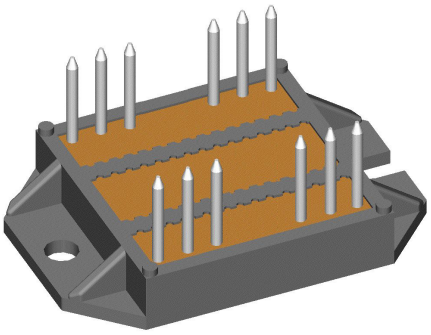
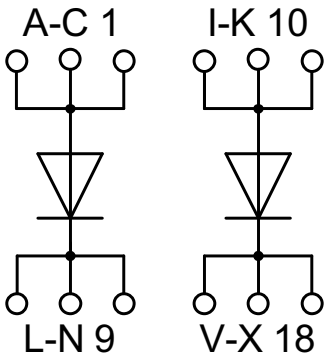
Fast Recovery Epitaxial Diode (FRED)

I_{FAVM} = 2x 91 A
V_{RRM} = 1200 V
t_{rr} = 40 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*		$T_{VJ} = T_{VJM}$			130	A
I_{FAVM} ①	*max. average forward current*	rectangular, d = 0.5	T_C = 50°C			91	A
I_{FRM}	*max. repetitive forward current*	t_p < 10 µs 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°C			900	A
P_{tot}	*total power dissipation*		T_{VJ} = 25°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°C T_{VJ} = 25°C T_{VJ} = 125°C			3.0 1.5 15	mA mA mA
V_F	*forward voltage*	I_F = 100 A	T_{VJ} = 150°C T_{VJ} = 25°C			1.61 1.87	V V
V_{T0} r_T	*threshold voltage* *slope resistance*	for power-loss calculations only	$T_{VJ} = T_{VJM}$			1.01 6.1	V mΩ
R_{thJC} R_{thCH}	*thermal resistance junction to case* *thermal resistance junction to heatsink*				 0.05	0.5	K/W K/W
t_{rr}	*reverse recovery time*	I_F = 1 A; -di/dt = 400 A/µs; V_R = 30 V	T_{VJ} = 25°C		40	60	ns
I_{RM}	*max. reverse recovery current*	I_F = 75 A; $-di_F/dt$ = 200 A/µs V_R = 100 V; L ≤ 0.05 µH	T_{VJ} = 100°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

