

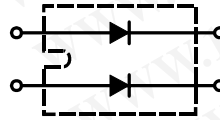
HiPerFRED™ Epitaxial Diode with soft recovery

$$I_{FAV} = 2x 30 A$$

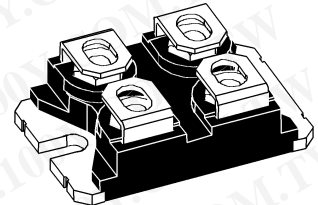
$$V_{RRM} = 300 V$$

$$t_{rr} = 30 ns$$

V_{RSM} V	V_{RRM} V	Type
300	300	DSEP 2x 31-03A



miniBLOC, SOT-227 B



Symbol	Conditions	Maximum Ratings	
I_{FRMS}		70	A
I_{FAVM}	$T_C = 110^\circ\text{C}$; rectangular, $d = 0.5$	30	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10$ ms (50 Hz), sine	300	A
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 3$ A; $L = 180$ μH	1.2	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10$ kHz; repetitive	0.3	A
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	100	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1$ mA	2500	V~
M_d	mounting torque (M4)	1.1-1.5/9-13	Nm/lb.in.
	terminal connection torque (M4)	1.1-1.5/9-13	Nm/lb.in.
Weight	typical	30	g

Features

- International standard package miniBLOC
- Isolation voltage 2500 V~
- UL registered E 72873
- 2 independent FRED in 1 package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour

Applications

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Dimensions see outlines.pdf

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_R ①	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$	0.25	1 mA
V_F ②	$I_F = 30$ A; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	0.96	1.23 V
R_{thJC} R_{thCH}		1.15	K/W
		0.1	K/W
t_{rr}	$I_F = 1$ A; $-di/dt = 200$ A/ μs ; $V_R = 30$ V; $T_{VJ} = 25^\circ\text{C}$	30	ns
I_{RM}	$V_R = 100$ V; $I_F = 50$ A; $-di_F/dt = 100$ A/ μs $T_{VJ} = 100^\circ\text{C}$	7	A

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
 ② Pulse Width = 300 μs , Duty Cycle < 2.0 %

Data according to IEC 60747 and per diode unless otherwise specified

IXYS reserves the right to change limits, test conditions and dimensions.

