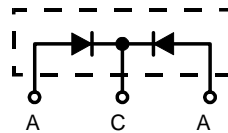
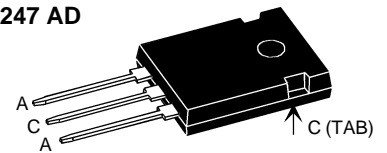


HiPerFRED™ Epitaxial Diode

with common cathode and soft recovery

$I_{FAV} = 2 \times 15 \text{ A}$
 $V_{RRM} = 300 \text{ V}$
 $t_{rr} = 30 \text{ ns}$

| V_{RSM} | V_{RRM} | Type |
|-----------|-----------|-------------|
| V | V | |
| 300 | 300 | DSEC 30-03A |


TO-247 AD


A = Anode, C = Cathode, TAB = Cathode

| Symbol | Conditions | Maximum Ratings | |
|------------|--|-----------------|------------------|
| I_{FRMS} | | 50 | A |
| I_{FAVM} | $T_C = 140^\circ\text{C}$; rectangular, $d = 0.5$ | 15 | A |
| I_{FSM} | $T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine | 110 | A |
| E_{AS} | $T_{VJ} = 25^\circ\text{C}$; non-repetitive $I_{AS} = 2.5 \text{ A}$; $L = 180 \mu\text{H}$ | 0.8 | mJ |
| I_{AR} | $V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$; repetitive | 0.3 | A |
| T_{VJ} | | -55...+175 | $^\circ\text{C}$ |
| T_{VJM} | | 175 | $^\circ\text{C}$ |
| T_{stg} | | -55...+150 | $^\circ\text{C}$ |
| P_{tot} | $T_C = 25^\circ\text{C}$ | 95 | W |
| M_d | mounting torque | 0.8...1.2 | Nm |
| Weight | typical | 6 | g |

Features

- International standard package
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -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_{RM} 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 | $T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 150^\circ\text{C}$ $V_R = V_{RRM}$ | | 100 μA 0.5 mA |
| V_F ② | $I_F = 15 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$ | | 1.20 V 1.67 V |
| R_{thJC} | | | 1.6 K/W |
| R_{thCH} | | 0.25 | K/W |
| t_{rr} | $I_F = 1 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$ | 30 | ns |
| I_{RM} | $V_R = 100 \text{ V}$; $I_F = 25 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 100^\circ\text{C}$ | | 2.7 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.

