     | $T_{VJ} = 45^\circ\text{C}$       | $t = 10\text{ ms}$ (50 Hz), sine  | 1200            | A                     |
|               | $V_R = 0$                         | $t = 8.3\text{ ms}$ (60 Hz), sine | 1300            | A                     |
|               | $T_{VJ} = T_{VJM}$                | $t = 10\text{ ms}$ (50 Hz), sine  | 1000            | A                     |
|               | $V_R = 0$                         | $t = 8.3\text{ ms}$ (60 Hz), sine | 1100            | A                     |
| $\int i^2 dt$ | $T_{VJ} = 45^\circ\text{C}$       | $t = 10\text{ ms}$ (50 Hz), sine  | 7200            | $\text{A}^2\text{ s}$ |
|               | $V_R = 0$                         | $t = 8.3\text{ ms}$ (60 Hz), sine | 7200            | $\text{A}^2\text{ s}$ |
|               | $T_{VJ} = T_{VJM}$                | $t = 10\text{ ms}$ (50 Hz), sine  | 5000            | $\text{A}^2\text{ s}$ |
|               | $V_R = 0$                         | $t = 8.3\text{ ms}$ (60 Hz), sine | 5000            | $\text{A}^2\text{ s}$ |
| $T_{VJ}$      |                                   |                                   | -40 ... + 150   | $^\circ\text{C}$      |
| $T_{VJM}$     |                                   |                                   | 150             | $^\circ\text{C}$      |
| $T_{stg}$     |                                   |                                   | -40 ... + 125   | $^\circ\text{C}$      |
| $V_{ISOL}$    | 50/60 HZ, RMS                     | $t = 1\text{ min}$                | 2500            | V ~                   |
|               | $I_{ISOL} \leq 1\text{ mA}$       | $t = 1\text{ s}$                  | 3000            | V ~                   |
| $M_d$         | Mounting torque                   | (M6)                              | 5               | Nm                    |
|               | Terminal connection torque        | (M6)                              | 5               | Nm                    |
| Weight        | typ.                              |                                   | 270             | g                     |

### Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar glasspassivated chips
- Blocking voltage up to 1800 V
- Low forward voltage drop
- UL registered, E148688

### Applications

- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

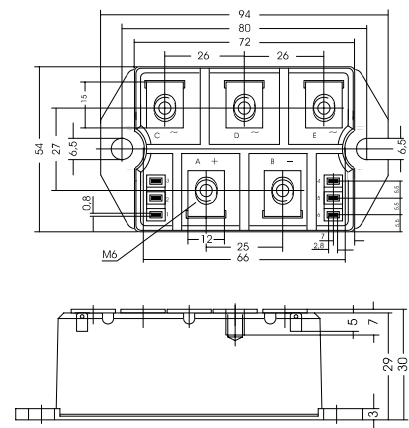
### Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability

### Package, style and outline

Dimensions in mm (1mm = 0.0394")

| Symbol     | Test Conditions                  |                             | Characteristic Value |                     |
|------------|----------------------------------|-----------------------------|----------------------|---------------------|
| $I_R$      | $V_R = V_{RRM}$                  | $T_{VJ} = 25^\circ\text{C}$ | $\leq$               | 0.3 mA              |
|            | $V_R = V_{RRM}$                  | $T_{VJ} = T_{VJM}$          | $\leq$               | 5.0 mA              |
| $V_F$      | $I_F = 300\text{ A}$             | $T_{VJ} = 25^\circ\text{C}$ | $\leq$               | 1.7 V               |
| $V_{TO}$   | For power-loss calculations only |                             |                      | 0.8 V               |
| $r_T$      | $T_{VJ} = T_{VJM}$               |                             |                      | 4 m $\Omega$        |
| $R_{thJC}$ | per diode; DC current            |                             |                      | 0.9 K/W             |
|            | per module                       |                             |                      | 0.15 K/W            |
| $R_{thJK}$ | per diode; DC current            |                             |                      | 1.08 K/W            |
|            | per module                       |                             |                      | 0.18 K/W            |
| $d_s$      | Creeping distance on surface     |                             |                      | 10.0 mm             |
| $d_A$      | Creeping distance in air         |                             |                      | 9.4 mm              |
| $a$        | Max. allowable acceleration      |                             |                      | 50 m/s <sup>2</sup> |



