

## Fast Recovery Epitaxial Diode (FRED)

PSEI 2x30  
PSEI 2x31

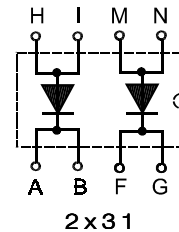
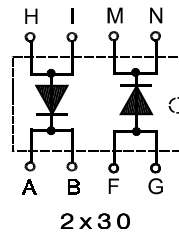
$$I_{FAVM} = 2 \times 28 \text{ A}$$

$$V_{RRM} = 1200 \text{ V}$$

$$t_{rr} = 40 \text{ ns}$$

Preliminary Data Sheet

$V_{RSM}$ (V)	$V_{RRM}$ (V)	Type
1200	1200	PSEI 2x30/12 PSEI 2x31/12



Symbol	Test Conditions	Maximum Ratings
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	70 A
$I_{FAVM}^*$	$T_C = 50^\circ\text{C}$ , rectangular, $d=0.5$	28 A
$I_{FRM}$	$t_p < 10\mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	375 A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	200 A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	210 A
	$T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	185 A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	195 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	200 A <sup>2</sup> s
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	180 A <sup>2</sup> s
	$T_{VJ} = 125^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	170 A <sup>2</sup> s
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	160 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~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3600 V~
$M_d$	Mounting torque (M4)	1.5 - 1.8 Nm
		14 - 16 lb.in.
<b>Weight</b>	typ.	16 g

Symbol	Test Conditions	Characteristic Value
$I_R$	$T_{VJ} = 25^\circ\text{C}$ , $V_R = V_{RRM}$	max. 750 $\mu\text{A}$
	$T_{VJ} = 25^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max. 250 $\mu\text{A}$
	$T_{VJ} = 125^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max. 7 mA
$V_F$	$I_F = 30 \text{ A}$ , $T_{VJ} = 150^\circ\text{C}$	max. 2.20 V
	$T_{VJ} = 25^\circ\text{C}$	max. 2.55 V
$V_{TO}$	For power-loss calculations only	1.65 V
$r_T$		18.2 m $\Omega$
$R_{thJC}$	per diode; max.	1.25 K/W
$R_{thCH}$	per diode; typ.	0.05 K/W
$I_{RM}$	$I_F = 30\text{A}$ ; $-di_F/dt = 240\text{A}/\mu\text{s}$ ; $V_R = 540\text{V}$ $L \leq 0.05 \text{ mH}$ ; $T_{VJ} = 100^\circ\text{C}$	typ. 16 A
$t_{rr}$	$I_F = 1\text{A}$ ; $-di_F/dt = 100\text{A}/\mu\text{s}$ ; $V_R = 30\text{V}$ ; $T_{VJ} = 25^\circ\text{C}$	typ. 40 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 3600 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  $d=0.5$

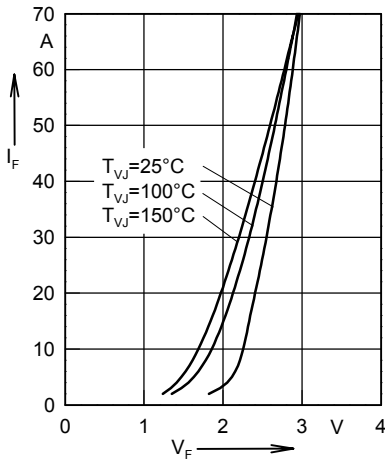


Fig. 1 Forward current versus voltage drop.

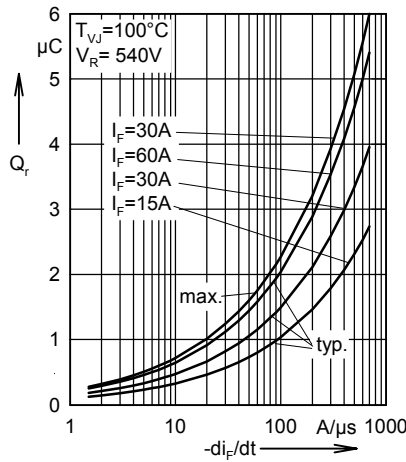


Fig. 2 Recovery charge versus  $-di_F/dt$ .

