

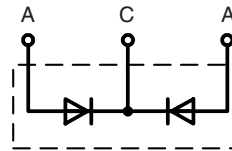
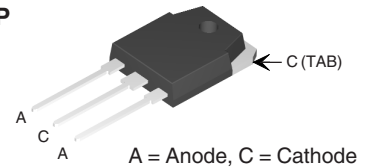
# HiPerFRED™ Epitaxial Diode

## with common cathode and soft recovery

$I_{FAV} = 2 \times 30 \text{ A}$   
 $V_{RRM} = 200 \text{ V}$   
 $t_{rr} = 25 \text{ ns}$

### Preliminary Data

| $V_{RSM}$ | $V_{RRM}$ | Type         |
|-----------|-----------|--------------|
| V         | V         |              |
| 200       | 200       | DSEC 60-02AQ |


**TO-3 P**


| Symbol        | Conditions   | Maximum Ratings |                  |
|---------------|--|-----------------|------------------|
| $I_{FRMS}$    |  | 70              | A                |
| $I_{FAVM}$    | $T_C = 145^\circ\text{C}$ ; rectangular, $d = 0.5$   | 30              | A                |
| $I_{FSM}$     | $T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine                              | 325             | A                |
| $E_{AS}$      | $T_{VJ} = 25^\circ\text{C}$ ; non-repetitive<br>$I_{AS} = 3 \text{ A}$ ; $L = 180 \mu\text{H}$ | 1.2             | 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      | $^\circ\text{C}$ |
| $P_{tot}$     | $T_C = 25^\circ\text{C}$   | 165             | W                |
| $M_d$         | mounting torque  | 0.8...1.2       | Nm               |
| $F_c$         | mounting force with clip   | 20...120        | N                |
| <b>Weight</b> | 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

| Symbol     | Conditions  | Characteristic Values |                   |
|------------|---|-----------------------|-------------------|
|            |   | typ.                  | max.              |
| $I_R$ ①    | $V_R = V_{RRM}$ ; $T_{VJ} = 25^\circ\text{C}$   |                       | 10 $\mu\text{A}$  |
|            | $V_R = V_{RRM}$ ; $T_{VJ} = 150^\circ\text{C}$  |                       | 200 $\mu\text{A}$ |
| $V_F$ ②    | $I_F = 30 \text{ A}$ ; $T_{VJ} = 150^\circ\text{C}$   |                       | 0.95 V            |
|            | $T_{VJ} = 25^\circ\text{C}$   |                       | 1.20 V            |
| $R_{thJC}$ |   |                       | 0.9 K/W           |
| $R_{thCH}$ |   | 0.25                  | K/W               |
| $t_{rr}$   | $I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$ ;<br>$V_R = 30 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$      | 25                    | ns                |
| $I_{RM}$   | $V_R = 100 \text{ V}$ ; $I_F = 50 \text{ A}$ ;<br>$-di_F/dt = 100 \text{ A}/\mu\text{s}$ ; $T_{VJ} = 100^\circ\text{C}$ |                       | 4 A               |

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

② Pulse Width = 300  $\mu\text{s}$ , 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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