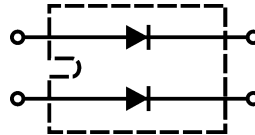


Fast Recovery Epitaxial Diode (FRED)

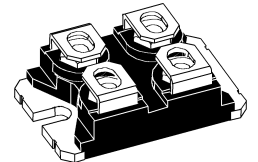
DSEI 2x 61

$I_{FAVM} = 2x 71 A$
 $V_{RRM} = 200 V$
 $t_{rr} = 35 ns$

V_{RSM} V	V_{RRM} V	Type
200	200	DSEI 2x 61-02A



miniBLOC, SOT-227 B
 E72873



Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 85^\circ C$; rectangular, $d = 0.5$	71	A
I_{FRM}	$t_p < 10 \mu s$; rep. rating, pulse width limited by T_{VJM}	800	A
I_{FSM}	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	950	A
	$t = 8.3 ms$ (60 Hz), sine	1020	A
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	800	A
	$t = 8.3 ms$ (60 Hz), sine	870	A
I^2t	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	4500	A ² s
	$t = 8.3 ms$ (60 Hz), sine	4300	A ² s
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	3200	A ² s
	$t = 8.3 ms$ (60 Hz), sine	3140	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ C$	150	W
V_{ISOL}	50/60 Hz, RMS $I_{ISOL} \leq 1 mA$	2500	V~
M_d	Mounting torque	1.1-1.5/9-13	Nm/lb.in.
	Terminal connection torque (M4)	1.1-1.5/9-13	Nm/lb.in.
Weight		30	g

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

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ C$ $V_R = V_{RRM}$		50 μA
	$T_{VJ} = 25^\circ C$ $V_R = 0.8 \cdot V_{RRM}$		40 μA
	$T_{VJ} = 125^\circ C$ $V_R = 0.8 \cdot V_{RRM}$		11 mA
V_F	$I_F = 60 A$; $T_{VJ} = 150^\circ C$ $T_{VJ} = 25^\circ C$		0.88 V
			1.08 V
V_{T0}	For power-loss calculations only		0.7 V
r_T	$T_{VJ} = T_{VJM}$		3.0 mΩ
R_{thJC} R_{thCK}		0.05	0.8 K/W K/W
t_{rr}	$I_F = 1 A$; $-di/dt = 200 A/\mu s$; $V_R = 30 V$; $T_{VJ} = 25^\circ C$	35	50 ns
I_{RM}	$V_R = 100 V$; $I_F = 60 A$; $-di_F/dt = 200 A/\mu s$ $L \leq 0.05 mH$; $T_{VJ} = 100^\circ C$	8	10 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
 IXYS reserves the right to change limits, test conditions and dimensions

