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Stocking Distributor

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[IXYS Corporation](#)
[DPF60C300HB](#)

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DPF60C300HB

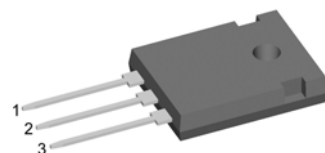
HiPerFRED²

$$\begin{aligned} V_{RRM} &= 300\text{ V} \\ I_{FAV} &= 2 \times 30\text{ A} \\ t_{rr} &= 55\text{ ns} \end{aligned}$$

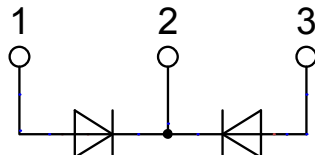
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DPF60C300HB



Backside: cathode



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- 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

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: TO-247

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

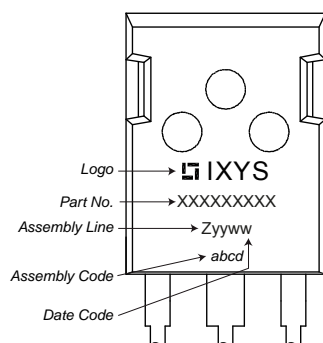
| Fast Diode | | | | Ratings | | | | |
|-------------------|--|--|-------------------------|-------------------------|------|------|------|----|
| Symbol | Definition | Conditions | | min. | typ. | max. | Unit | |
| V _{RSM} | max. non-repetitive reverse blocking voltage | T _{VJ} = 25°C | | | | 300 | V | |
| V _{RRM} | max. repetitive reverse blocking voltage | T _{VJ} = 25°C | | | | 300 | V | |
| I _R | reverse current, drain current | V _R = 300 V | T _{VJ} = 25°C | | | 5 | μA | |
| | | V _R = 300 V | T _{VJ} = 150°C | | | 0.25 | mA | |
| V _F | forward voltage drop | I _F = 30 A | T _{VJ} = 25°C | | | 1.16 | V | |
| | | I _F = 60 A | | | | 1.34 | V | |
| | | I _F = 30 A | T _{VJ} = 150°C | | | 0.97 | V | |
| | | I _F = 60 A | | | | 1.18 | V | |
| I _{FAV} | average forward current | T _C = 145°C rectangular d = 0.5 | T _{VJ} = 175°C | | | 30 | A | |
| V _{F0} | threshold voltage | } for power loss calculation only | | T _{VJ} = 175°C | | 0.72 | V | |
| r _F | slope resistance | | | | | 6.7 | mΩ | |
| R _{thJC} | thermal resistance junction to case | | | | | 0.95 | K/W | |
| R _{thCH} | thermal resistance case to heatsink | | | | 0.25 | | K/W | |
| P _{tot} | total power dissipation | T _C = 25°C | | | | 160 | W | |
| I _{FSM} | max. forward surge current | t = 10 ms; (50 Hz), sine; V _R = 0 V | | T _{VJ} = 45°C | | 400 | A | |
| C _J | junction capacitance | V _R = 150 V f = 1 MHz | | T _{VJ} = 25°C | 42 | | pF | |
| I _{RM} | max. reverse recovery current | } I _F = 30 A; V _R = 200 V -di _F /dt = 200 A/μs | | T _{VJ} = 25°C | 6 | | A | |
| t _{rr} | reverse recovery time | | | T _{VJ} = 125°C | 10 | | A | |
| | | | | T _{VJ} = 25°C | | 55 | | ns |
| | | | | T _{VJ} = 125°C | | 85 | | ns |



DPF60C300HB

| Package TO-247 | | | Ratings | | | |
|----------------|------------------------------|----------------------------|---------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal ¹⁾ | | | 50 | A |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | °C |
| T_{op} | operation temperature | | -55 | | 150 | °C |
| T_{stg} | storage temperature | | -55 | | 150 | °C |
| Weight | | | | 6 | | g |
| M_D | mounting torque | | 0.8 | | 1.2 | Nm |
| F_C | mounting force with clip | | 20 | | 120 | N |

