

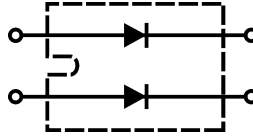


Fast Recovery Epitaxial Diode (FRED)

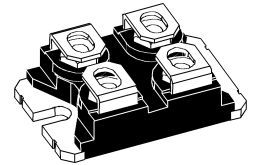
DSEI 2x 101

$V_{RRM} = 600\text{ V}$
 $I_{FAVM} = 2 \times 96\text{ A}$
 $t_{rr} = 35\text{ ns}$

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



miniBLOC, SOT-227 B
 E72873

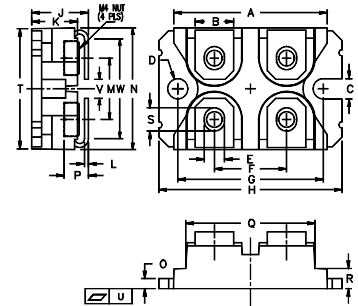


Symbol	Test Conditions	Maximum Ratings (per diode)	
$I_{F(RMS)}$	$T_{VJ} = T_{VJM}$	150	A
$I_{F(AVM)}^{①}$	$T_C = 70^\circ\text{C}$; rectangular, $d = 0.5$	96	A
I_{FRM}	$t_p < 10\ \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	TBD	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	1200	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	1300	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	1080	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	1170	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	7200	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	7100	A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	5800	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	5700	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ\text{C}$	250	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1\text{ mA}$	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

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

miniBLOC, SOT-227 B



M4 screws (4x) supplied

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	38.20	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	0.031	0.033

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$	3	mA
	$T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$	1	mA
	$T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$	20	mA
V_F	$I_F = 100\text{ A}$; $T_{VJ} = 150^\circ\text{C}$	1.17	V
	$T_{VJ} = 25^\circ\text{C}$	1.25	V
V_{TO}	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}	$I_F = 1\text{ A}$; $-di/dt = 400\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	50 ns
I_{RM}	$V_R = 100\text{ V}$; $I_F = 80\text{ A}$; $-di_F/dt = 200\text{ A}/\mu\text{s}$	19	24 A
	$L \leq 0.05\text{ mH}$; $T_{VJ} = 100^\circ\text{C}$		