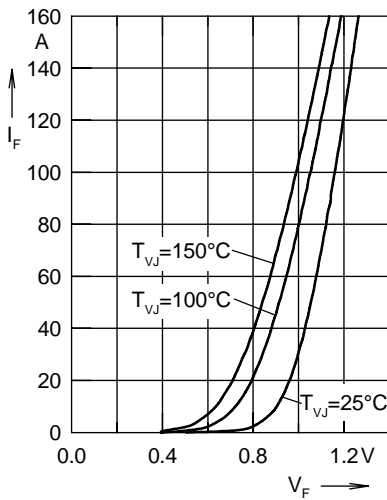


Fig. 1 Forward current I_F versus V_F

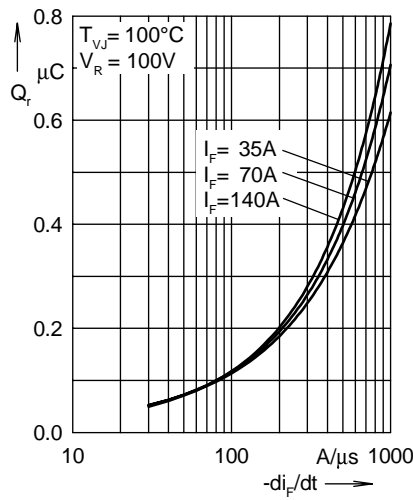


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

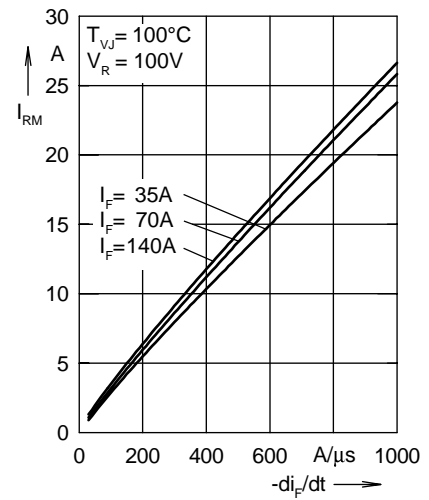


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

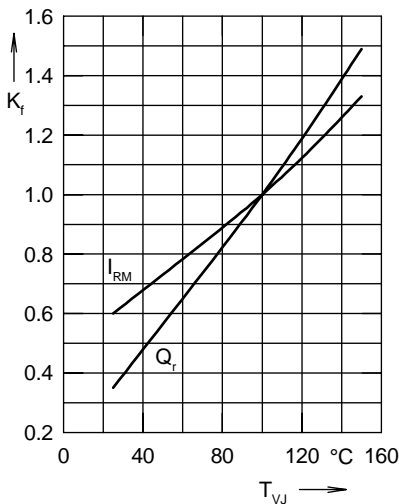


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

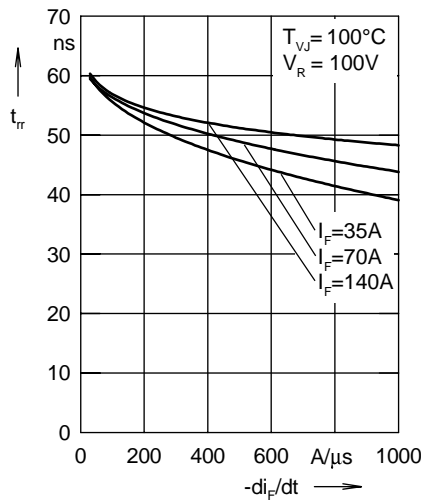


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

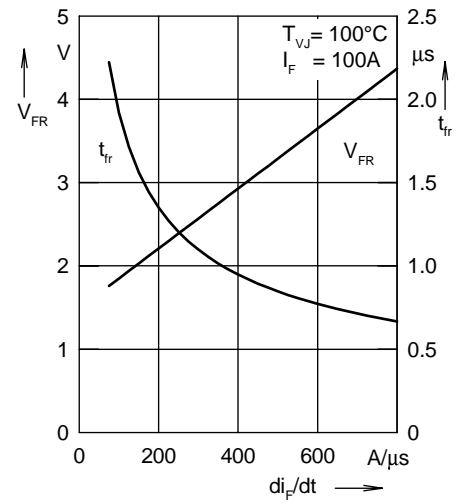


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

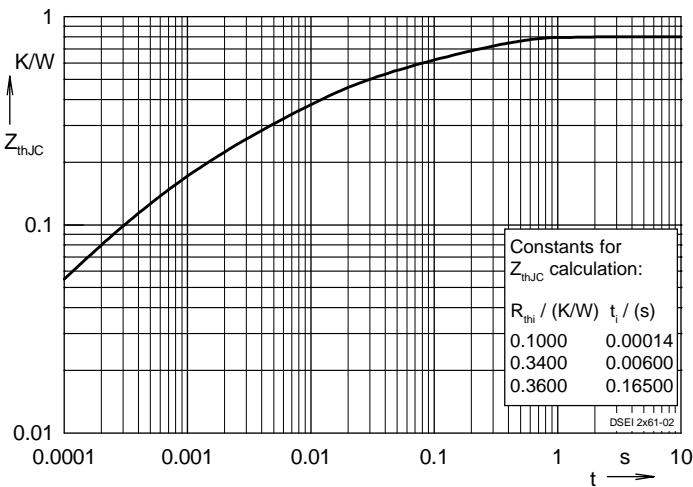
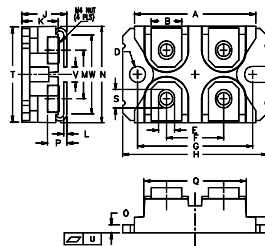


Fig. 7 Transient thermal impedance junction to case

Dimensions



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

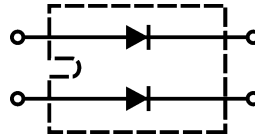
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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

