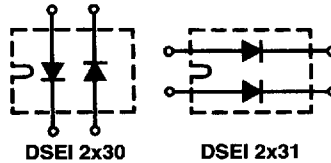


Fast Recovery Epitaxial Diodes (FRED)

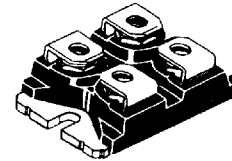
DSEI 2x30
DSEI 2x31

$I_{FAVM} = 2 \times 28 \text{ A}$
 $V_{RRM} = 1200 \text{ V}$
 $t_{rr} = 40 \text{ ns}$

V_{RSM}	V_{RRM}	Type
V	V	
1200	1200	DSEI 2x30-12B DSEI 2x31-12B



miniBLOC, SOT-227 B



Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS} ①	$T_{VJ} = T_{VJM}$	70	A
I_{FAVM}	$T_C = 50^\circ\text{C}$; rectangular, $d = 0.5$	28	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	375	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	200	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	210	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	185	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	195	A
j^2dt	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	200	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	180	A^2s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	170	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	160	A^2s
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 $t = 1 \text{ min}$	2500	V~
	$I_{ISOL} \leq 1 \text{ mA}$ $t = 1 \text{ s}$	3000	V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
Weight		30	g

Features

- International standard package miniBLOC (ISOTOP compatible)
- Isolation voltage 3000 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
- 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

Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$		0.75 mA
	$T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		0.25 mA
	$T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		7 mA
V_F	$I_F = 30 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$		2.2 V
	$T_{VJ} = 25^\circ\text{C}$		2.55 V
V_{T0}	For power-loss calculations only		1.65 V
r_T	$T_{VJ} = T_{VJM}$		18.2 mΩ
R_{thJC}			1.25 K/W
R_{thCK}		0.05	K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	40	60 ns
I_{RM}	$V_R = 540 \text{ V}$; $I_F = 30 \text{ A}$; $-di_F/dt = 240 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	16	18 A

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

Data according to DIN/IEC 747

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

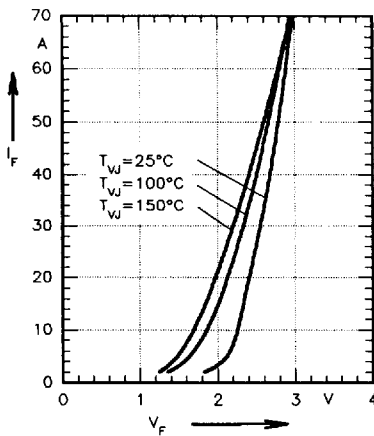


Fig. 1 Forward current versus voltage drop.

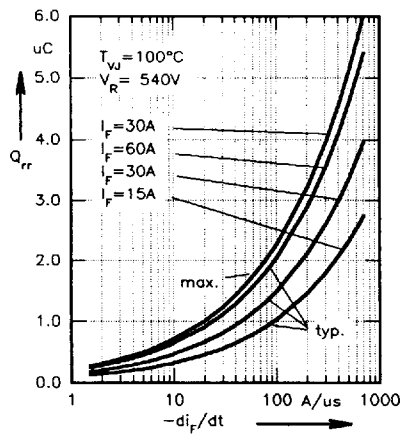


Fig. 2 Recovery charge versus $-di_F/dt$.

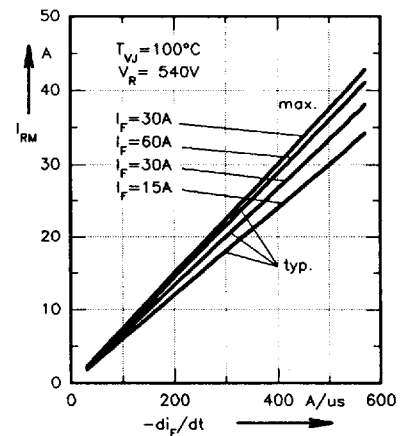


Fig. 3 Peak reverse current versus $-di_F/dt$.

