

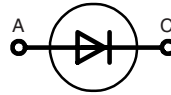
HiPerFRED™ Epitaxial Diode with soft recovery

$$I_{FAV} = 10 \text{ A}$$

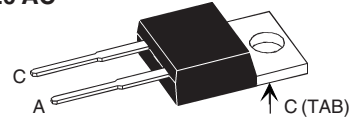
$$V_{RRM} = 600 \text{ V}$$

$$t_{rr} = 30 \text{ ns}$$

| V_{RSM} V | V_{RRM} V | Type |
|----------------|----------------|------------|
| 600 | 600 | DSEP 8-06B |



TO-220 AC



A = Anode, C = Cathode, TAB = Cathode

| Symbol | Conditions | Maximum Ratings | |
|------------|--|-----------------|------------------|
| I_{FRMS} | $T_C = 125^\circ\text{C}$; rectangular, $d = 0.5$ | 35 | A |
| I_{FAVM} | | 10 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine | 50 | A |
| E_{AS} | $T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 0.9 \text{ A}$; $L = 180 \mu\text{H}$ | 0.1 | mJ |
| I_{AR} | $V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive | 0.1 | A |
| T_{VJ} | | -55...+175 | $^\circ\text{C}$ |
| T_{VJM} | | 175 | $^\circ\text{C}$ |
| T_{stg} | | -55...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C = 25^\circ\text{C}$ | 60 | W |
| M_d | mounting torque | 0.4...0.6 | Nm |
| Weight | typical | 2 | g |

Features

- International standard package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{FRM} -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

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_{FRM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Dimensions see Outlines.pdf

| Symbol | Conditions | Characteristic Values | |
|------------|---|-----------------------|---------------|
| | | typ. | max. |
| I_R ① | $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ | 60 | μA |
| | $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$ | 0.25 | mA |
| V_F ② | $I_F = 10 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | 1.66 | V |
| | | 2.66 | V |
| R_{thJC} | | 2.5 | K/W |
| R_{thCH} | | 0.5 | K/W |
| t_{rr} | $I_F = 1 \text{ A}$; $-di/dt = 50 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ | 30 | ns |
| I_{RM} | $V_R = 100 \text{ V}$; $I_F = 12 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$ | 2.4 | 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.

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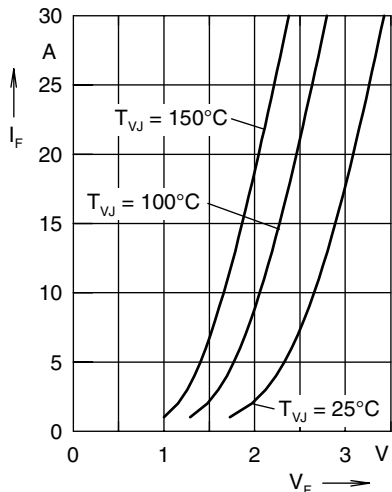


