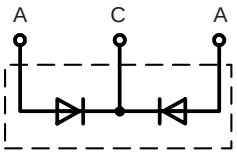
# HiPerFRED™ Epitaxial Diode
## with common cathode and soft recovery

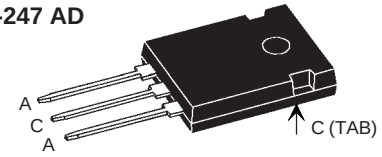
Preliminary Data

$I_{FAV}$ = 2x30 A
$V_{RRM}$ = 400 V
$t_{rr}$ = 30 ns

| $V_{RSM}$ V | $V_{RRM}$ V | Type |
|---|---|---|
| 400 | 400 | DSEC 60-04A |




TO-247 AD




A = Anode, C = Cathode, TAB = Cathode

| Symbol | Conditions | Maximum Ratings | |
|---|---|---|---|
| $I_{FRMS}$ | | 70 | A |
| $I_{FAVM}$ | $T_C$ = 140°C; rectangular, d = 0.5 | 30 | A |
| $I_{FSM}$ | $T_{VJ}$ = 45°C; $t_p$ = 10 ms (50 Hz), sine | tbd | A |
| $E_{AS}$ | $T_{VJ}$ = 25°C; non-repetitive<br>$I_{AS}$ = tbd A; L = tbd µH | tbd | mJ |
| $I_{AR}$ | $V_A = 1.5 \cdot V_R$ typ.; f = 10 kHz; repetitive | tbd | A |
| $T_{VJ}$ | | -55...+175 | °C |
| $T_{VJM}$ | | 175 | °C |
| $T_{stg}$ | | -55...+150 | °C |
| $P_{tot}$ | $T_C$ = 25°C | 165 | W |
| $M_d$ | mounting torque | 0.8...1.2 | Nm |
| Weight | typical | 6 | g |

| Symbol | Conditions | Characteristic Values typ. | max. | |
|---|---|---|---|---|
| $I_R$ ① | $T_{VJ}$ = 25°C $V_R = V_{RRM}$ | | 250 | µA |
| | $T_{VJ}$ = 150°C $V_R = V_{RRM}$ | | 1 | mA |
| $V_F$ ② | $I_F$ = 30 A; $T_{VJ}$ = 150°C | | 1.09 | V |
| | $T_{VJ}$ = 25°C | | 1.49 | V |
| $R_{thJC}$ | | | 0.9 | K/W |
| $R_{thCH}$ | | 0.25 | | K/W |
| $t_{rr}$ | $I_F$ = 1 A; -di/dt = 300 A/µs;<br>$V_R$ = 30 V; $T_{VJ}$ = 25°C | 30 | | ns |
| $I_{RM}$ | $V_R$ = 100 V; $I_F$ = 50 A; $-di_F/dt$ = 100 A/µs<br>$T_{VJ}$ = 100°C | 5.5 | 6.8 | A |

### 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**

**Recommended replacement:**
**DPG 60C400HB**

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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NOT FOR NEW DESIGN

