

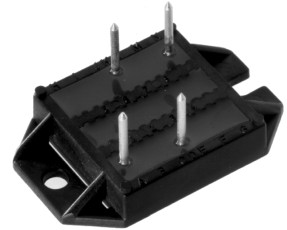
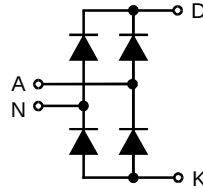
# ECO-PAC™

## Single Phase Rectifier Bridge

### with Fast Recovery Epitaxial Diodes (FRED)

$$\begin{aligned} I_{dAV} &= 19 \text{ A} \\ V_{RRM} &= 1200 \text{ V} \\ t_{rr} &= 40 \text{ ns} \end{aligned}$$

| $V_{RSM}$<br>V | $V_{RRM}$<br>V | Typ          |
|----------------|----------------|--------------|
| 1200           | 1200           | VBE 17-12NO7 |



| Symbol          | Conditions                                     | Maximum Ratings                    |                     |
|-----------------|------------------------------------------------|------------------------------------|---------------------|
| $I_{dAV}$ ①     | $T_C = 85^\circ\text{C}$ , module              | 19                                 | A                   |
| $I_{dAVM}$      |                                                | 90                                 | A                   |
| $I_{FSM}$       | $T_{VJ} = 45^\circ\text{C}$<br>$V_R = 0$       | $t = 10 \text{ ms}$ (50 Hz), sine  | 40 A                |
|                 |                                                | $t = 8.3 \text{ ms}$ (60 Hz), sine | 45 A                |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                | $t = 10 \text{ ms}$ (50 Hz), sine  | 35 A                |
|                 |                                                | $t = 8.3 \text{ ms}$ (60 Hz), sine | 40 A                |
| $I^2t$          | $T_{VJ} = 45^\circ\text{C}$<br>$V_R = 0$       | $t = 10 \text{ ms}$ (50 Hz), sine  | 10 A <sup>2</sup> s |
|                 |                                                | $t = 8.3 \text{ ms}$ (60 Hz), sine | 10 A <sup>2</sup> s |
|                 | $T_{VJ} = T_{VJM}$<br>$V_R = 0$                | $t = 10 \text{ ms}$ (50 Hz), sine  | 5 A <sup>2</sup> s  |
|                 |                                                | $t = 8.3 \text{ ms}$ (60 Hz), sine | 5 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 $t = 1 \text{ min}$              | 3000                               | V~                  |
|                 | $I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$ | 3600                               | V~                  |
| $M_d$<br>Weight | Mounting torque (M4)<br>typ.                   | 1.5-2/14-18<br>19                  | Nm/lb.in.<br>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

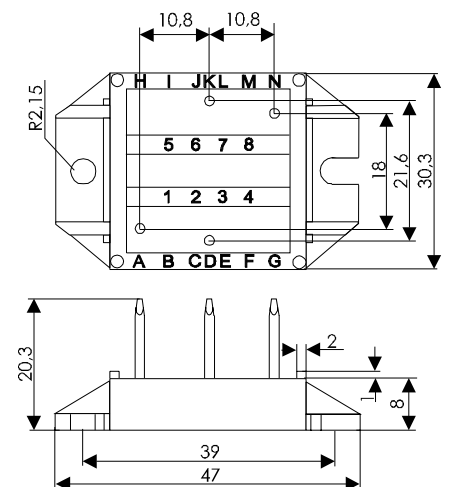
| Symbol     | Conditions                                                                                                                                   | Characteristic Values |                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|
|            |                                                                                                                                              | typ.                  | max.             |
| $I_R$      | $V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$                                                                                                  |                       | 0.06 mA          |
|            | $V_R = V_{RRM}$ $T_{VJ} = T_{VJM}$                                                                                                           |                       | 0.25 mA          |
| $V_F$      | $I_F = 10 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$                                                                                             |                       | 2.92 V           |
| $V_{T0}$   | for power-loss calculations only                                                                                                             |                       | 1.32 V           |
| $r_T$      |                                                                                                                                              |                       | 30 mΩ            |
| $R_{thJC}$ | per diode; DC current                                                                                                                        |                       | 2.5 K/W          |
| $R_{thCH}$ | per diode; DC current, typ.                                                                                                                  |                       | 0.3 K/W          |
| $I_{RM}$   | $I_F = 12 \text{ A}$ , $-diF/dt = 100 \text{ A}/\mu\text{s}$<br>$V_R = 100 \text{ V}$ , $L = 0.05 \text{ mH}$ , $T_{VJ} = 100^\circ\text{C}$ | 4                     | 8.5 A            |
| $t_{rr}$   | $I_F = 1 \text{ A}$ ; $-di/dt = 50 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ , $T_{VJ} = 25^\circ\text{C}$                               | 40                    | 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               |

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.

