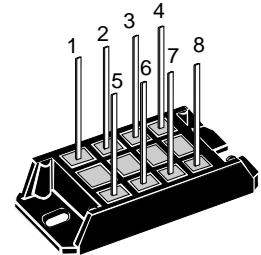
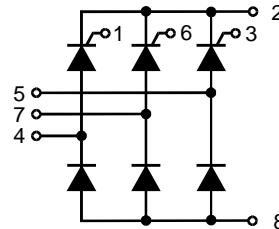


Three Phase Half Controlled Rectifier Bridge

$I_{dAVM} = 27 \text{ A}$
 $V_{RRM} = 1200-1600 \text{ V}$

| V_{RSM} V_{DSM} V | V_{RRM} V_{DRM} V | Type |
|-----------------------------|-----------------------------|--------------|
| 1300 | 1200 | VVZ 24-12io1 |
| 1500 | 1400 | VVZ 24-14io1 |
| 1700 | 1600 | VVZ 24-16io1 |



| Symbol | Test Conditions | Maximum Ratings | Features |
|----------------------|---|---|---|
| I_{dAV} | $T_K = 100^\circ\text{C}$; module | 21 A | <ul style="list-style-type: none"> • Package with DCB ceramic base plate • Isolation voltage 3600 V~ • Planar passivated chips • Soldering terminals • UL registered E 72873 |
| I_{dAVM} | module | 27 A | |
| I_{FRMS}, I_{TRMS} | per leg | 16 A | |
| I_{FSM}, I_{TSM} | $T_{VJ} = 45^\circ\text{C}$; $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 300 A 320 A |
| | $T_{VJ} = T_{VJM}$ $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 270 A 290 A |
| I^2t | $T_{VJ} = 45^\circ\text{C}$ $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 450 A ² s 430 A ² s |
| | $T_{VJ} = T_{VJM}$ $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 365 A ² s 350 A ² s |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ $f = 400 \text{ Hz}$, $t_p = 200 \mu\text{s}$ $V_D = 2/3 V_{DRM}$ $I_G = 0.3 \text{ A}$, $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ | repetitive, $I_T = 50 \text{ A}$ | 150 A/ μs |
| | | non repetitive, $I_T = 1/3 \cdot I_{dAV}$ | 500 A/ μs |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$; $V_{DR} = 2/3 V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise) | | 1000 V/ μs |
| V_{RGM} | | | 10 V |
| P_{GM} | $T_{VJ} = T_{VJM}$ $I_T = I_{TAVM}$ | $t_p = 30 \mu\text{s}$ | $\leq 10 \text{ W}$ |
| | | $t_p = 500 \mu\text{s}$ | $\leq 5 \text{ W}$ |
| | | $t_p = 10 \text{ ms}$ | $\leq 1 \text{ W}$ |
| P_{GAVM} | | | 0.5 W |
| T_{VJ} | | | -40...+125 °C |
| T_{VJM} | | | 125 °C |
| T_{stg} | | | -40...+125 °C |
| V_{ISOL} | 50/60 Hz, RMS | $t = 1 \text{ min}$ | 3000 V~ |
| | $I_{ISOL} \leq 1 \text{ mA}$ | $t = 1 \text{ s}$ | 3600 V~ |
| M_d | Mounting torque | (M5) | 2-2.5 Nm |
| | | (10-32 UNF) | 18-22 lb.in. |
| Weight | typ. | | 28 g |

Features

- Package with DCB ceramic base plate
- Isolation voltage 3600 V~
- Planar passivated chips
- Soldering terminals
- UL registered E 72873

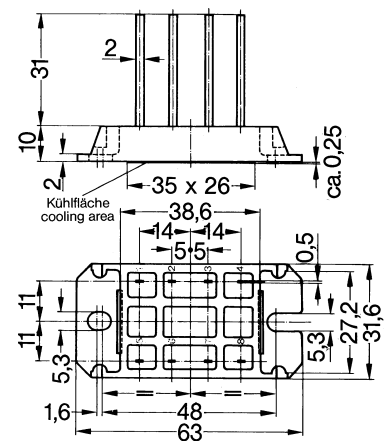
Applications

- Input rectifier for switch mode power supplies (SMPS)
- Softstart capacitor charging
- Electric drives and auxiliaries

