POWERSEM

ECO-PAC™ 1

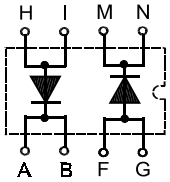
Fast Recovery Epitaxial Diode (FRED)

PSEI 2x30
PSEI 2x31

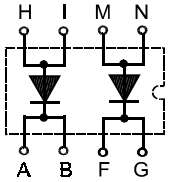
I_{FAVM} = 2x 30 A
V_{RRM} = 1000 V
t_{rr} = 35 ns

Preliminary Data Sheet

V_{RSM} (V)	V_{RRM} (V)	Type	
1000	1000	PSEI 2x30/10	PSEI 2x31/10



2x30



2x31

Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		70	A
I_{FAVM}*	T_C = 50 °C, rectangular, d=0.5		30	A
I_{FRM}	t_P<10µs; rep.rating, pulse widthlimited by T_{VJM}		375	A
I_{FSM}	T_{VJ} = 45 °C	t = 10 ms (50 Hz), sine	200	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	210	A
	T_{VJ} = 125 °C	t = 10 ms (50 Hz), sine	185	A
	V_R = 0	t = 8.3 ms (60 Hz), sine	195	A
$\int i^2 dt$	T_{VJ} = 45 °C	t = 10 ms (50 Hz), sine	200	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	180	A²s
	T_{VJ} = 125 °C	t = 10 ms (50 Hz), sine	170	A²s
	V_R = 0	t = 8.3 ms (60 Hz), sine	160	A²s
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} ≤ 1 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°C,	$V_R=V_{RRM}$	max.	750	µA
	T_{VJ} = 25°C,	$V_R=0.8\cdot V_{RRM}$	max.	250	µA
	T_{VJ} = 125°C,	$V_R=0.8\cdot V_{RRM}$	max.	7	mA
V_F	I_F = 30 A,	T_{VJ} = 150 °C	max.	2.0	V
		T_{VJ} = 25 °C	max.	2.4	V
V_{TO}	For power-loss calculations only			1.5	V
r_T				12.5	mΩ
R_{thJC}	per diode; max.			1.25	K/W
R_{thCH}	per diode; typ.			0.05	K/W
I_{RM}	I_F=30A; -di_F/dt=240A/µs; V_R=540V		typ.	16	A
	L≤0.05 mH; T_{VJ}= 100°C				
t_{rr}	I_F=1A; -di_F/dt=100A/µs; V_R=30V;		typ.	35	ns
	T_{VJ}= 25°C				
d_s	Creeping distance on surface			11.2	mm
d_A	Creeping distance in air			11.2	mm
a	Max. allowable acceleration			50	m/s²

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

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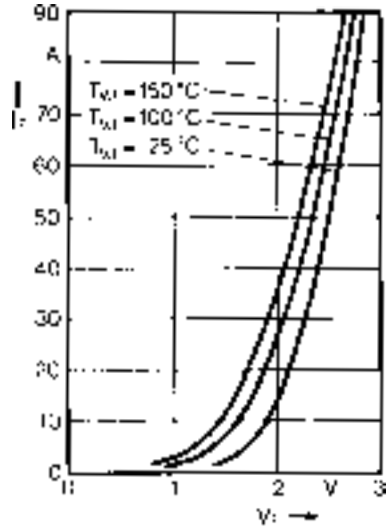


Fig. 1 Forward current versus voltage drop.

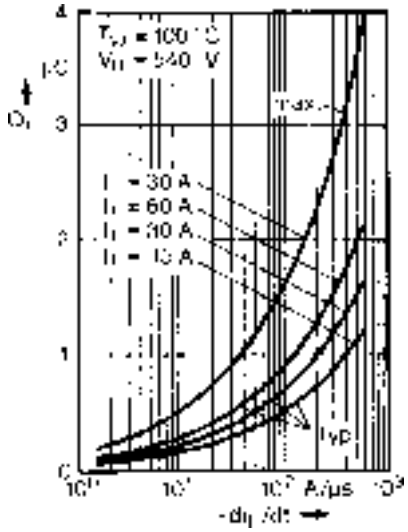


Fig. 2 Recovery charge versus $-di_F/dt$.

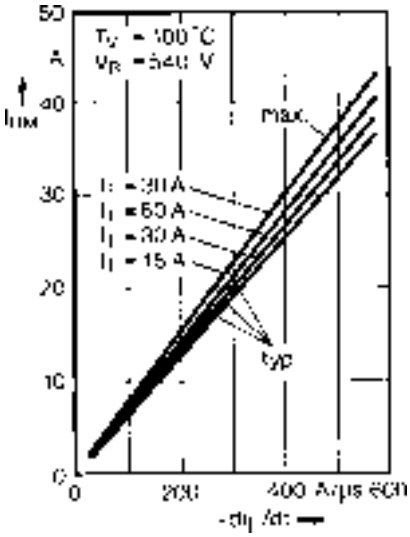


Fig. 3 Peak reverse current versus $-di_F/dt$.