Fast Recovery Epitaxial Diode (FRED)

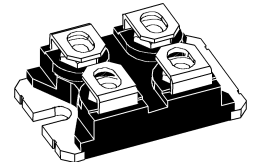
DSEI 2x 61

$I_{FAVM} = 2x 60 A$
 $V_{RRM} = 400/600 V$
 $t_{rr} = 35 ns$

V_{RSM} V	V_{RRM} V	Type
440	400	DSEI 2x 61-04C
640	600	DSEI 2x 61-06C



miniBLOC, SOT-227 B
E72873



Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 70^\circ C$; rectangular, $d = 0.5$	60	A
I_{FRM}	$t_p < 10 \mu s$; rep. rating, pulse width limited by T_{VJM}	800	A
I_{FSM}	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	550	A
	$t = 8.3 ms$ (60 Hz), sine	600	A
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	480	A
	$t = 8.3 ms$ (60 Hz), sine	520	A
I^2t	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	1510	A ² s
	$t = 8.3 ms$ (60 Hz), sine	1490	A ² s
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	1150	A ² s
	$t = 8.3 ms$ (60 Hz), sine	1120	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ C$	180	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

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

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ C$; $V_R = V_{RRM}$		200 μA
	$T_{VJ} = 25^\circ C$; $V_R = 0.8 \cdot V_{RRM}$		100 μA
	$T_{VJ} = 125^\circ C$; $V_R = 0.8 \cdot V_{RRM}$		14 mA
V_F	$I_F = 60 A$; $T_{VJ} = 150^\circ C$ $T_{VJ} = 25^\circ C$		1.5 V
			1.8 V
V_{TO}	For power-loss calculations only		1.13 V
r_T	$T_{VJ} = T_{VJM}$		4.7 mΩ
R_{thJC}		0.7	K/W
R_{thCK}		0.05	K/W
t_{rr}	$I_F = 1 A$; $-di/dt = 200 A/\mu s$; $V_R = 30 V$; $T_{VJ} = 25^\circ C$	35	50 ns
I_{RM}	$V_R = 350 V$; $I_F = 60 A$; $-di_F/dt = 480 A/\mu s$ $L \leq 0.05 \mu H$; $T_{VJ} = 100^\circ C$	19	21 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

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

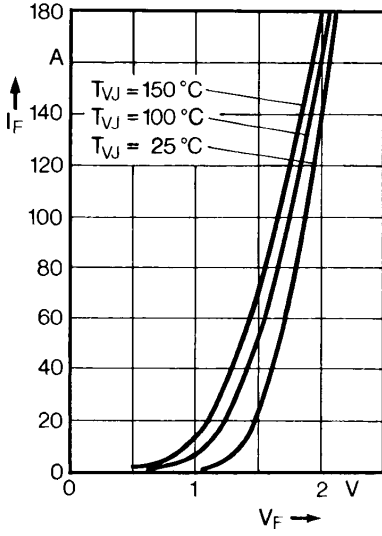


Fig. 1 Forward current versus voltage drop.

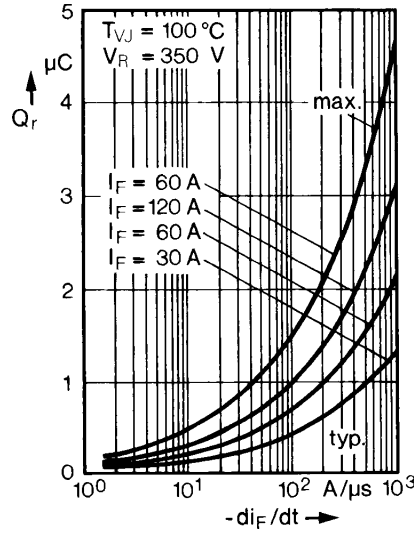


Fig. 2 Recovery charge versus $-di_F/dt$.

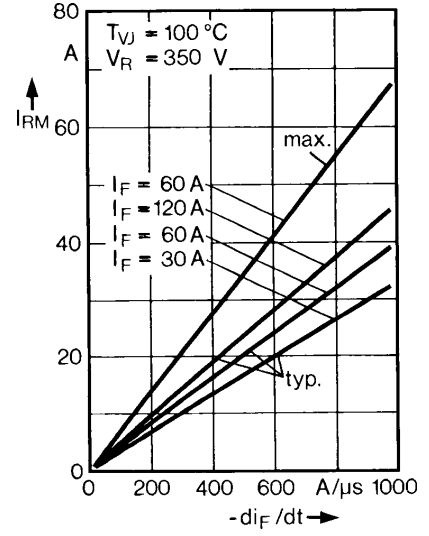


Fig. 3 Peak reverse current versus $-di_F/dt$.

