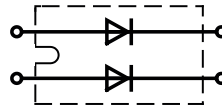


Fast Recovery Epitaxial Diode (FRED)

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

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


miniBLOC, SOT-227 B


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

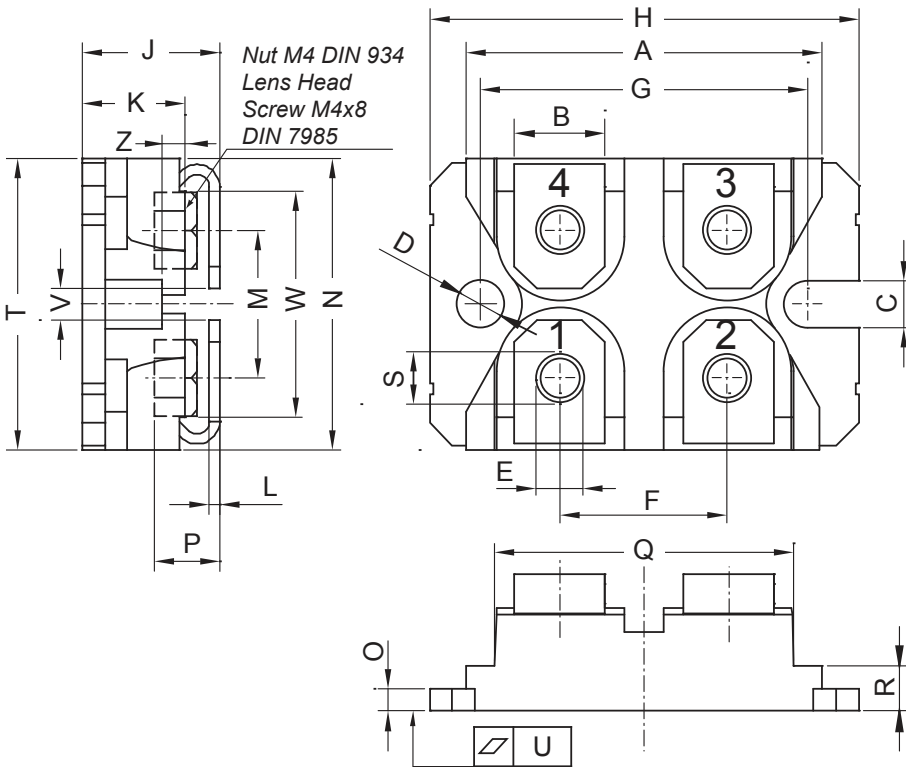
Advantages

- 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 | $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ | | 3 mA |
| | $T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$ | | 0.5 mA |
| | $T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$ | | 14 mA |
| V_F | $I_F = 60 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | | 1.8 V |
| | | | 2.3 V |
| V_{T0} | 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} | $I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ | 35 | 50 ns |
| I_{RM} | $V_R = 540 \text{ V}$; $I_F = 60 \text{ A}$; $-di_F/dt = 480 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$ | 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

miniBLOC, SOT-227 B



| 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 | 38.23 | 1.488 | 1.505 |
| J | 11.68 | 12.22 | 0.460 | 0.481 |
| K | 8.92 | 9.60 | 0.351 | 0.378 |
| L | 0.74 | 0.84 | 0.029 | 0.033 |
| M | 12.50 | 13.10 | 0.492 | 0.516 |
| N | 25.15 | 25.42 | 0.990 | 1.001 |
| O | 1.95 | 2.13 | 0.077 | 0.084 |
| P | 4.95 | 6.20 | 0.195 | 0.244 |
| Q | 26.54 | 26.90 | 1.045 | 1.059 |
| R | 3.94 | 4.42 | 0.155 | 0.167 |
| S | 4.55 | 4.85 | 0.179 | 0.191 |
| T | 24.59 | 25.25 | 0.968 | 0.994 |
| U | -0.05 | 0.10 | -0.002 | 0.004 |
| V | 3.20 | 5.50 | 0.126 | 0.217 |
| W | 19.81 | 21.08 | 0.780 | 0.830 |
| Z | 2.50 | 2.70 | 0.098 | 0.106 |

