

Single Phase Half Controlled Bridges

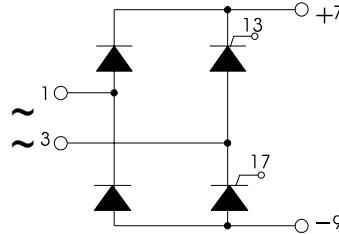
PSBZ 75

I_{TAVM} = 74 A
 V_{RRM} = 400-1600 V

Preliminary Data Sheet

| V_{RSM} V_{DSM} | V_{RRM} V_{DRM} | Type |
|------------------------|------------------------|------------|
| 500 | 400 | PSBZ 75/04 |
| 900 | 800 | PSBZ 75/08 |
| 1300 | 1200 | PSBZ 75/12 |
| 1500 | 1400 | PSBZ 75/14 |
| *1700 | *1600 | PSBZ 75/16 |

* Delivery on request



| Symbol | Test Conditions | | Maximum Ratings | |
|--------------------|--|-----------------------------------|-----------------|------------------------|
| I_{TAVM} | $T_C = 85^\circ\text{C}$ | per module | 74 | A |
| I_{FSM}, I_{TSM} | $T_{VJ} = 45^\circ\text{C}$ | $t = 10\text{ ms}$ (50 Hz), sine | 1150 | A |
| | $V_R = 0$ | $t = 8.3\text{ ms}$ (60 Hz), sine | 1230 | 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 | 1070 | A |
| $\int i^2 dt$ | $T_{VJ} = 45^\circ\text{C}$ | $t = 10\text{ ms}$ (50 Hz), sine | 6600 | $\text{A}^2\text{ s}$ |
| | $V_R = 0$ | $t = 8.3\text{ ms}$ (60 Hz), sine | 6280 | $\text{A}^2\text{ s}$ |
| | $T_{VJ} = T_{VJM}$ | $t = 10\text{ ms}$ (50 Hz), sine | 5000 | $\text{A}^2\text{ s}$ |
| | $V_R = 0$ | $t = 8.3\text{ ms}$ (60 Hz), sine | 4750 | $\text{A}^2\text{ s}$ |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ | repetitive, $I_T = 150\text{ A}$ | 100 | $\text{A}/\mu\text{s}$ |
| | $f = 50\text{ Hz}$, $t_p = 200\mu\text{s}$ | | | |
| | $V_D = 2/3 V_{DRM}$ | | | |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ | $V_{DR} = 2/3 V_{DRM}$ | 1000 | $\text{V}/\mu\text{s}$ |
| | $R_{GK} = \infty$, method 1 (linear voltage rise) | | | |
| P_{GM} | $T_{VJ} = T_{VJM}$ | $t_p = 30\mu\text{s}$ | 10 | W |
| | $I_T = I_{TAVM}$ | $t_p = 300\mu\text{s}$ | 5 | W |
| P_{GAVM} | | | 0.5 | W |
| V_{RGM} | | | 10 | V |
| T_{VJ} | | | -40 ... + 125 | $^\circ\text{C}$ |
| T_{VJM} | | | 125 | $^\circ\text{C}$ |
| 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 | (M5) | 5 | Nm |
| | Terminal connection torque | (M3) | 1.5 | Nm |
| | | (M5) | 5 | Nm |
| Weight | typ. | | 220 | g |

Features

- Package with screw terminals
- Isolation voltage 3000 V~
- Planar glasspassivated chips
- Low forward voltage drop
- UL registered E 148688

Applications

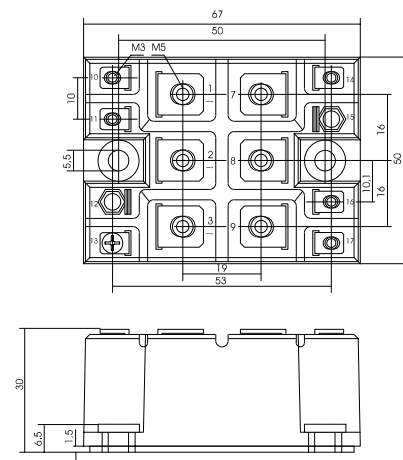
- Heat and temperature control for industrial furnaces and chemical processes
- Lighting control
- Motor control
- Power converter

