

Fast Recovery Epitaxial Diode (FRED)

PSEI 2x61

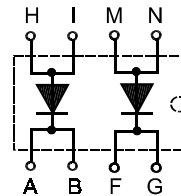
$$I_{FAVM} = 2 \times 60 \text{ A}$$

$$V_{RRM} = 1000 \text{ V}$$

$$t_{rr} = 35 \text{ ns}$$

Preliminary Data Sheet

V_{RSM} (V)	V_{RRM} (V)	Type
1000	1000	PSEI 2x61/10



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM}^*	$T_C = 50 \text{ }^\circ\text{C}$, rectangular, $d=0.5$	60	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	800	A
I_{FSM}	$T_{VJ} = 45 \text{ }^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	500	A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	540	A
	$T_{VJ} = 125 \text{ }^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	450	A
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	480	A
$\int i^2 dt$	$T_{VJ} = 45 \text{ }^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	1150	A ² s
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	1200	A ² s
	$T_{VJ} = 125 \text{ }^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	1000	A ² s
	$V_R = 0$ $t = 8.3 \text{ ms}$ (60 Hz), sine	950	A ² 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 - 1.8	Nm
		14 - 16	lb.in.
Weight	typ.	16	g

Symbol	Test Conditions	Characteristic Value	
I_R	$T_{VJ} = 25 \text{ }^\circ\text{C}$, $V_R = V_{RRM}$	max.	3 mA
	$T_{VJ} = 25 \text{ }^\circ\text{C}$, $V_R = 0.8 \cdot V_{RRM}$	max.	0.5 mA
	$T_{VJ} = 125 \text{ }^\circ\text{C}$, $V_R = 0.8 \cdot V_{RRM}$	max.	14 mA
V_F	$I_F = 60 \text{ A}$, $T_{VJ} = 150 \text{ }^\circ\text{C}$	max.	1.8 V
	$T_{VJ} = 25 \text{ }^\circ\text{C}$	max.	2.3 V
V_{TO}	For power-loss calculations only	1.43	V
r_T		6.1	mΩ
R_{thJC}	per diode; max.	0.7	K/W
R_{thCH}	per diode; typ.	0.05	K/W
I_{RM}	$I_F = 60 \text{ A}$; $-di_F/dt = 480 \text{ A}/\mu\text{s}$; $V_R = 540 \text{ V}$ $L \leq 0.05 \text{ mH}$; $T_{VJ} = 100 \text{ }^\circ\text{C}$	typ.	32 A
t_{rr}	$I_F = 1 \text{ A}$; $-di_F/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25 \text{ }^\circ\text{C}$	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 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} ;
 $V_R = 0.8 \cdot V_{RRM}$; duty cycle $d = 0.5$

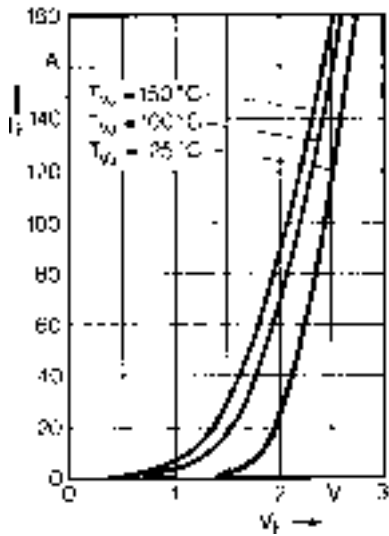


Fig. 1 Forward current versus voltage drop.

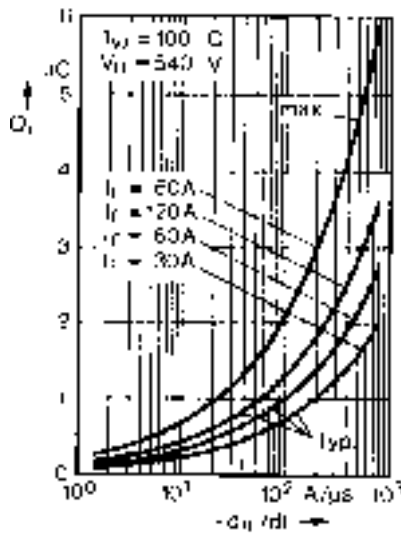


Fig. 2 Recovery charge versus $-di_F/dt$.

