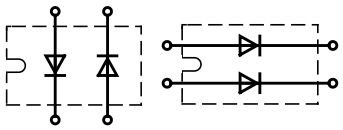
Fast Recovery Epitaxial Diode (FRED)

I_{FAVM} = 2x 30 A
V_{RRM} = 1000 V
t_{rr} = 35 ns

V_{RSM} V	V_{RRM} V	Type	
1000	1000	DSEI 2x 30-10B	DSEI 2x 31-10B



DSEI 2x 30 DSEI 2x 31

miniBLOC, SOT-227 B

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Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS}	$T_{VJ} = T_{VJM}$	70	A
I_{FAVM} ①	T_C = 50°C; rectangular, d = 0.5	30	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}	375	A
I_{FSM}	T_{VJ} = 45°C; t = 10 ms (50 Hz), sine	200	A
	t = 8.3 ms (60 Hz), sine	210	A
	T_{VJ} = 150°C; t = 10 ms (50 Hz), sine	185	A
	t = 8.3 ms (60 Hz), sine	195	A
I^2t	T_{VJ} = 45°C t = 10 ms (50 Hz), sine	200	A^2s
	t = 8.3 ms (60 Hz), sine	180	A^2s
	T_{VJ} = 150°C; t = 10 ms (50 Hz), sine	170	A^2s
	t = 8.3 ms (60 Hz), sine	160	A^2s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	T_C = 25°C	100	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq$ 1 mA	2500	V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
Weight		30	g

Symbol	Test Conditions	Characteristic Values (per diode) typ.	max.	
I_R	T_{VJ} = 25°C $V_R = V_{RRM}$		750	µA
	T_{VJ} = 25°C V_R = 0.8 • V_{RRM}		250	µA
	T_{VJ} = 125°C V_R = 0.8 • V_{RRM}		7	mA
V_F	I_F = 30 A; T_{VJ} = 150°C		2	V
	T_{VJ} = 25°C		2.4	V
V_{T0}	For power-loss calculations only		1.5	V
r_T	$T_{VJ} = T_{VJM}$		12.5	mΩ
R_{thJC}			1.25	K/W
R_{thCK}		0.05		K/W
t_{rr}	I_F = 1 A; -di/dt = 100 A/µs; V_R = 30 V; T_{VJ} = 25°C	35	50	ns
I_{RM}	V_R = 540 V; I_F = 30 A; $-di_F/dt$ = 240 A/µs L ≤ 0.05 µH; T_{VJ} = 100°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 IEC 60747

Features

- International standard package miniBLOC (ISOTOP compatible)
- Isolation voltage 2500 V~
- 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

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

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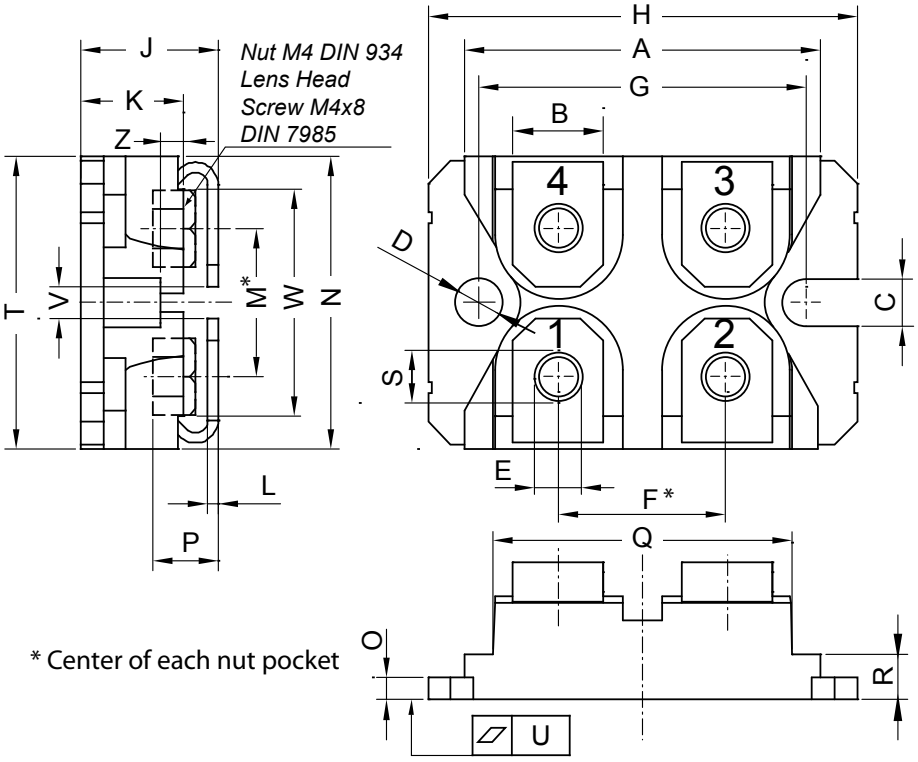
miniBLOC, SOT-227 B



