

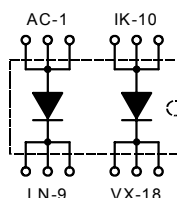
## Fast Recovery Epitaxial Diode (FRED)

## PSEI 2x101

$I_{FAVM} = 2 \times 96 \text{ A}$   
 $V_{RRM} = 600 \text{ V}$   
 $t_{rr} = 35 \text{ ns}$

Preliminary Data Sheet

$V_{RSM}$ (V)	$V_{RRM}$ (V)	Type
600	600	PSEI 2x101/06



Symbol	Test Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	150	A
$I_{FAVM}^*$	$T_C = 70^\circ\text{C}$ , rectangular, $d=0.5$	96	A
$I_{FRM}$	$t_p < 10\mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	TBD	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	1200	A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	1300	A
	$T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	1080	A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	1170	A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	7200	$\text{A}^2\text{s}$
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	7100	$\text{A}^2\text{s}$
	$T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	5800	$\text{A}^2\text{s}$
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	5700	$\text{A}^2\text{s}$
$T_{VJ}$		-40... + 150	$^\circ\text{C}$
$T_{VJM}$		150	$^\circ\text{C}$
$T_{stg}$		-40... + 150	$^\circ\text{C}$
$V_{ISOL}$	50/60 Hz, RMS $t = 1 \text{ min}$	2500	V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000	V~
$M_d$	Mounting torque (M4)	1.5 - 2.0	Nm
		14 - 18	lb.in.
<b>Weight</b>	typ.	24	g

Symbol	Test Conditions	Characteristic Value	
$I_R$	$T_{VJ} = 25^\circ\text{C}$ , $V_R = V_{RRM}$	max.	3 mA
	$T_{VJ} = 25^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	1 mA
	$T_{VJ} = 125^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	20 mA
$V_F$	$I_F = 100 \text{ A}$ , $T_{VJ} = 25^\circ\text{C}$	max.	1.25 V
$V_{TO}$	For power-loss calculations only		0.7 V
$r_T$			4.7 $\text{m}\Omega$
$R_{thJC}$	per diode; max.		0.5 K/W
$R_{thCH}$	per diode; typ.		0.05 K/W
$I_{RM}$	$I_F = 80 \text{ A}$ ; $-di_F/dt = 200 \text{ A}/\mu\text{s}$ ; $V_R = 100 \text{ V}$ $L \leq 0.05 \text{ mH}$ ; $T_{VJ} = 100^\circ\text{C}$	typ.	19 A
$t_{rr}$	$I_F = 1 \text{ A}$ ; $-di_F/dt = 400 \text{ A}/\mu\text{s}$ ; $V_R = 30 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$	typ.	35 ns
$d_s$	Creeping distance on surface	11.2	mm
$d_A$	Creeping distance in air	11.2	mm
$a$	Max. allowable acceleration	50	$\text{m/s}^2$

### Features

- 2 independent FRED in 1 package
- Isolation voltage 3000 V~
- Planar glass passivated chips
- Low forward voltage drop
- Leads suitable for PC board soldering
- Very short recovery time
- Soft recovery behaviour
- UL registered, E 148688

### Applications

- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

### Advantages

- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Low noise switching
- Small and light weight

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

\* $I_{FAVM}$  rating includes blocking losses at  $T_{VJM}$ ;  $V_R = 0.8 V_{RRM}$ ; duty cycle  $d = 0.5$