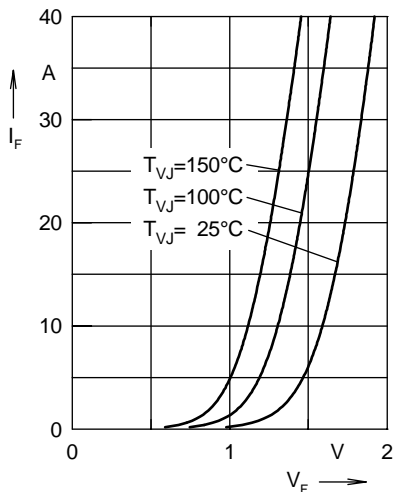


Fig. 1 Forward current I_F versus V_F

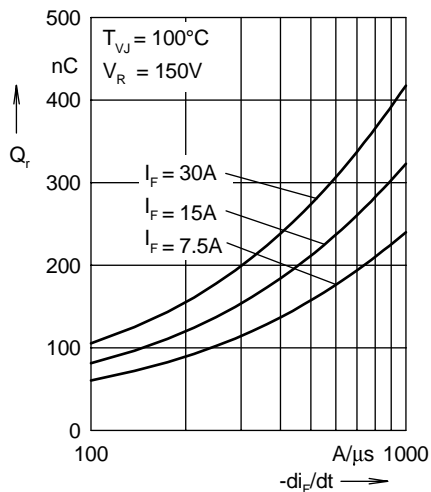


Fig. 2 Reverse recovery charge Q_r

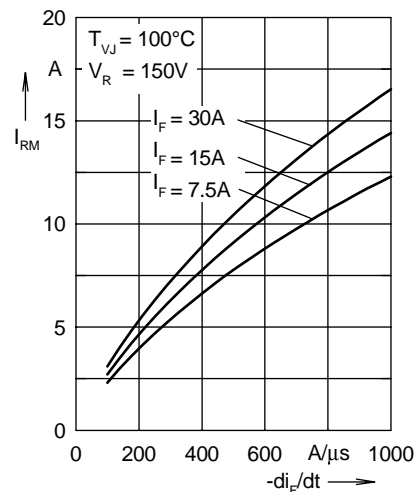


Fig. 3 Peak reverse current I_{RM}

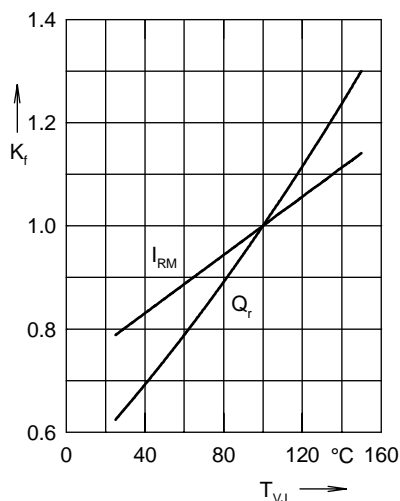


Fig. 4 Dynamic parameters Q_r , I_{RM}

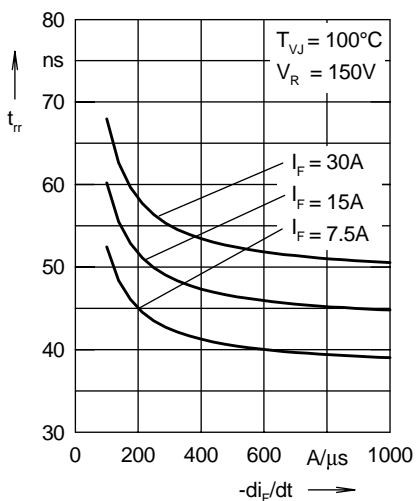


Fig. 5 Recovery time t_{rr} versus $-di_F/dt$

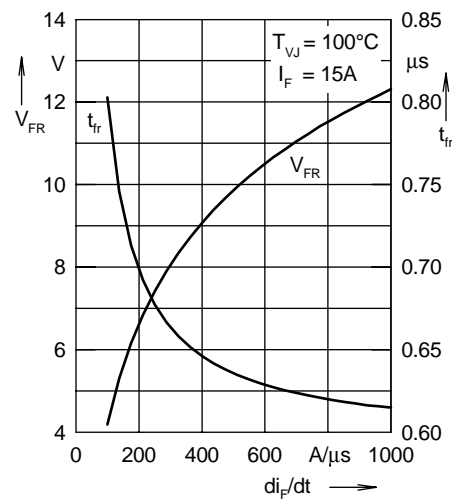


Fig. 6 Peak forward voltage V_{FR} and t_{rr}

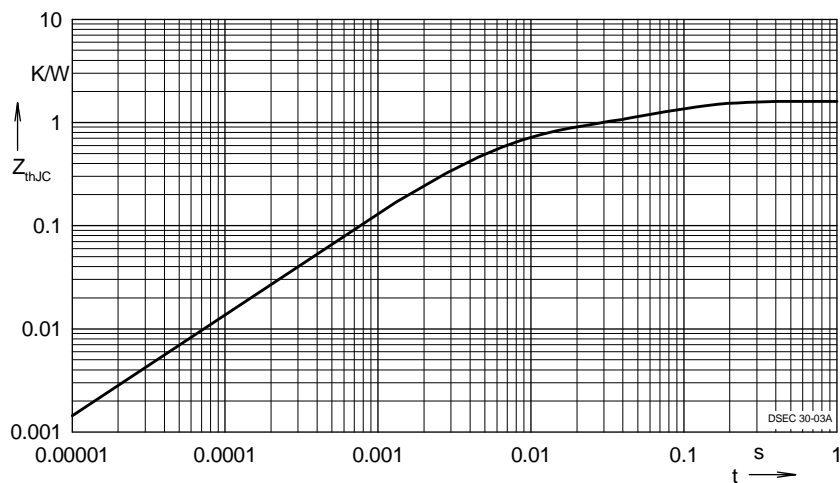


Fig. 7 Transient thermal resistance junction to case

Constants for Z_{thJC} calculation:

| i | R_{thi} (K/W) | t_i (s) |
|---|-----------------|-----------|
| 1 | 0.851 | 0.005 |
| 2 | 0.328 | 0.0003 |
| 3 | 0.421 | 0.041 |

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