

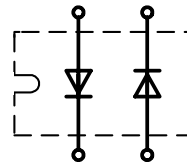
HiPerFRED™ Epitaxial Diode with soft recovery

$$I_{FAV} = 2 \times 60 \text{ A}$$

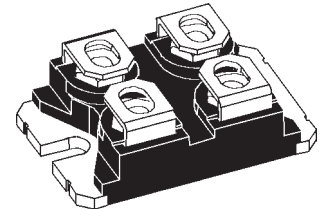
$$V_{RRM} = 1200 \text{ V}$$

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

| V_{RSM} V | V_{RRM} V | Type |
|----------------|----------------|----------------|
| 1200 | 1200 | DSEP 2x 60-12A |



miniBLOC, SOT-227 B



| Symbol | Conditions | Maximum Ratings | |
|------------|---|-----------------|------------------|
| I_{FRMS} | | 100 | A |
| I_{FAVM} | $T_C = 80^\circ\text{C}$; rectangular, $d = 0.5$ | 60 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine | 800 | A |
| E_{AS} | $T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 16 \text{ A}$; $L = 180 \mu\text{H}$ | 28 | mJ |
| I_{AR} | $V_A = 1.25 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive | 1.6 | A |
| T_{VJ} | | -40...+150 | $^\circ\text{C}$ |
| T_{VJM} | | 150 | $^\circ\text{C}$ |
| T_{stg} | | -40...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C = 25^\circ\text{C}$ | 200 | W |
| V_{ISOL} | 50/60 Hz, RMS $I_{ISOL} \leq 1 \text{ mA}$ | 2500 | V~ |
| M_d | mounting torque (M4) | 1.1-1.5/9-13 | Nm/lb.in. |
| | terminal connection torque (M4) | 1.1-1.5/9-13 | Nm/lb.in. |
| Weight | typical | 30 | g |

Features

- International standard package miniBLOC
- Isolation voltage 2500 V~
- UL registered E 72873
- 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
- Antisaturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

| Symbol | Conditions | Characteristic Values | |
|--------------------------|--|-----------------------|----------------|
| | | typ. | max. |
| I_R ① | $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$ | 1 | 4 mA |
| V_F ② | $I_F = 60 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | 1.70 | 2.42 V |
| R_{thJC} R_{thCH} | | 0.1 | 0.6 K/W K/W |
| t_{rr} | $I_F = 1 \text{ A}$; $-di/dt = 400 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ | 40 | ns |
| I_{RM} | $V_R = 100 \text{ V}$; $I_F = 200 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$ | 8 | A |

Pulse test: ① Pulse Width = 5 ms, Duty Cycle < 2.0 %
② Pulse Width = 300 μs , Duty Cycle < 2.0 %

