

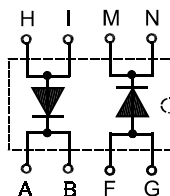
## Fast Recovery Epitaxial Diode (FRED)

**PSEI 2x30**  
**PSEI 2x31**

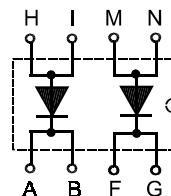
$I_{FAVM}$  = 2x 30 A  
 $V_{RRM}$  = 400/600 V  
 $t_{rr}$  = 35 ns

Preliminary Data Sheet

$V_{RSM}$ (V)	$V_{RRM}$ (V)	Type	
440	400	PSEI 2x30/04	PSEI 2x31/04
640	600	PSEI 2x30/06	PSEI 2x31/06



2 x 30



2 x 31



Symbol	Test Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	70	A
$I_{FAVM}^*$	$T_C = 85^\circ\text{C}$ , rectangular, $d=0.5$	30	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	300	A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	320	A
	$T_{VJ} = 125^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	260	A
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	280	A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	450	A <sup>2</sup> s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	420	A <sup>2</sup> s
	$T_{VJ} = 125^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	340	A <sup>2</sup> s
	$V_R = 0$ $t = 8.3\text{ ms}$ (60 Hz), sine	320	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.	100 $\mu\text{A}$
	$T_{VJ} = 25^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	50 $\mu\text{A}$
	$T_{VJ} = 125^\circ\text{C}$ , $V_R = 0.8 \cdot V_{RRM}$	max.	7 mA
$V_F$	$I_F = 30\text{ A}$ , $T_{VJ} = 150^\circ\text{C}$	max.	1.4 V
	$T_{VJ} = 25^\circ\text{C}$	max.	1.6 V
$V_{TO}$	For power-loss calculations only	1.01	V
$r_T$		7.1	m $\Omega$
$R_{thJC}$	per diode; max.	1.25	K/W
$R_{thKH}$	per diode; typ.	0.05	K/W
$I_{RM}$	$I_F = 30\text{ A}$ ; $-di_F/dt = 240\text{ A}/\mu\text{s}$ ; $V_R = 350\text{ V}$ $L \leq 0.05\text{ mH}$ ; $T_{VJ} = 100^\circ\text{C}$	typ.	10 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.	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 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  $d = 0.5$

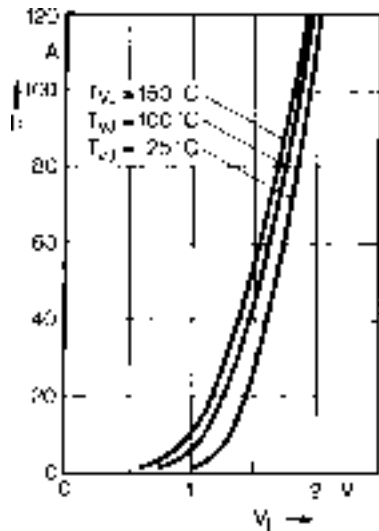


Fig. 1 Forward current versus voltage drop.

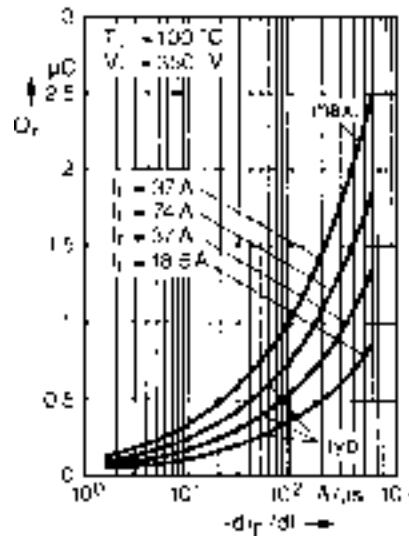


Fig. 2 Recovery charge versus  $-di_F/dt$ .

