

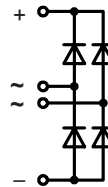
Single Phase Rectifier Bridge with Fast Recovery Epitaxial Diodes (FRED)

$$I_{dAV} = 60 \text{ A}$$

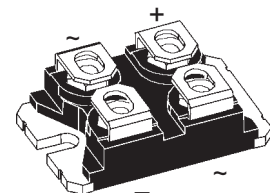
$$V_{RRM} = 600 \text{ V}$$

$$t_{rr} = 35 \text{ ns}$$

V_{RSM}	V_{RRM}	Type
V	V	
600	600	VBE 60-06A



miniBLOC, SOT-227 B



Symbol	Conditions	Maximum Ratings	
I_{FRMS}		70	A
I_{dAV} ①	rect., $d = 0.5$; $T_C = 90^\circ\text{C}$	60	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $V_R = 0$;	250	A
I^2t	$t_p = 10 \text{ ms}$ (50 Hz), sine	315	A^2s
E_{AS}	$T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 1.3 \text{ A}$; $L = 180 \mu\text{H}$	0.2	mJ
I_{AR}	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive	0.1	A
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	140	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$	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~
- single Phase Rectifier Bridge with FREDs
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour

Applications

- Supplies for DC power equipment
- Input and output rectifiers for high frequency
- Battery DC power supplies
- Field supply for DC motors

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

Dimensions see Outlines.pdf

Symbol	Conditions	Characteristic max. Values	
I_R ②	$V_R = V_{RRM}$; $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$; $T_{VJ} = 125^\circ\text{C}$	0.15 1	mA mA
V_F ③	$I_F = 30 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	1.26 1.54	V V
R_{thJC}		1.15	K/W
R_{thCH}		typ. 0.1	K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	typ. 35	ns
I_{RM}	$V_R = 100 \text{ V}$; $I_F = 50 \text{ A}$; $-di_f/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$	typ. 5.5	A

Pulse test: ① for resistive load at bridge output.

② Pulse Width = 5 ms, Duty Cycle < 2.0 %

③ 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, Conditions and dimensions.