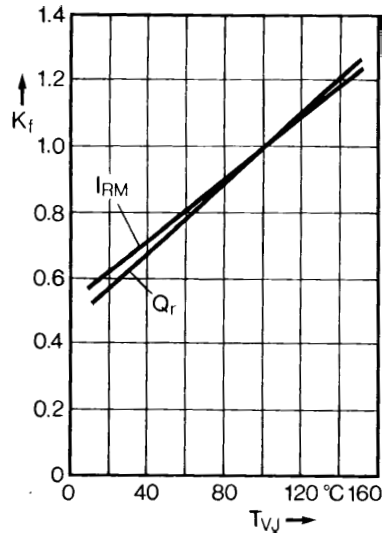


Fig. 4 Dynamic parameters versus junction temperature.

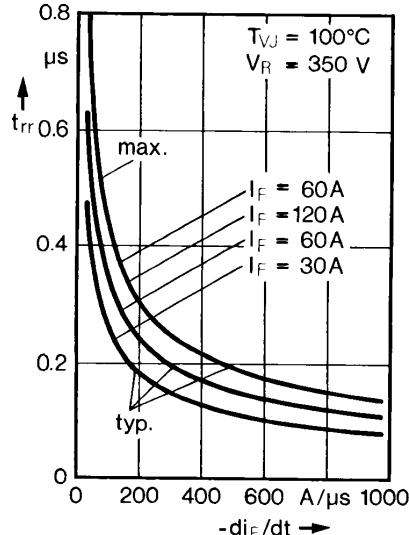


Fig. 5 Recovery time versus $-di_F/dt$.

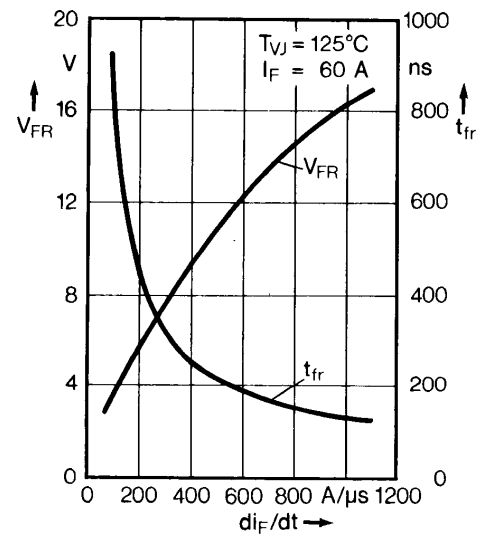


Fig. 6 Peak forward voltage versus di_F/dt .

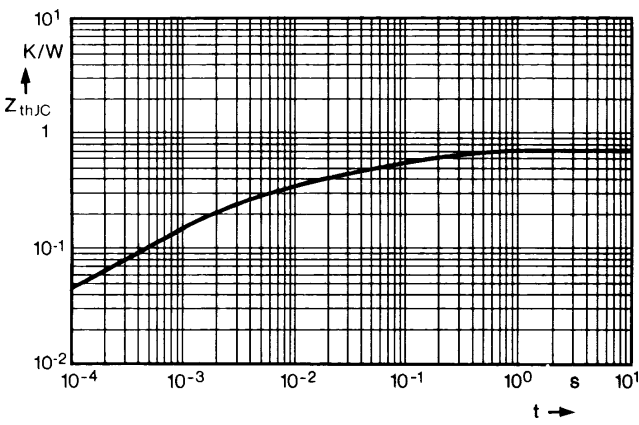
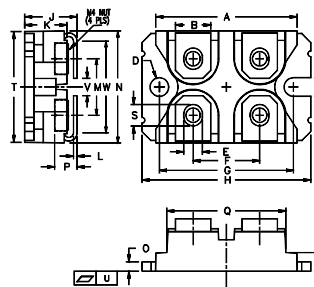


Fig. 7 Transient thermal impedance junction to case.

