

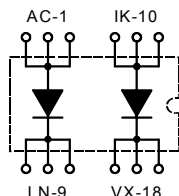
### Fast Recovery Epitaxial Diode (FRED)

### PSEI 2x121

$I_{FAVM}$  = 2x 123 A  
 $V_{RRM}$  = 200 V  
 $t_{rr}$  = 35 ns

Preliminary Data Sheet

$V_{RSM}$ (V)	$V_{RRM}$ (V)	Type
200	200	PSEI 2x121/02



Symbol	Test Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	150	A
$I_{FAVM}^*$	$T_C = 70^\circ\text{C}$ , rectangular, $d=0.5$	123	A
$I_{FRM}$	$t_p < 10\mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	600	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	A <sup>2</sup> s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	7100	A <sup>2</sup> s
	$T_{VJ} = 125^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	5800	A <sup>2</sup> s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	5700	A <sup>2</sup> s
$T_{VJ}$		-40... + 150	°C
$T_{VJM}$		150	°C
$T_{stg}$		-40... + 150	°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.	1 mA
	$T_{VJ} = 25^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	0.5 mA
	$T_{VJ} = 125^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	20 mA
$V_F$	$I_F = 120\text{ A}$ , $T_{VJ} = 150^\circ\text{C}$	max.	0.95 V
	$T_{VJ} = 25^\circ\text{C}$	max.	1.10 V
$V_{TO}$	For power-loss calculations only	0.7	V
$r_T$		2.1	mΩ
$R_{thJC}$	per diode; max.	0.7	K/W
$R_{thCH}$	per diode; typ.	0.1	K/W
$I_{RM}$	$I_F = 100\text{ A}$ ; $-di_F/dt = 200\text{ A}/\mu\text{s}$ ; $V_R = 100\text{ V}$ $L \leq 0.05\text{ mH}$ ; $T_{VJ} = 100^\circ\text{C}$	typ.	12 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	m/s <sup>2</sup>

### 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  $T_{VJM}$ ;  
 $V_R = 0.8 \cdot V_{RRM}$ ; duty cycle  $d = 0.5$