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



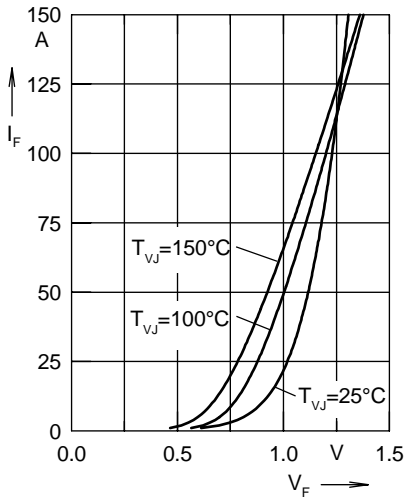


Fig. 1 Forward current I_F versus V_F

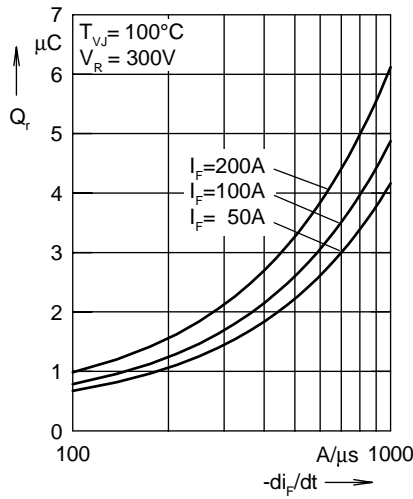


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

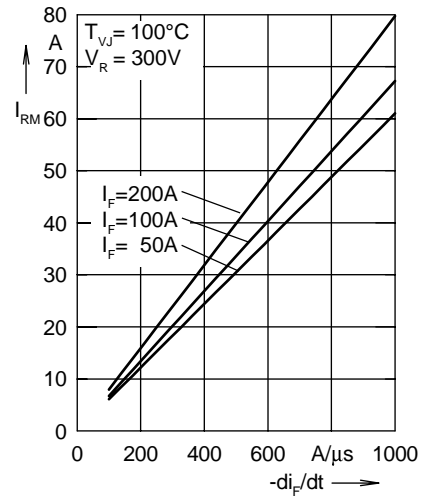


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

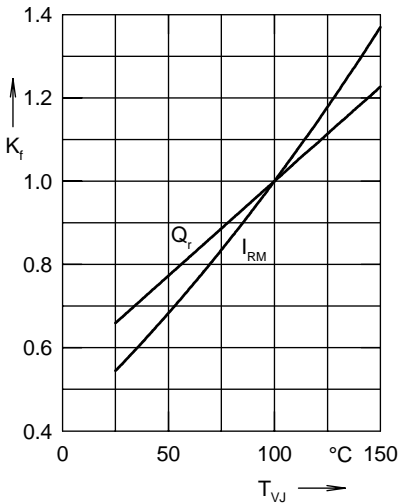


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

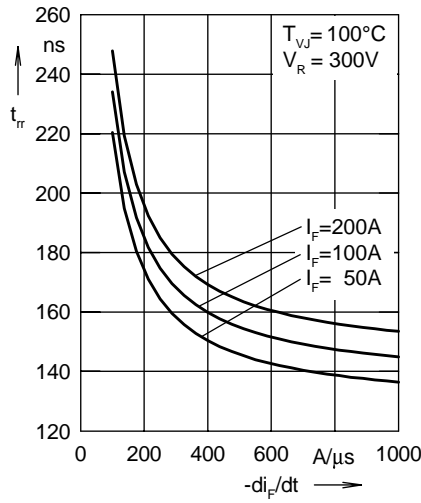


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

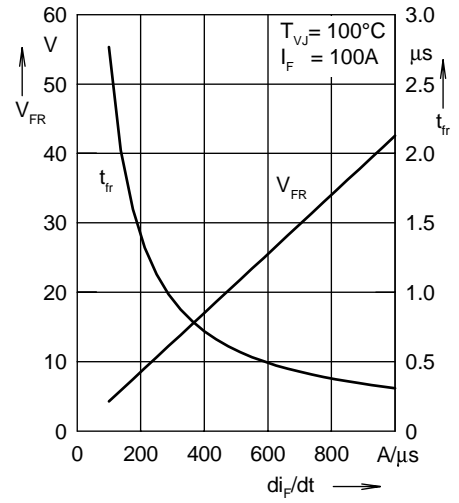


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

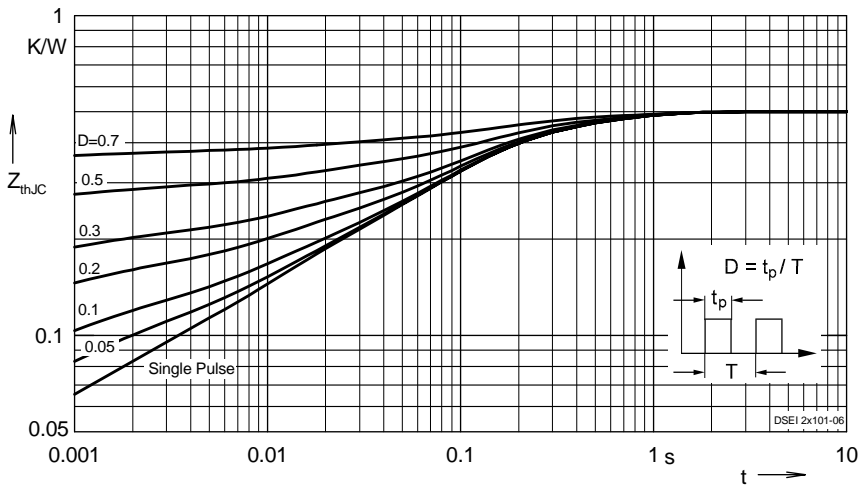


Fig. 7 Transient thermal impedance junction to case at various duty cycles

Constants for Z_{thJC} calculation:

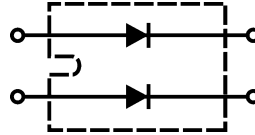
i	R_{thi} (K/W)	t_i (s)
1	0.02	0.00002
2	0.05	0.00081
3	0.076	0.01
4	0.24	0.94
5	0.114	0.45

Fast Recovery Epitaxial Diode (FRED)