Dimensions



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

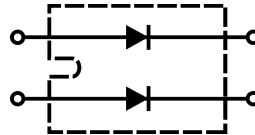
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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

Fast Recovery Epitaxial Diode (FRED)

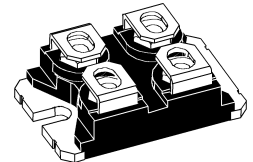
DSEI 2x 61

$I_{FAVM} = 2x 60 A$
 $V_{RRM} = 1000 V$
 $t_{rr} = 35 ns$

V_{RSM} V	V_{RRM} V	Type
1000	1000	DSEI 2x 61-10B



miniBLOC, SOT-227 B
E72873



Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 50^\circ C$; rectangular, $d = 0.5$	60	A
I_{FRM}	$t_p < 10 \mu s$; rep. rating, pulse width limited by T_{VJM}	800	A
I_{FSM}	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	500	A
	$t = 8.3 ms$ (60 Hz), sine	540	A
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	450	A
	$t = 8.3 ms$ (60 Hz), sine	480	A
I^2t	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	1150	A ² s
	$t = 8.3 ms$ (60 Hz), sine	1200	A ² s
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	1000	A ² s
	$t = 8.3 ms$ (60 Hz), sine	950	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ C$	180	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

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

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ C$ $V_R = V_{RRM}$		3 mA
	$T_{VJ} = 25^\circ C$ $V_R = 0.8 \cdot V_{RRM}$		0.5 mA
	$T_{VJ} = 125^\circ C$ $V_R = 0.8 \cdot V_{RRM}$		14 mA
V_F	$I_F = 60 A$; $T_{VJ} = 150^\circ C$ $T_{VJ} = 25^\circ C$		1.8 V
			2.3 V
V_{TO}	For power-loss calculations only		1.43 V
r_T	$T_{VJ} = T_{VJM}$		6.1 mΩ
R_{thJC}		0.7	K/W
R_{thCK}		0.05	K/W
t_{rr}	$I_F = 1 A$; $-di/dt = 200 A/\mu s$; $V_R = 30 V$; $T_{VJ} = 25^\circ C$	35	50 ns
I_{RM}	$V_R = 540 V$; $I_F = 60 A$; $-di_F/dt = 480 A/\mu s$ $L \leq 0.05 \mu H$; $T_{VJ} = 100^\circ C$	32	36 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

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

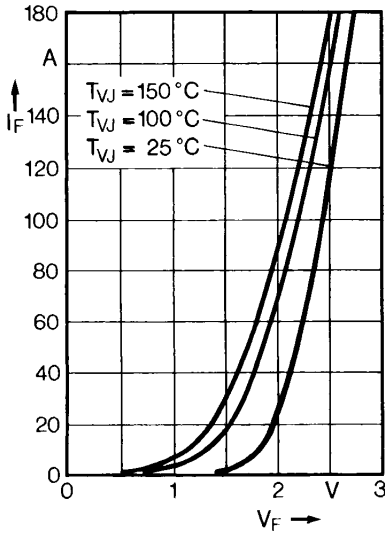


Fig. 1 Forward current versus voltage drop.

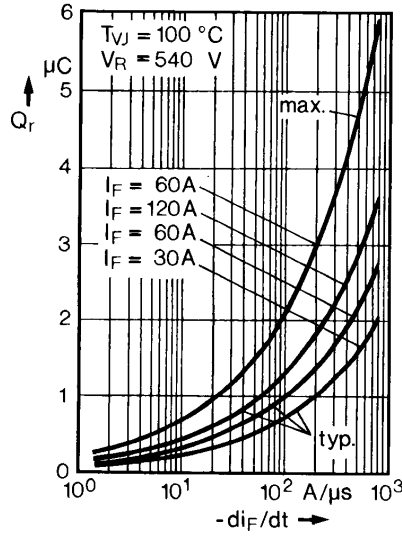


Fig. 2 Recovery charge versus $-di_F/dt$.

