

Fast Recovery Epitaxial Diode (FRED)

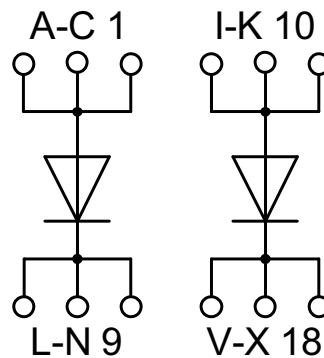
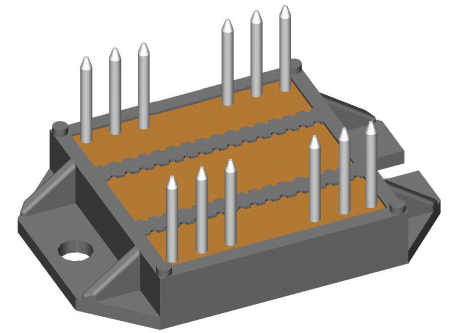
$$I_{FAVM} = 2 \times 91 \text{ A}$$

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

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

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

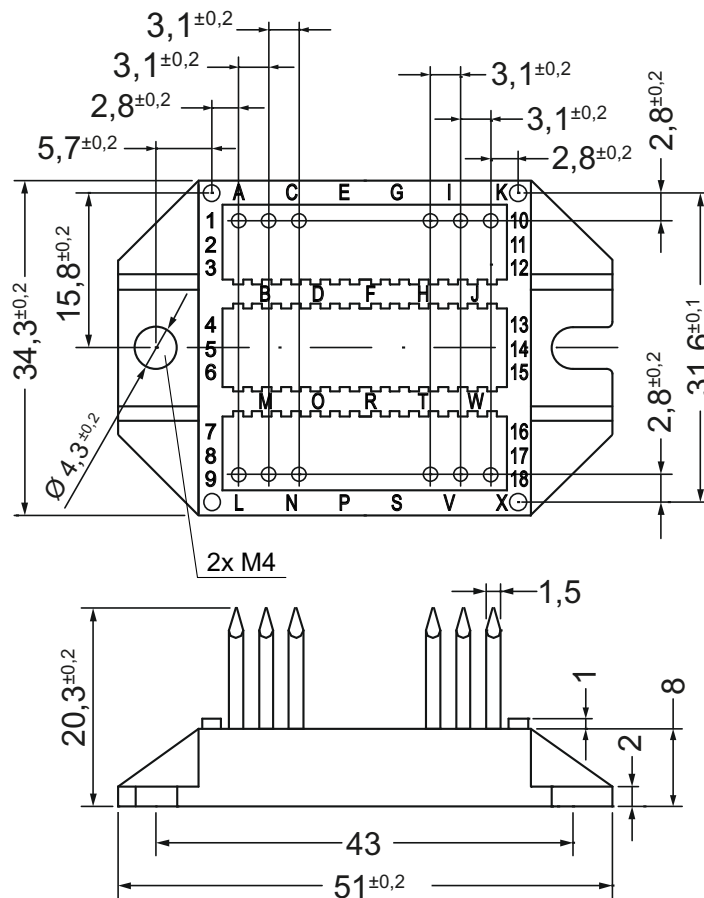
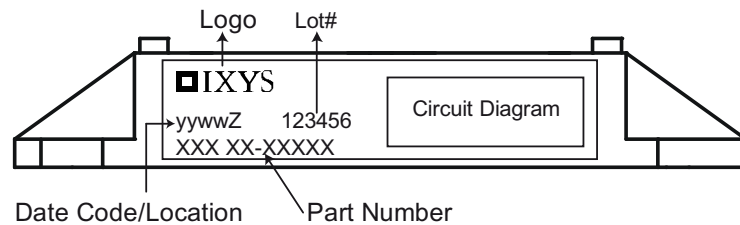
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Diode			Ratings			
Symbol	Definitions	Conditions	min.	typ.	max.	
I_{FRMS}	RMS forward current				130	A
I_{FAVM} ①	max. average forward current	rectangular, d = 0.5			91	A
I_{FRM}	max. repetitive forward current	$t_p < 10 \mu s$ rep. rating, pulse width limited by T_{VJM}			tbd	A
I_{FSM}	max. surge forward current	t = 10 ms (50 Hz), sine			900	A
P_{tot}	total power dissipation				250	W
I_R	reverse current	$V_R = V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$ $V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^\circ C$		3.0	mA
			$T_{VJ} = 25^\circ C$		1.5	mA
			$T_{VJ} = 125^\circ C$		15	mA
V_F	forward voltage	$I_F = 100 A$	$T_{VJ} = 150^\circ C$		1.61	V
			$T_{VJ} = 25^\circ C$		1.87	V
V_{TO}	threshold voltage	for power-loss calculations only	$T_{VJ} = T_{VJM}$		1.01	V
r_T	slope resistance				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	$I_F = 1 A$; $-di/dt = 400 A/\mu s$; $V_R = 30 V$	$T_{VJ} = 25^\circ C$	40	60	ns
I_{RM}	max. reverse recovery current	$I_F = 75 A$; $-di_F/dt = 200 A/\mu s$ $V_R = 100 V$; $L \leq 0.05 \mu H$	$T_{VJ} = 100^\circ C$	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
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	6.0			mm
$d_{Spb/Appb}$			terminal to backside	10.0		
V_{ISOL}	isolation voltage	t = 1 second t = 1 minute	3000 2500			V V
		50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA				