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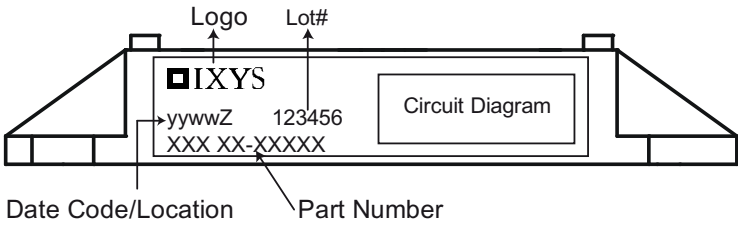
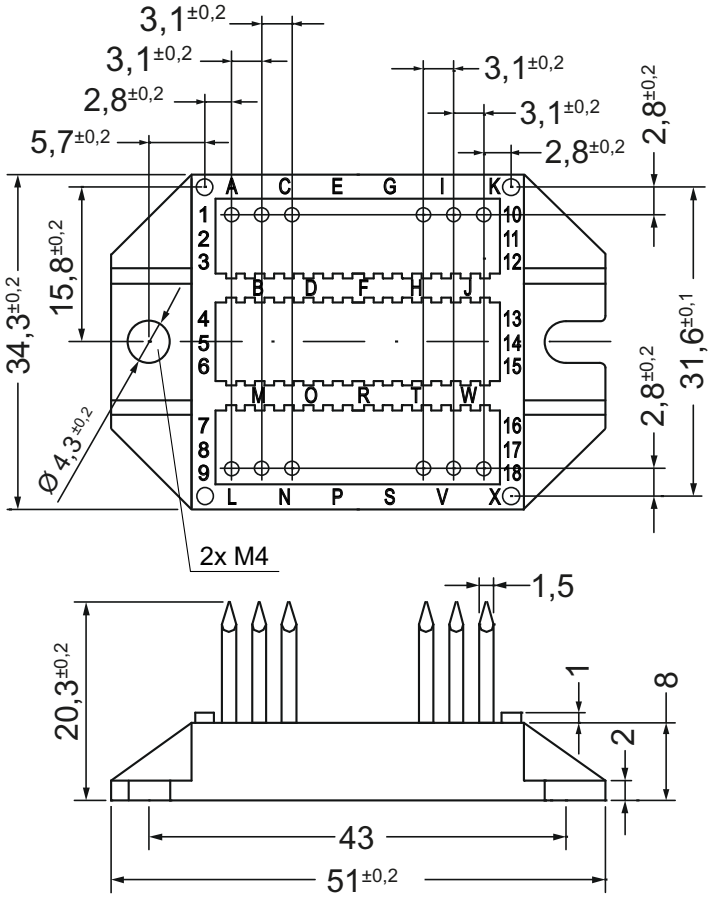
Package	ECO-PAC2			Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
I_{RMS}	*RMS current*	per terminal				100	A
T_{VJ} T_{op} T_{stg}	*virtual junction temperature* *operation temperature* *storage temperature*			-40 -40 -40		150 125 125	°C °C °C
Weight					24		g
M_D	*mounting 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





