

Fast Recovery Epitaxial Diode (FRED)

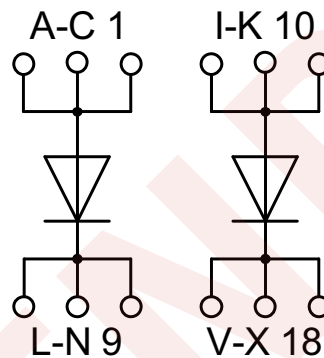
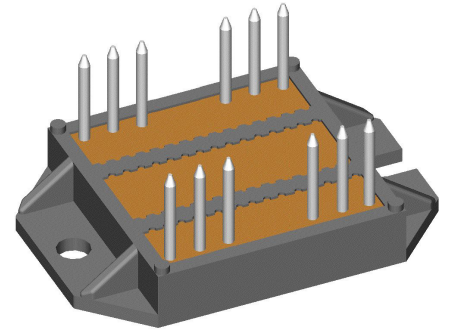
$$I_{FAVM} = 2 \times 91 \text{ A}$$

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

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

Part number

DSEI 2x 101-12P



Features / Advantages:

- 2 independent FRED in 1 package
- Planar passivated chips
- Very short recovery time
- Leads suitable for PC board soldering
- Very short recovery time
- Soft recovery behaviour
- Easy to mount with two screws
- Space and weight savings
- Improved temperature and power cycling capability
- Low noise switching
- Small and light weight

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

Package: ECO-PAC2

- Isolation voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Soldering pins for PCB mounting
- Height: 9 mm
- Base plate: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

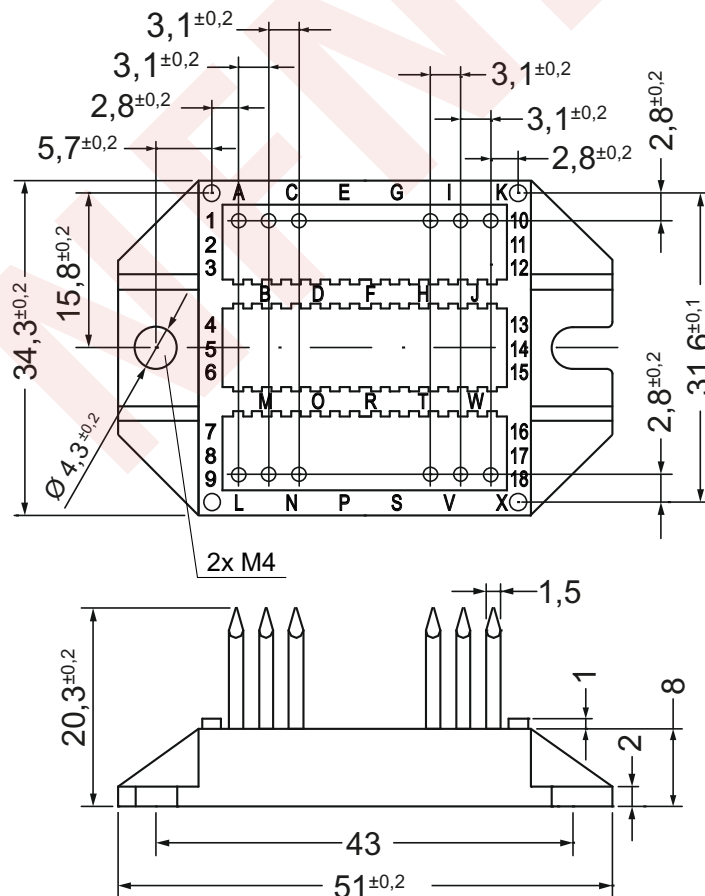
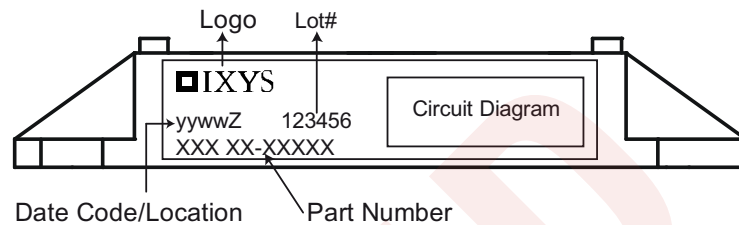


