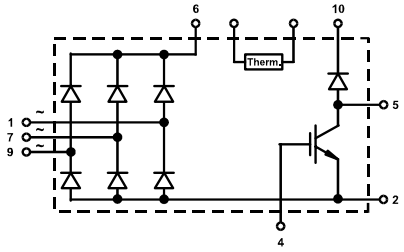
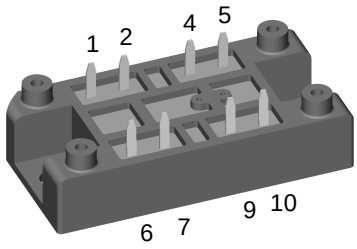
# Three Phase Rectifier Bridge
## with IGBT and Fast Recovery Diode for Braking System

$V_{RRM}$ = 1200-1600 V
$I_{dAVM}$ = 70 A

| $V_{RRM}$ V | Type |
|---|---|
| 1200 | VUB 71-12 NO1 |
| 1600 | VUB 71-16 NO1 |




| Symbol | | Test Conditions | | Maximum Ratings | |
|---|---|---|---|---|---|
| $V_{RRM}$ | Rectifier Diodes | | | 1200 / 1600 | V |
| $I_{dAV}$ | | $T_H$ = 110°C, sinusoidal 120° | | 59 | A |
| $I_{dAVM}$ | | limited by leads | | 70 | A |
| $I_{FSM}$ | | $T_{VJ}$ = 45°C, t = 10 ms, $V_R$ = 0 V | | 530 | A |
| | | $T_{VJ}$ = 150°C, t = 10 ms, $V_R$ = 0 V | | 475 | A |
| $I^2t$ | | $T_{VJ}$ = 45°C, t = 10 ms, $V_R$ = 0 V | | 1400 | A |
| | | $T_{VJ}$ = 150°C, t = 10 ms, $V_R$ = 0V | | 1130 | A |
| $P_{tot}$ | | $T_H$ = 25°C per diode | | 90 | W |
| $V_{CES}$ | IGBT | $T_{VJ}$ = 25°C to 150°C | | 1200 | V |
| $V_{GE}$ | | Continuous | | ± 20 | V |
| $I_{C25}$ | | $T_H$ = 25°C, DC | | 43 | A |
| $I_{C80}$ | | $T_H$ = 80°C, DC | | 29 | A |
| $I_{CM}$ | | $t_p$ = Pulse width limited by $T_{VJM}$ | | 90 | A |
| $P_{tot}$ | | $T_H$ = 80°C | | 160 | W |
| $V_{RRM}$ | Fast Recovery Diode | | | 1200 | V |
| $I_{FAV}$ | | $T_H$ = 80°C, rectangular d = 0.5 | | 9 | A |
| $I_{FRMS}$ | | $T_H$ = 80°C, rectangular d = 0.5 | | 14 | A |
| $I_{FRM}$ | | $T_H$ = 80°C, $t_p$ = 10 µs, f = 5 kHz | | 90 | A |
| $I_{FSM}$ | | $T_{VJ}$ = 45°C, t = 10 ms | | 75 | A |
| | | $T_{VJ}$ = 150°C, t = 10 ms | | 60 | A |
| $P_{tot}$ | | $T_H$ = 25°C | | 40 | W |
| $T_{VJ}$ | Module | | | -40...+150 | °C |
| $T_{VJM}$ | | | | 150 | °C |
| $T_{stg}$ | | | | -40...+125 | °C |
| $V_{ISOL}$ | | 50/60 Hz | t = 1 min | 3000 | V~ |
| | | $I_{ISOL}$ ≤ 1 mA | t = 1 s | 3600 | V~ |
| $M_d$ | | Mounting torque | (M5) | 2-2.5 | Nm |
| | | | (10-32 unf) | 18-22 | lb.in. |
| Weight | | typ. | | 35 | g |

### Features

- Soldering connections for PCB mounting
- Isolation voltage 3600 V~
- Ultrafast freewheeling diode
- Convenient package outline
- UL registered E 72873
- Thermistor

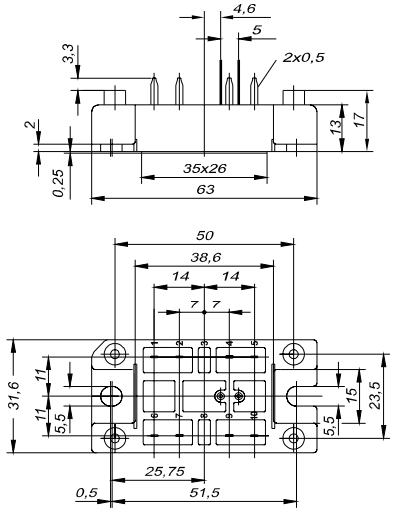
### Applications

- Drive Inverters with brake system

### Advantages

- 2 functions in one package
- No external isolation neccessary
- Easy to mount with two screws
- Suitable for wave soldering
- High temperature and power cycling capability

### Dimensions in mm (1 mm = 0.0394")






Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions.

