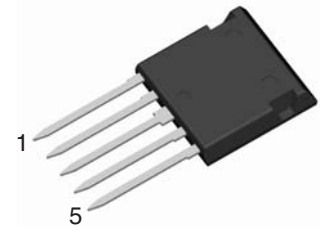
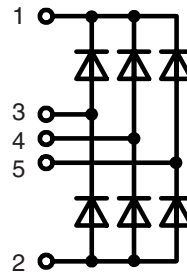


# Fast Three Phase Rectifier Bridge

in ISOPLUS i4-PAC™

$V_{RRM} = 1200\text{ V}$   
 $I_{D(AV)M} = 30\text{ A}$   
 $t_{rr} = 130\text{ ns}$



## Rectifier Bridge

| Symbol       | Conditions  | Maximum Ratings |    |
|--------------|---|-----------------|----|
| $V_{RRM}$    |   | 1200            | V  |
| $I_{FAV}$    | $T_C = 90^\circ\text{C}$ ; sine $180^\circ$ (per diode)   | 12              | A  |
| $I_{D(AV)M}$ | $T_C = 90^\circ\text{C}$ (bridge)   | 30              | A  |
| $I_{FSM}$    | $T_{VJ} = 25^\circ\text{C}$ ; $t = 10\text{ ms}$ ; sine $50\text{ Hz}$                                | 80              | A  |
| $E_{AS}$     | $I_{AS} = 9\text{ A}$ ; $L_{AS} = 180\text{ }\mu\text{H}$ ; $T_C = 25^\circ\text{C}$ ; non repetitive | 8.7             | mJ |
| $P_{tot}$    | $T_C = 25^\circ\text{C}$ (per diode)  | 50              | W  |

## Features

- HiPerFRED™ Epitaxial Diodes
  - fast and soft reverse recovery – low switching losses
  - avalanche rated
  - low leakage current
- ISOPLUS i4-PAC™ package
  - isolated back surface
  - low coupling capacity between pins and heatsink
  - enlarged creepage towards heatsink
  - application friendly pinout
  - high reliability
  - industry standard outline

| Symbol               | Conditions   | Characteristic Values<br>( $T_{VJ} = 25^\circ\text{C}$ , unless otherwise specified) |            |                 |
|----------------------|--|--|------------|-----------------|
|                      |  | min.   | typ.       | max.            |
| $V_F$                | $I_F = 10\text{ A}$ ; $T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                                  |  | 2.2<br>1.6 | 2.6<br>V<br>V   |
| $I_R$                | $V_R = V_{RRM}$ ; $T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 125^\circ\text{C}$                                      |  | 0.1        | 0.1<br>mA<br>mA |
| $I_{RM}$<br>$t_{rr}$ | $I_F = 15\text{ A}$ ; $di_F/dt = -400\text{ A}/\mu\text{s}$ ; $T_{VJ} = 125^\circ\text{C}$<br>$V_R = 600\text{ V}$ |  | 16<br>130  | A<br>ns         |
| $R_{thJC}$           | (per diode)  |  |            | 2.3<br>K/W      |

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

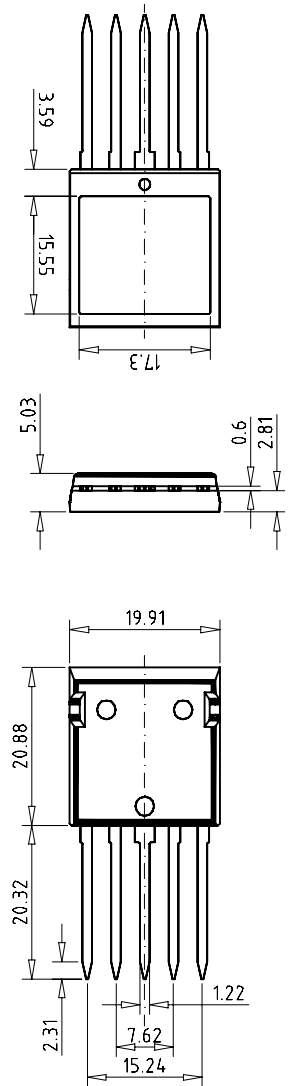
## Applications

- high frequency rectifiers, output rectifiers of switched mode power supplies
- three phase mains rectifiers with minimized electromagnetic emissions

**Component**

| Symbol     | Conditions                                     | Maximum Ratings |    |
|------------|--|-----------------|----|
| $T_{VJ}$   |  | -55...+150      | °C |
| $T_{stg}$  |  | -55...+125      | °C |
| $V_{ISOL}$ | $I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$ | 2500            | V~ |
| $F_c$      | mounting force with clip                       | 20...120        | N  |

| Symbol        | Conditions  | Characteristic Values |      |      |
|---------------|---|-----------------------|------|------|
|               |   | min.                  | typ. | max. |
| $C_p$         | coupling capacity between shorted pins and mounting tab in the case |                       | 40   | pF   |
| $d_s, d_A$    | pin - pin   | 1.7                   |      | mm   |
| $d_s, d_A$    | pin - backside metal  | 5.5                   |      | mm   |
| $R_{thCH}$    | with heatsink compound  |                       | 0.15 | K/W  |
| <b>Weight</b> |   |                       | 9    | g    |