Diode				Ratings			
Symbol	Definitions	Conditions		min.	typ.	max.	
I_{FRMS}	RMS forward current		$T_{VJ} = T_{VJM}$			130	A
I_{FAVM} ①	max. average forward current	rectangular, d = 0.5	$T_C = 50^{\circ}\text{C}$			91	A
I_{FRM}	max. repetitive forward current	$t_p < 10 \mu\text{s}$ rep. rating, pulse width limited by T_{VJM}				tbd	A
I_{FSM}	max. surge forward current	t = 10 ms (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			900	A
P_{tot}	total power dissipation		$T_{VJ} = 25^{\circ}\text{C}$			250	W
I_R	reverse current	$V_R = V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$			3.0 1.5 15	mA mA mA
V_F	forward voltage	$I_F = 100 \text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$ $T_{VJ} = 25^{\circ}\text{C}$			1.61 1.87	V V
V_{TO}	threshold voltage					1.01	V
r_T	slope resistance	for power-loss calculations only	$T_{VJ} = T_{VJM}$			6.1	mΩ
R_{thJC}	thermal resistance junction to case				0.05	0.5	K/W
R_{thCH}	thermal resistance junction to heatsink						K/W
t_{rr}	reverse recovery time	$I_F = 1 \text{ A}$; $-di/dt = 400 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$		40	60	ns
I_{RM}	max. reverse recovery current	$I_F = 75 \text{ A}$; $-di_F/dt = 200 \text{ A}/\mu\text{s}$ $V_R = 100 \text{ V}$; $L \leq 0.05 \mu\text{H}$	$T_{VJ} = 100^{\circ}\text{C}$		24	30	A

① I_{FAVM} rating includes reverse blocking losses at T_{VJM} , $V_R = 0.8 V_{RRM}$, duty cycle d = 0.5



Package ECO-PAC2			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
I_{RMS}	RMS current	per terminal			100	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
T_{stg}	storage temperature		-40		125	°C
Weight				24		g
M_D	mounting torque		1.4		2.0	Nm
$d_{Spp/App}$ $d_{Spb/Apb}$	creepage distance on surface striking distance through air	terminal to terminal terminal to backside	6.0 10.0			mm mm
V_{ISOL}	isolation voltage	t = 1 second t = 1 minute 50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000 2500			V V