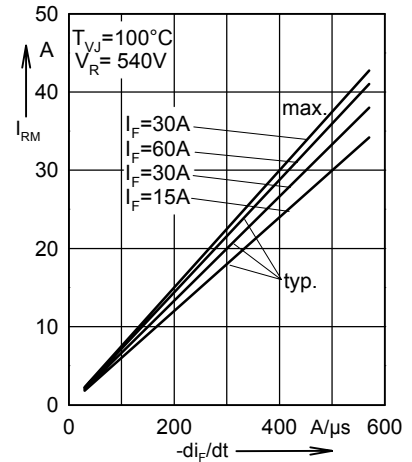


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

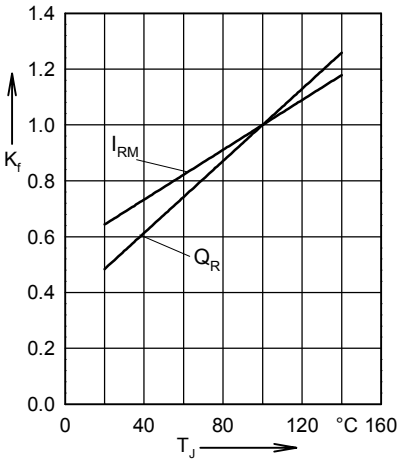


Fig. 4 Dynamic parameters versus junction temperature.

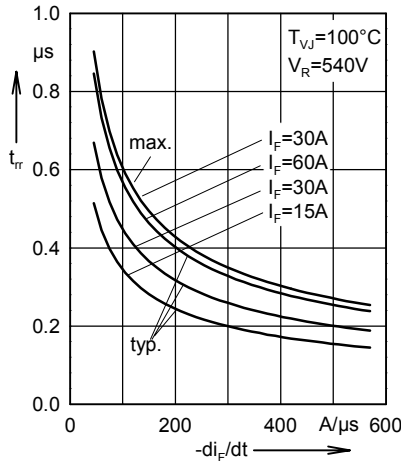


Fig. 5 Recovery time versus  $-di_F/dt$ .

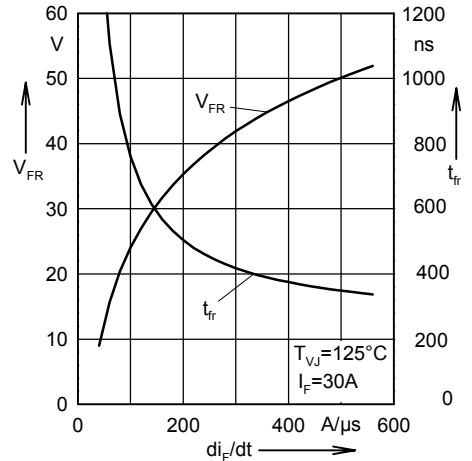


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

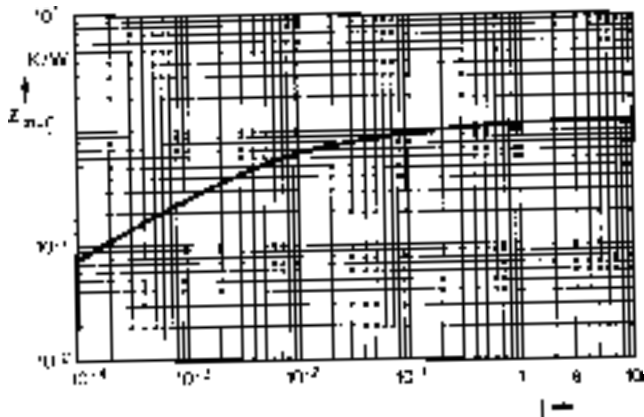


Fig. 7 Transient thermal impedance junction to case.

### Package style and outline

Dimensions in mm (1mm = 0.0394")

