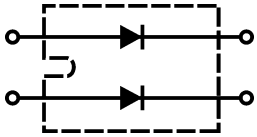
IXYS

Fast Recovery Epitaxial Diode (FRED)

DSEI 2x 101

V_{RRM} = 600 V
I_{FAVM} = 2x 96 A
t_{rr} = 35 ns

V_{RSM} V	V_{RRM} V	Type
600	600	DSEI 2x 101-06A



miniBLOC, SOT-227 B

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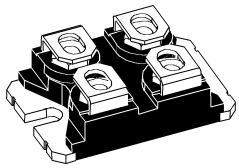


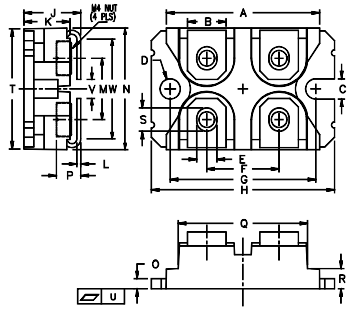
Features

- International standard package
- miniBLOC (ISOTOP compatible)
- Isolation voltage 2500 V~
- matched diodes f. parallel operation
- Planar passivated chips
- two independent diodes
- Very short recovery time
- Extremely low switching losses
- Low I_{RM}-values
- Soft recovery behaviour

Symbol	Test Conditions		Maximum Ratings (per diode)	
$I_{F(RMS)}$	$T_{VJ} = T_{VJM}$		150	A
$I_{F(AV)M}$ ①	T_C = 70°C; rectangular, d = 0.5		96	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		TBD	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1200	A
		t = 8.3 ms (60 Hz), sine	1300	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	1080	A
		t = 8.3 ms (60 Hz), sine	1170	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	7200	A^2s
		t = 8.3 ms (60 Hz), sine	7100	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	5800	A^2s
		t = 8.3 ms (60 Hz), sine	5700	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
P_{tot}	T_C = 25°C		250	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	$V_R = V_{RRM}$		3	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		1	mA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		20	mA
V_F	I_F = 100 A;	T_{VJ} = 150°C		1.17	V
		T_{VJ} = 25°C		1.25	V
V_{T0}	For power-loss calculations only			0.70	V
r_T				4.7	mΩ
R_{thJC}				0.5	K/W
R_{thCH}			0.05		K/W
t_{rr}	I_F = 1 A; -di/dt = 400 A/µs; V_R = 30 V; T_{VJ} = 25°C		35	50	ns
I_{RM}	V_R = 100 V; I_F = 80 A; -di_F/dt = 200 A/µs L ≤ 0.05 mH; T_{VJ} = 100°C		19	24	A

miniBLOC, SOT-227 B



M4 screws (4x) supplied

Dim.	Millimeter Min.	Max.	Inches 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	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	0.84	0.030	0.033
M	12.60	12.85	0.496	0.506
N	25.15	25.42	0.990	1.001
O	1.98	2.13	0.078	0.084
P	4.95	5.97	0.195	0.235
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.174
S	4.72	4.85	0.186	0.191
T	24.59	25.07	0.968	0.987
U	-0.05	0.1	-0.002	0.004
V	3.30	4.57	0.130	0.180
W	0.780	0.830	19.81	21.08

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

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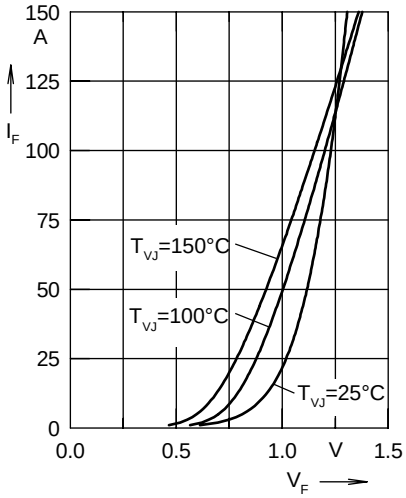

