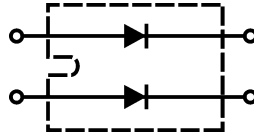


# Fast Recovery Epitaxial Diode (FRED)

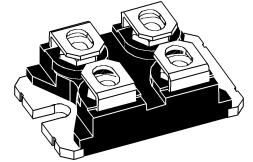
## DSEI 2x 101

$V_{RRM} = 1200\text{ V}$   
 $I_{FAVM} = 2 \times 91\text{ A}$   
 $t_{rr} = 40\text{ ns}$

| $V_{RSM}$ | $V_{RRM}$ | Type            |
|-----------|-----------|-----------------|
| V         | V         |                 |
| 1200      | 1200      | DSEI 2x 101-12A |



**miniBLOC, SOT-227 B**  
 E72873

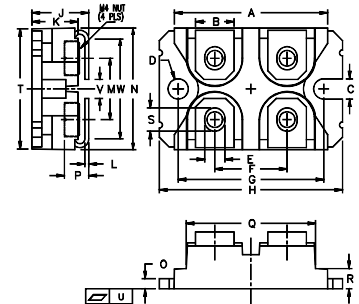


| Symbol           | Test Conditions   | Maximum Ratings (per diode) |                      |
|------------------|---|-----------------------------|----------------------|
| $I_{F(RMS)}$     | $T_{VJ} = T_{VJM}$  | 130                         | A                    |
| $I_{F(AVM)}^{①}$ | $T_C = 50^\circ\text{C}$ ; rectangular, $d = 0.5$                       | 91                          | A                    |
| $I_{FRM}$        | $t_p < 10\ \mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$ | TBD                         | A                    |
| $I_{FSM}$        | $T_{VJ} = 45^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine          | 900                         | A                    |
|                  | $t = 8.3\text{ ms}$ (60 Hz), sine                                       | 970                         | A                    |
|                  | $T_{VJ} = 150^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine         | 810                         | A                    |
|                  | $t = 8.3\text{ ms}$ (60 Hz), sine                                       | 870                         | A                    |
| $I^2t$           | $T_{VJ} = 45^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine          | 4100                        | $\text{A}^2\text{s}$ |
|                  | $t = 8.3\text{ ms}$ (60 Hz), sine                                       | 4000                        | $\text{A}^2\text{s}$ |
|                  | $T_{VJ} = 150^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine         | 3300                        | $\text{A}^2\text{s}$ |
|                  | $t = 8.3\text{ ms}$ (60 Hz), sine                                       | 3200                        | $\text{A}^2\text{s}$ |
| $T_{VJ}$         |   | -40...+150                  | $^\circ\text{C}$     |
| $T_{VJM}$        |   | 150                         | $^\circ\text{C}$     |
| $T_{stg}$        |   | -40...+150                  | $^\circ\text{C}$     |
| $P_{tot}$        | $T_C = 25^\circ\text{C}$  | 250                         | W                    |
| $V_{ISOL}$       | 50/60 Hz, RMS<br>$I_{ISOL} \leq 1\text{ mA}$                            | 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~
- matched diodes f. parallel operation
- Planar passivated chips
- two independent diodes
- Very short recovery time
- Extremely low switching losses
- Low  $I_{RM}$ -values
- Soft recovery behaviour