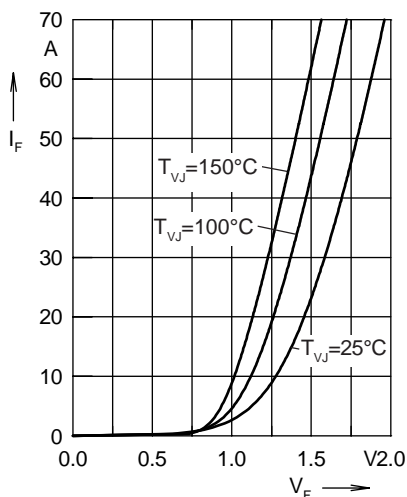


Fig. 1 Forward current I_F versus V_F

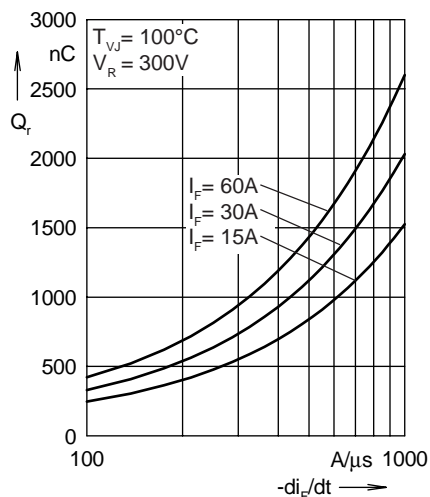


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

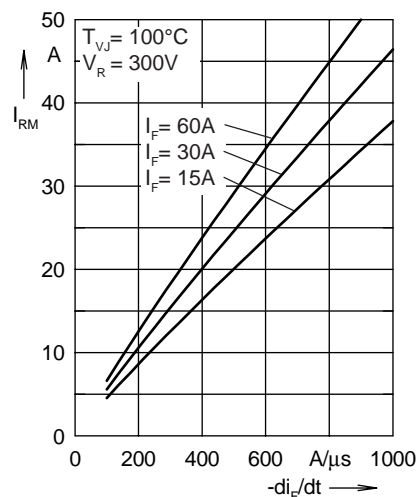


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

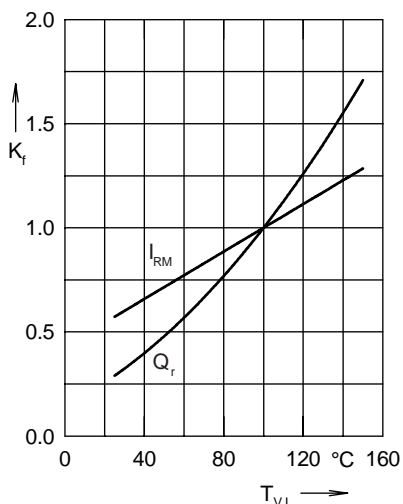


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

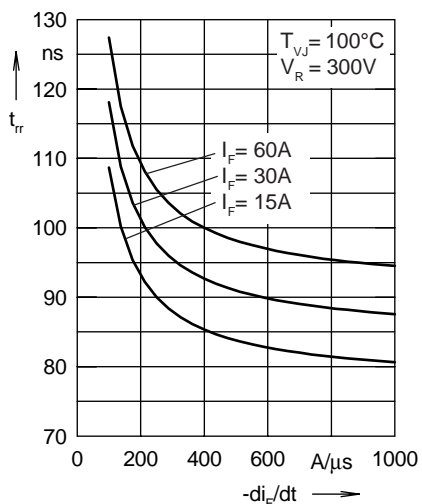


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

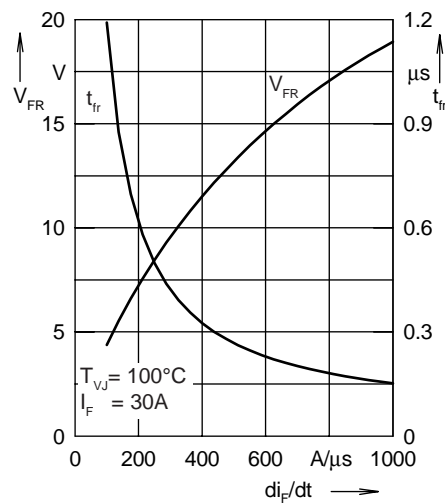


Fig. 6 Peak forward voltage V_{FR} and t_{tr} versus di_F/dt

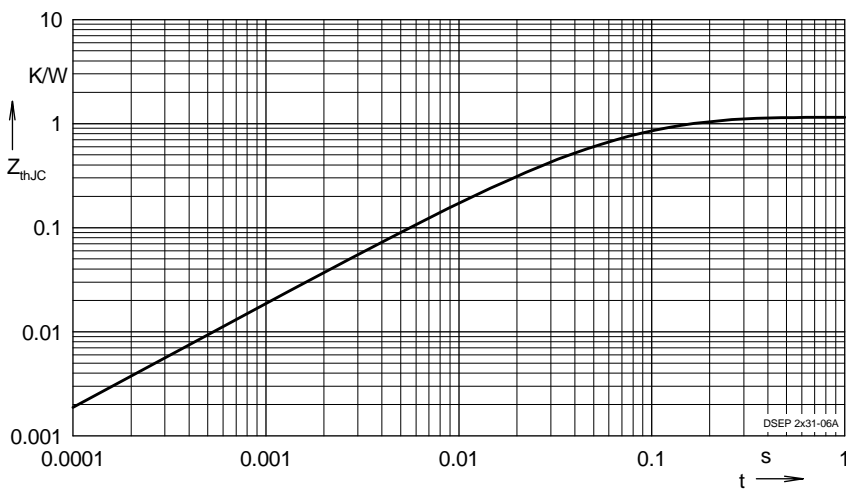


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.436	0.0055
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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