

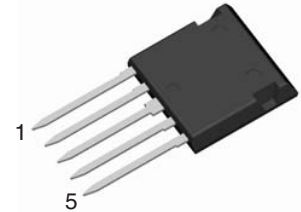
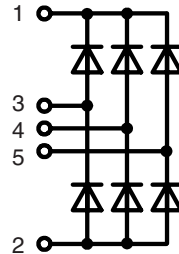
Fast Three Phase Rectifier Bridge

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° (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 Hz	80	A
E_{AS}	$I_{AS} = 9 \text{ A}$; $L_{AS} = 180 \mu\text{H}$; $T_C = 25^\circ\text{C}$; 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	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

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

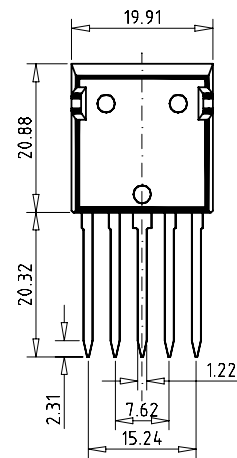
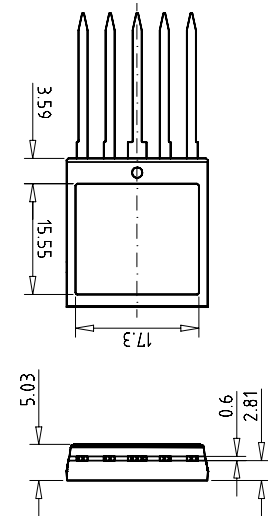
Applications

- 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
Weight		9		g

Dimensions in mm (1 mm = 0.0394")


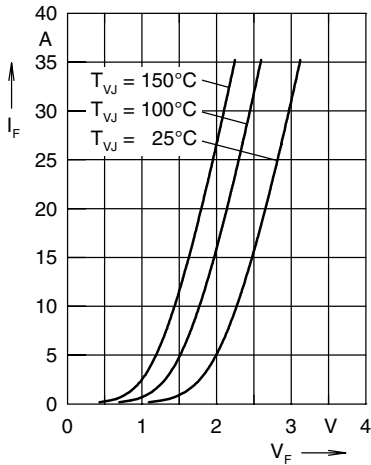


Fig. 1 Forward current I_F vs. V_F

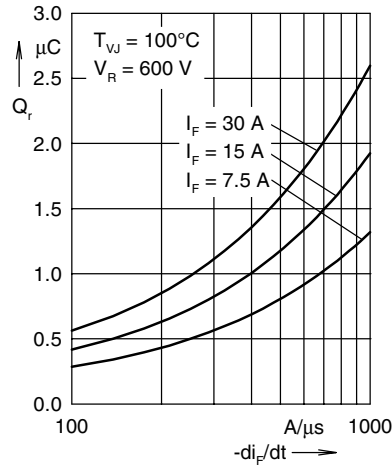


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

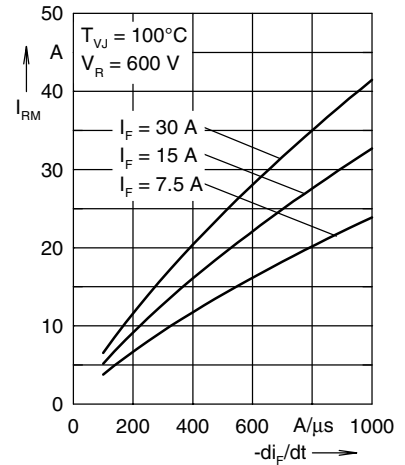


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

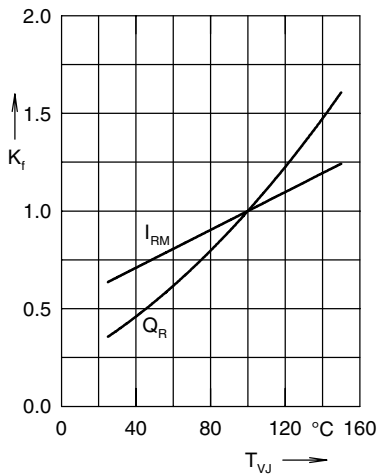


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

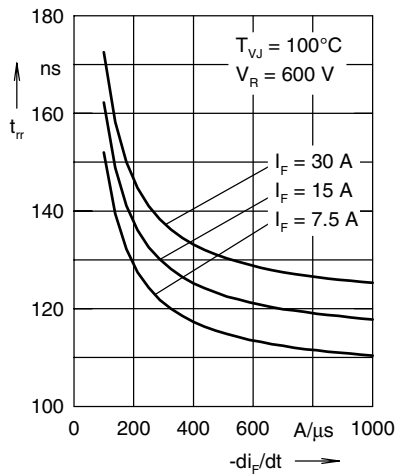


Fig. 5 Recovery time t_{tr} vs. $-di_F/dt$

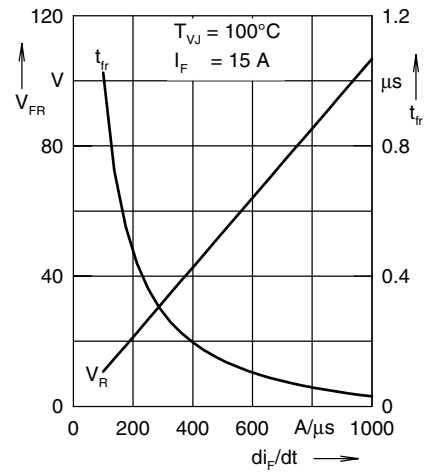


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

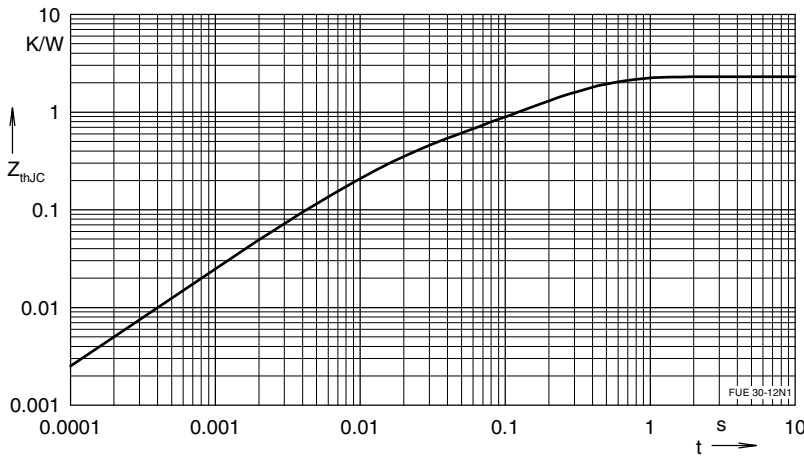


Fig. 7 Transient thermal resistance junction to case

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