Data according to IEC 60747 and per diode unless otherwise specified

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

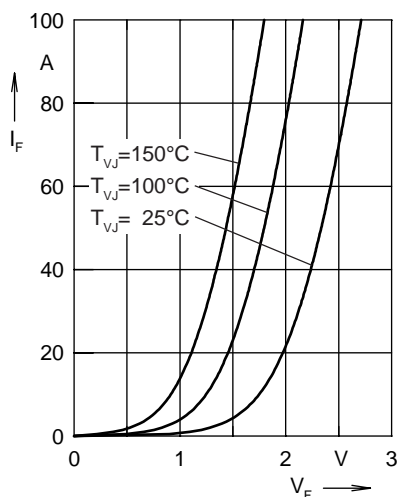
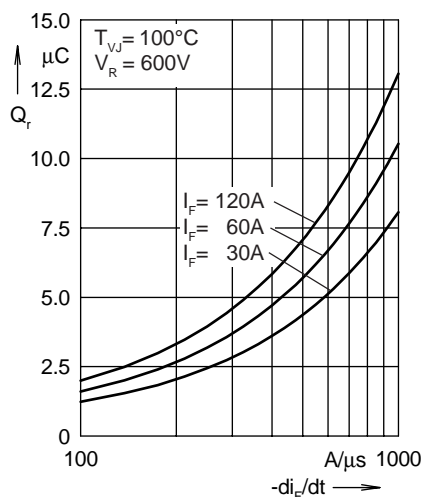
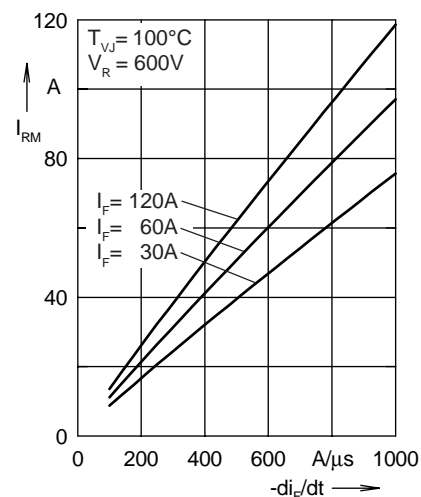
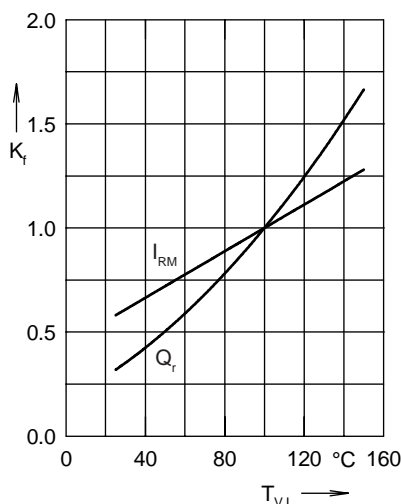
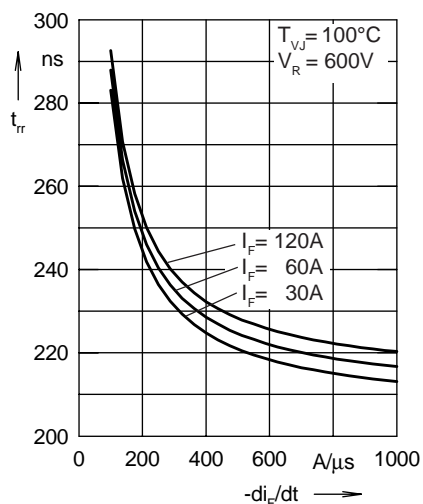
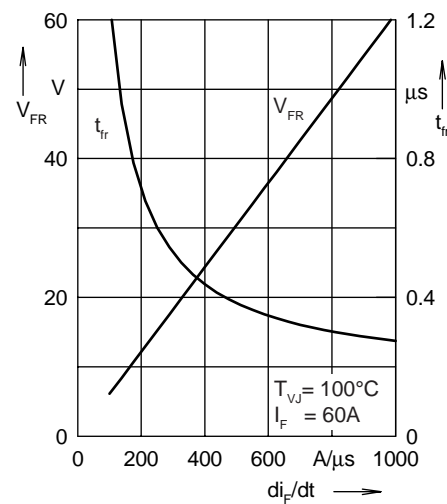
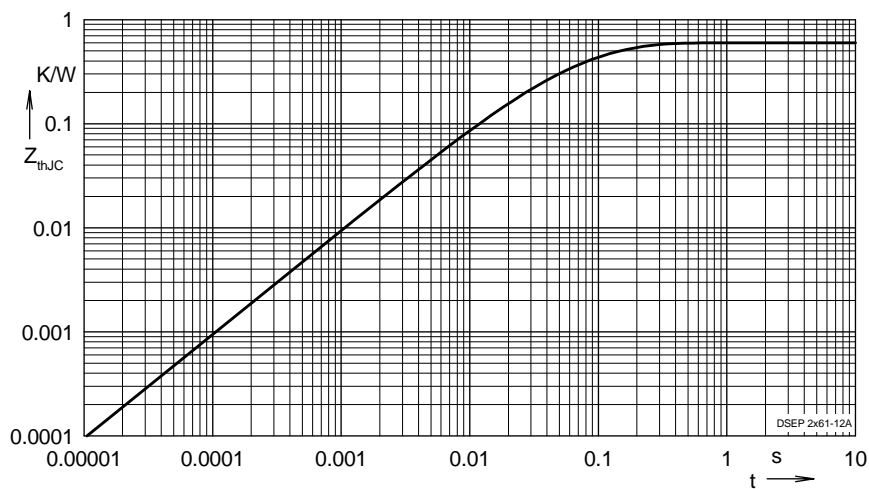

 Fig. 1 Forward current I_F versus V_F

 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_{tr} versus $-di_F/dt$

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


Fig. 7 Transient thermal resistance junction to case

 Constants for Z_{thJC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.212 | 0.0055 |
| 2 | 0.248 | 0.0092 |
| 3 | 0.063 | 0.0007 |
| 4 | 0.077 | 0.0391 |

NOTE: Fig. 2 to Fig. 6 shows typical values