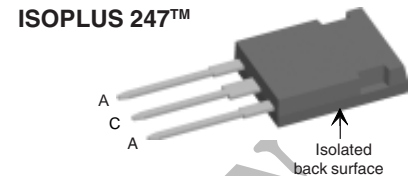
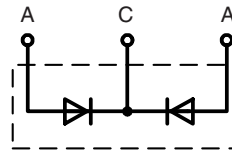


# HiPerFRED™ Epitaxial Diode

## with common cathode and soft recovery

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

| $V_{RSM}$ | $V_{RRM}$ | Type         |
|-----------|-----------|--------------|
| V         | V         |              |
| 300       | 300       | DSEC 60-03AR |



A = Anode, C = Cathode

| Symbol     | Conditions   | Maximum Ratings |                  |
|------------|--|-----------------|------------------|
| $I_{FRMS}$ |  | 70              | A                |
| $I_{FAVM}$ | $T_C = 135^\circ\text{C}$ ; rectangular, $d = 0.5$   | 30              | A                |
| $I_{FSM}$  | $T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine                              | 300             | 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               |
| $I_{AR}$   | $V_A = 1.5 \cdot V_{R \text{ typ.}}$ ; $f = 10 \text{ kHz}$ ; 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                |
| $F_C$      | mounting force with clip   | 20...120        | N                |
| $V_{ISOL}$ | 50/60 Hz, RMS, $t = 1 \text{ minute}$ , leads-to-tab   | 2500            | V~               |
| 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
- Isolated and UL registered E153432

### 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                  | $V_R = V_{RRM}$ ; $T_{VJ} = 25^\circ\text{C}$<br>$T_{VJ} = 150^\circ\text{C}$   | 10<br>1               | $\mu\text{A}$<br>mA |
| $V_F$ ②                  | $I_F = 30 \text{ A}$ ; $T_{VJ} = 150^\circ\text{C}$<br>$T_{VJ} = 25^\circ\text{C}$                                    | 0.91<br>1.25          | V<br>V              |
| $R_{thJC}$<br>$R_{thCH}$ |   | 0.25                  | K/W<br>K/W          |
| $t_{rr}$                 | $I_F = 1 \text{ A}$ ; $-di/dt = 200 \text{ A}/\mu\text{s}$<br>$V_R = 30 \text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$      | 30                    | ns                  |
| $I_{RM}$                 | $V_R = 100 \text{ V}$ ; $I_F = 50 \text{ A}$ ; $-di_F/dt = 100 \text{ A}/\mu\text{s}$<br>$T_{VJ} = 100^\circ\text{C}$ | 7                     | 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