Advantages

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

Dimensions in mm (1 mm = 0.0394")



Data according to IEC 60747 and refer to a single thyristor/diode unless otherwise stated. IXYS reserves the right to change limits, test conditions and dimensions.

| Symbol | Test Conditions | Characteristic Values |
|------------|--|---|
| I_R, I_D | $V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$ | ≤ 5 mA ≤ 0.3 mA |
| V_F, V_T | $I_F, I_T = 30$ A, $T_{VJ} = 25^\circ\text{C}$ | ≤ 1.45 V |
| V_{T0} | For power-loss calculations only | 1 V |
| r_T | ($T_{VJ} = 125^\circ\text{C}$) | 16 m Ω |
| V_{GT} | $V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ | ≤ 1.0 V ≤ 1.2 V |
| I_{GT} | $V_D = 6$ V; $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$ | ≤ 65 mA ≤ 80 mA ≤ 50 mA |
| V_{GD} | $T_{VJ} = T_{VJM};$ $T_{VJ} = T_{VJM};$ | ≤ 0.2 V |
| I_{GD} | $V_D = 2/3 V_{DRM}$ $V_D = 2/3 V_{DRM}$ | ≤ 5 mA |
| I_L | $I_G = 0.3$ A; $t_G = 30$ μs $di_G/dt = 0.3$ A/ μs $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = -40^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$ | ≤ 150 mA ≤ 200 mA ≤ 100 mA |
| I_H | $T_{VJ} = 25^\circ\text{C}; V_D = 6$ V; $R_{GK} = \infty$ | ≤ 100 mA |
| t_{gd} | $T_{VJ} = 25^\circ\text{C}; V_D = 1/2 V_{DRM}$ $I_G = 0.3$ A; $di_G/dt = 0.3$ A/ μs | ≤ 2 μs |
| t_q | $T_{VJ} = 125^\circ\text{C}; I_T = 15$ A, $t_p = 300$ μs , $-di/dt = 10$ A/ μs | typ. 150 μs |
| Q_r | $V_R = 100$ V, $dv/dt = 20$ V/ μs , $V_D = 2/3 V_{DRM}$ | 75 μC |
| R_{thJC} | per thyristor (diode); DC current per module | 2.1 K/W 0.35 K/W |
| R_{thJH} | per thyristor (diode); DC current per module | 2.7 K/W 0.45 K/W |
| d_s | Creeping distance on surface | 7 mm |
| d_A | Creepage distance in air | 7 mm |
| a | Max. allowable acceleration | 50 m/s ² |