Fig. 1 Forward current I_F versus V_F

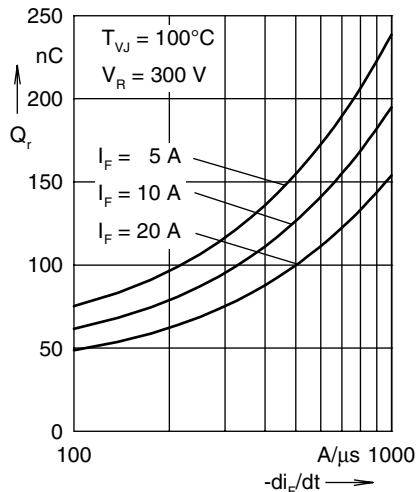


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

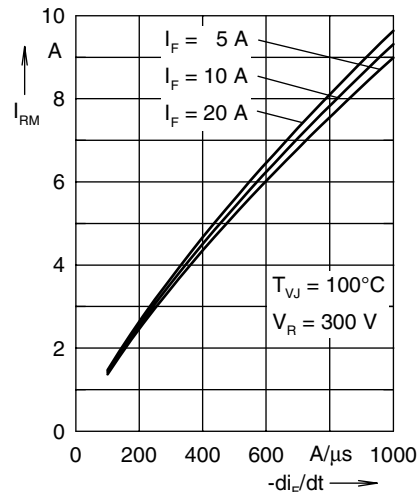


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

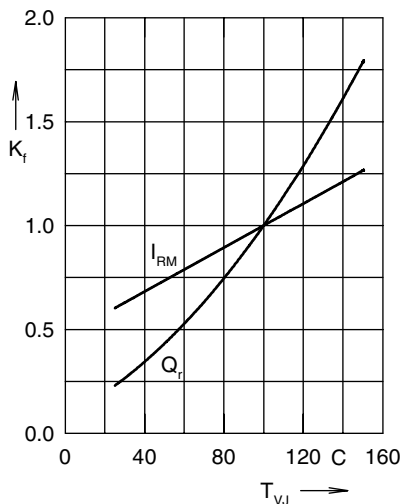


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

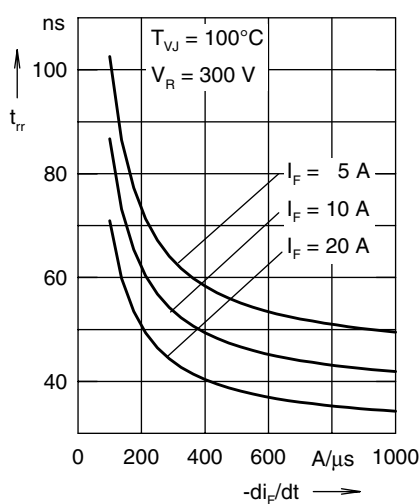


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

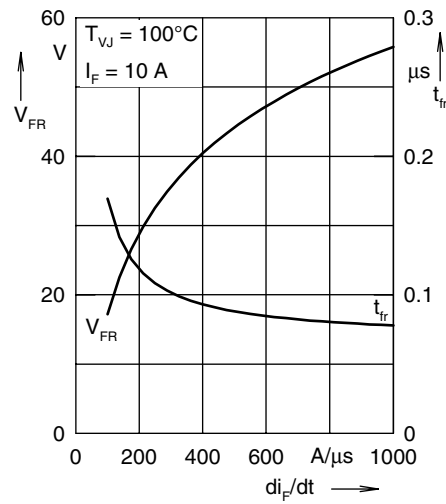


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus di_F/dt

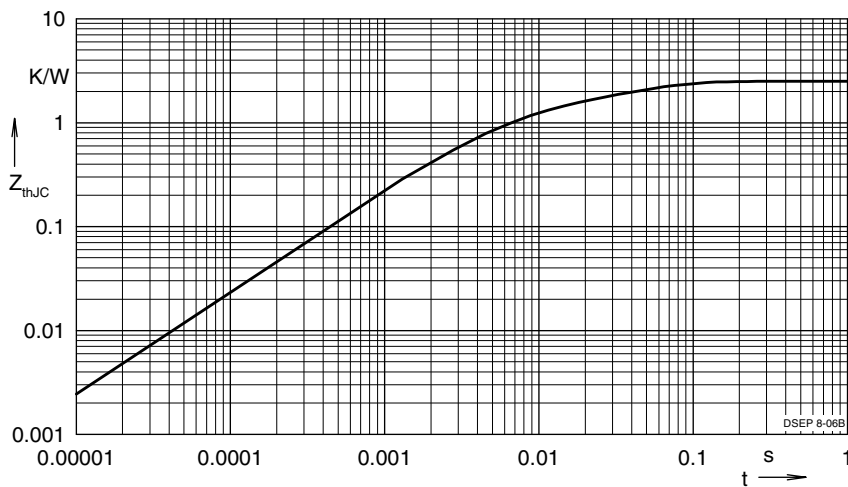


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 1.449 | 0.0052 |
| 2 | 0.5578 | 0.0003 |
| 3 | 0.4931 | 0.0169 |

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