### 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 |

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

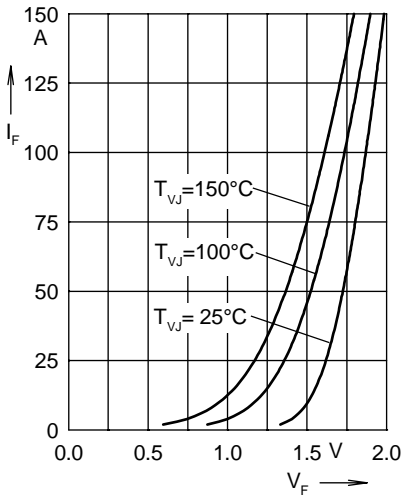


Fig. 1 Forward current  $I_F$  versus  $V_F$

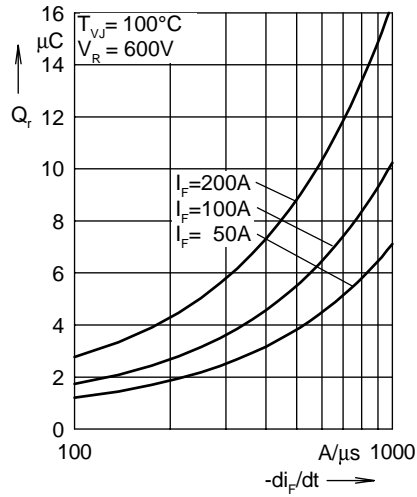


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

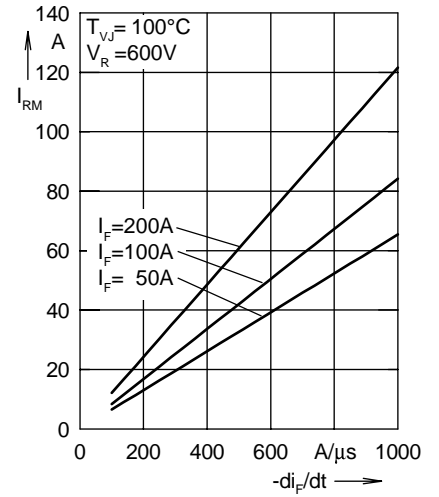


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

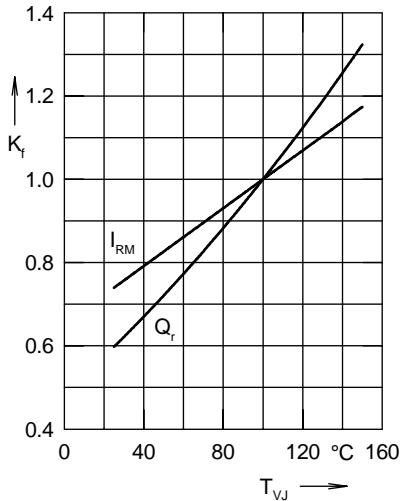


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

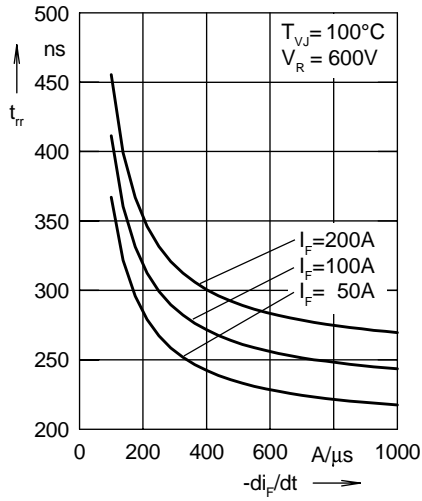


Fig. 5 Recovery time  $t_{rr}$  versus  $-di_F/dt$

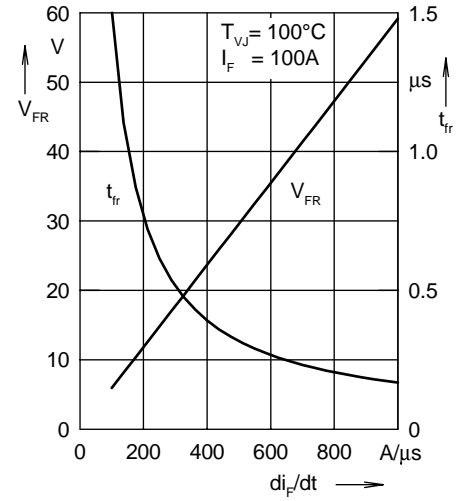


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{fr}$  versus  $di_F/dt$

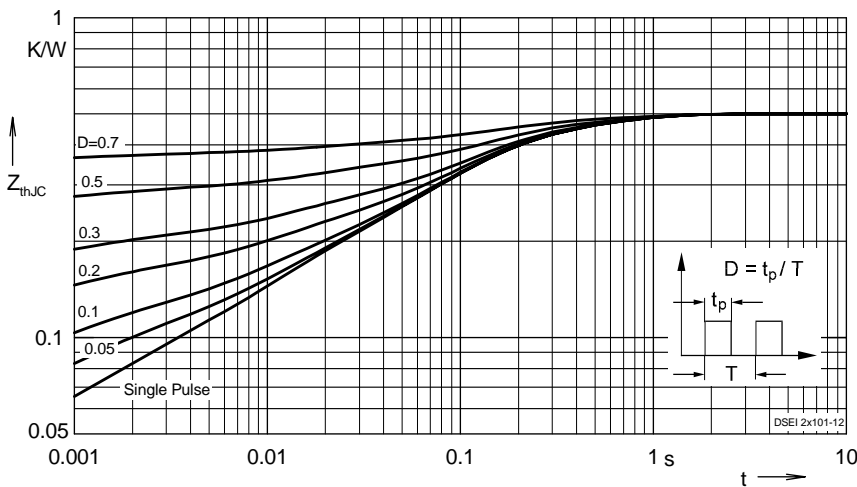


Fig. 7 Transient thermal impedance junction to case at various duty cycles

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.02            | 0.00002   |
| 2 | 0.05            | 0.00081   |
| 3 | 0.076           | 0.01      |
| 4 | 0.24            | 0.94      |
| 5 | 0.114           | 0.45      |