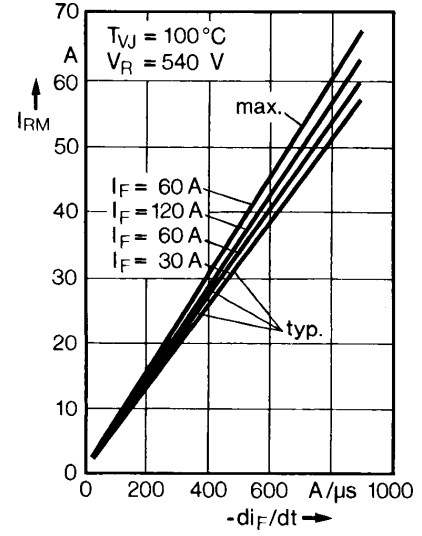


Fig. 3 Peak reverse current versus $-di_F/dt$.

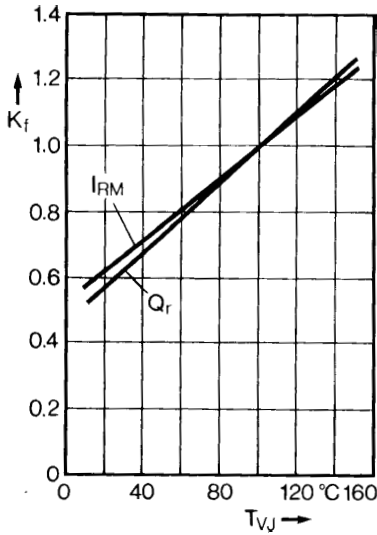


Fig. 4 Dynamic parameters versus junction temperature.

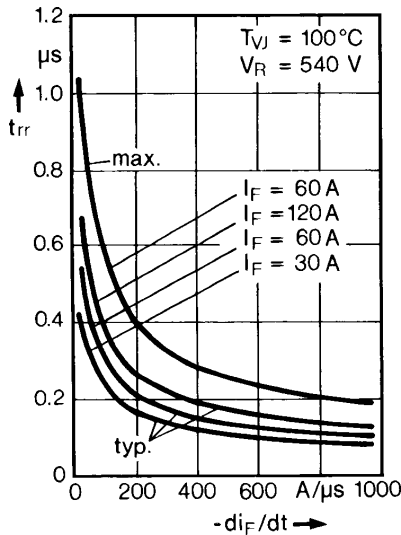


Fig. 5 Recovery time versus $-di_F/dt$.

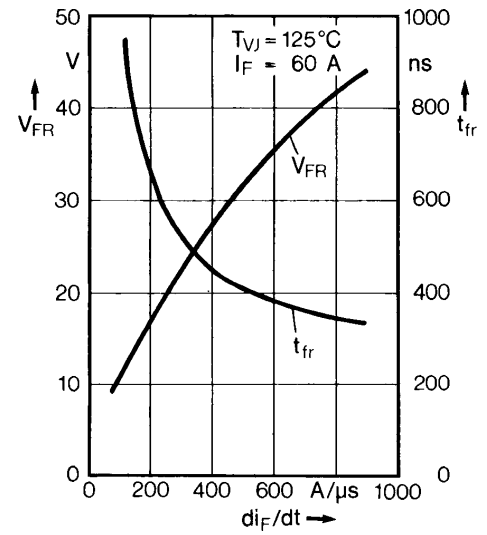


Fig. 6 Peak forward voltage versus di_F/dt .

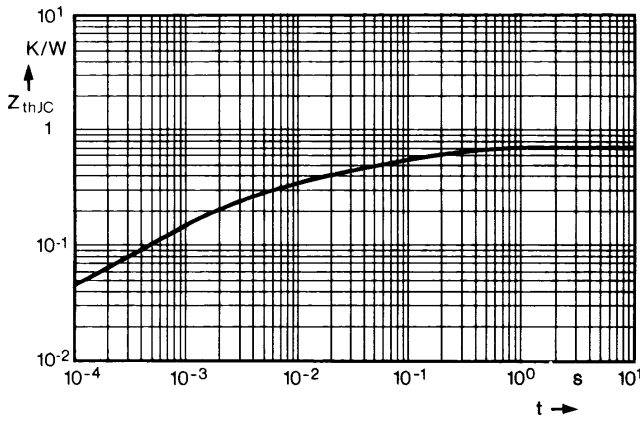
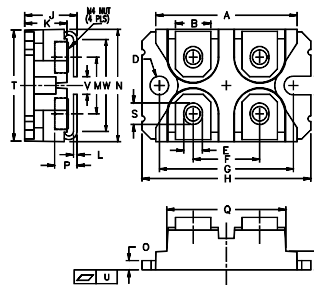


Fig. 7 Transient thermal impedance junction to case.