**Recommended replacement:**  
**DPG 60C300HJ**

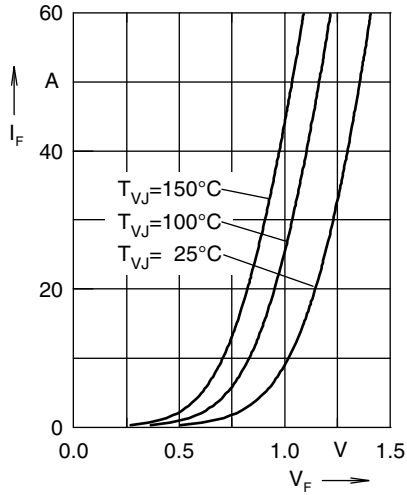


Fig. 1 Forward current  $I_F$  versus  $V_F$

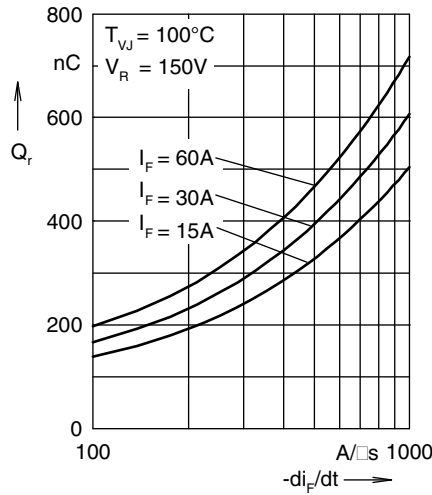


Fig. 2 Reverse recovery charge  $Q_r$  versus  $-di_F/dt$

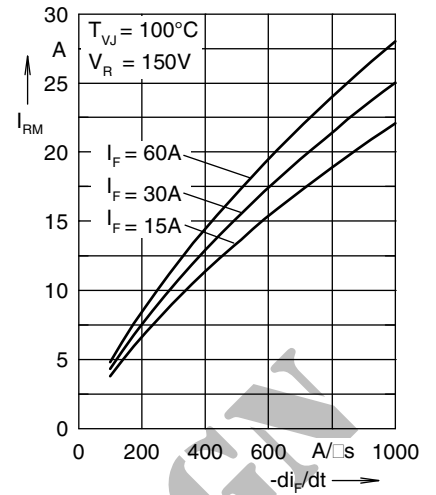


Fig. 3 Peak reverse current  $I_{RM}$  versus  $-di_F/dt$

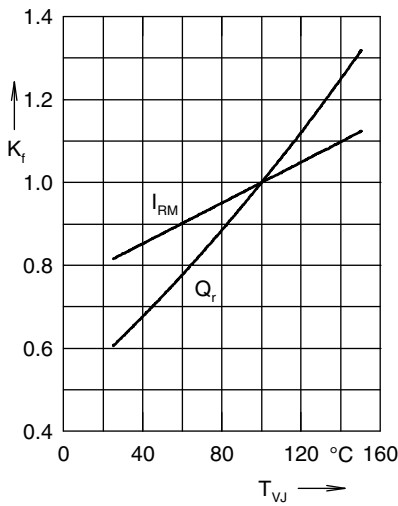


Fig. 4 Dynamic parameters  $Q_r$ ,  $I_{RM}$  versus  $T_{VJ}$

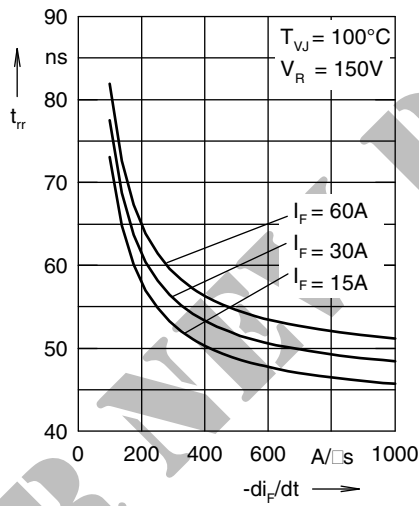


Fig. 5 Recovery time  $t_{tr}$  versus  $-di_F/dt$

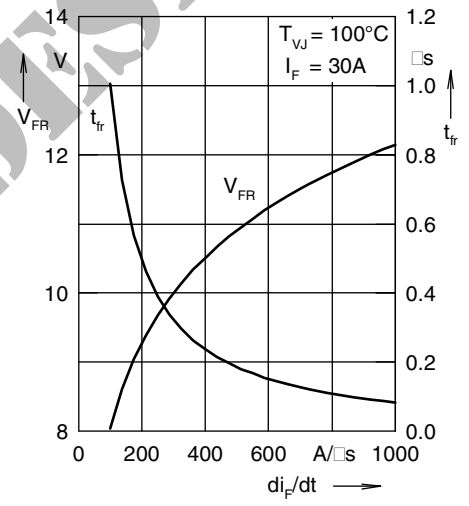


Fig. 6 Peak forward voltage  $V_{FR}$  and  $t_{tr}$  versus  $di_F/dt$

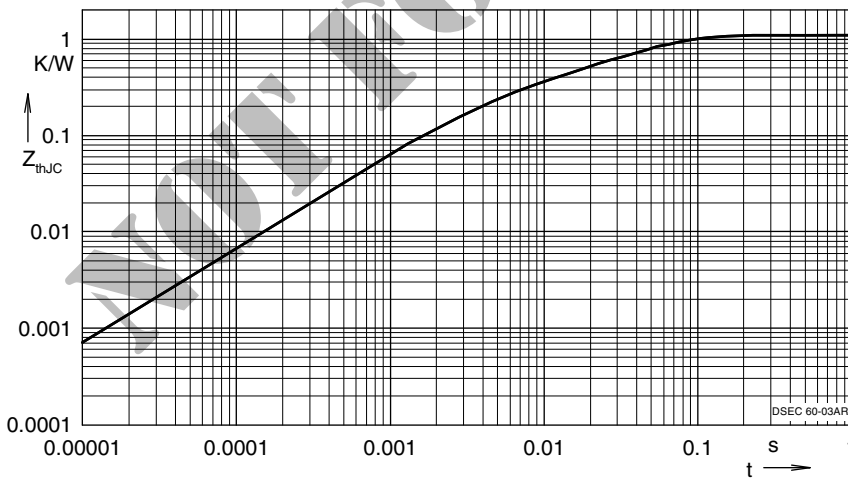


Fig. 7 Transient thermal resistance junction to case

Constants for  $Z_{thJC}$  calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|-----------------|-----------|
| 1 | 0.368           | 0.0052    |
| 2 | 0.1417          | 0.0003    |
| 3 | 0.0295          | 0.0004    |
| 4 | 0.5604          | 0.0092    |

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