749

| Symbol | | Test Conditions ($T_{VJ}$ = 25°C, unless otherwise specified) | Characteristic Values min. | typ. | max. | |
|---|---|---|---|---|---|---|
| $I_R$ | Rectifier Diodes | $V_R = V_{RRM}$, $T_{VJ}$ = 25°C | | | 0.1 | mA |
| | | $V_R = V_{RRM}$, $T_{VJ}$ = 150°C | | | 3 | mA |
| $V_F$ | | $I_F$ = 25 A, $T_{VJ}$ = 25°C | | | 1.3 | V |
| $V_{T0}$ | | For power-loss calculations only | | | 0.85 | V |
| $r_T$ | | $T_{VJ}$ = 150°C | | | 8.5 | mΩ |
| $R_{thJH}$ | | per diode | | | 1.42 | K/W |
| $V_{BR(CES)}$ | IGBT | $V_{GS}$ = 0 V, $I_C$ = 3 mA | 1200 | | | V |
| $V_{GE(th)}$ | | $I_C$ = 10 mA | 5 | | 8 | V |
| $I_{GES}$ | | $V_{GE}$ = ± 20 V | | | 500 | nA |
| $I_{CES}$ | | $T_{VJ}$ = 25°C, $V_{CE}$ = $V_{CES}$ | | | 700 | μA |
| | | $T_{VJ}$ = 125°C, $V_{CE}$ = 0.8 $V_{CES}$ | | | 1.5 | mA |
| $V_{CEsat}$ | | $V_{GE}$ = 15 V, $I_C$ = 25 A | | | 2.9 | V |
| $t_{SC}$ (SCSOA) | | $V_{GE}$ = 15 V, $V_{CE}$ = 600 V, $T_{VJ}$ = 125°C, $R_G$ = 22 Ω, non repetitive | | | 10 | μs |
| RBSOA | | $V_{GE}$ = 15 V, $V_{CE}$ = 800 V, $T_{VJ}$ = 125°C, $R_G$ = 22 Ω, Clamped Inductive load, L = 100 μH | | | 50 | A |
| $C_{ies}$ | | $V_{CE}$ = 25 V, f = 1 MHz, $V_{GE}$ = 0 V | | 4.5 | | nF |
| $t_{d(on)}$ | | $V_{CE}$ = 600 V, $I_C$ = 25 A | | 300 | | ns |
| $t_{d(off)}$ | | $V_{GE}$ = 15 V, $R_G$ = 22 Ω | | 350 | | ns |
| $t_{fi}$ | | Inductive load; L = 100 μH | | 1600 | | ns |
| $E_{on}$ | | $T_{VJ}$ = 125°C | | 6 | | mJ |
| $E_{off}$ | | | | 8 | | mJ |
| $R_{thJH}$ | | | | | 0.8 | K/W |
| $I_R$ | Fast Recovery Diode | $V_R = V_{RRM}$, $T_{VJ}$ = 25°C | | | 0.2 | mA |
| | | $V_R$ = 800 V, $T_{VJ}$ = 150°C | | 4 | 6 | mA |
| $V_F$ | | $I_F$ = 12 A, $T_{VJ}$ = 25°C | | | 2.7 | V |
| $V_{T0}$ | | For power-loss calculations only | | | 1.65 | V |
| $r_T$ | | $T_{VJ}$ = 150°C | | | 46 | mΩ |
| $I_{RM}$ | | $I_F$ = 25 A, $-di_F/dt$ = 100 A/μs | | 6.5 | 7 | A |
| | | $V_R$ = 100 V | | | | |
| $t_{rr}$ | | $I_F$ = 1 A, $-di_F/dt$ = 100 A/μs | | 50 | 70 | ns |
| | | $V_R$ = 30 V | | | | |
| $R_{thJH}$ | | | | | 3.12 | K/W |
| $R_{25}$ | NTC | Siemens Typ S 891/2,2k/+9 | | | 2,2 | kΩ |
| $d_S$ | Module | Creep distance on surface | | | 12.7 | mm |
| $d_A$ | | Strike distance in air | | | 9.4 | mm |
| a | | Maximum allowable acceleration | | | 50 | $m/s^2$ |