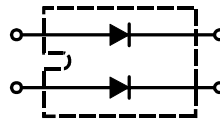


HiPerFRED™ Epitaxial Diode

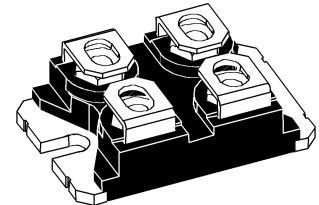
with soft recovery

$I_{FAV} = 2x 30 A$
 $V_{RRM} = 1200 V$
 $t_{rr} = 40 ns$

V_{RSM} V	V_{RRM} V	Type
1200	1200	DSEP 2x 31-12A



miniBLOC, SOT-227 B



Symbol	Conditions	Maximum Ratings	
I_{FRMS}		70	A
I_{FAVM}	$T_C = 70^\circ C$; rectangular, $d = 0.5$	30	A
I_{FSM}	$T_{VJ} = 45^\circ C$; $t_p = 10 ms$ (50 Hz), sine	200	A
E_{AS}	$T_{VJ} = 25^\circ C$; non-repetitive $I_{AS} = 12 A$; $L = 180 \mu H$	14	mJ
I_{AR}	$V_A = 1.25 \cdot V_R$ typ.; $f = 10 kHz$; repetitive	1.2	A
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ C$	110	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

Symbol	Conditions	Characteristic Values	
		typ.	max.
I_R ①	$T_{VJ} = 25^\circ C$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ C$ $V_R = V_{RRM}$	0.25	1 mA
V_F ②	$I_F = 30 A$; $T_{VJ} = 125^\circ C$ $T_{VJ} = 25^\circ C$	1.96	2.72 V
R_{thJC}		1.15	K/W
R_{thCH}		0.1	K/W
t_{rr}	$I_F = 1 A$; $-di/dt = 200 A/\mu s$; $V_R = 30 V$; $T_{VJ} = 25^\circ C$	40	ns
I_{RM}	$V_R = 100 V$; $I_F = 50 A$; $-di_F/dt = 100 A/\mu s$ $T_{VJ} = 100^\circ C$	5.5	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.