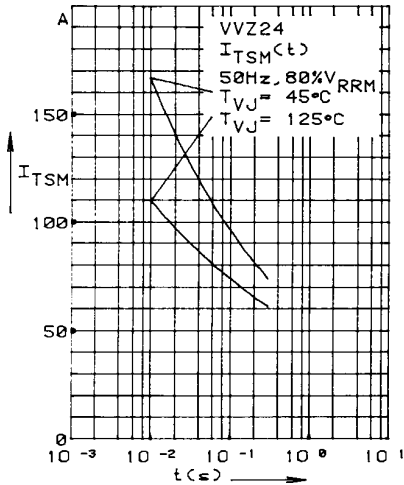


Fig. 1 Surge overload current per chip
 I_{FSM} : Crest value, t : duration

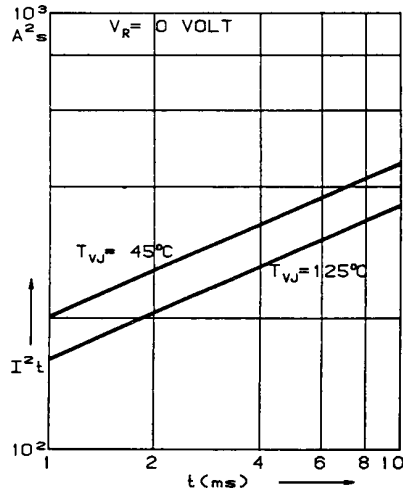


Fig. 2 I^2t versus time (1-10 ms) per chip

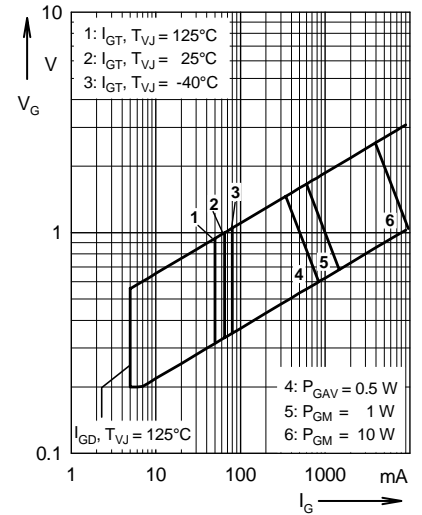


Fig. 3 Gate trigger characteristics
 Triggering:

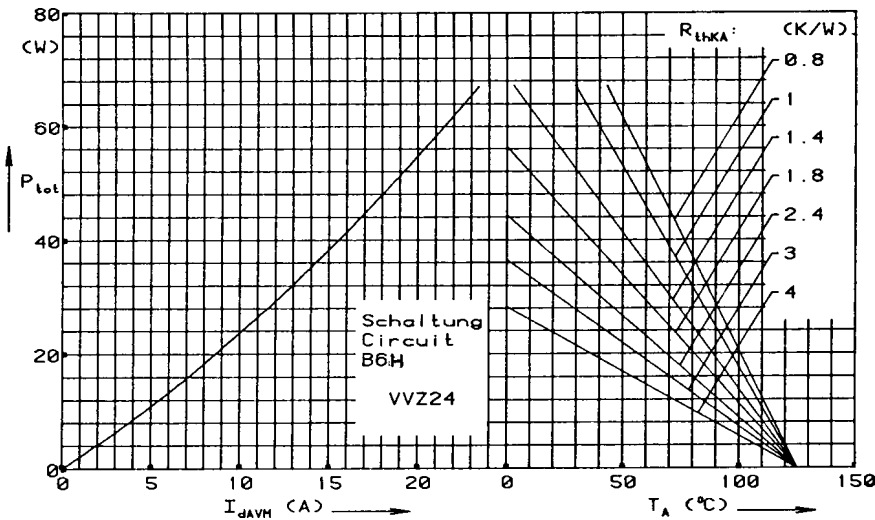


Fig. 4 Power dissipation versus direct output current and ambient temperature

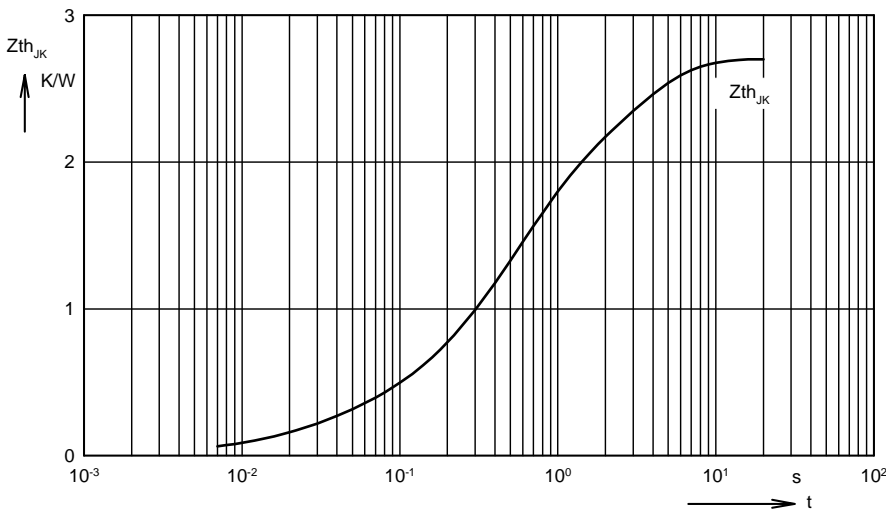


Fig. 5 Transient thermal impedance junction to heatsink

Constants for Z_{thJK} calculation

| i | R_{thi} (K/W) | t_i (s) |
|-----|-----------------|-----------|
| 1 | 0.17 | 0.028 |
| 2 | 1.4 | 0.44 |
| 3 | 1.1 | 2.6 |