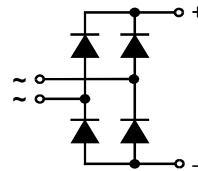


# Single Phase Rectifier Bridge

$$I_{dAV} = 40 \text{ A}$$

$$V_{RRM} = 800-1600 \text{ V}$$

| $V_{RSM}$<br>V | $V_{RRM}$<br>V | Standard<br>Types |
|----------------|----------------|-------------------|
| 900            | 800            | VBO 40-08NO6      |
| 1300           | 1200           | VBO 40-12NO6      |
| 1700           | 1600           | VBO 40-16NO6      |



miniBLOC, SOT-227 B  
E72873



| Symbol          | Test Conditions   | Maximum Ratings   |
|-----------------|---|---|
| $I_{dAV}$       | $T_C = 100^\circ\text{C}$                               | 20 A  |
| $I_{dAV}^{(1)}$ |   | 40 A  |
| $I_{FSM}$       | $T_{VJ} = 45^\circ\text{C};$<br>$V_R = 0$               | $t = 10 \text{ ms (50 Hz), sine}$ 300 A<br>$t = 8.3 \text{ ms (60 Hz), sine}$ 320 A                               |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                         | $t = 10 \text{ ms (50 Hz), sine}$ 260 A<br>$t = 8.3 \text{ ms (60 Hz), sine}$ 280 A                               |
| $I^2t$          | $T_{VJ} = 45^\circ\text{C}$<br>$V_R = 0$                | $t = 10 \text{ ms (50 Hz), sine}$ 450 A <sup>2</sup> s<br>$t = 8.3 \text{ ms (60 Hz), sine}$ 430 A <sup>2</sup> s |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                         | $t = 10 \text{ ms (50 Hz), sine}$ 340 A <sup>2</sup> s<br>$t = 8.3 \text{ ms (60 Hz), sine}$ 330 A <sup>2</sup> s |
| $T_{VJ}$        |   | -40...+150 °C   |
| $T_{VJM}$       |   | 150 °C  |
| $T_{stg}$       |   | -40...+125 °C   |
| $V_{ISOL}$      | 50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$              | 2500 V~   |
| $M_d$           | Mounting torque (M4)<br>Terminal connection torque (M4) | 1.5/13 Nm/lb.in.<br>1.5/13 Nm/lb.in.  |
| Weight          | typ.  | 30 g  |

## Features

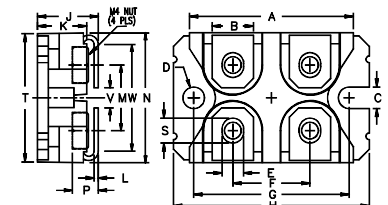
- Isolation voltage 2500 V~
- Planar passivated chips
- Low forward voltage drop

## Applications

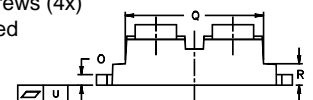
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

## Advantages

- Easy to mount
- Space and weight savings



M4 screws (4x)  
supplied



| Symbol     | Test Conditions   | Characteristic Values                        |
|------------|---|--|
| $I_R$      | $V_R = V_{RRM};$ $T_{VJ} = 25^\circ\text{C}$<br>$V_R = V_{RRM};$ $T_{VJ} = T_{VJM}$ | $\leq 0.3 \text{ mA}$<br>$\leq 5 \text{ mA}$ |
| $V_F$      | $I_F = 20 \text{ A};$ $T_{VJ} = 25^\circ\text{C}$                                   | $\leq 1.15 \text{ V}$                        |
| $V_{T0}$   | For power-loss calculations only  | 0.80 V                                       |
| $r_T$      | $T_{VJ} = T_{VJM}$  | 13 mΩ  |
| $R_{thJC}$ | per diode; DC current   | 1.7 K/W                                      |
|            | per module  | 0.42 K/W                                     |
| $R_{thCH}$ | per diode, DC current   | typ. 0.3 K/W                                 |
|            | per module  | typ. 0.08 K/W                                |
| $d_s$      | Creeping distance on surface  | 8 mm   |
| $d_A$      | Creepage distance in air ③  | 4 mm   |
| $a$        | Max. allowable acceleration   | 50 m/s <sup>2</sup>                          |