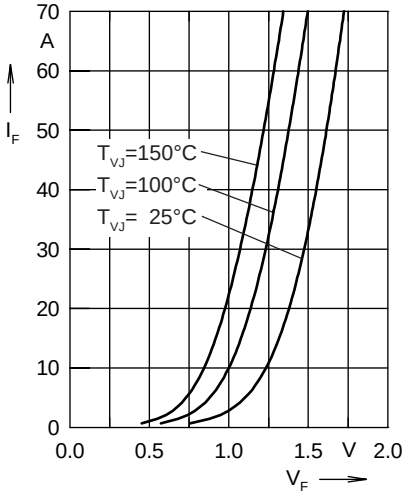



Fig. 1 Forward current $I_F$ versus $V_F$

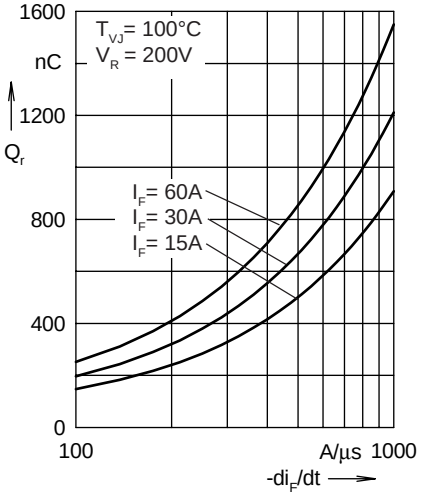



Fig. 2 Reverse recovery charge $Q_r$ versus $-di_F/dt$

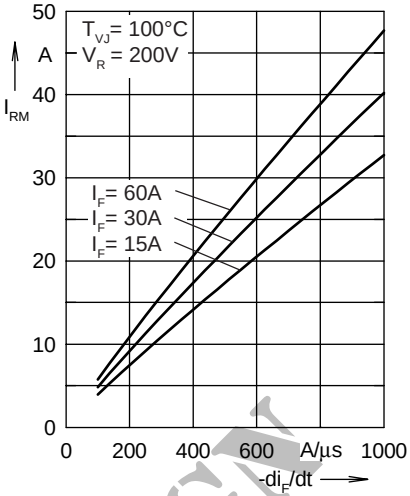



Fig. 3 Peak reverse current $I_{RM}$ versus $-di_F/dt$

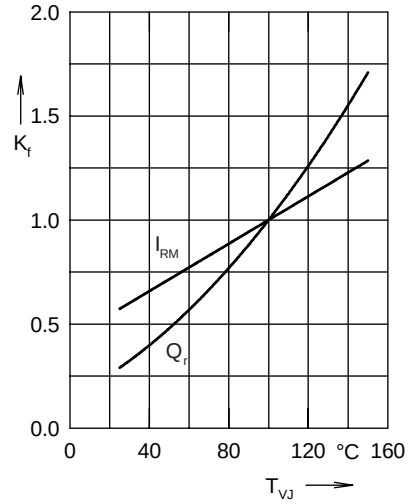



Fig. 4 Dynamic parameters $Q_r$, $I_{RM}$ versus $T_{VJ}$

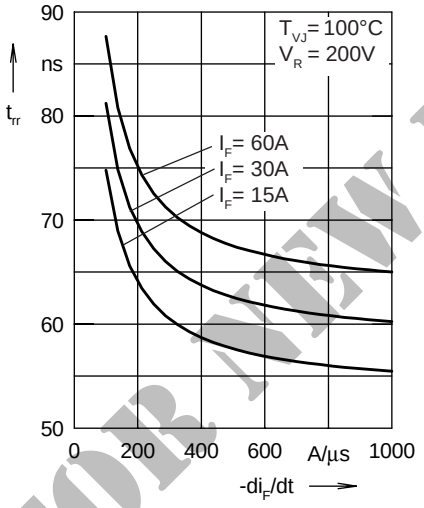



Fig. 5 Recovery time $t_{rr}$ versus $-di_F/dt$

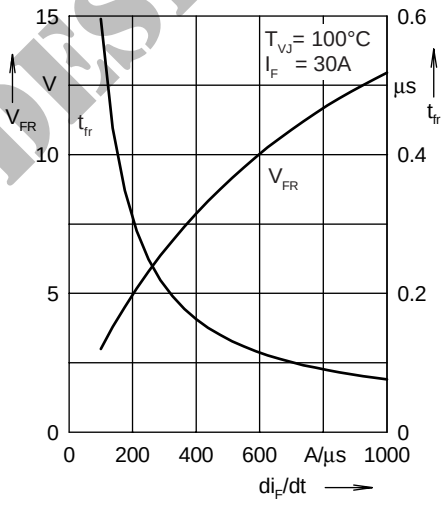



Fig. 6 Peak forward voltage $V_{FR}$ and $t_{fr}$ versus $di_F/dt$

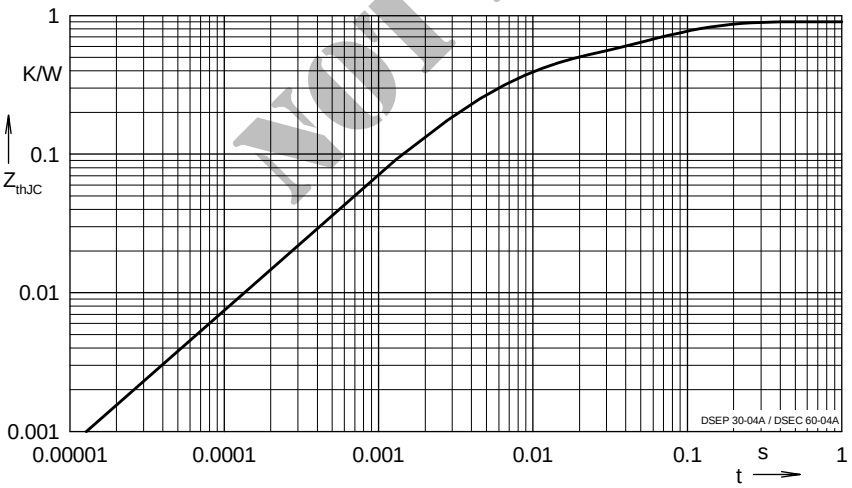



Fig. 7 Transient thermal resistance junction to case

Constants for $Z_{thJC}$ calculation:

| i | $R_{thi}$ (K/W) | $t_i$ (s) |
|---|---|---|
| 1 | 0.465 | 0.0052 |
| 2 | 0.179 | 0.0003 |
| 3 | 0.256 | 0.0396 |

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


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