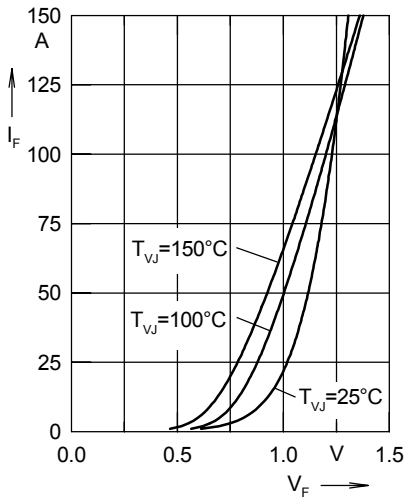


Fig. 1 Forward current  $I_F$  versus  $V_F$

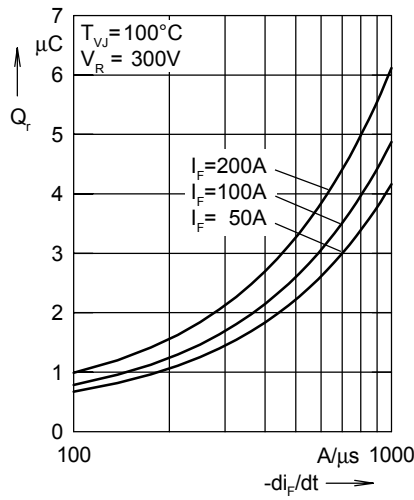


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

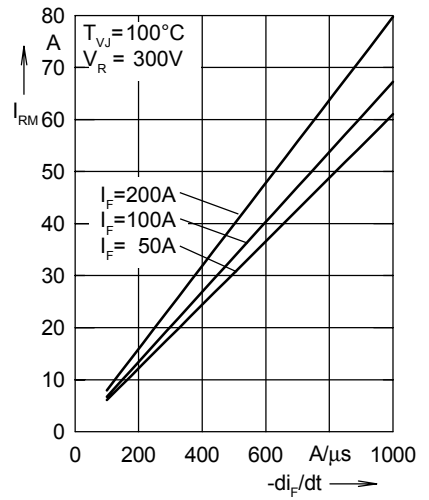


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

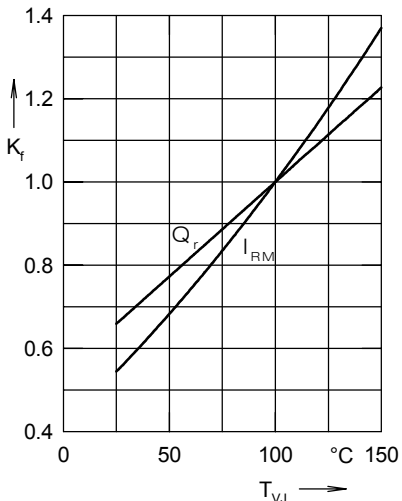


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

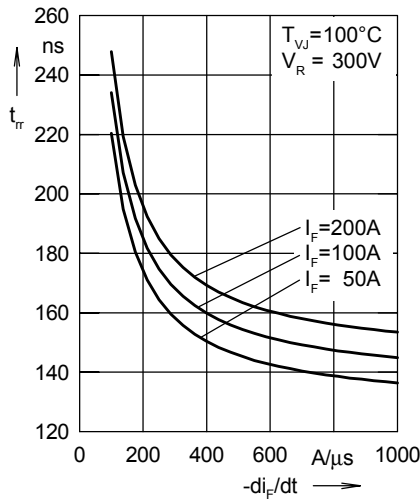


Fig. 5 Recovery time  $t_{tr}$  versus  $-di_F/dt$

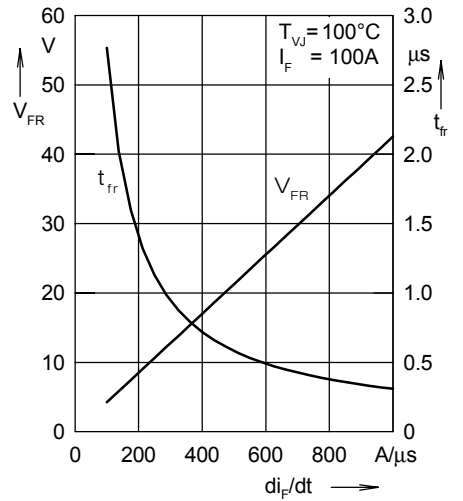


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

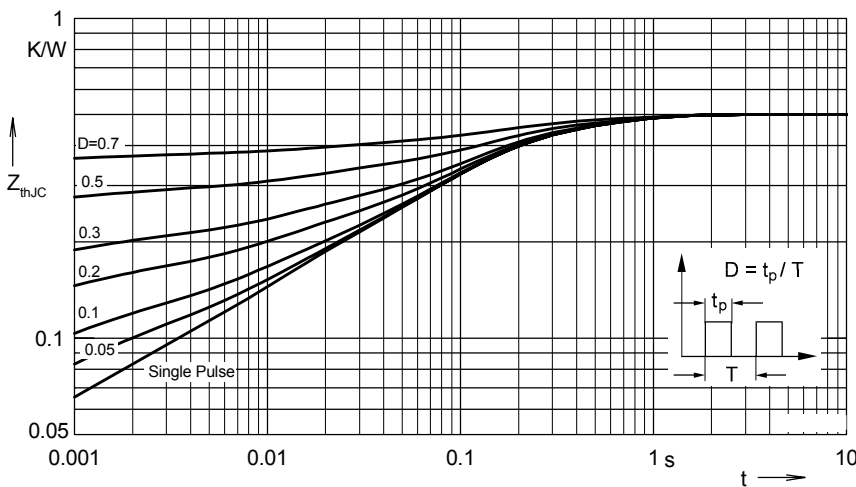


Fig. 7 Transient thermal impedance junction to case at various duty cycles

### Package style and outline

Dimensions in mm (1mm = 0.0394")

