

Three Phase Rectifier Bridge

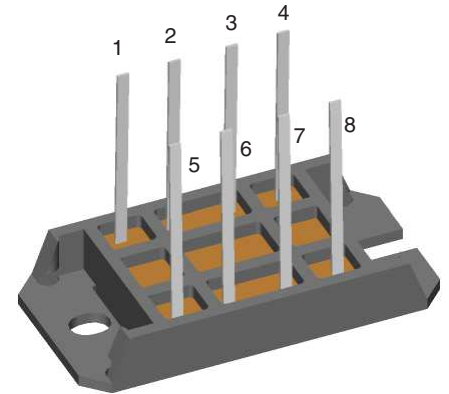
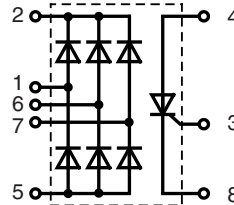
with Fast Diodes and "Softstart" Thyristor

$$I_{dAVM} = 39 \text{ A}$$

$$I_{TAVM} = 31 \text{ A}$$

$$V_{RRM} = 1200/1600 \text{ V}$$

| V_{RSM} V | V_{RRM} V | Type |
|----------------|----------------|--------------|
| 1300 | 1200 | VUC 36-12go2 |
| 1700 | 1600 | VUC 36-16go2 |



| Symbol | Conditions | Maximum Ratings | | | |
|----------------------|---|---|------------|------------|--|
| | | Diode | Thyristor | | |
| I_{dAV} | $T_K = 85^\circ\text{C}$, module | 34 | - | A | |
| I_{dAVM} | module | 39 | - | A | |
| I_{TAVM} | $T_K = 85^\circ\text{C}$, DC | - | 31 | 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 | 300 330 | 400 440 | A A |
| | $T_{VJ} = T_{VJM}$ $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 270 300 | 360 400 | A 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 | 450 460 | 800 810 | A^2s A^2s |
| | $T_{VJ} = T_{VJM}$ $V_R = 0$ | $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine | 365 380 | 650 670 | A^2s A^2s |
| $(di/dt)_{cr}$ | $T_{VJ} = T_{VJM}$ $f = 400 \text{ Hz}$, $t_p = 200 \mu\text{s}$ $V_D = \frac{2}{3} V_{DRM}$ $I_G = 0.3 \text{ A}$ $di_G/dt = 0.3 \text{ A}/\mu\text{s}$ | repetitive, $I_T = 50 \text{ A}$ | | 150 | $\text{A}/\mu\text{s}$ |
| | | non repetitive, $I_T = I_{TAVM}$ | | 500 | $\text{A}/\mu\text{s}$ |
| $(dv/dt)_{cr}$ | $T_{VJ} = T_{VJM}$; $V_{DR} = \frac{2}{3} V_{DRM}$ $R_{GK} = \infty$; method 1 (linear voltage rise) | | | 200 | $\text{V}/\mu\text{s}$ |
| V_{RGM} | | | | 10 | V |
| P_{GM} | $T_{VJ} = T_{VJM}$ | $t_p = 30 \mu\text{s}$ | \leq | 10 | W |
| | $I_T = I_{TAVM}$ | $t_p = 10 \text{ ms}$ | \leq | 1 | W |
| P_{GAVM} | | | | 0.5 | W |
| 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 | $t = 1 \text{ min}$ | | 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
- Fast recovery diodes to reduce EMI
- Separate thyristor for softstart
- Solderable terminals
- UL registered E 72873

Applications

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

Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature & power cycling
- Up to 10 dB lower EMI/RFI compared to standard rectifier

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

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IXYS reserves the right to change limits, test conditions and dimensions.

20200117c



| Symbol | Conditions | Characteristic Values | |
|------------|---|------------------------|------------------------------|
| | | Diode | Thyristor |
| I_R, I_D | $V_R = V_{RRM}; V_D = V_{DRM}$ $T_{VJ} = T_{VJM}$ $T_{VJ} = 25^\circ\text{C}$ | ≤ 5 ≤ 0.3 | ≤ 5 mA ≤ 0.3 mA |
| V_F, V_T | $I_F = 55$ A; $I_T = 45$ A $T_{VJ} = 25^\circ\text{C}$ | ≤ 1.85 | ≤ 1.4 V |
| V_{T0} | For power-loss calculations only | 1.2 | 0.85 V |
| r_T | $T_{VJ} = 125^\circ\text{C}$ | 16 | 10 m Ω |
| V_{GT} | $V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$ | | ≤ 1.5 V |
| I_{GT} | $V_D = 6$ V $T_{VJ} = 25^\circ\text{C}$ | | ≤ 80 mA |
| V_{GD} | $V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = T_{VJM}$ | | ≤ 0.2 V |
| I_{GD} | $V_D = \frac{2}{3} V_{DRM}$ $T_{VJ} = T_{VJM}$ | | ≤ 5 mA |
| I_L | $t_G = 30$ μs ; $I_G = 0.3$ A $di_G/dt = 0.3$ A/ μs $T_{VJ} = 25^\circ\text{C}$ | | ≤ 300 mA |
| I_H | $V_D = 6$ V; $R_{GK} = \infty$ $T_{VJ} = 25^\circ\text{C}$ | | ≤ 100 mA |
| t_{gd} | $V_D = \frac{1}{2} V_{DRM}$; $I_G = 0.3$ A $di_G/dt = 0.3$ A/ μs $T_{VJ} = 25^\circ\text{C}$ | | ≤ 2.5 μs |
| t_q | $I_T = 15$ A; $t_p = 300$ μs ; $-di/dt = 10$ A/ μs ; $T_{VJ} = 125^\circ\text{C}$ $V_R = 100$ V; $dv/dt = 20$ V/ μs ; $V_D = \frac{2}{3} V_{DRM}$ | | typ. 130 μs |
| t_{rr} | $I_F = 10$ A; $V_R = \frac{1}{2} V_{RRM}$ $-di/dt = 10$ A/ μs $T_{VJ} = 25^\circ\text{C}$ | ≤ 1.5 | - μs |
| R_{thJC} | per thyristor (diode); DC current per module | 1.4 0.233 | 0.9 K/W - K/W |
| R_{thJH} | per thyristor (diode); DC current per module | 2.0 0.333 | 1.1 K/W - 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 |

Dimensions in mm (1 mm = 0.0394")