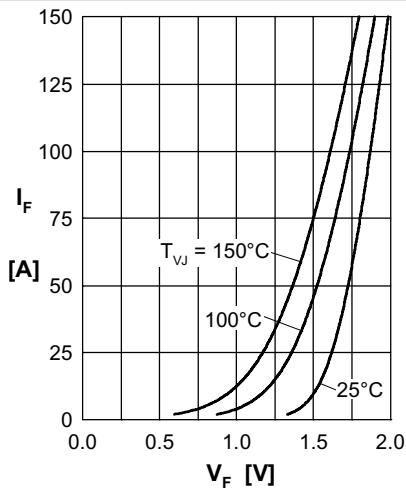
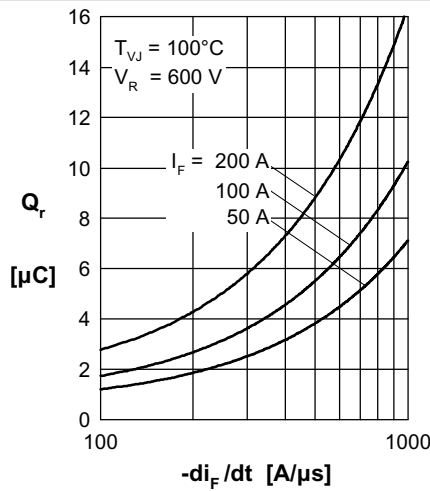
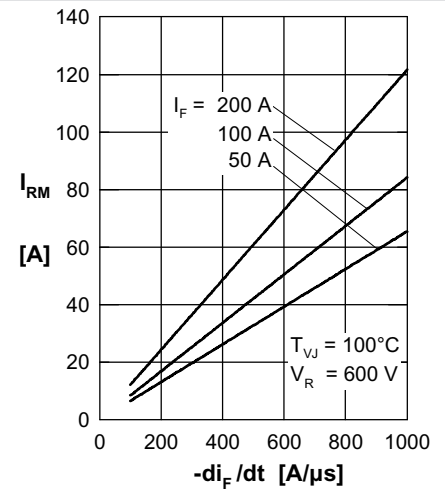
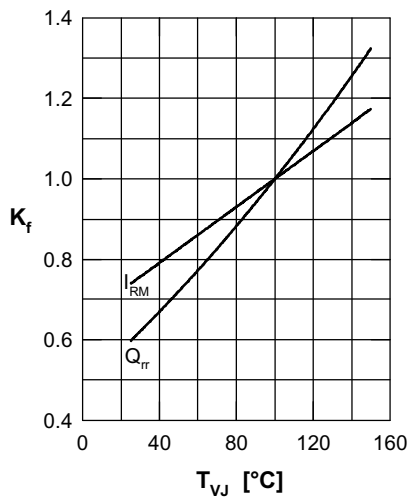
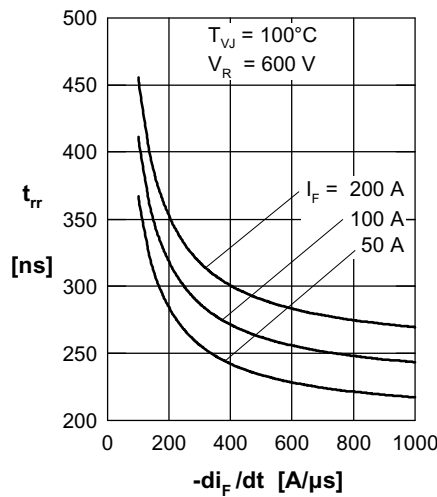
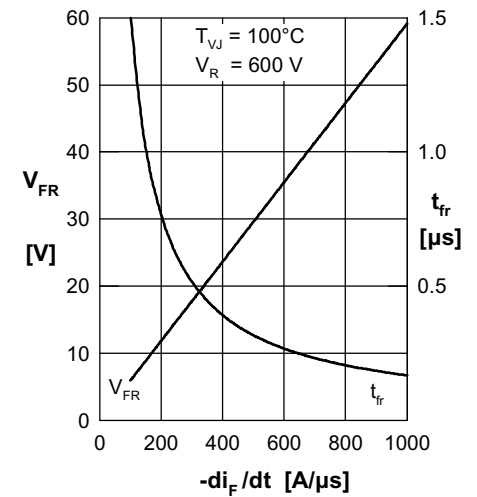
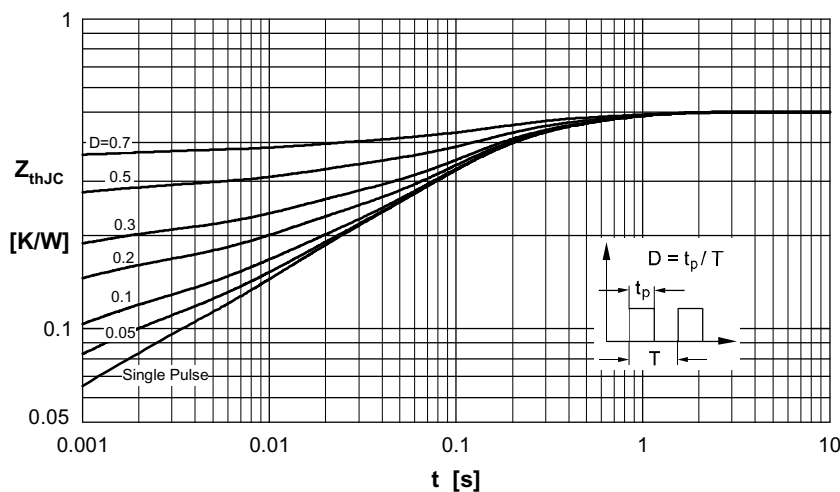
Curves

 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_{tr} versus $-di_F/dt$

 Fig. 6 Typ. peak forward voltage V_{FR} and t_{tr} 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