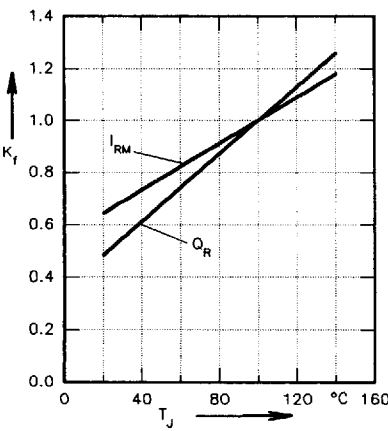


Fig. 4 Dynamic parameters versus junction temperature.

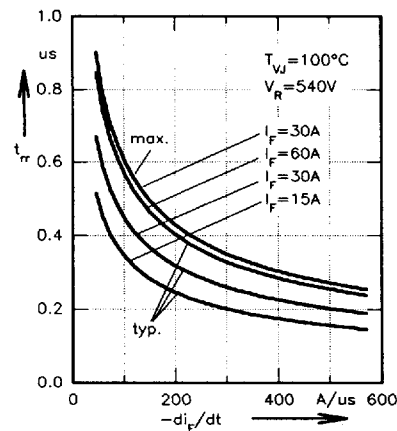


Fig. 5 Recovery time versus $-di_F/dt$.

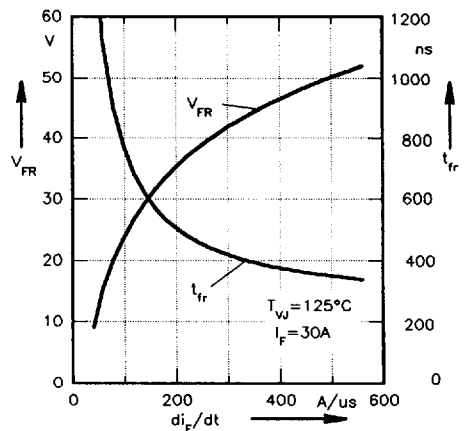


Fig. 6 Peak forward voltage versus $-di_F/dt$.

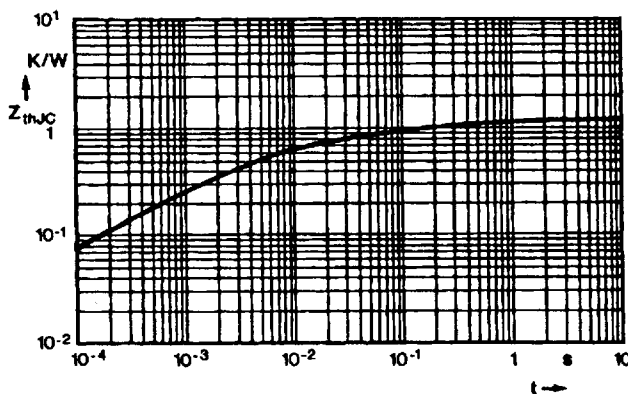
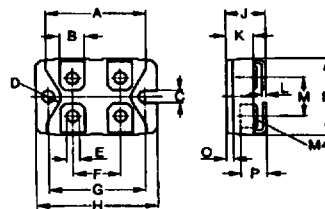


Fig. 7 Transient thermal impedance junction to case.

Dimensions



miniBLOC SOT-227 B
M4 screws (4x) supplied

Dim.	Millimeter	Millimeter	Inches	Inches
	Min.	Max.	Min.	Max.
A	31.5	31.7	1.241	1.249
B	7.8	8.2	0.307	0.323
C	4.0	-	0.158	-
D	4.1	4.3	0.162	0.169
E	4.1	4.3	0.162	0.169
F	14.9	15.1	0.587	0.595
G	30.1	30.3	1.186	1.193
H	38.0	38.2	1.497	1.505
J	11.8	12.2	0.465	0.481
K	8.9	9.1	0.351	0.359
L	0.75	0.85	0.030	0.033
M	12.6	12.8	0.496	0.504
N	25.2	25.4	0.993	1.001
O	1.95	2.05	0.077	0.081
P	-	5.0	-	0.197