Advantages

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

Package, style and outline

Dimensions in mm (1mm = 0.0394")



| Symbol | Test Conditions | Characteristic Value | | | |
|------------|--|------------------------|--------|------------------|----|
| I_D, I_R | $T_{VJ} = T_{VJM}, V_R = V_{RRM}, V_D = V_{DRM}$ | \leq | 5 | mA | |
| V_T | $I_T = 150A, T_{VJ} = 25^\circ C$ | \leq | 1.57 | V | |
| V_{TO} | For power-loss calculations only ($T_{VJ} = T_{VJM}$) | | 0.85 | V | |
| r_T | | | 5.33 | m Ω | |
| V_{GT} | $V_D = 6V$ | $T_{VJ} = 25^\circ C$ | \leq | 1.0 | V |
| | | $T_{VJ} = -40^\circ C$ | \leq | 1.6 | V |
| I_{GT} | $V_D = 6V$ | $T_{VJ} = 25^\circ C$ | \leq | 100 | mA |
| | | $T_{VJ} = -40^\circ C$ | \leq | 150 | mA |
| V_{GD} | $T_{VJ} = T_{VJM} \quad V_D = 2/3 V_{DRM}$ | \leq | 0.2 | V | |
| I_{GD} | $T_{VJ} = T_{VJM} \quad V_D = 2/3 V_{DRM}$ | \leq | 5 | mA | |
| I_L | $T_{VJ} = 25^\circ C, t_p = 10\mu s$ | \leq | 200 | mA | |
| | $I_G = 0.3A, di_G/dt = 0.3A/\mu s$ | | | | |
| I_H | $T_{VJ} = 25^\circ C, V_D = 6V, R_{GK} = \infty$ | \leq | 150 | mA | |
| t_{gd} | $T_{VJ} = 25^\circ C, V_D = 1/2 V_{DRM}$ | \leq | 2 | μs | |
| | $I_G = 0.3A, di_G/dt = 0.3A/\mu s$ | | | | |
| t_q | $T_{VJ} = T_{VJM}, I_T = 20A, t_p = 200\mu s, V_R = 100V$ | | 150 | μs | |
| | $-di/dt = 10A/\mu s, dv/dt = 15V/\mu s, V_D = 2/3 V_{DRM}$ | | | | |
| R_{thJC} | per thyristor; sine 180°el | | 0.66 | K/W | |
| | per module | | 0.165 | K/W | |
| R_{thJK} | per thyristor; sine 180° el | | 0.93 | K/W | |
| | per module | | 0.2325 | K/W | |
| d_s | Creeping distance on surface | | 8.0 | mm | |
| d_A | Creeping distance in air | | 4.5 | mm | |
| a | Max. allowable acceleration | | 50 | m/s ² | |