Curves

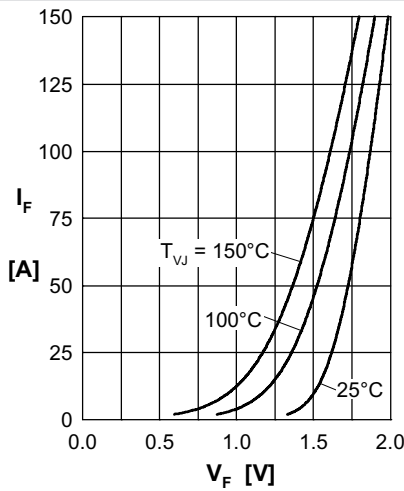


Fig. 1 Forward current I_F versus V_F

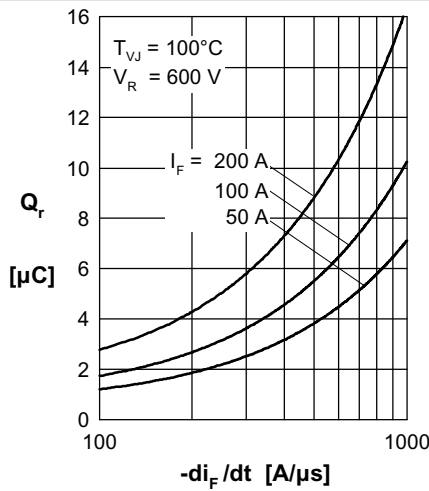


Fig. 2 Typ. reverse recov. charge Q_{rr} versus $-di_F/dt$

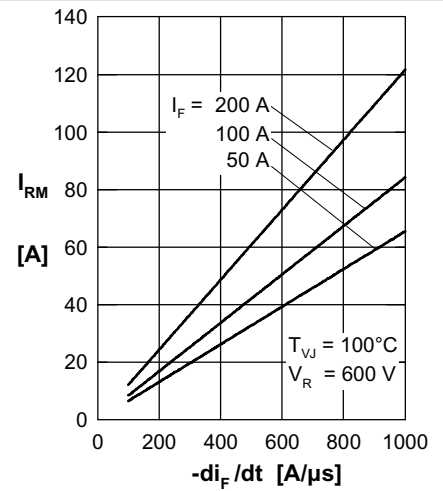


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

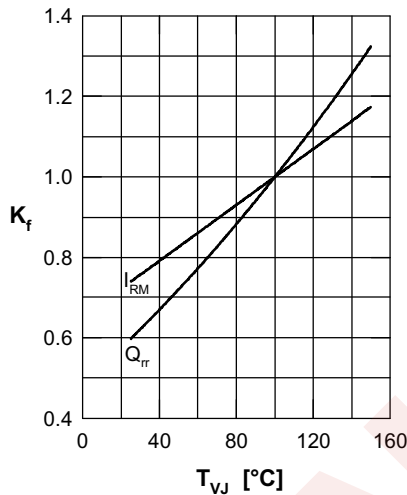


Fig. 4 Dyn. parameters Q_{rr} , I_{RM} versus T_{VJ}

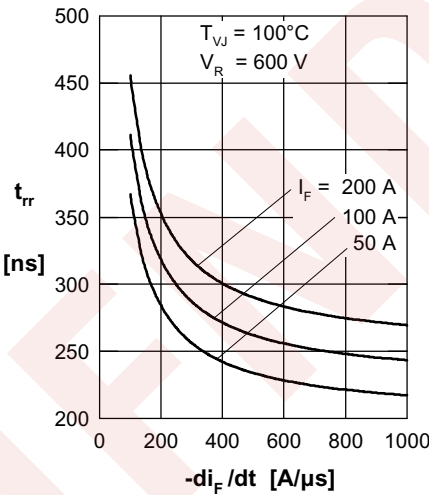


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

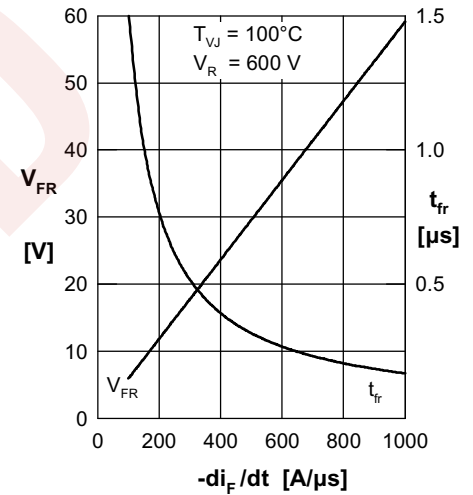


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

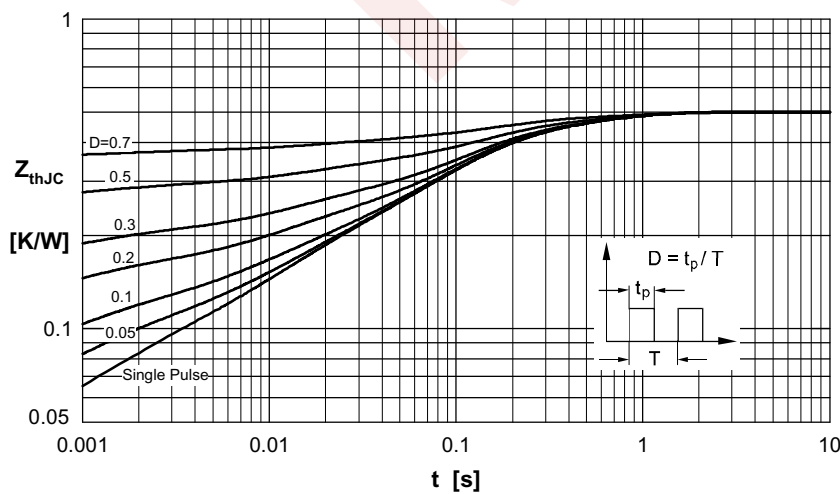


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.020	0.00002
2	0.050	0.00081
3	0.076	0.01000
4	0.240	0.09400
5	0.114	0.45000