Product Marking



Part number

D = Diode
P = HiPerFRED
F = ultra fast
60 = Current Rating [A]
C = Common Cathode
300 = Reverse Voltage [V]
HB = TO-247AD (3)

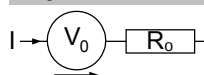
| Ordering | Part Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-------------|--------------------|---------------|----------|----------|
| Standard | DPF60C300HB | DPF60C300HB | Tube | 30 | 506882 |

| Similar Part | Package | Voltage class |
|--------------|----------------------|---------------|
| DPG60C300HB | TO-247AD (3) | 300 |
| DPG60C300QB | TO-3P (3) | 300 |
| DPG60C300PC | TO-263AB (D2Pak) (2) | 300 |
| DPG60C300HJ | ISOPLUS247 (3) | 300 |
| DPG80C300HB | TO-247AD (3) | 300 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175\text{ °C}$



Fast Diode

$V_{0\max}$ threshold voltage

0.72

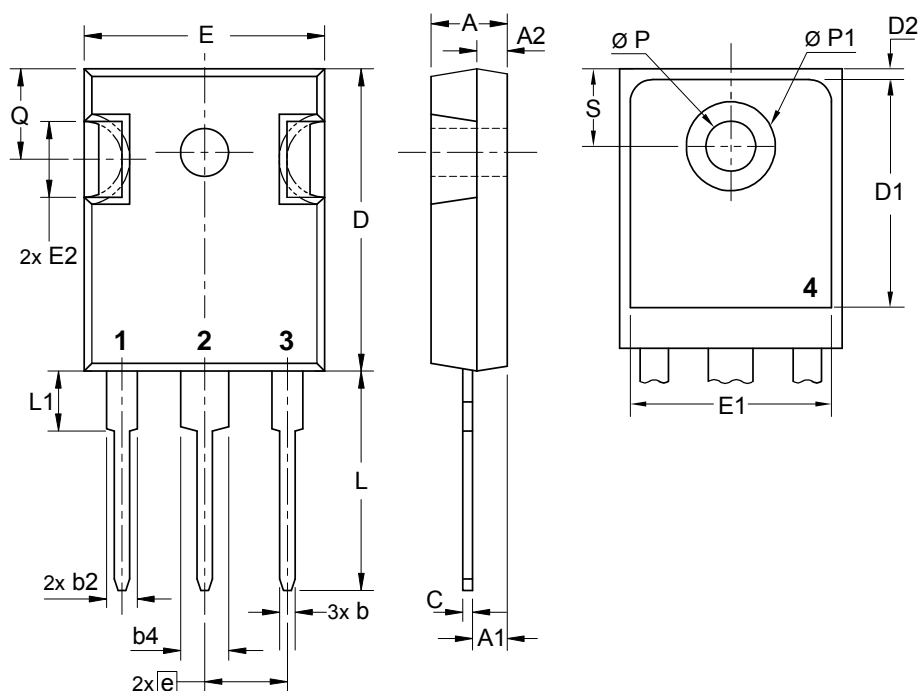
V

$R_{0\max}$ slope resistance *

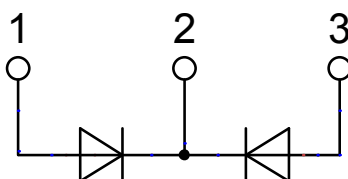
4.1

mΩ

Outlines TO-247



| Sym. | Inches | | Millimeter | |
|------|--------|-------|------------|-------|
| | min. | max. | min. | max. |
| A | 0.185 | 0.209 | 4.70 | 5.30 |
| A1 | 0.087 | 0.102 | 2.21 | 2.59 |
| A2 | 0.059 | 0.098 | 1.50 | 2.49 |
| D | 0.819 | 0.845 | 20.79 | 21.45 |
| E | 0.610 | 0.640 | 15.48 | 16.24 |
| E2 | 0.170 | 0.216 | 4.31 | 5.48 |
| e | 0.215 | BSC | 5.46 | BSC |
| L | 0.780 | 0.800 | 19.80 | 20.30 |
| L1 | - | 0.177 | - | 4.49 |
| Ø P | 0.140 | 0.144 | 3.55 | 3.65 |
| Q | 0.212 | 0.244 | 5.38 | 6.19 |
| S | 0.242 | BSC | 6.14 | BSC |
| b | 0.039 | 0.055 | 0.99 | 1.40 |
| b2 | 0.065 | 0.094 | 1.65 | 2.39 |
| b4 | 0.102 | 0.135 | 2.59 | 3.43 |
| c | 0.015 | 0.035 | 0.38 | 0.89 |
| D1 | 0.515 | - | 13.07 | - |
| D2 | 0.020 | 0.053 | 0.51 | 1.35 |
| E1 | 0.530 | - | 13.45 | - |
| Ø P1 | - | 0.29 | - | 7.39 |