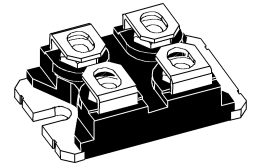
DSEI 2x 101

$V_{RRM} = 1200\text{ V}$
 $I_{FAVM} = 2 \times 91\text{ A}$
 $t_{rr} = 40\text{ ns}$

V_{RSM}	V_{RRM}	Type
V	V	
1200	1200	DSEI 2x 101-12A



miniBLOC, SOT-227 B
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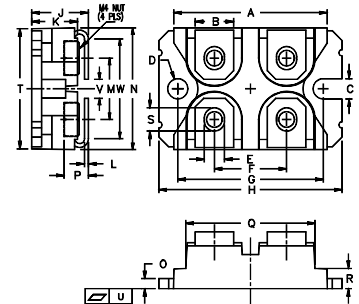


Symbol	Test Conditions	Maximum Ratings (per diode)	
$I_{F(RMS)}$	$T_{VJ} = T_{VJM}$	130	A
$I_{F(AVM)}^{\text{①}}$	$T_C = 50^\circ\text{C}$; rectangular, $d = 0.5$	91	A
I_{FRM}	$t_p < 10\ \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	TBD	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	900	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	970	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	810	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	870	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	4100	A^2s
	$t = 8.3\text{ ms}$ (60 Hz), sine	4000	A^2s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	3300	A^2s
	$t = 8.3\text{ ms}$ (60 Hz), sine	3200	A^2s
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	250	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1\text{ mA}$	2500	V~
M_d	Mounting torque	1.5/13	Nm/lb.in.
	Terminal connection torque (M4)	1.5/13	Nm/lb.in.
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V	3.30	4.57	0.130	0.180
W	0.780	0.830	0.031	0.033

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$		3 mA
	$T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		1.5 mA
	$T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		15 mA
V_F	$I_F = 100\text{ A}$; $T_{VJ} = 150^\circ\text{C}$		1.61 V
	$T_{VJ} = 25^\circ\text{C}$		1.87 V
V_{TO}	For power-loss calculations only		1.01 V
r_T			6.1 $\text{m}\Omega$
R_{thJC}			0.5 K/W
R_{thCH}		0.05	K/W
t_{rr}	$I_F = 1\text{ A}$; $-di/dt = 400\text{ A}/\mu\text{s}$; $V_R = 30\text{ V}$; $T_{VJ} = 25^\circ\text{C}$	40	60 ns
I_{RM}	$V_R = 100\text{ V}$; $I_F = 75\text{ A}$; $-di_F/dt = 200\text{ A}/\mu\text{s}$ $L \leq 0.05\text{ mH}$; $T_{VJ} = 100^\circ\text{C}$	24	30 A

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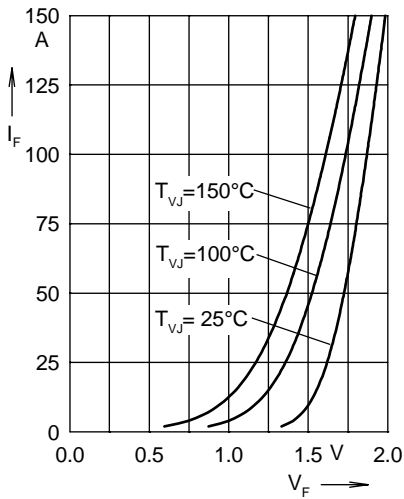


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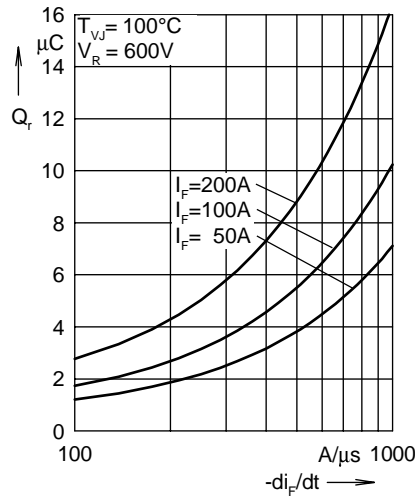


