

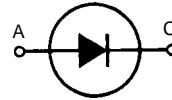
Fast Recovery Epitaxial Diode (FRED)

$$I_{FAVM} = 17 \text{ A}$$

$$V_{RRM} = 1200 \text{ V}$$

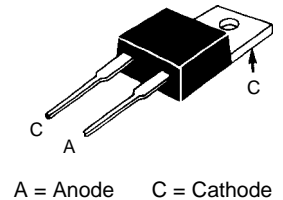
$$t_{rr} = 40 \text{ ns}$$

V_{RSM}	V_{RRM}	Type
1200V	1200V	DSEI 20-12A



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	70	A
I_{FAVM} ①	$T_C = 85^\circ\text{C}$; rectangular, $d = 0.5$	17	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	220	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	130 A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	140 A
	$T_{VJ} = 150^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	110 A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	120 A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	85 A^2s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	80 A^2s
	$T_{VJ} = 150^\circ\text{C}$	$t = 10 \text{ ms}$ (50 Hz), sine	60 A^2s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	60 A^2s
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	78	W
M_d	Mounting torque with screw M3	0.45/4	Nm/lb.in.
	Mounting torque with screw M3.5	0.55/5	Nm/lb.in.
Weight		2	g

TO-220 AC



Features

- Low I_{RM} -values
- Planar passivated chips
- Very short recovery time
- Soft recovery behaviour
- Epoxy meet UL 94V-0.
- Extremely low switching losses
- International standard package JEDEC TO-220 AC

Applications

- Snubber diode
- Anti saturation diode
- Inductive heating and melting
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Antiparallel diode for high frequency switching devices
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

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

Symbol	Test Conditions	Characteristic Values	
		Typ.	Max.
I_R	$V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$		750 μA
	$V_R = 0.8 V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$		250 μA
	$V_R = 0.8 V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$		7 mA
V_F	$I_F = 12 \text{ A}$ $T_{VJ} = 150^\circ\text{C}$		1.87 V
		$T_{VJ} = 25^\circ\text{C}$	2.15 V
V_{T0}	For power-loss calculations only		1.65 V
r_T	$T_{VJ} = T_{VJM}$		18.2 $\text{m}\Omega$
R_{thJC}			1.6 K/W
R_{thCK}		0.5	K/W
R_{thJA}			60 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}	$V_R = 540 \text{ V}$; $I_F = 20 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	7	A
	$L \leq 0.05 \mu\text{H}$ $T_{VJ} = 100^\circ\text{C}$		

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 DIN/IEC 747

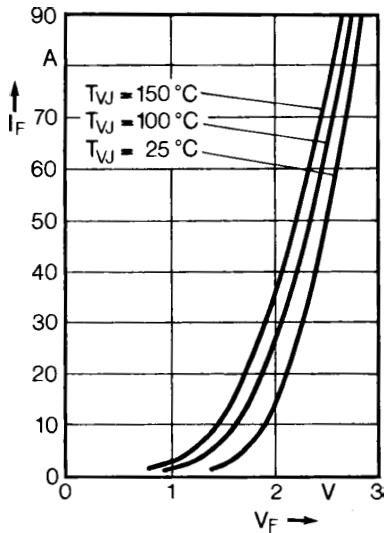


Fig. 1 Forward current versus voltage drop.

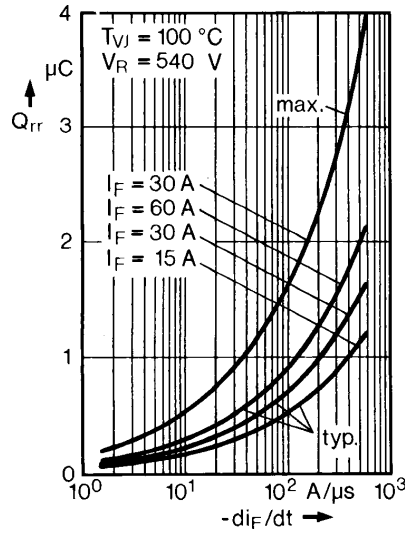


Fig. 2 Recovery charge versus $-di_F/dt$.