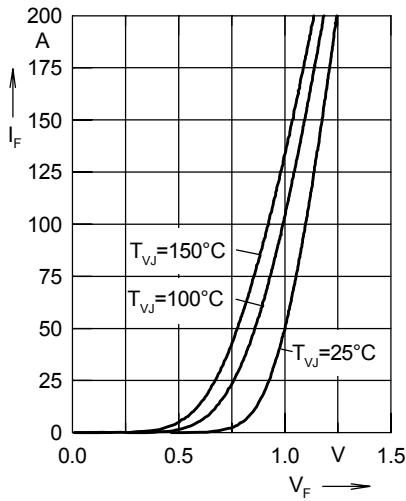


Fig. 1 Forward current  $I_F$  versus  $V_F$

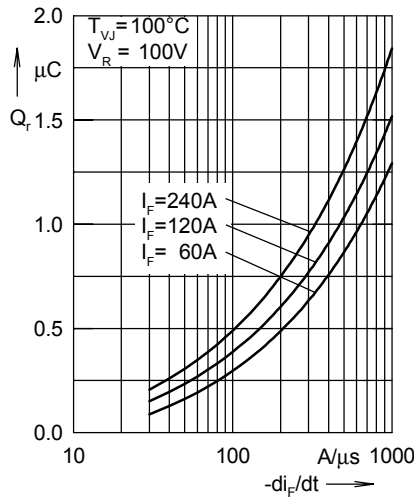


Fig. 2 Typ. reverse recovery charge  $Q_r$  versus  $-di_F/dt$

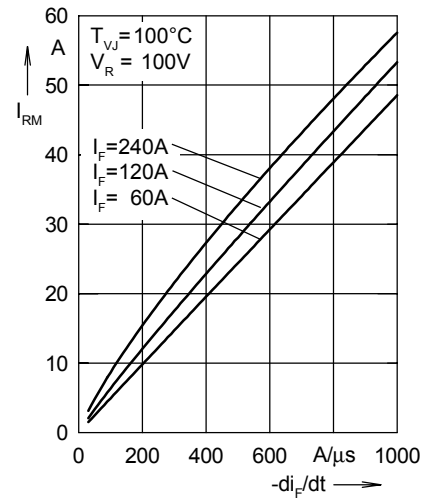


Fig. 3 Typ. peak reverse current  $I_{RM}$  versus  $-di_F/dt$

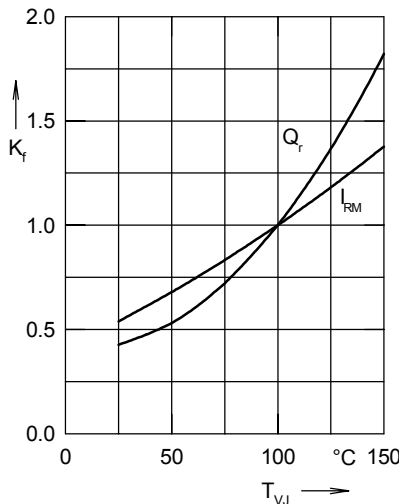


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

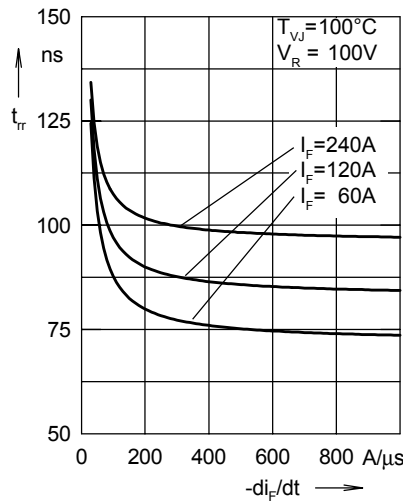


Fig. 5 Typ. recovery time  $t_{tr}$  versus  $-di_F/dt$

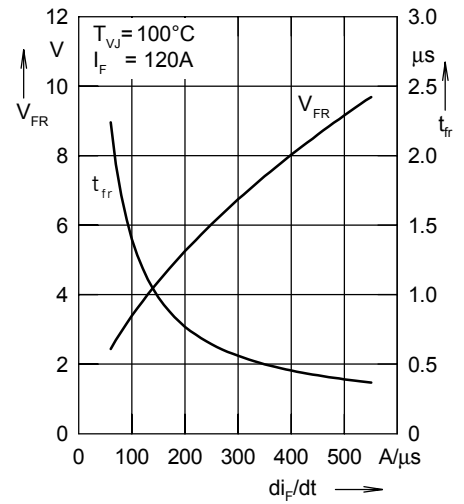


Fig. 6 Typ. peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

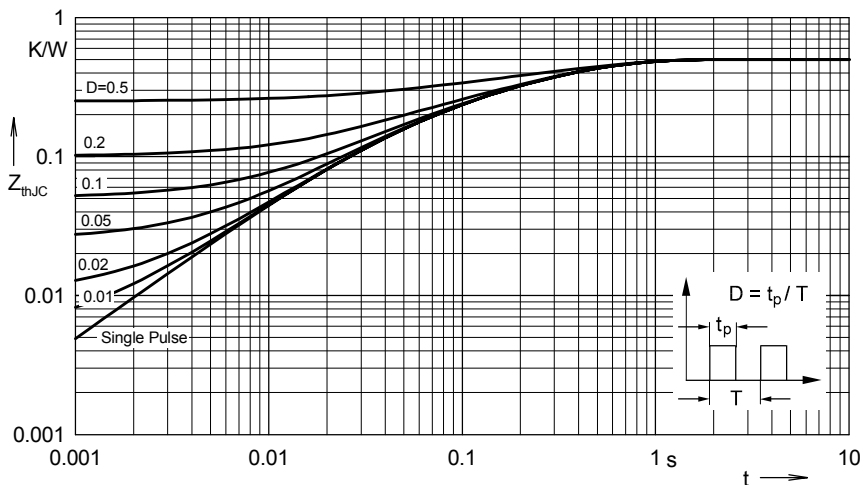


Fig. 7 Transient thermal impedance junction to case at various duty cycles

### Package style and outline

Dimensions in mm (1mm = 0.0394")