Dimensions



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

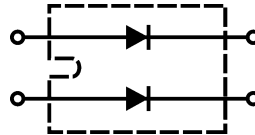
Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.20	1.489	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.76	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

Fast Recovery Epitaxial Diode (FRED)

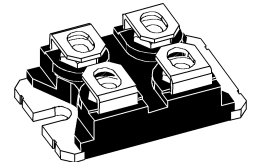
DSEI 2x 61

$I_{FAVM} = 2x 52 A$
 $V_{RRM} = 1200 V$
 $t_{rr} = 40 ns$

V_{RSM} V	V_{RRM} V	Type
1200	1200	DSEI 2x 61-12B



miniBLOC, SOT-227 B
E72873



Symbol	Test Conditions	Maximum Ratings (per diode)	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 50^\circ C$; rectangular, $d = 0.5$	52	A
I_{FRM}	$t_p < 10 \mu s$; rep. rating, pulse width limited by T_{VJM}	700	A
I_{FSM}	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	450	A
	$t = 8.3 ms$ (60 Hz), sine	500	A
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	400	A
	$t = 8.3 ms$ (60 Hz), sine	440	A
I^2t	$T_{VJ} = 45^\circ C$; $t = 10 ms$ (50 Hz), sine	1000	A ² s
	$t = 8.3 ms$ (60 Hz), sine	1050	A ² s
	$T_{VJ} = 150^\circ C$; $t = 10 ms$ (50 Hz), sine	800	A ² s
	$t = 8.3 ms$ (60 Hz), sine	810	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ C$	180	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

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

Symbol	Test Conditions	Characteristic Values (per diode)	
		typ.	max.
I_R	$T_{VJ} = 25^\circ C$; $V_R = V_{RRM}$		2.2 mA
	$T_{VJ} = 25^\circ C$; $V_R = 0.8 \cdot V_{RRM}$		0.5 mA
	$T_{VJ} = 125^\circ C$; $V_R = 0.8 \cdot V_{RRM}$		14 mA
V_F	$I_F = 60 A$; $T_{VJ} = 150^\circ C$ $T_{VJ} = 25^\circ C$		2.15 V
			2.50 V
V_{TO}	For power-loss calculations only		1.65 V
r_T	$T_{VJ} = T_{VJM}$		8.3 mΩ
R_{thJC}		0.7	K/W
R_{thCK}		0.05	K/W
t_{rr}	$I_F = 1 A$; $-di/dt = 200 A/\mu s$; $V_R = 30 V$; $T_{VJ} = 25^\circ C$	40	60 ns
I_{RM}	$V_R = 540 V$; $I_F = 60 A$; $-di_F/dt = 480 A/\mu s$ $L \leq 0.05 \mu H$; $T_{VJ} = 100^\circ C$	32	36 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

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

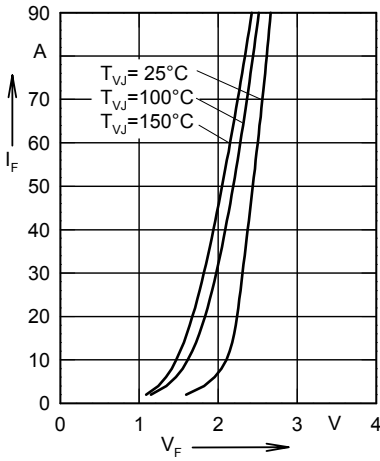


Fig. 1 Forward current versus voltage drop.

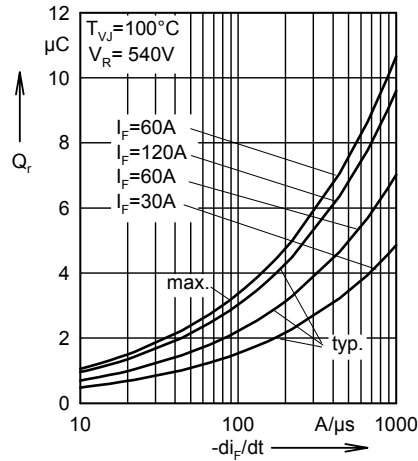


Fig. 2 Recovery charge versus $-di_F/dt$.