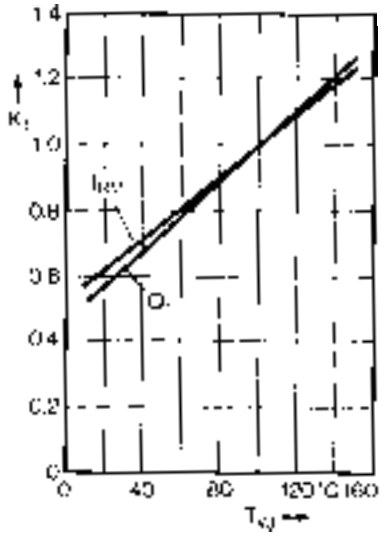


Fig. 4 Dynamic parameters versus junction temperature.

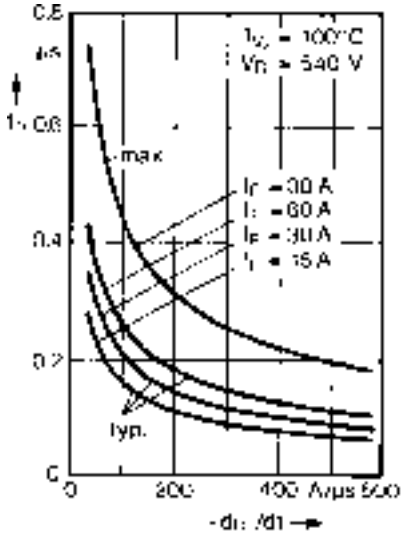


Fig. 5 Recovery time versus $-di_F/dt$.

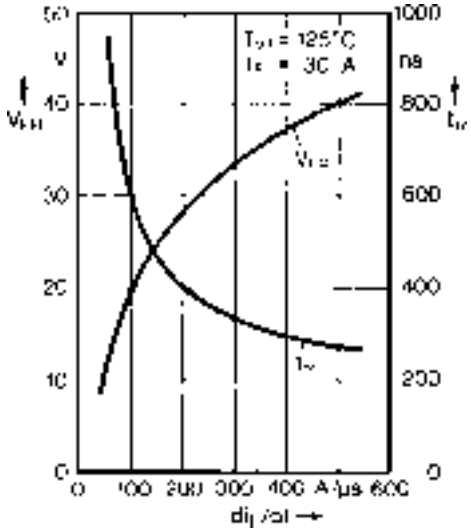


Fig. 6 Peak forward voltage versus di_F/dt.

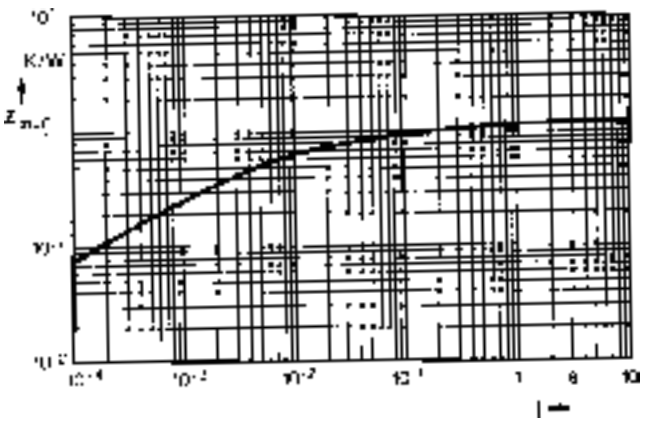
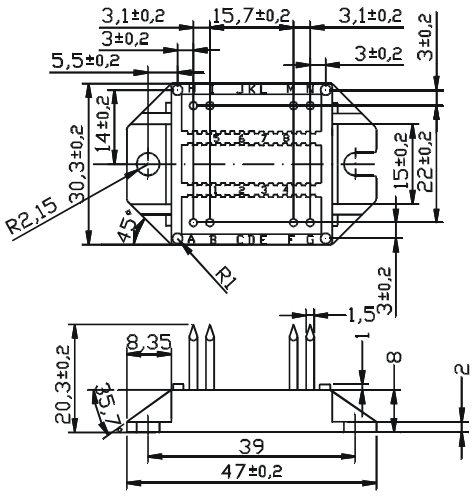


Fig. 7 Transient thermal impedance junction to case.

Package style and outline

Dimensions in mm (1mm = 0.0394“)



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