Fast Diode

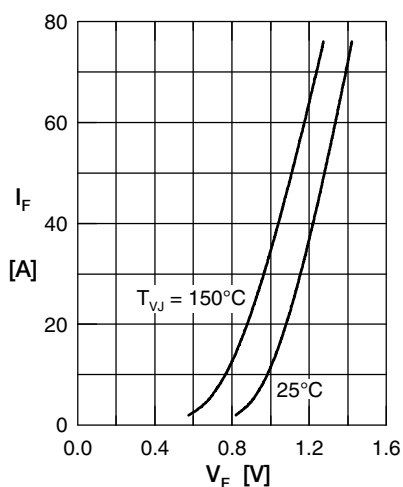


Fig. 1 Forward current I_F versus V_F

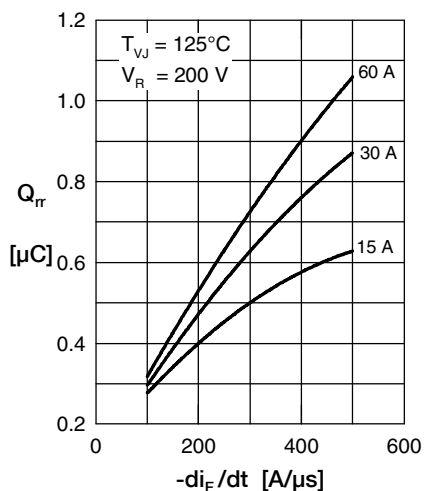


Fig. 2 Typ. reverse recov. charge Q_{rr} versus $-di_F/dt$

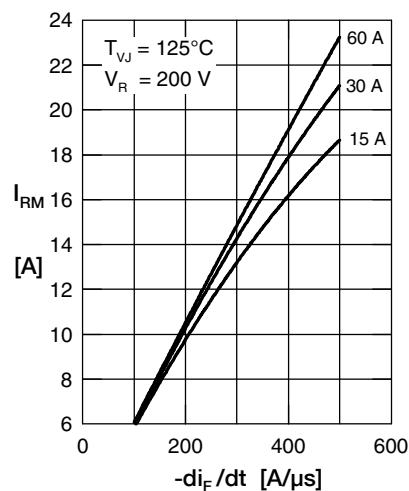


Fig. 3 Typ. reverse recov. current I_{RM} versus $-di_F/dt$

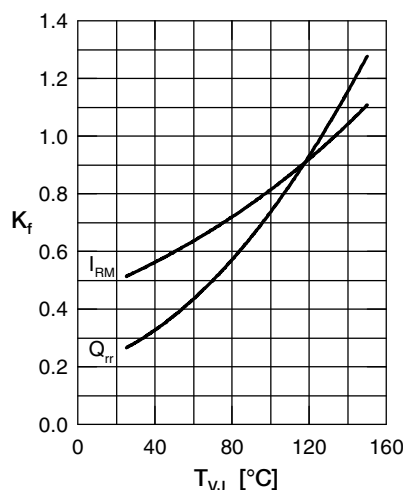


Fig. 4 Typ. dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