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


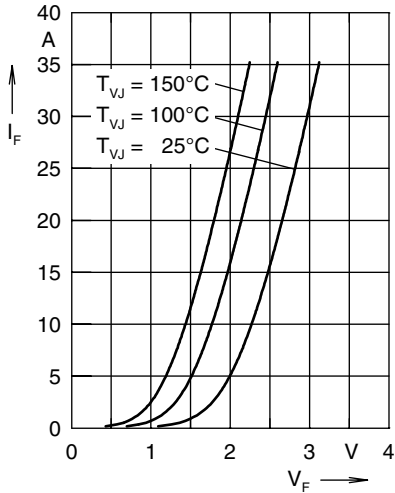


Fig. 1 Forward current  $I_F$  vs.  $V_F$

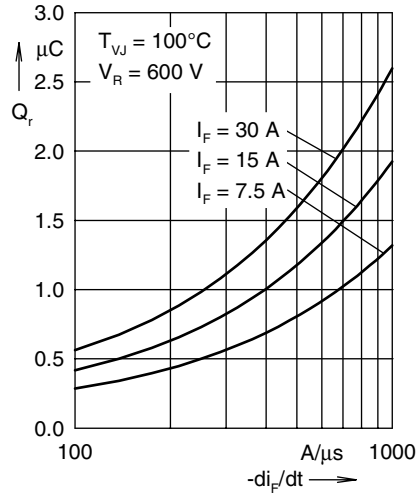


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

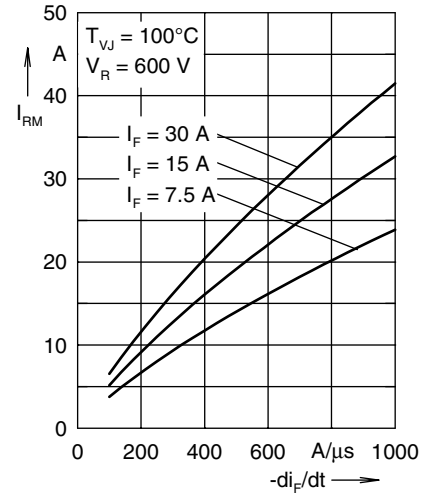


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

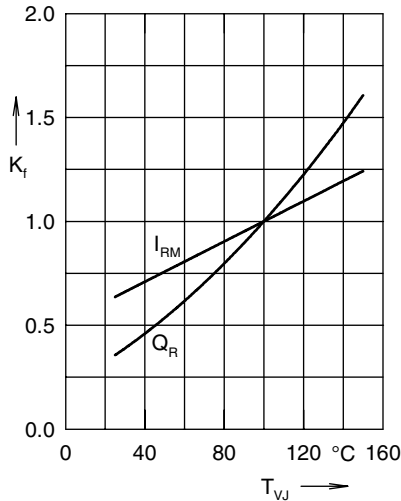


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

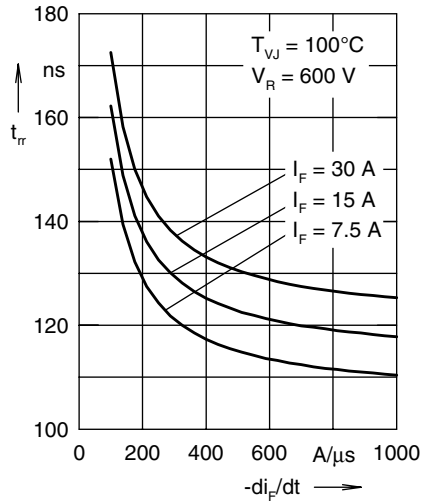


Fig. 5 Recovery time  $t_{tr}$  vs.  $-di_F/dt$

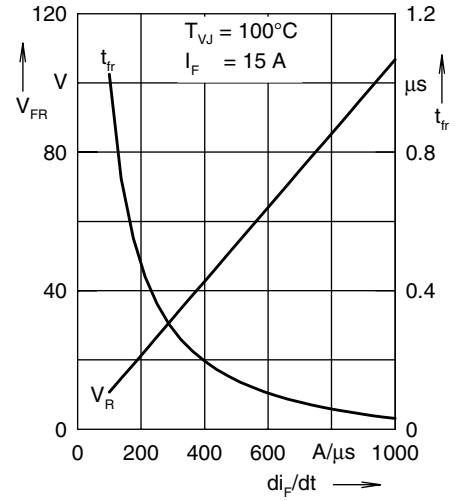


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

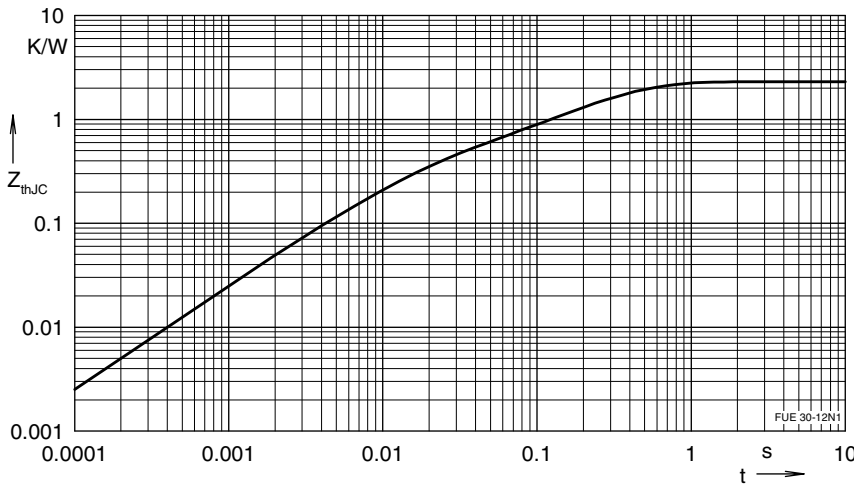


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thjC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.78545         | 0.0052    |
| 2 | 0.30245         | 0.0003    |
| 3 | 0.0621          | 0.0004    |
| 4 | 1.15            | 0.0092    |