Fig. 1 Forward current I_F versus V_F

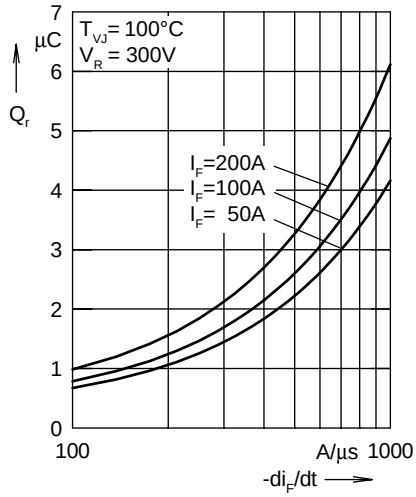

Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

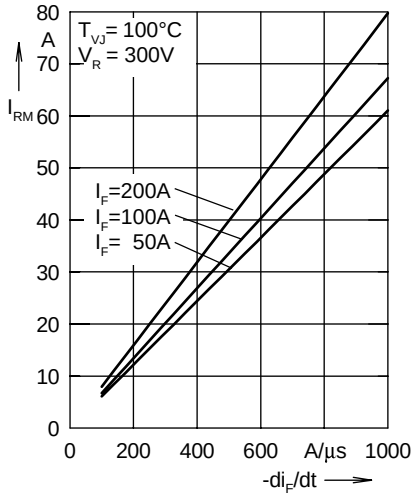

Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

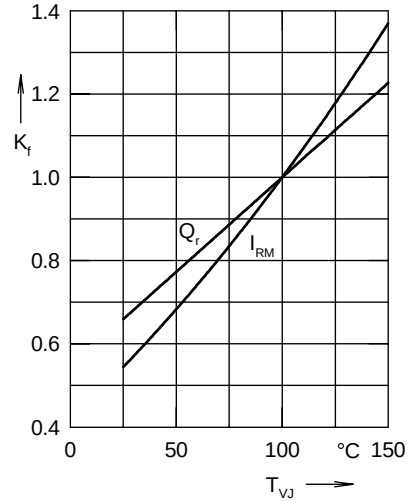

Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

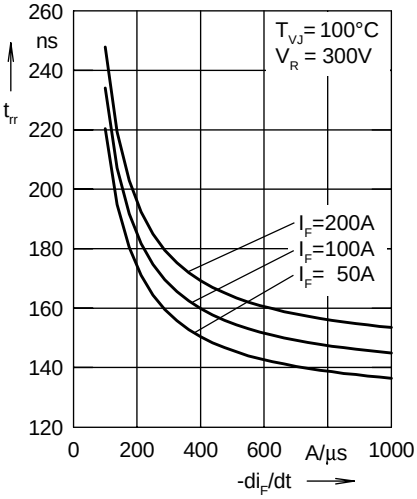

Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

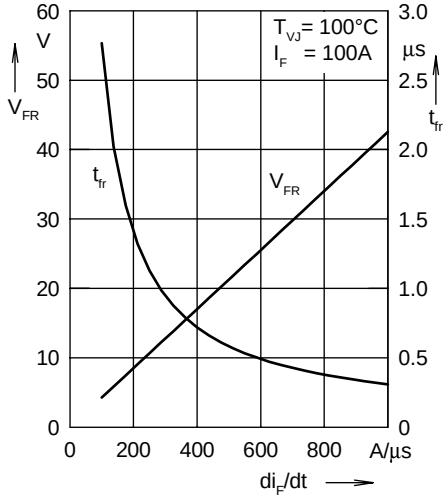

Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

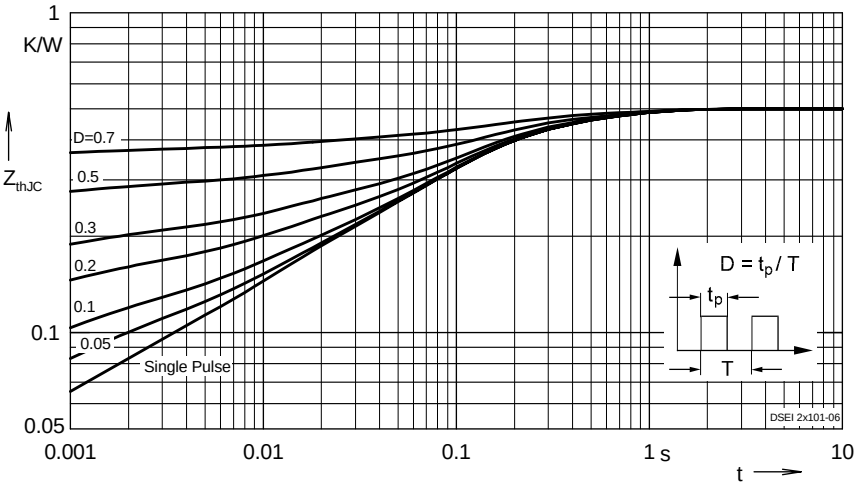

Fig. 7 Transient thermal impedance junction to case at various duty cycles

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.02	0.00002
2	0.05	0.00081
3	0.076	0.01
4	0.24	0.94
5	0.114	0.45

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  QQ 800077892

  Skype ameyasales1 ameyasales2

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  Email service@ameya360.com

- ### Partnership :

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  Email mkt@ameya360.com