

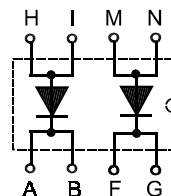
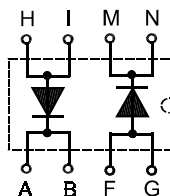
Fast Recovery Epitaxial Diode (FRED)

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



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 ms (50 Hz), sine	300	A
	$V_R = 0$ t = 8.3 ms (60 Hz), sine	320	A
	$T_{VJ} = 125^\circ\text{C}$ t = 10 ms (50 Hz), sine	260	A
	$V_R = 0$ t = 8.3 ms (60 Hz), sine	280	A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$ t = 10 ms (50 Hz), sine	450	A ² s
	$V_R = 0$ t = 8.3 ms (60 Hz), sine	420	A ² s
	$T_{VJ} = 125^\circ\text{C}$ t = 10 ms (50 Hz), sine	340	A ² s
	$V_R = 0$ t = 8.3 ms (60 Hz), sine	320	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 min	2500	V~
	$I_{ISOL} \leq 1\text{ mA}$ t = 1 s	3600	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	$T_{VJ} = 25^\circ\text{C}$, $V_R = V_{RRM}$	max.	100 μA
	$T_{VJ} = 25^\circ\text{C}$, $V_R = 0.8 \cdot V_{RRM}$	max.	50 μA
	$T_{VJ} = 125^\circ\text{C}$, $V_R = 0.8 \cdot V_{RRM}$	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 Ω
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 ²

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

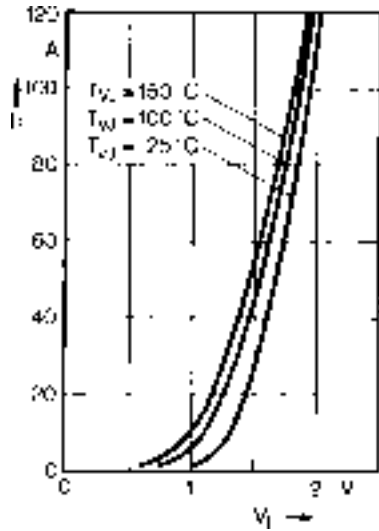


Fig. 1 Forward current versus voltage drop.

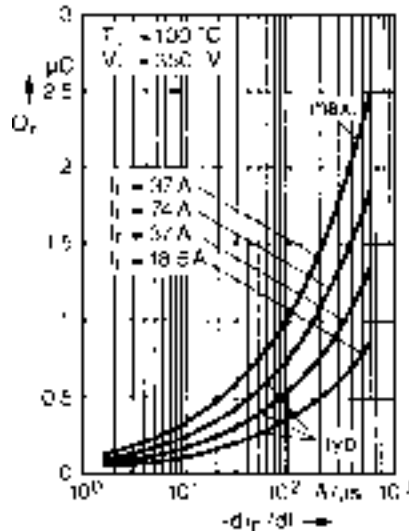


Fig. 2 Recovery charge versus $-di_F/dt$.

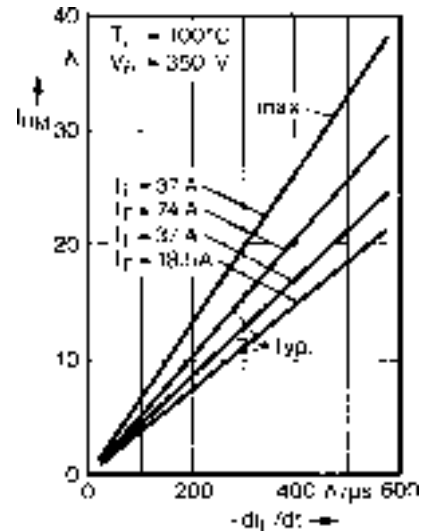


Fig. 3 Peak reverse current versus $-di_F/dt$.

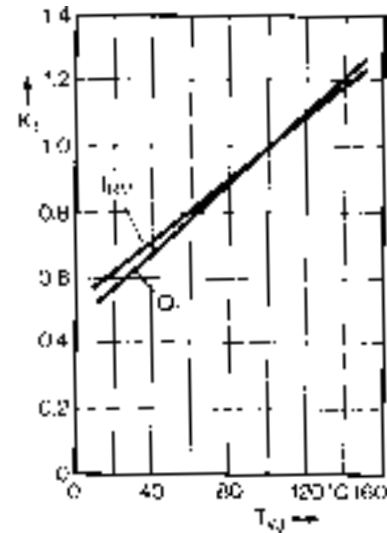


Fig. 4 Dynamic parameters versus junction temperature.

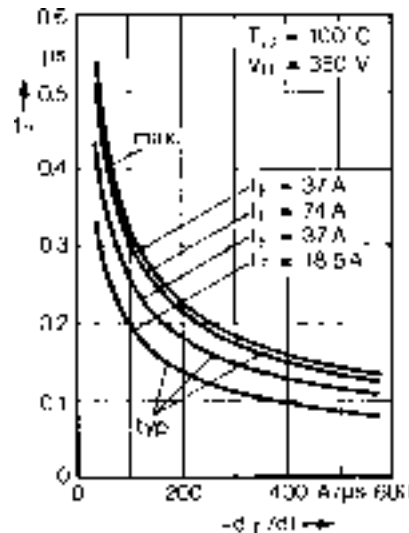


Fig. 5 Recovery time versus $-di_F/dt$.

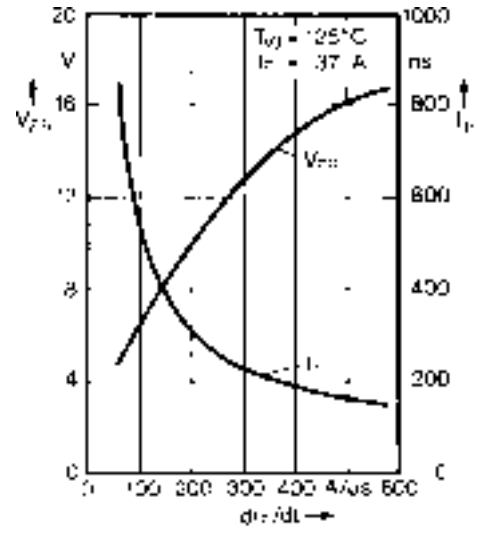


Fig. 6 Peak forward voltage versus di_F/dt .

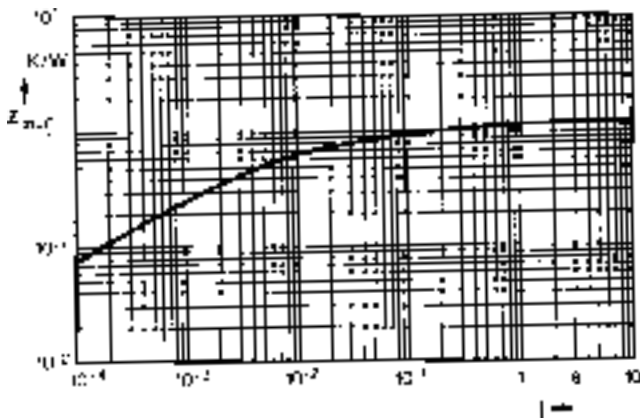


Fig. 7 Transient thermal impedance junction to case.

