

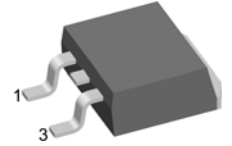
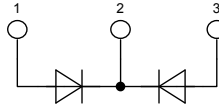
HiPerFRED²

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

$V_{RRM} = 300\text{ V}$
 $I_{FAV} = 2 \times 15\text{ A}$
 $t_{rr} = 35\text{ ns}$

Part number

DPG 30 C 300 PC



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:

- Housing: TO-263 (D2Pak)
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

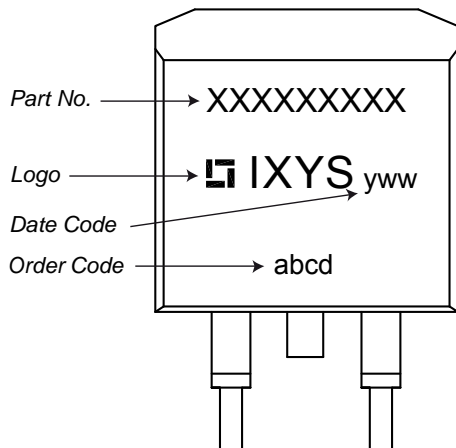
Ratings

| Symbol | Definition | Conditions | Ratings | | | Unit |
|------------|-------------------------------------|---|---------|------|------|--------------------|
| | | | min. | typ. | max. | |
| V_{RRM} | max. repetitive reverse voltage | | | | 300 | V |
| I_R | reverse current | $V_R = 300\text{ V}$ | | | 1 | μA |
| | | $V_R = 300\text{ V}$ | | | 0.08 | mA |
| V_F | forward voltage | $I_F = 15\text{ A}$ | | | 1.26 | V |
| | | $I_F = 30\text{ A}$ | | | 1.51 | V |
| | | $I_F = 15\text{ A}$ | | | 1.01 | V |
| | | $I_F = 30\text{ A}$ | | | 1.29 | V |
| I_{FAV} | average forward current | rectangular d = 0.5 | | | 15 | A |
| V_{F0} | threshold voltage | } for power loss calculation only | | | 0.69 | V |
| r_F | slope resistance | | | | 18 | m Ω |
| R_{thJC} | thermal resistance junction to case | | | | 1.70 | K/W |
| T_{VJ} | virtual junction temperature | | -55 | | 175 | $^{\circ}\text{C}$ |
| P_{tot} | total power dissipation | | | | 90 | W |
| I_{FSM} | max. forward surge current | t = 10 ms (50 Hz), sine | | | 240 | A |
| I_{RM} | max. reverse recovery current | | | | 3 | A |
| | | $I_F = 15\text{ A}; V_R = 200\text{ V}$ | | | 6.5 | A |
| t_{rr} | reverse recovery time | $-di_F/dt = 200\text{ A}/\mu\text{s}$ | | | 35 | ns |
| | | | | | 55 | ns |
| C_J | junction capacitance | $V_R = 150\text{ V}; f = 1\text{ MHz}$ | | | 20 | pF |

| Symbol | Definition | Conditions | Ratings | | | Unit |
|---------------|-------------------------------------|-----------------------|---------|------|------|------|
| | | | min. | typ. | max. | |
| I_{RMS} | RMS current | per pin ¹⁾ | | | 35 | A |
| R_{thCH} | thermal resistance case to heatsink | | | 0.25 | | K/W |
| T_{stg} | storage temperature | | -55 | | 150 | °C |
| Weight | | | | 2 | | g |
| F_c | mounting force with clip | | 20 | | 60 | N |

¹⁾ I_{RMS} is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.
 In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