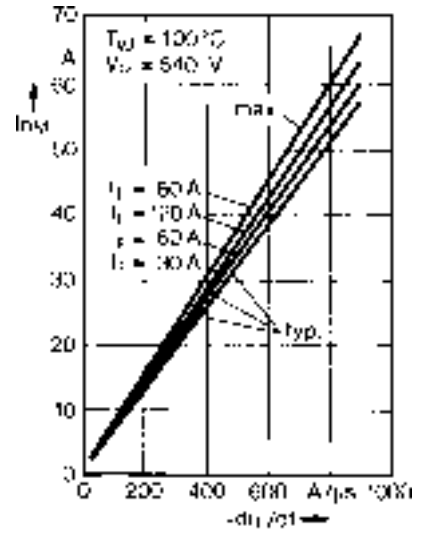


Fig. 3 Peak reverse current versus $-di_F/dt$.

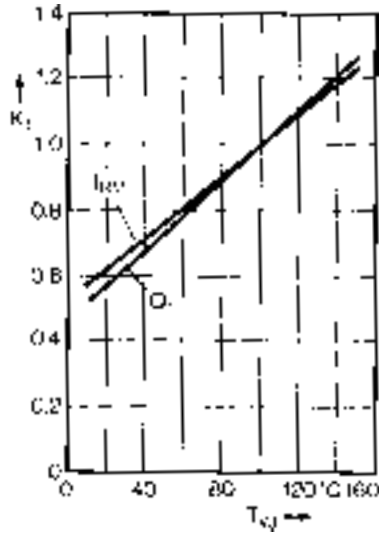


Fig. 4 Dynamic parameters versus junction temperature.

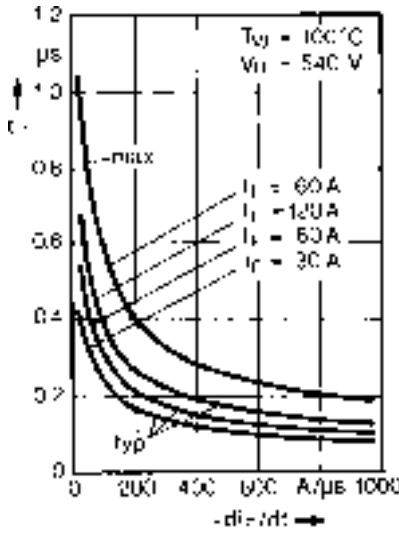


Fig. 5 Recovery time versus $-di_F/dt$.

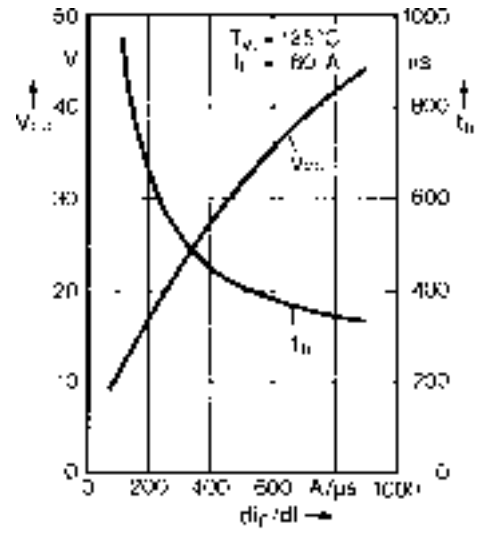


Fig. 6 Peak forward voltage versus di_F/dt .

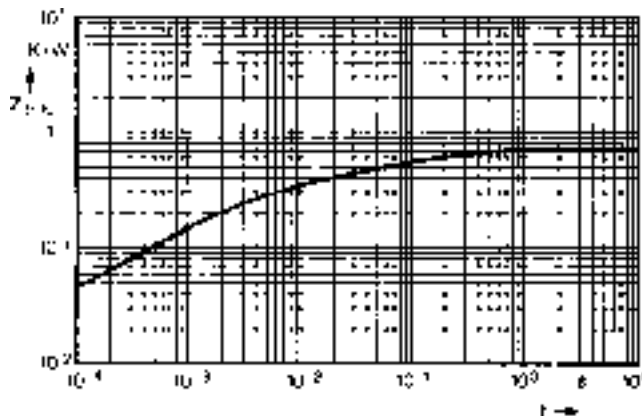


Fig. 7 Transient thermal impedance junction to case.

Package style and outline

Dimensions in mm (1mm = 0.0394")