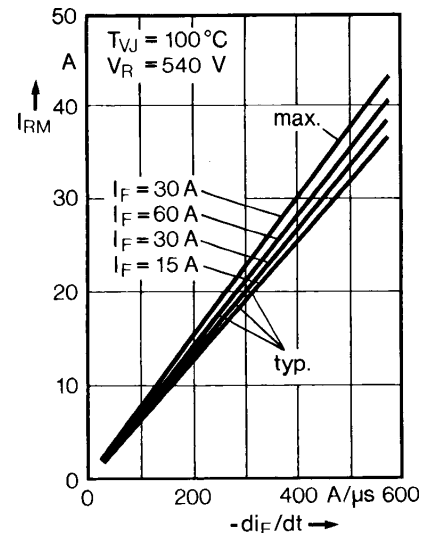


Fig. 3 Peak reverse current versus $-di_F/dt$.

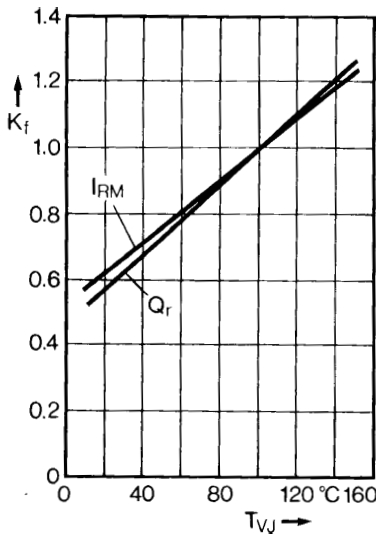


Fig. 4 Dynamic parameters versus junction temperature.

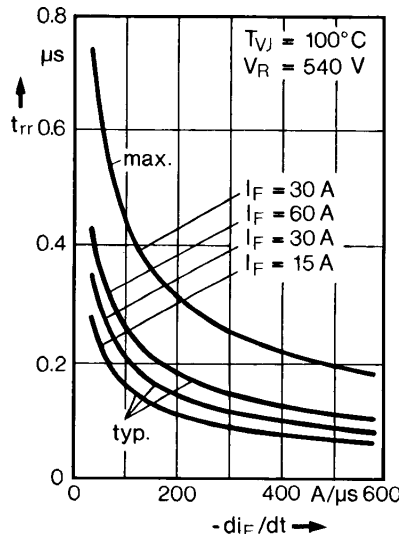


Fig. 5 Recovery time versus $-di_F/dt$.

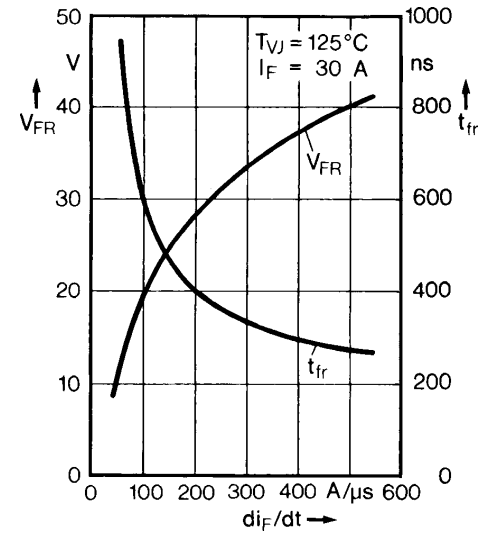


Fig. 6 Peak forward voltage versus di_F/dt .

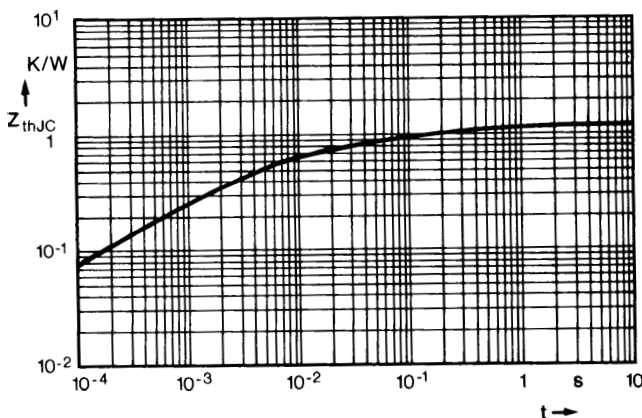
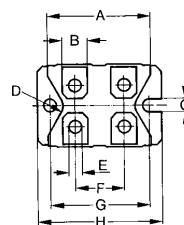
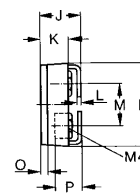


Fig. 7 Transient thermal impedance junction to case.



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



Dim.	Millimeter		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