* Center of each nut pocket

Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106

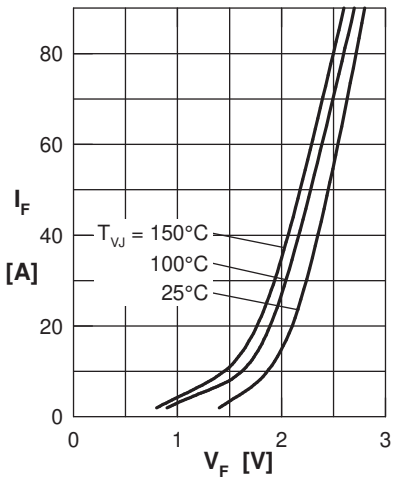


Fig. 1 Typ. forward current versus voltage drop

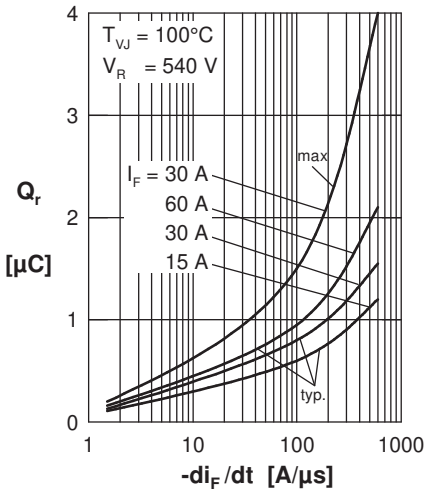


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

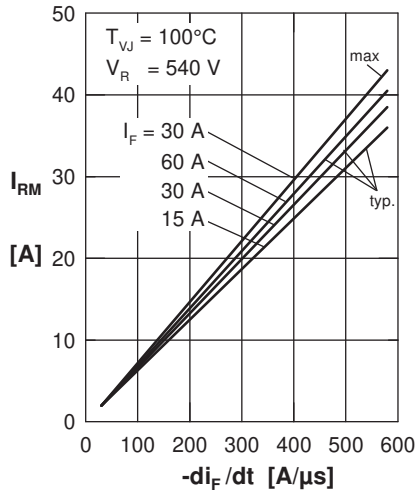


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

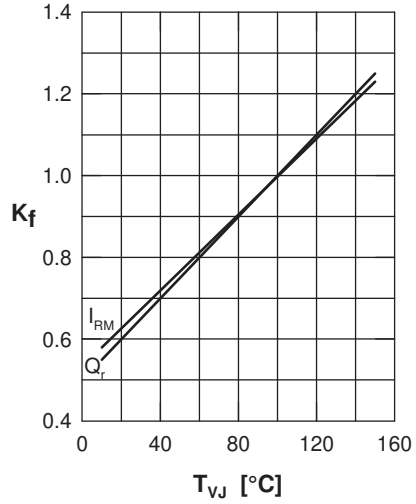


Fig. 4 Dynamic parameters vs. junction temperature

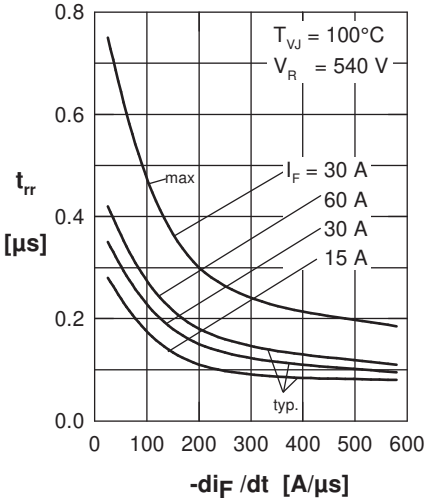


Fig. 5 Typ. recovery time versus $-di_F/dt$

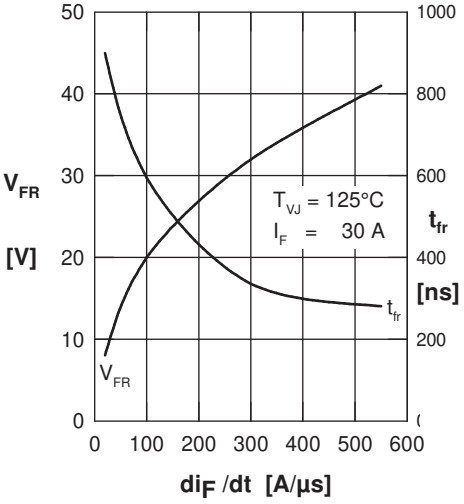


Fig. 6 Typ. peak forward voltage versus di_F/dt

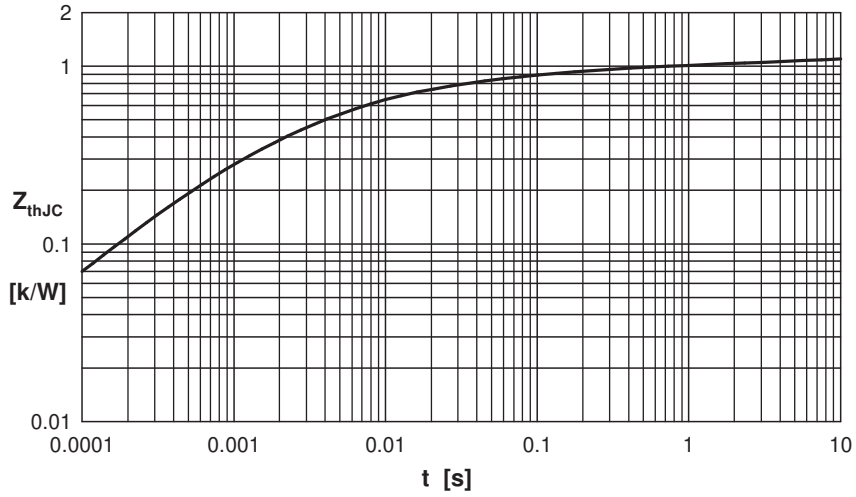


Fig. 7 Transient thermal impedance junction to case

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