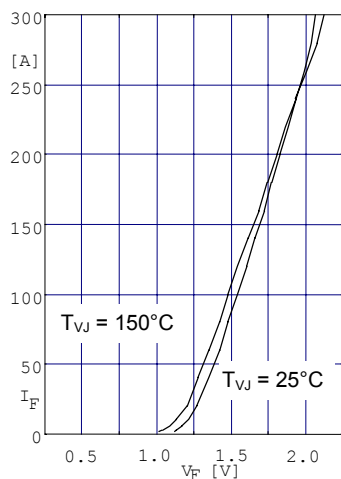


Fig. 1 Forward current versus voltage drop per diode

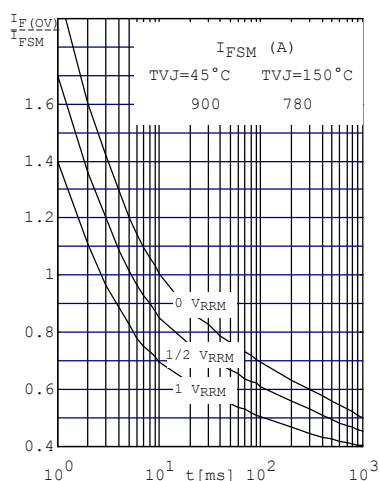


Fig. 2 Surge overload current per diode  $I_{FSM}$ : Crest value.  
t: duration

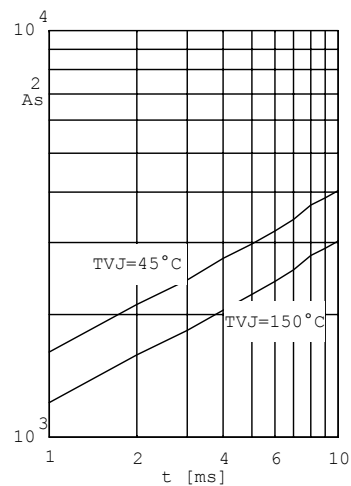


Fig. 3  $\int i^2 dt$  versus time (1-10ms) per diode

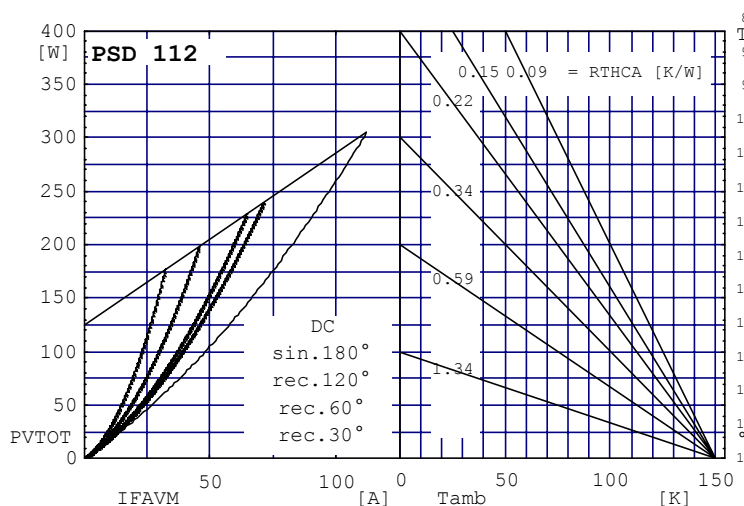


Fig. 4 Power dissipation versus direct output current and ambient temperature

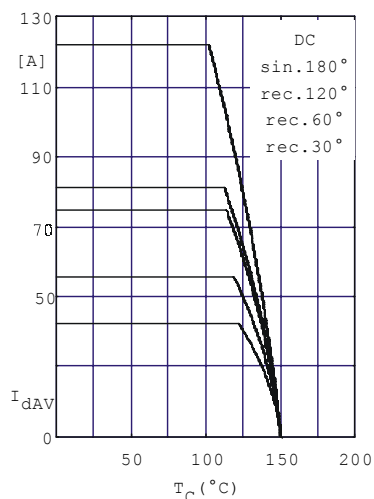


Fig. 5 Maximum forward current at case temperature

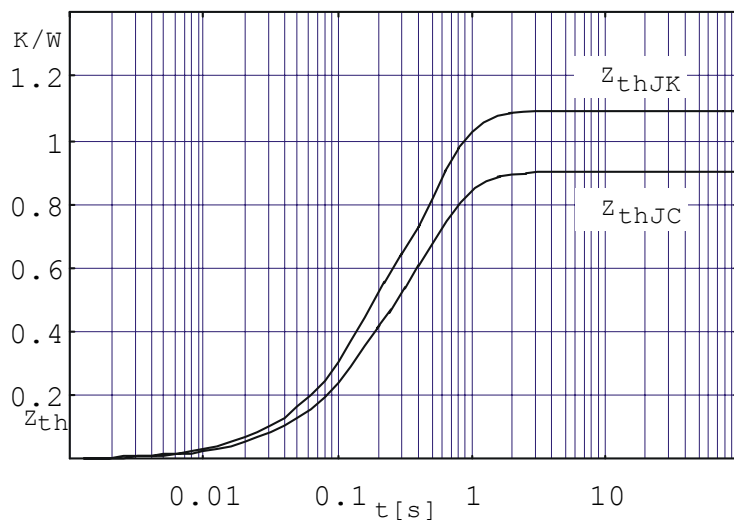


Fig. 6 Transient thermal impedance per diode