Data according to IEC 60747 and refer to a single diode unless otherwise stated

① for resistive load at bridge output

| Dim. | Millimeter<br>Min. Max. | Inches<br>Min. Max. |
|------|-------------------------|---------------------|
| A    | 31.50 31.88             | 1.240 1.255         |
| B    | 7.80 8.20               | 0.307 0.323         |
| C    | 4.09 4.29               | 0.161 0.169         |
| D    | 4.09 4.29               | 0.161 0.169         |
| E    | 4.09 4.29               | 0.161 0.169         |
| F    | 14.91 15.11             | 0.587 0.595         |
| G    | 30.12 30.30             | 1.186 1.193         |
| H    | 37.80 38.30             | 1.489 1.509         |
| J    | 11.68 12.22             | 0.460 0.481         |
| K    | 8.92 9.60               | 0.351 0.378         |
| L    | 0.76 0.84               | 0.030 0.033         |
| M    | 12.60 12.85             | 0.496 0.506         |
| N    | 25.15 25.42             | 0.990 1.001         |
| O    | 1.98 2.13               | 0.078 0.084         |
| P    | 4.95 5.97               | 0.195 0.235         |
| Q    | 26.54 26.90             | 1.045 1.059         |
| R    | 3.94 4.42               | 0.155 0.174         |
| S    | 4.72 4.85               | 0.186 0.191         |
| T    | 24.59 25.07             | 0.968 0.987         |
| U    | -0.05 0.1               | -0.002 0.004        |
| V    | 3.30 4.57               | 0.130 0.180         |
| W    | 0.780 0.830             | 0.031 0.033         |

