

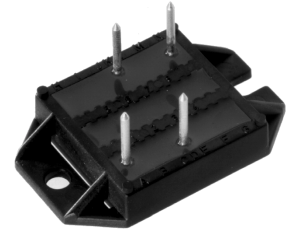
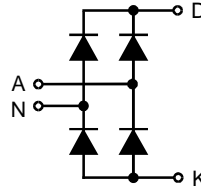
# ECO-PAC™

## Single Phase Rectifier Bridge

### with Fast Recovery Epitaxial Diodes (FRED)

$I_{dAV} = 68 \text{ A}$   
 $V_{RRM} = 600 \text{ V}$   
 $t_{rr} = 35 \text{ ns}$

| $V_{RSM}$ | $V_{RRM}$ | Typ          |
|-----------|-----------|--------------|
| V         | V         |              |
| 600       | 600       | VBE 55-06NO7 |



| Symbol          | Conditions  | Maximum Ratings                    |                      |
|-----------------|---|------------------------------------|----------------------|
| $I_{dAV}$ ①     | $T_C = 100^\circ\text{C}$ , module  | 68                                 | A                    |
| $I_{dAVM}$      |   | 90                                 | A                    |
| $I_{FSM}$       | $T_{VJ} = 45^\circ\text{C}$<br>$V_R = 0$  | $t = 10 \text{ ms}$ (50 Hz), sine  | 250 A                |
|                 |   | $t = 8.3 \text{ ms}$ (60 Hz), sine | 275 A                |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$   | $t = 10 \text{ ms}$ (50 Hz), sine  | 215 A                |
|                 |   | $t = 8.3 \text{ ms}$ (60 Hz), sine | 235 A                |
| $I^2t$          | $T_{VJ} = 45^\circ\text{C}$<br>$V_R = 0$  | $t = 10 \text{ ms}$ (50 Hz), sine  | 315 A <sup>2</sup> s |
|                 |   | $t = 8.3 \text{ ms}$ (60 Hz), sine | 320 A <sup>2</sup> s |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$   | $t = 10 \text{ ms}$ (50 Hz), sine  | 230 A <sup>2</sup> s |
|                 |   | $t = 8.3 \text{ ms}$ (60 Hz), sine | 230 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 $t = 1 \text{ min}$<br>$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$ | 3000                               | V~                   |
|                 |   | 3600                               | V~                   |
| $M_d$<br>Weight | Mounting torque (M4)<br>typ.  | 1.5-2/14-18                        | Nm/lb.in.            |
|                 |   | 19                                 | g                    |

#### Features

- Package with DCB ceramic base plate in low profile
- Isolation voltage 3000 V~
- Planar passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering

#### Applications

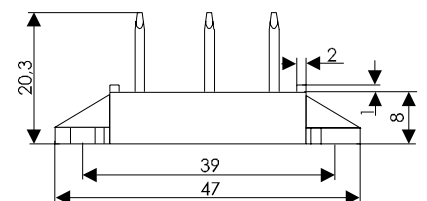
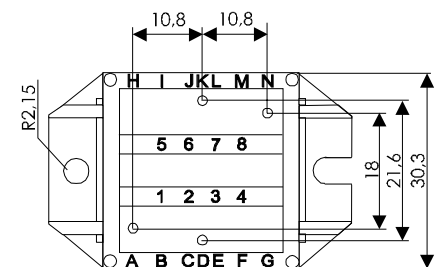
- Supplies for DC power equipment
- Input and output rectifiers for high frequency
- Battery DC power supplies
- Field supply for DC motors

#### Advantages

- Space and weight savings
- Improved temperature and power cycling capability
- Small and light weight
- Low noise switching

| Symbol     | Conditions  | Characteristic Values       |                  |
|------------|---|-----------------------------|------------------|
|            |   | typ.                        | max.             |
| $I_R$      | $V_R = V_{RRM}$<br>$V_R = V_{RRM}$  | $T_{VJ} = 25^\circ\text{C}$ | 0.25 mA          |
|            |   | $T_{VJ} = T_{VJM}$          | 1.0 mA           |
| $V_F$      | $I_F = 30 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$  |                             | 1.57 V           |
| $V_{T0}$   | for power-loss calculations only  |                             | 0.98 V           |
| $r_T$      |   |                             | 8 mΩ             |
| $R_{thJC}$ | per diode; DC current   |                             | 0.9 K/W          |
| $R_{thCH}$ | per diode, DC current, typ.   |                             | 0.3 K/W          |
| $I_{RM}$   | $I_F = 50 \text{ A}$ , $-di/dt = 100 \text{ A}/\mu\text{s}$<br>$V_R = 100 \text{ V}$ , $L = 0.05 \text{ mH}$ , $T_{VJ} = 100^\circ\text{C}$ | 6                           | tbd A            |
| $t_{rr}$   | $I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ , $T_{VJ} = 25^\circ\text{C}$                             | 35                          | tbd ns           |
| $a$        | Max. allowable acceleration   | 50                          | m/s <sup>2</sup> |
| $d_s$      | creeping distance on surface  | 11.2                        | mm               |
| $d_A$      | creepage distance in air  | 9.7                         | mm               |

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



Data according to IEC 60747 refer to a single diode unless otherwise stated  
 ① for resistive load at bridge output.