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



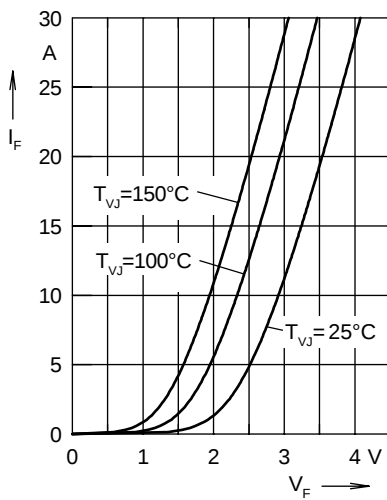


Fig. 1 Forward current  $I_F$  versus  $V_F$

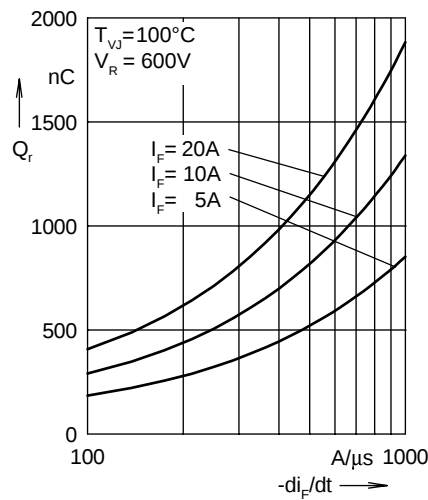


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

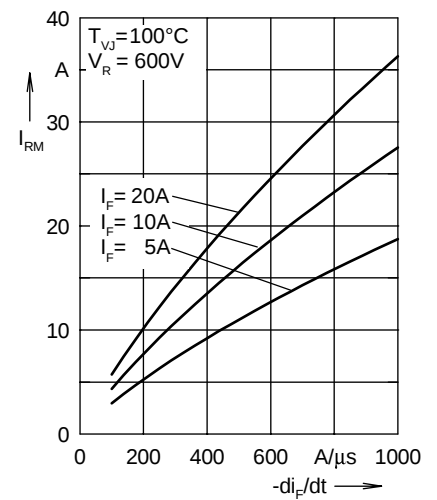


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

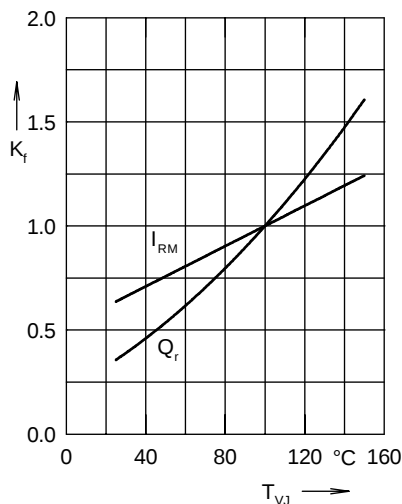


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

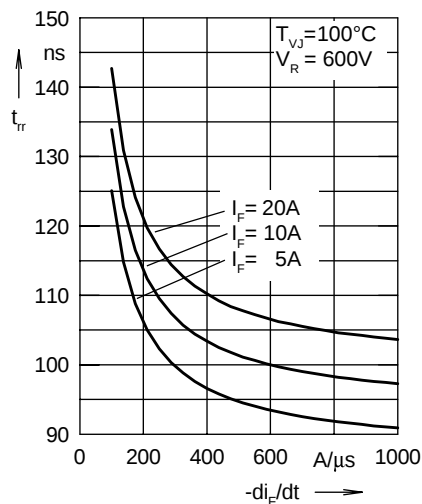


Fig. 5 Recovery time  $t_{rr}$  versus  $-di_F/dt$

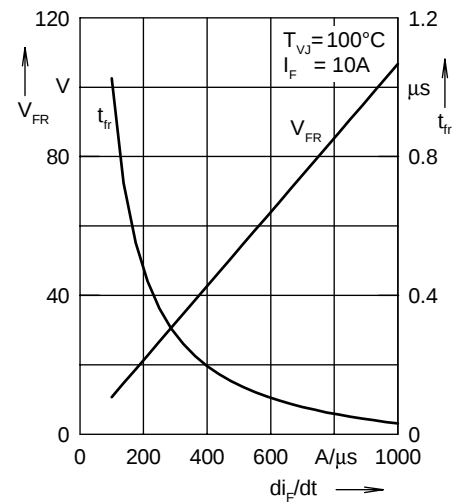


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{fr}$  versus  $di_F/dt$

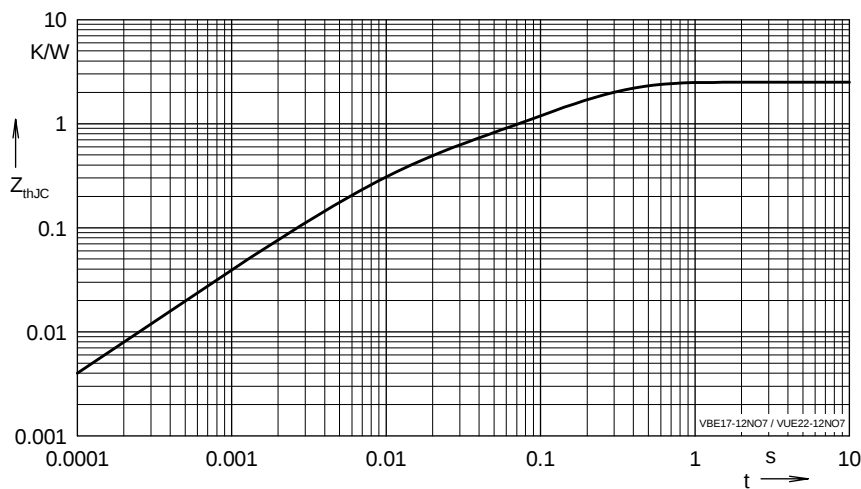


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.8776          | 0.0052    |
| 2 | 0.3378          | 0.0003    |
| 3 | 0.0678          | 0.0004    |
| 4 | 1.2168          | 0.0092    |

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

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[IXYS:](#)

[VBE17-12NO7](#)