008

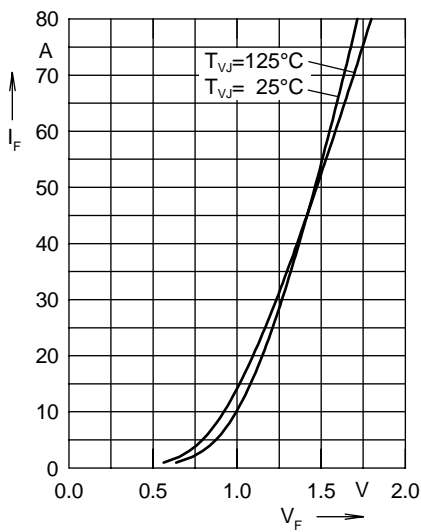


Fig. 1 Forward current versus voltage drop per diode

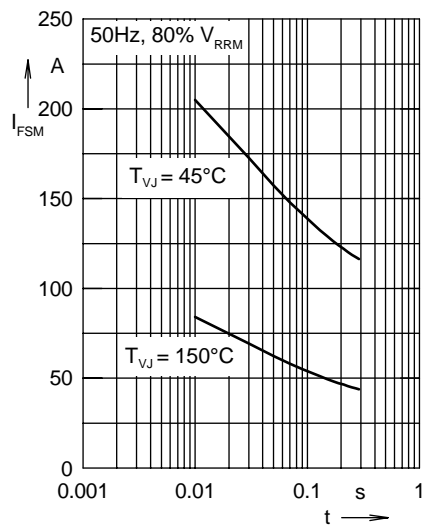


Fig. 2 Surge overload current

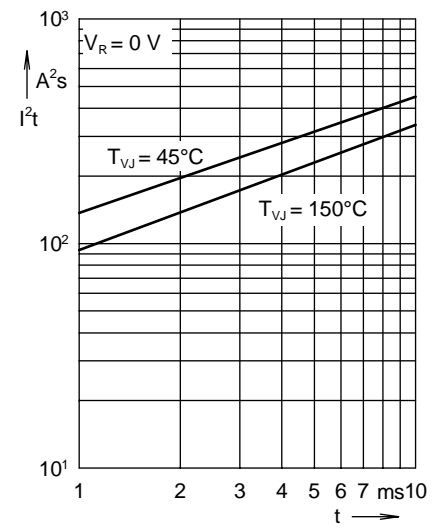


Fig. 3  $I^2t$  versus time per diode

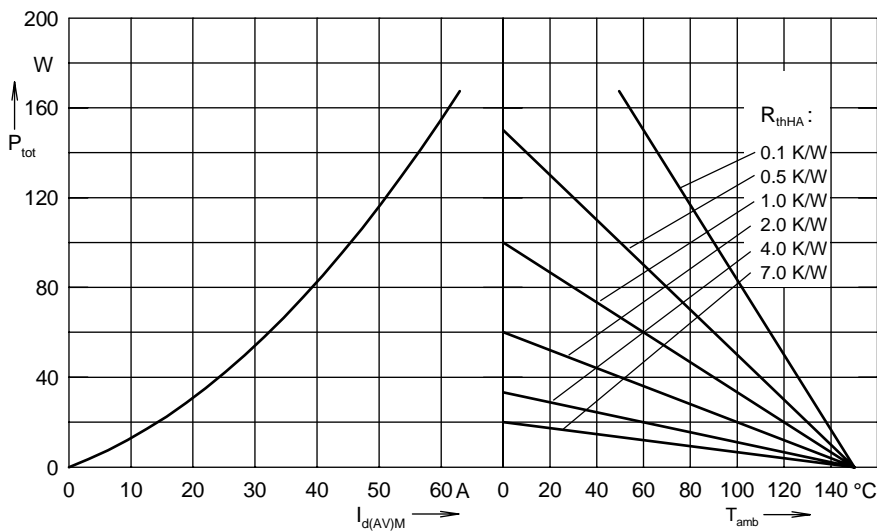


Fig. 4 Power dissipation versus direct output current and ambient temperature

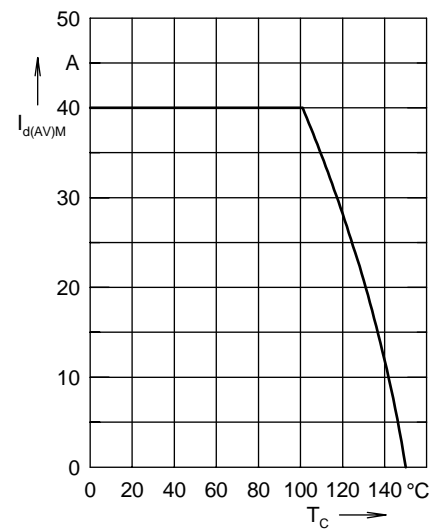


Fig. 5 Max. forward current versus case temperature

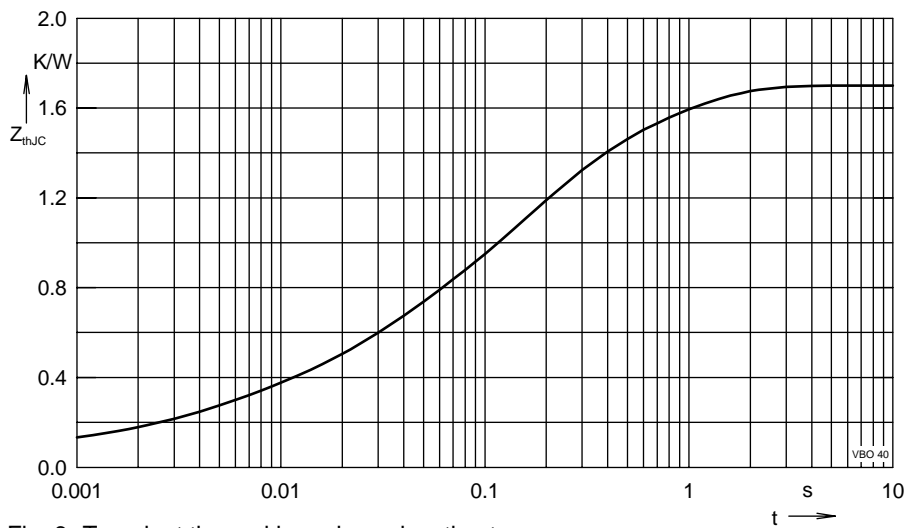


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.081           | 0.00024   |
| 2 | 0.1449          | 0.0036    |
| 3 | 0.2982          | 0.0235    |
| 4 | 0.735           | 0.142     |
| 5 | 0.441           | 0.7       |