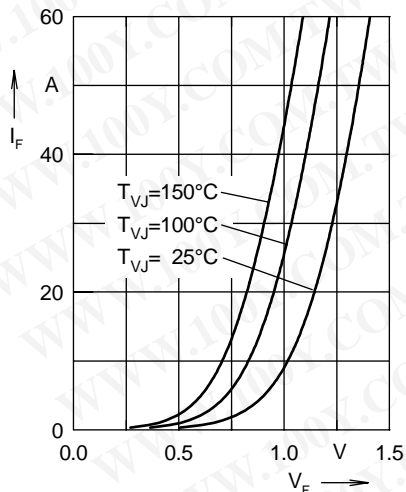


Fig. 1 Forward current I_F versus V_F

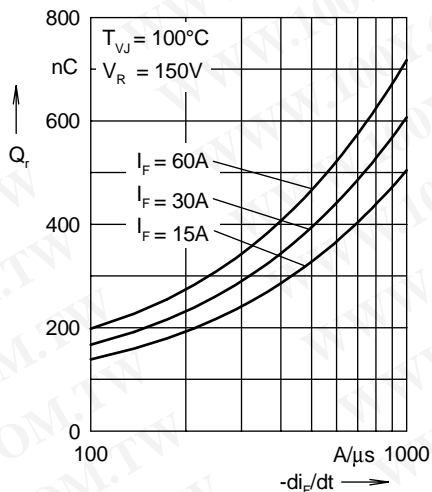


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

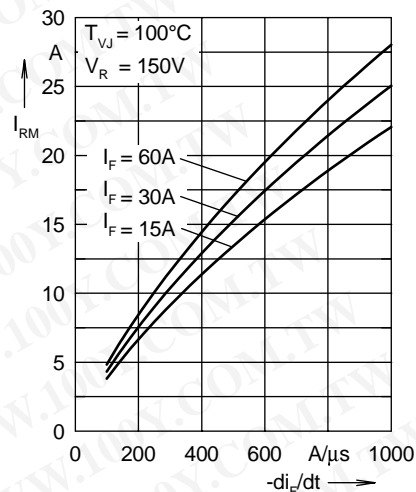


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

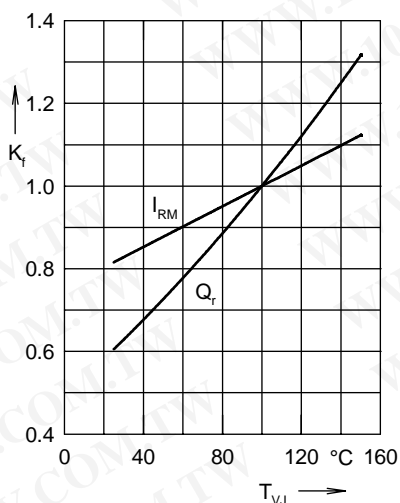


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

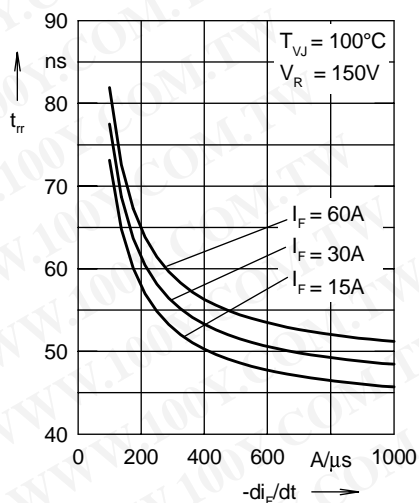


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

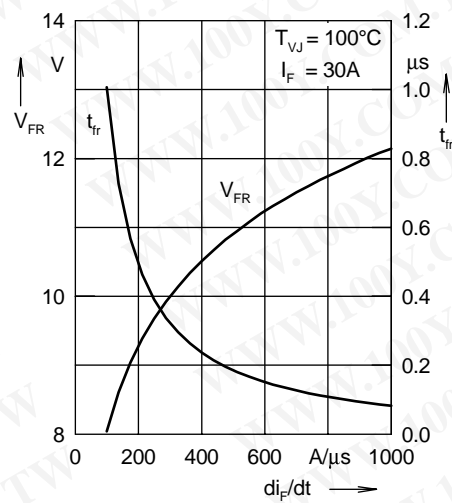


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

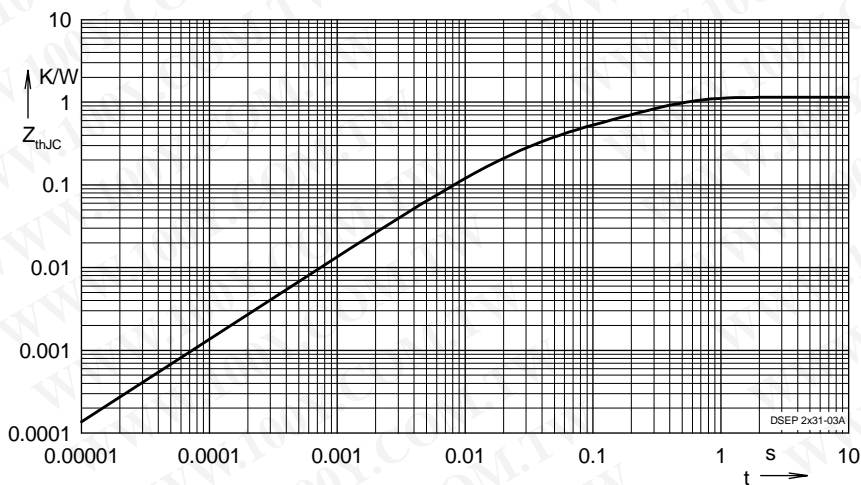


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thjC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.436	0.0055
2	0.482	0.009
3	0.117	0.0007
4	0.115	0.042

NOTE: Fig. 2 to Fig. 6 shows typical values

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