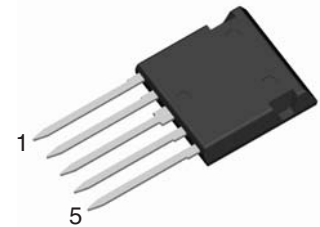
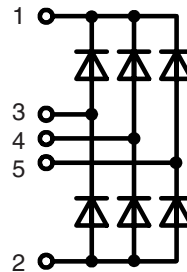


# Fast Three Phase Rectifier Bridge

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

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

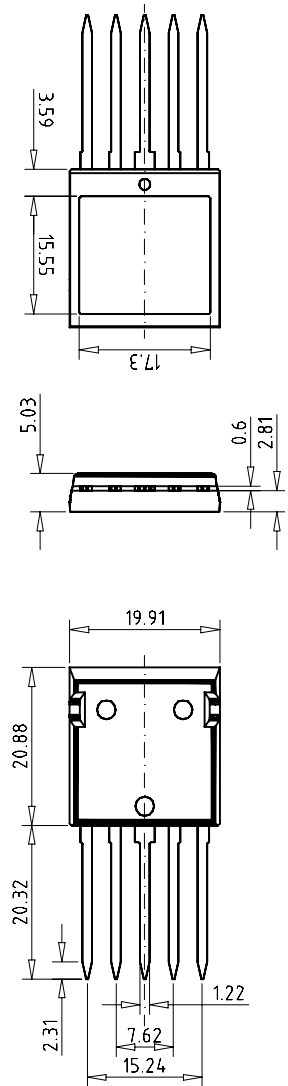
## Applications

- 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")**


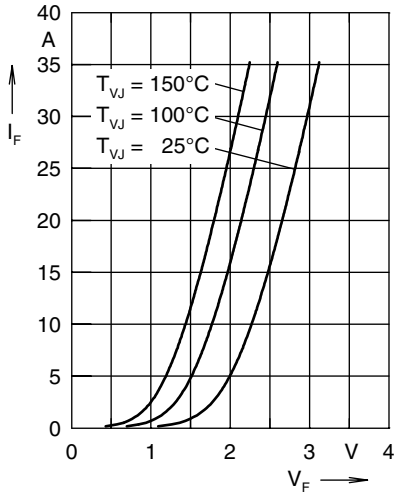


Fig. 1 Forward current  $I_F$  vs.  $V_F$

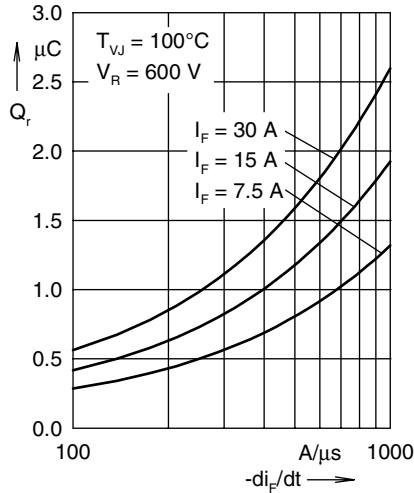


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

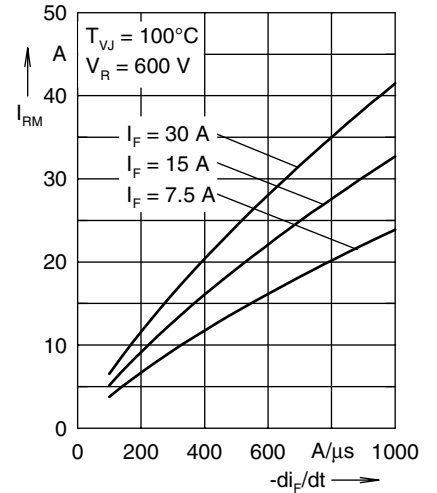


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

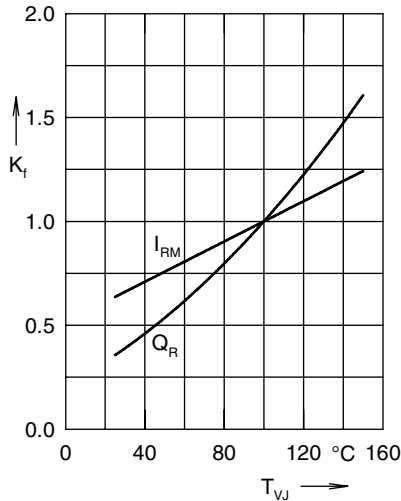


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

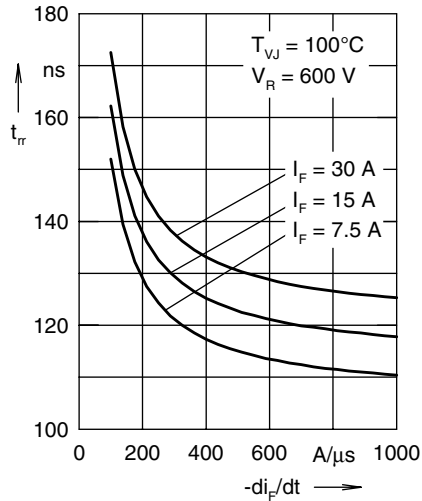


Fig. 5 Recovery time  $t_{tr}$  vs.  $-di_F/dt$

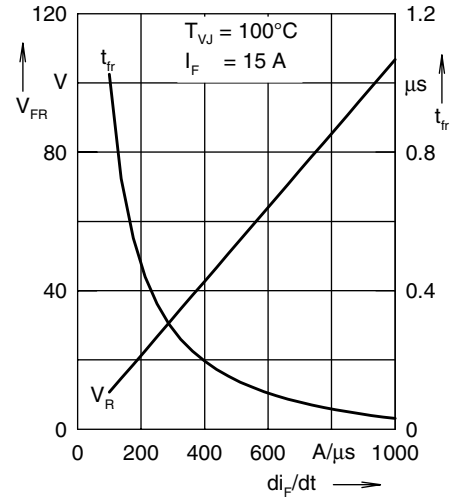


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

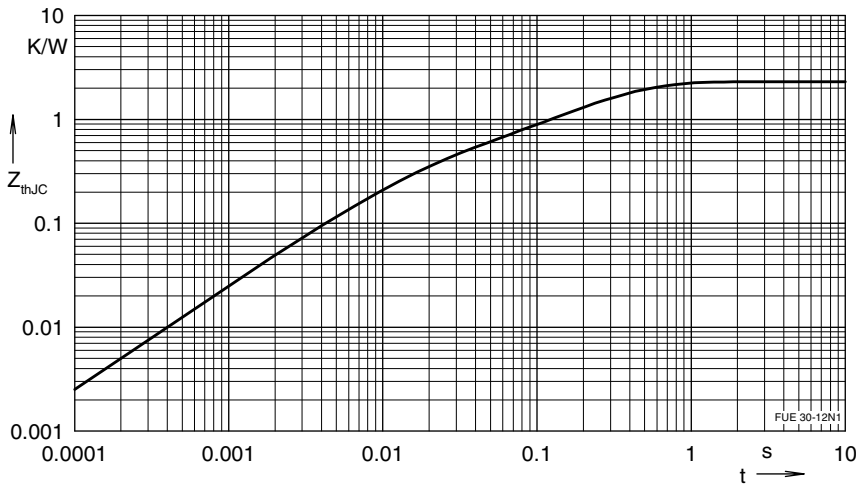


Fig. 7 Transient thermal resistance junction to case

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

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