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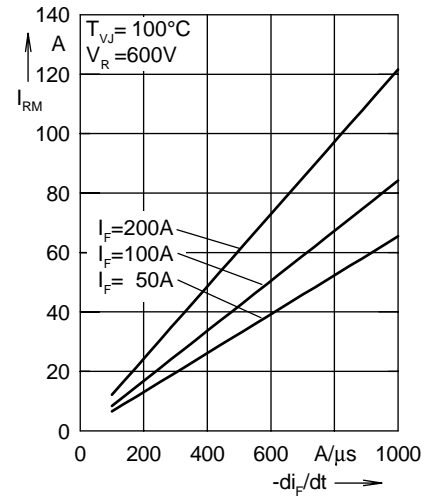


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

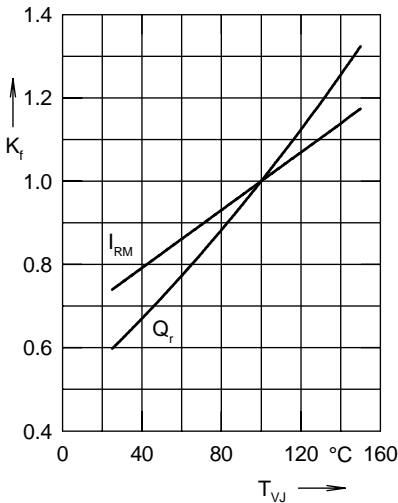


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

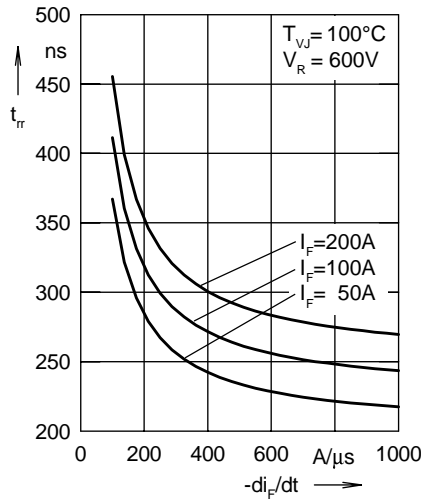


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

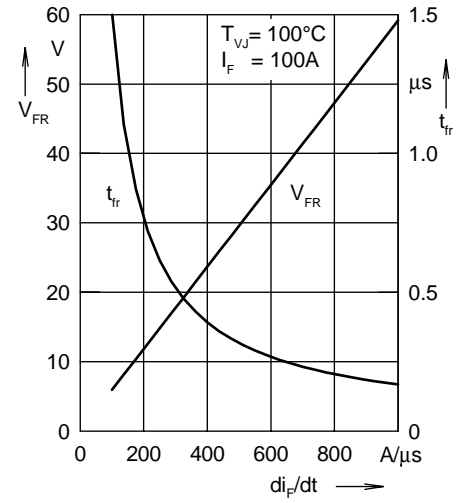


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

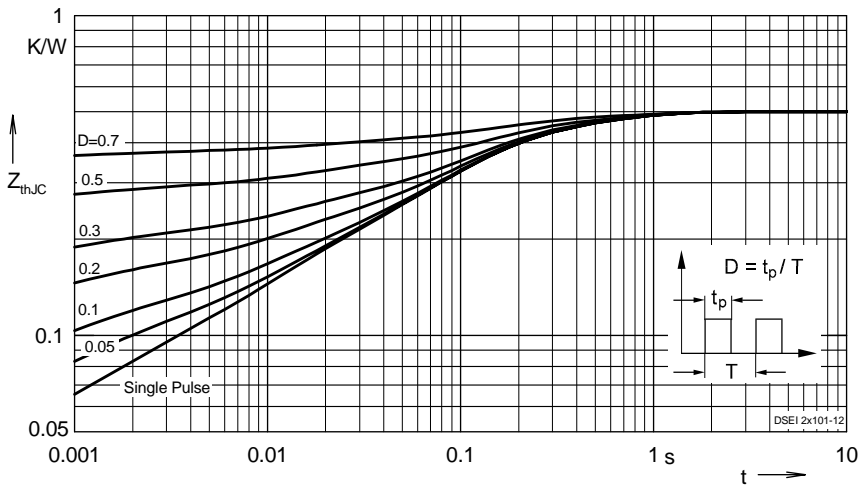


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