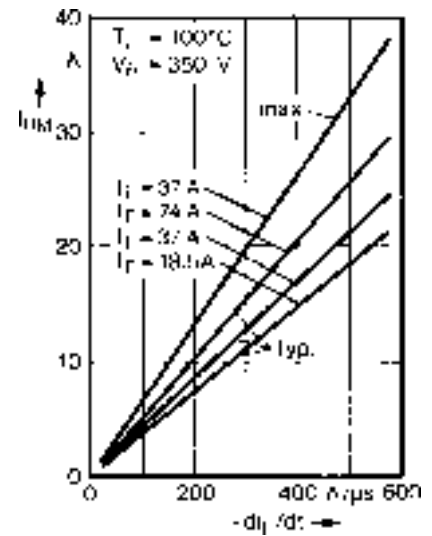


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

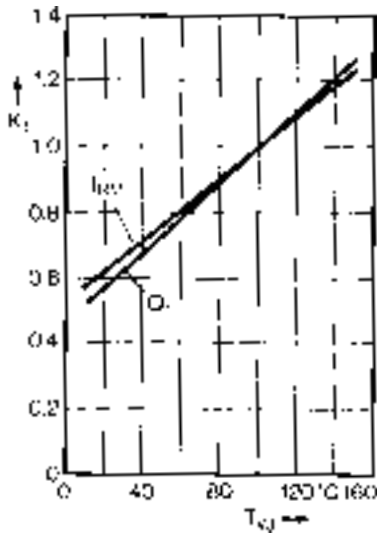


Fig. 4 Dynamic parameters versus junction temperature.

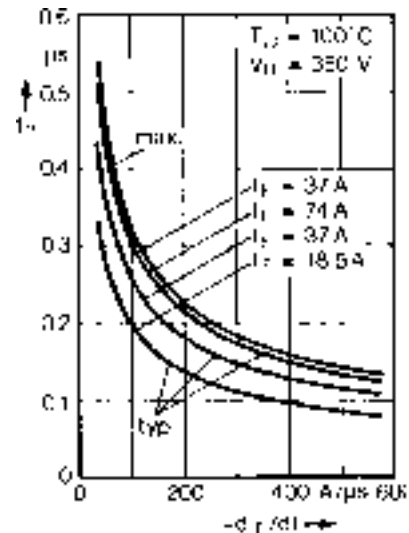


Fig. 5 Recovery time versus  $-di_F/dt$ .

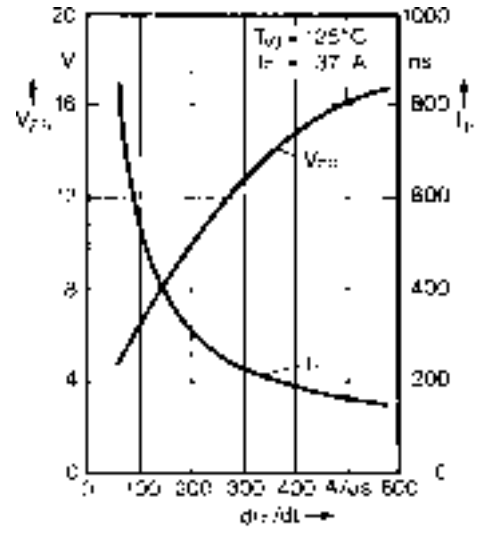


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

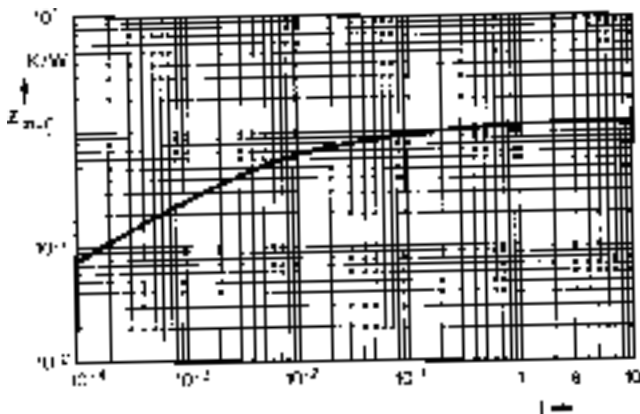


Fig. 7 Transient thermal impedance junction to case.

### Package style and outline

Dimensions in mm (1mm = 0.0394")