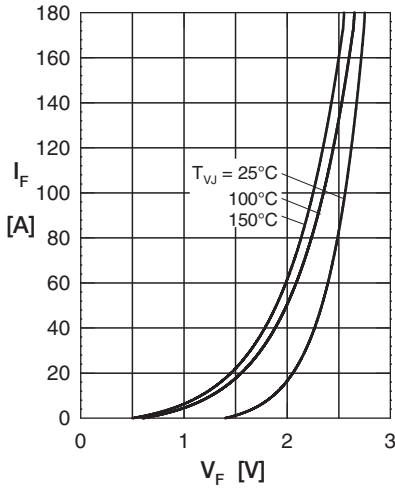


Fig. 1 Forward current I_F versus V_F

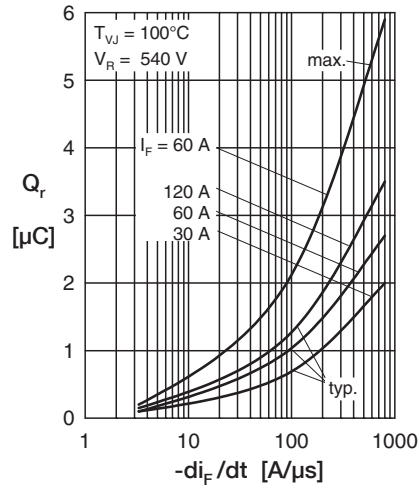


Fig. 2 Typ. recovery charge Q_r versus $-di_F/dt$

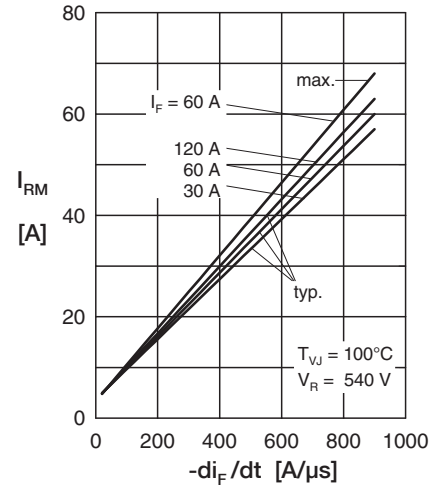


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

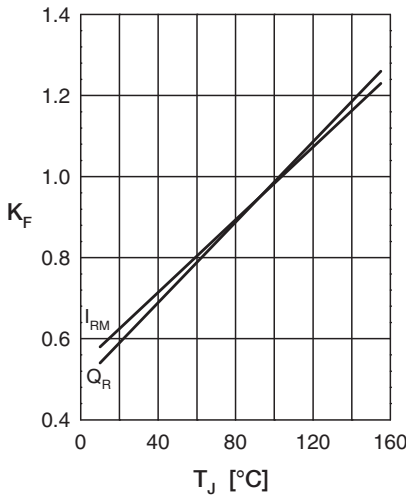


Fig. 4 Typ. dyn. parameters vs. junction temperature

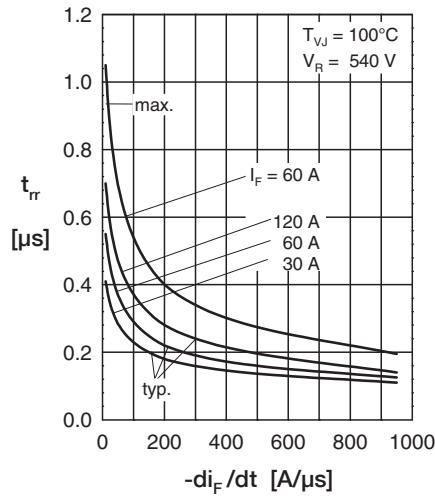


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

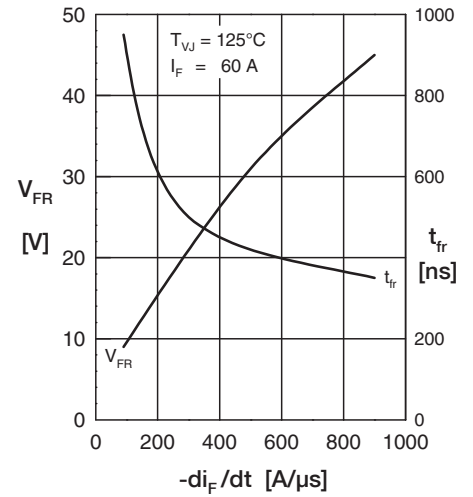


Fig. 6 Typ. peak forward voltage V_{FR} versus $-di_F/dt$

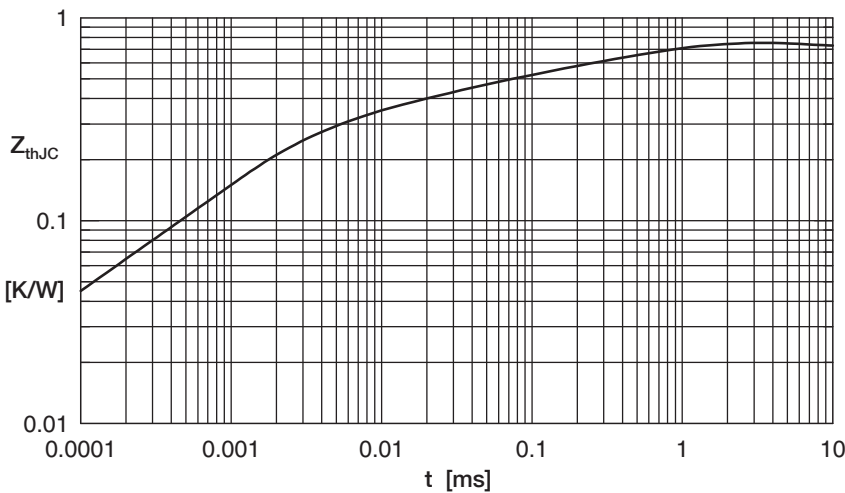


Fig. 7 Transient thermal impedance junction to case

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