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

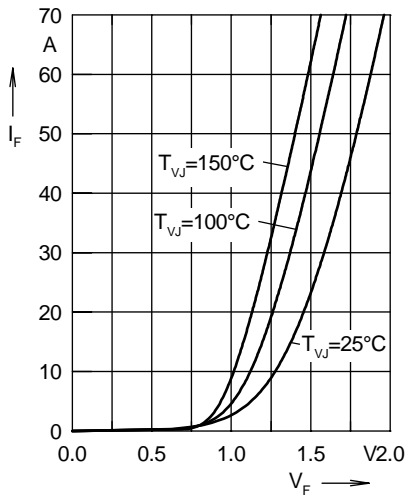


Fig. 1 Forward current  $I_F$  versus  $V_F$

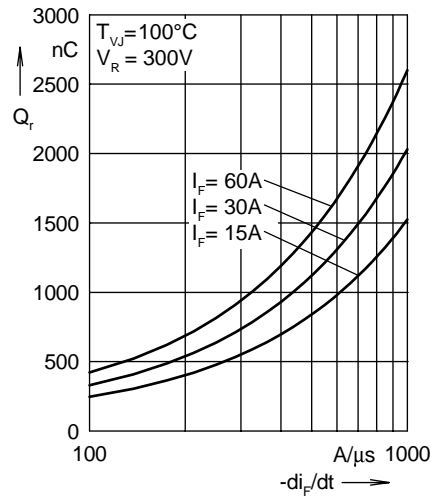


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

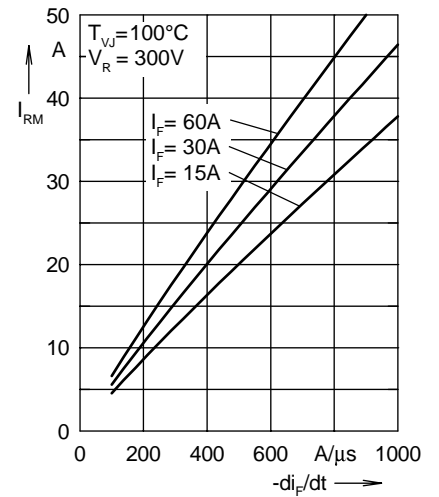


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

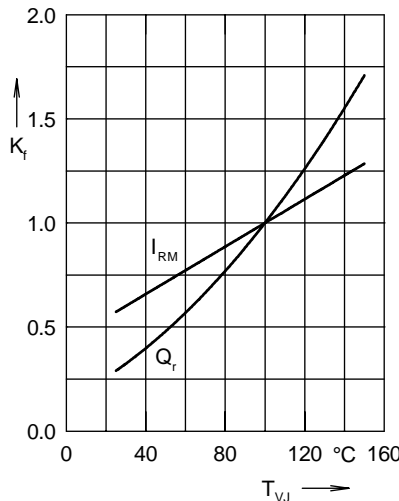


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

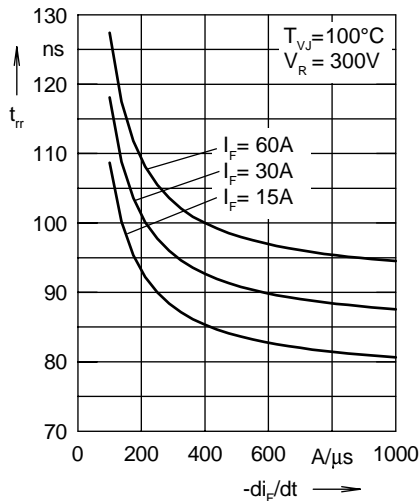


Fig. 5 Recovery time  $t_{rr}$  versus  $-di_F/dt$

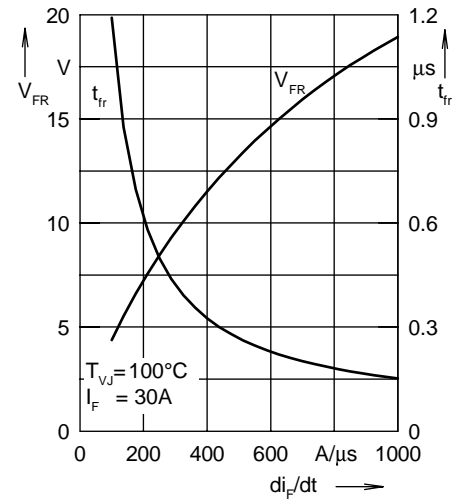


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{fr}$  versus  $di_F/dt$

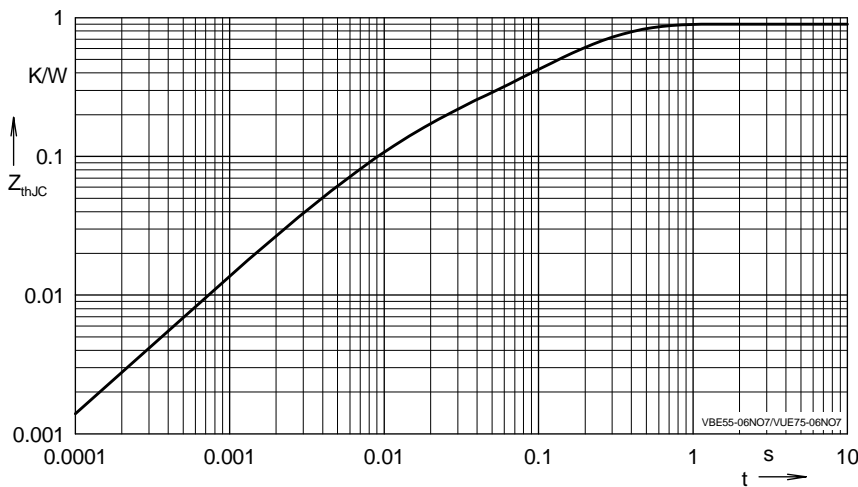


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.3012          | 0.0052    |
| 2 | 0.116           | 0.0003    |
| 3 | 0.0241          | 0.0004    |
| 4 | 0.4586          | 0.0092    |

NOTE: Fig. 2 to Fig. 6 shows typical values