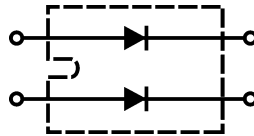


Fast Recovery Epitaxial Diode (FRED)

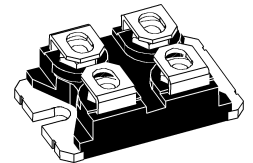
DSEI 2x 61

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

| 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

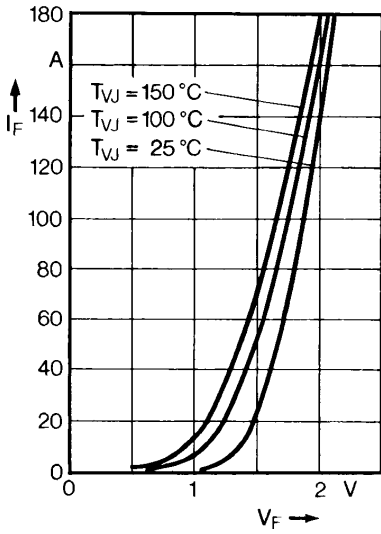


Fig. 1 Forward current versus voltage drop.

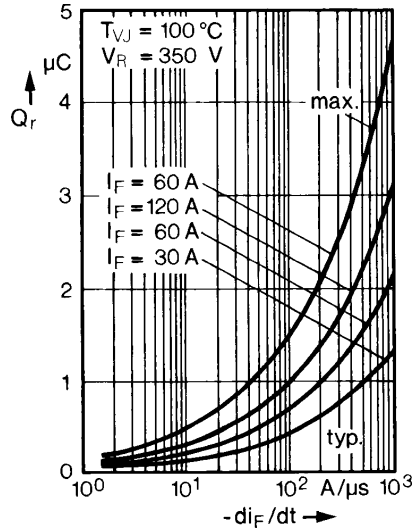


Fig. 2 Recovery charge versus $-di_F/dt$.

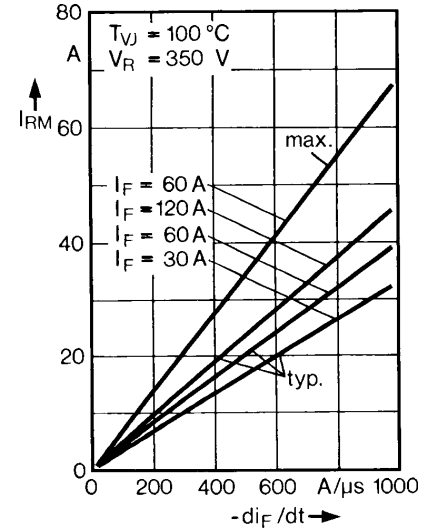


Fig. 3 Peak reverse current versus $-di_F/dt$.

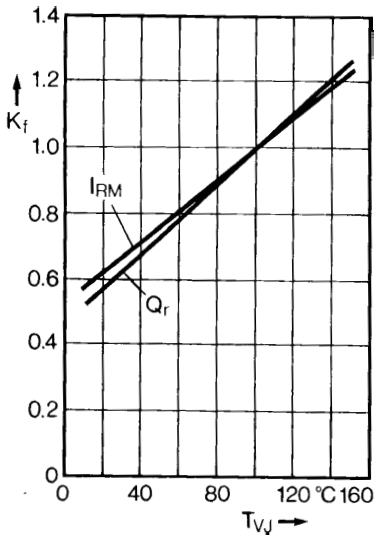


Fig. 4 Dynamic parameters versus junction temperature.

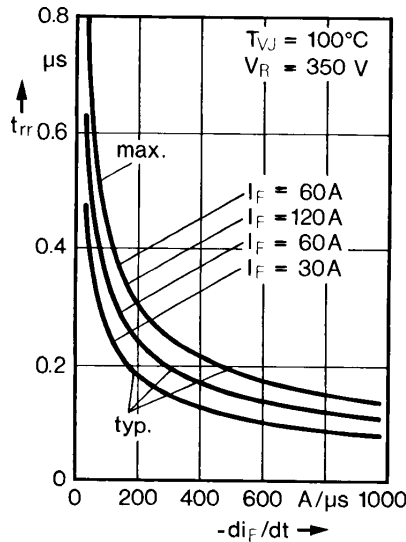


Fig. 5 Recovery time versus $-di_F/dt$.

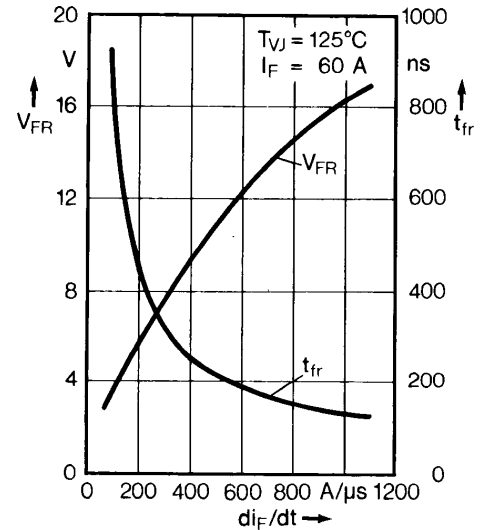


Fig. 6 Peak forward voltage versus di_F/dt .

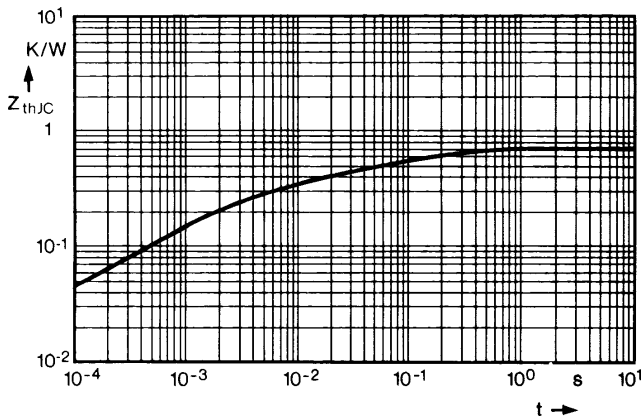
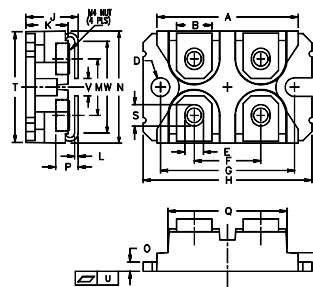


Fig. 7 Transient thermal impedance junction to case.

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 | 0.031 | 0.033 |