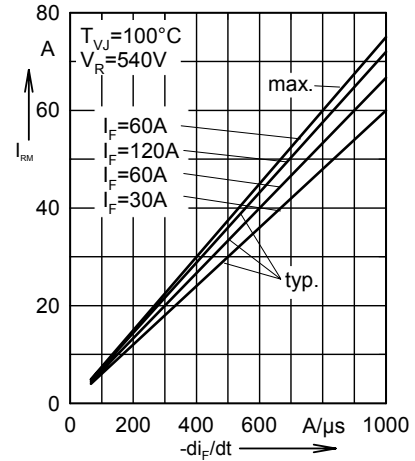


Fig. 3 Peak reverse current versus $-di_F/dt$.

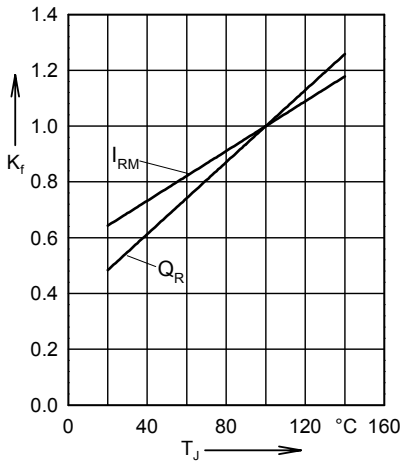


Fig. 4 Dynamic parameters versus junction temperature.

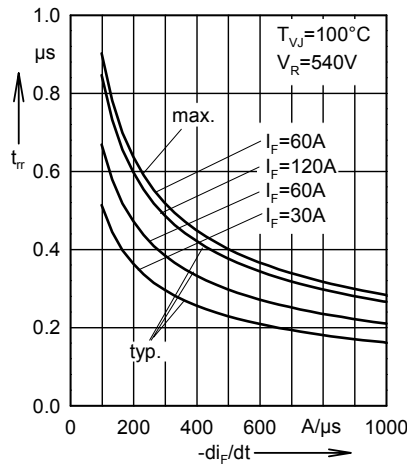


Fig. 5 Recovery time versus $-di_F/dt$.

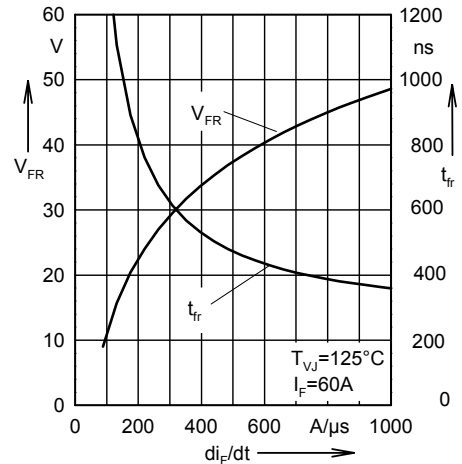


Fig. 6 Peak forward voltage versus di_F/dt .

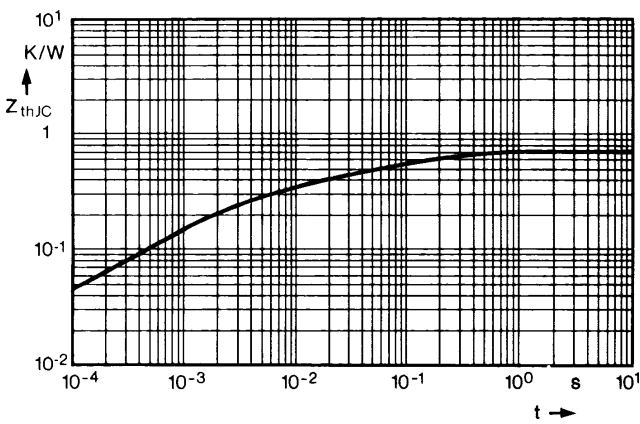
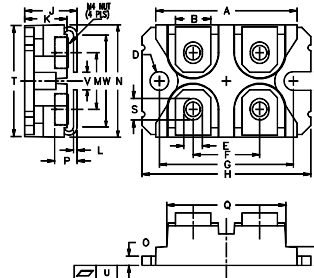


Fig. 7 Transient thermal impedance junction to case.

Dimensions



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

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	31.50	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