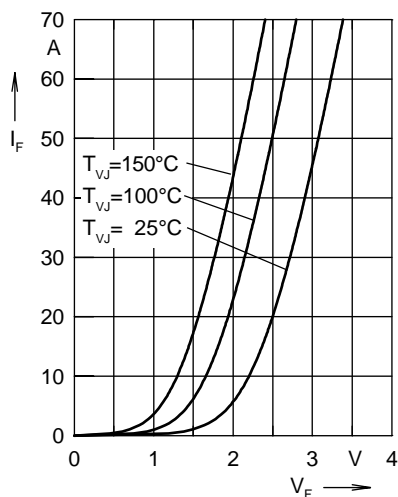


Fig. 1 Forward current I_F versus V_F

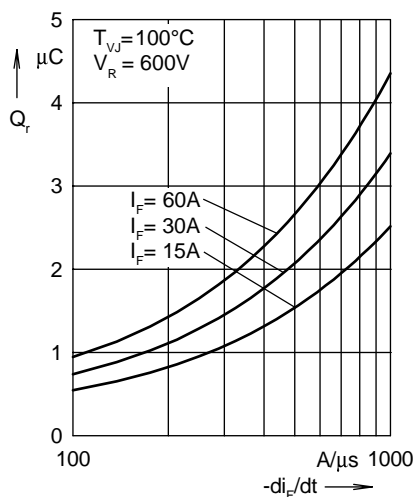


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

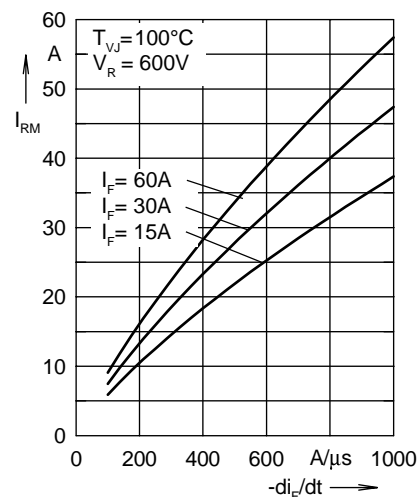


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

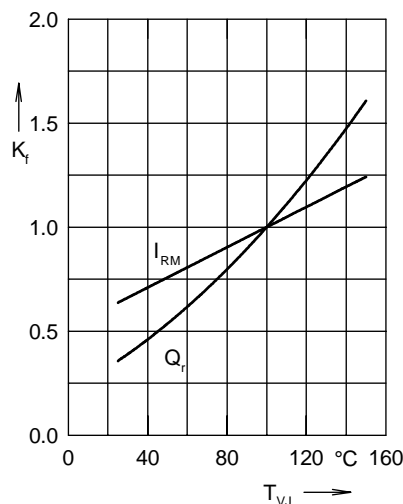


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

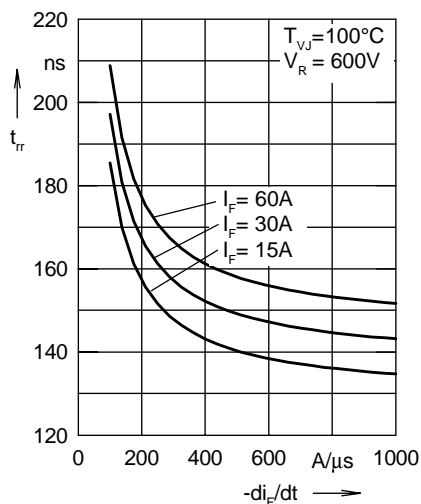


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

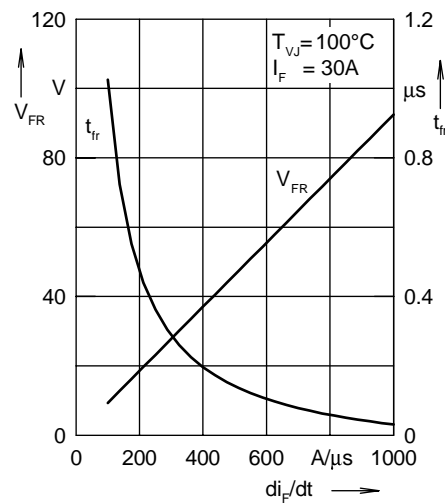


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

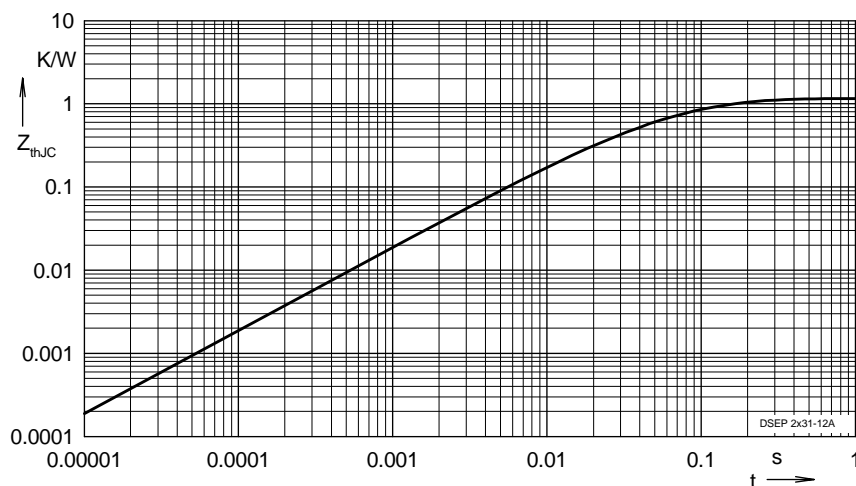


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.436	0.0056
2	0.482	0.0092
3	0.117	0.0007
4	0.115	0.0418

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

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