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Curves

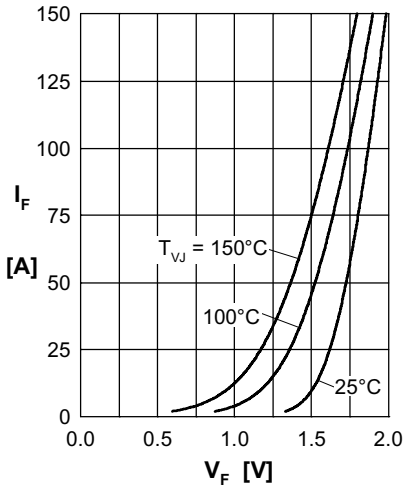

Fig. 1 Forward current I_F versus V_F

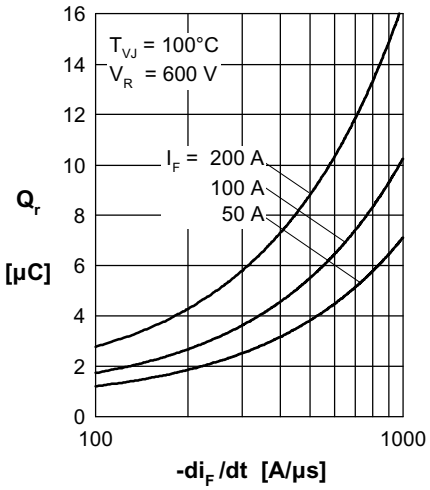

Fig. 2 Typ. reverse recov. charge Q_{rr} versus $-di_F/dt$

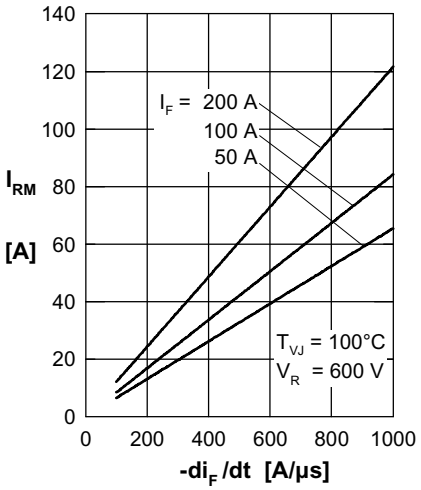

Fig. 3 Typ. peak reverse current I_{rr} versus $-di_F/dt$

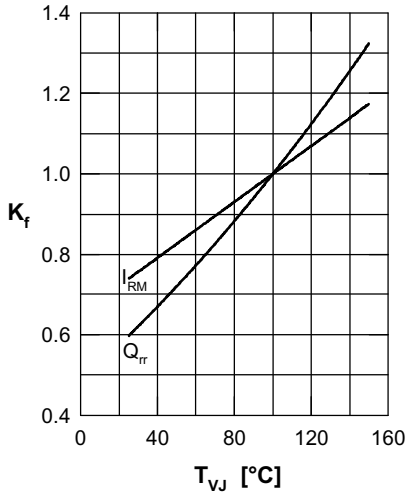

Fig. 4 Dyn. parameters Q_r, I_{RM} versus T_{VJ}

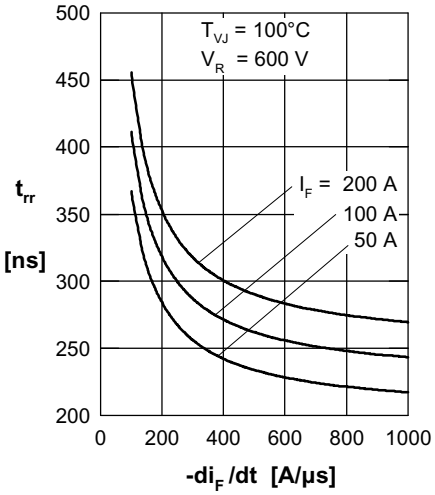

Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

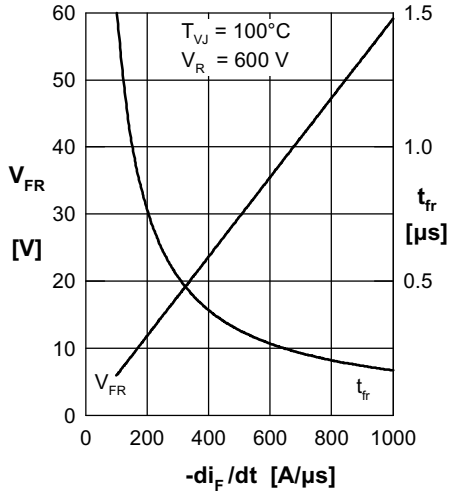

Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

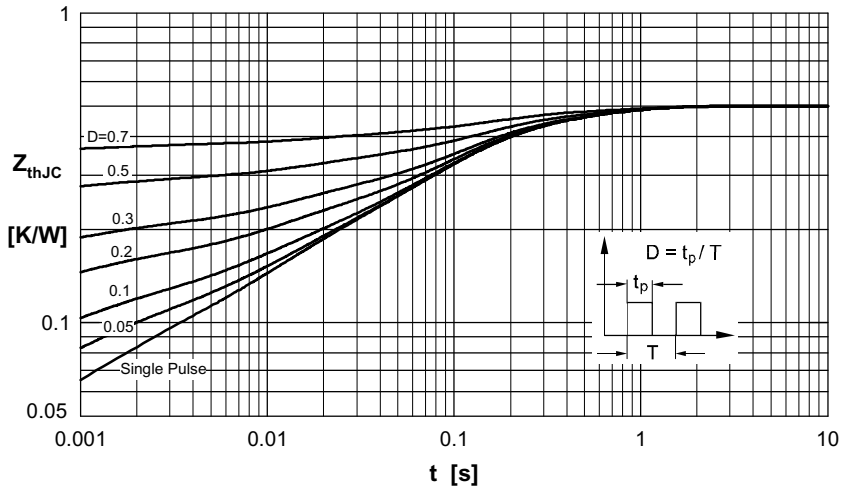

Fig. 7 Transient thermal impedance junction to case

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

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