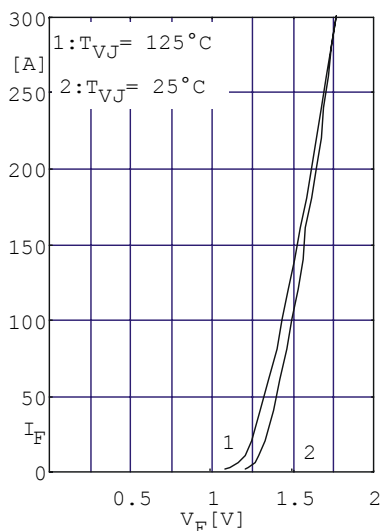


Fig. 1 Forward current vs. voltage drop per diode or thyristor

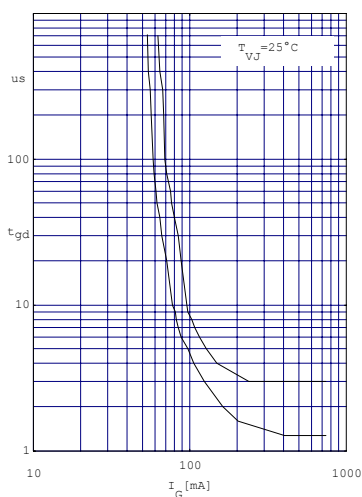


Fig. 2 Gate trigger delay time

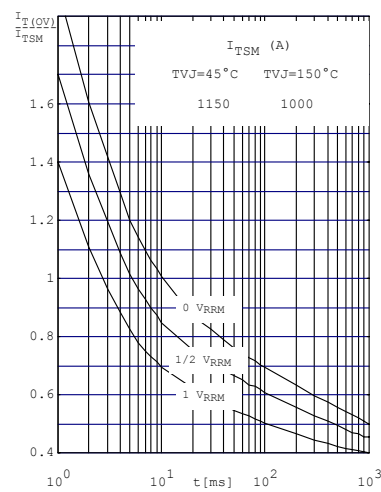


Fig. 3 Surge overload current per diode (or thyristor) I_{FSM} , I_{TSM} : Crest value t: duration



Fig.4 Gate trigger characteristic

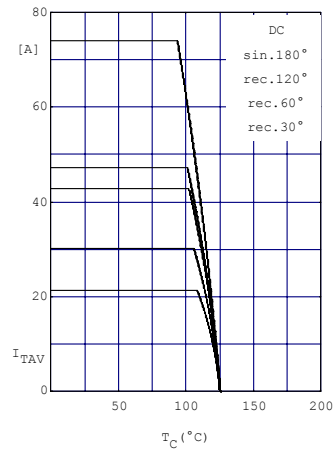


Fig.5 Maximum forward current at case temperature

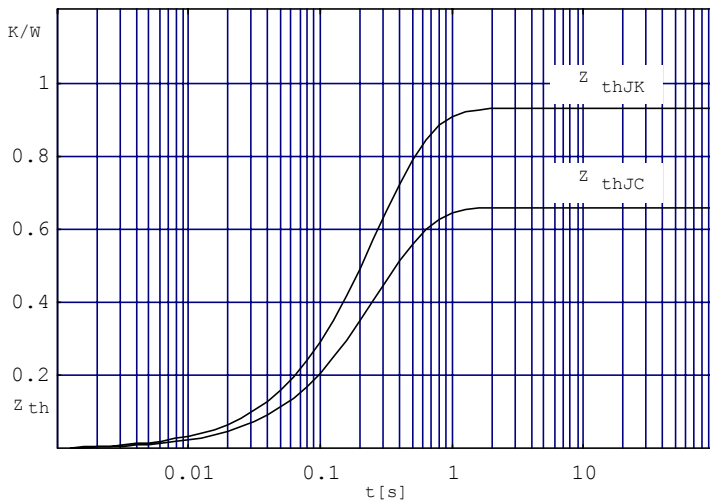


Fig.6 Transient thermal impedance per thyristor or diode (calculated)

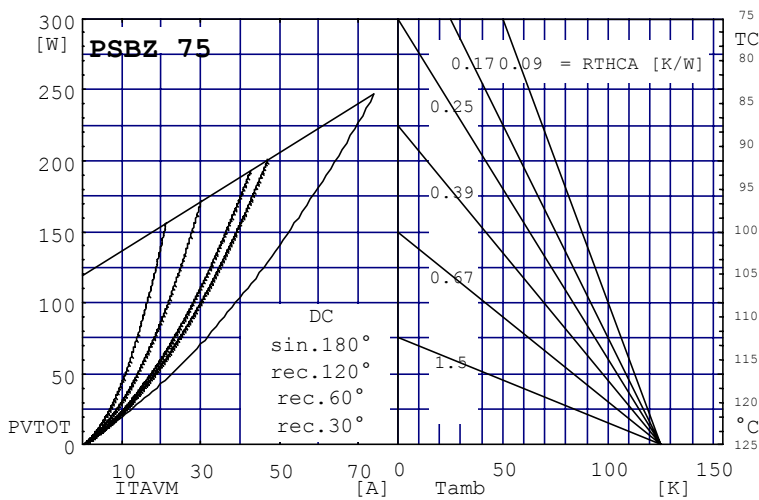


Fig. 7 Power dissipation vs. direct output current and ambient temperature