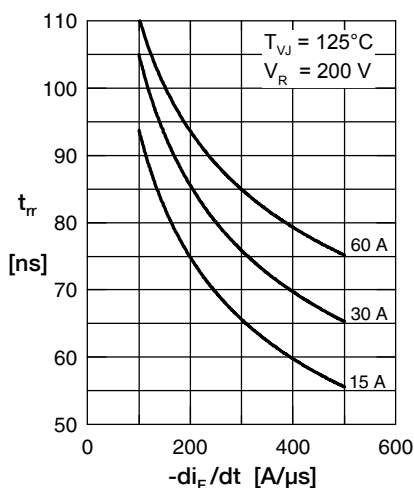


Fig. 5 Typ. reverse recov. time t_{rr} versus $-di_F/dt$

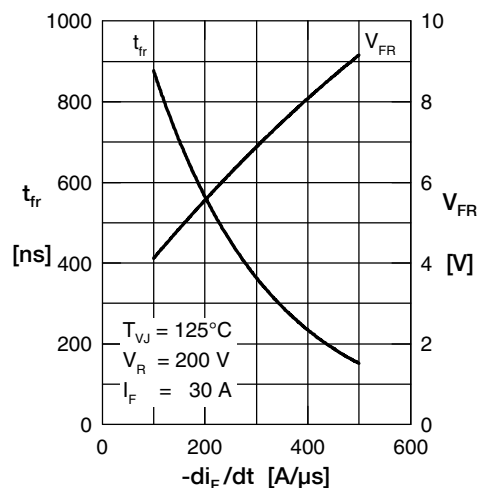


Fig. 6 Typ. forward recovery voltage V_{FR} & time t_{fr} versus di_F/dt

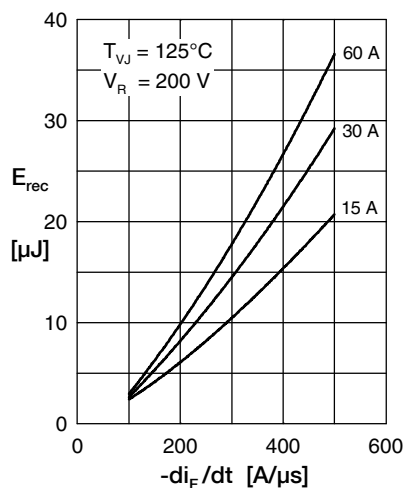


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

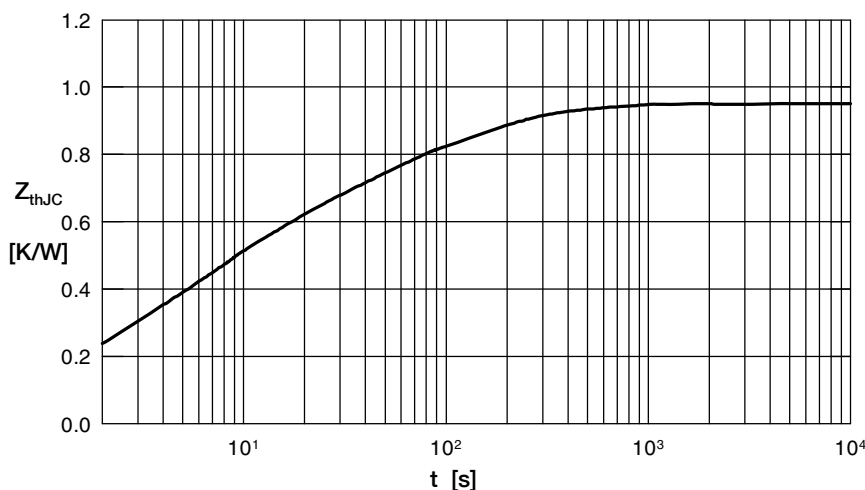


Fig. 8 Transient thermal impedance junction to case