Product Marking



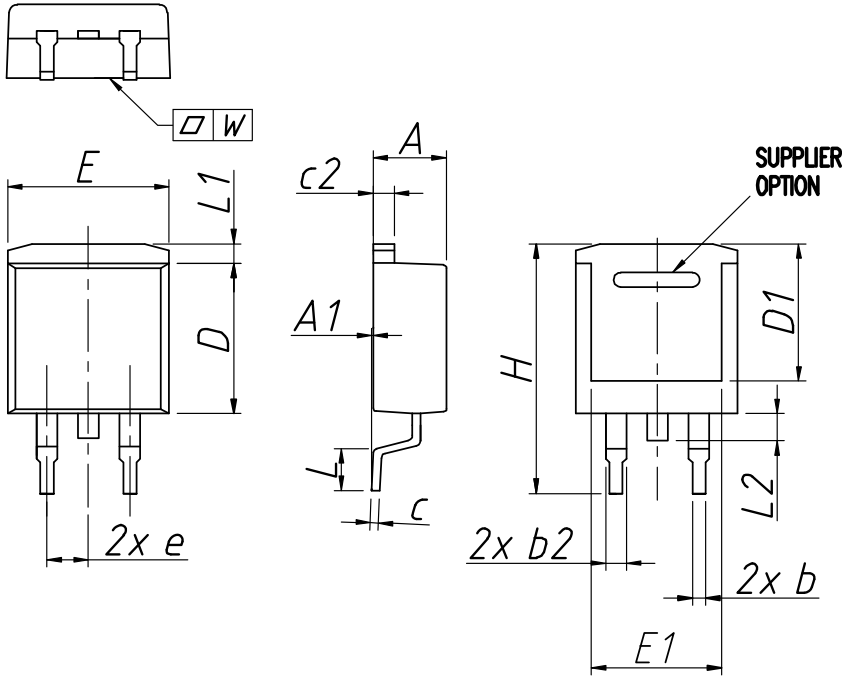
Part number

- D = Diode
- P = HiPerFRED
- G = extreme fast
- 30 = Current Rating [A]
- C = Common Cathode
- 300 = Reverse Voltage [V]
- PC = TO-263AB (D2Pak) (2)

| Ordering | Part Name | Marking on Product | Delivering Mode | Base Qty | Code Key |
|----------|-----------------|--------------------|-----------------|----------|----------|
| Standard | DPG 30 C 300 PC | DPG30C300PC | Tape & Reel | 800 | 501901 |

| Similar Part | Package | Voltage Class |
|--------------|--------------|---------------|
| DPG30C300PB | TO-220AB (3) | 300 |
| DPG30C300HB | TO-247AD (3) | 300 |

Outlines TO-263 (D2Pak)



| Dim. | Millimeter | | Inches | |
|------|------------|-------|-------------|--------|
| | min | max | min | max |
| A | 4.06 | 4.83 | 0.160 | 0.190 |
| A1 | typ. 0.10 | | typ. 0.004 | |
| b | 0.51 | 0.99 | 0.020 | 0.039 |
| b2 | 1.14 | 1.40 | 0.045 | 0.055 |
| c | 0.40 | 0.74 | 0.016 | 0.029 |
| c2 | 1.14 | 1.40 | 0.045 | 0.029 |
| D | 8.38 | 9.40 | 0.330 | 0.370 |
| D1 | 8.00 | 8.89 | 0.315 | 0.350 |
| E | 9.65 | 10.41 | 0.380 | 0.410 |
| E1 | 6.22 | 8.20 | 0.245 | 0.323 |
| e | 2,54 BSC | | 0,100 BSC | |
| H | 14.61 | 15.88 | 0.575 | 0.625 |
| L | 1.78 | 2.79 | 0.070 | 0.110 |
| L1 | 1.02 | 1.68 | 0.040 | 0.066 |
| L2 | 1.02 | 1.52 | 0.040 | 0.060 |
| W | typ. 0.02 | 0.040 | typ. 0.0008 | 0.0016 |

All dimensions conform with and/or are within JEDEC standard.

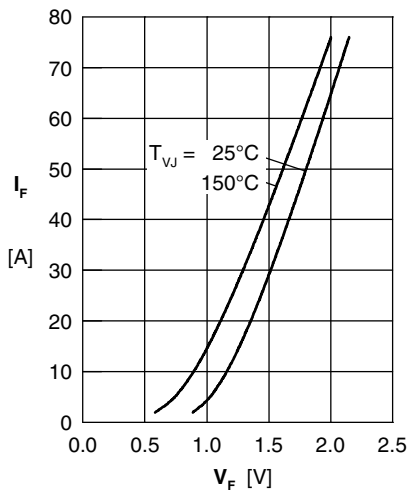


Fig. 1 Forward current I_F vs. V_F

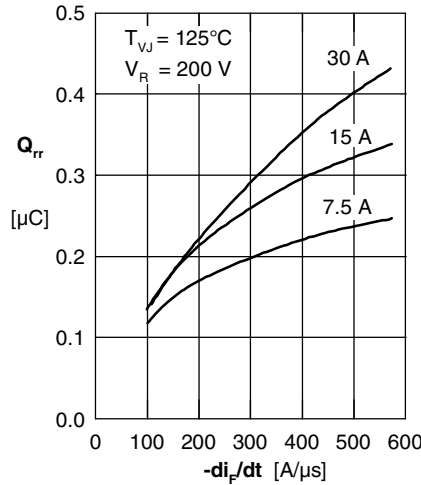


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

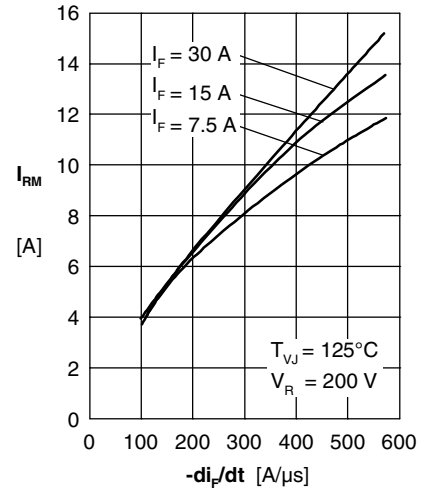


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

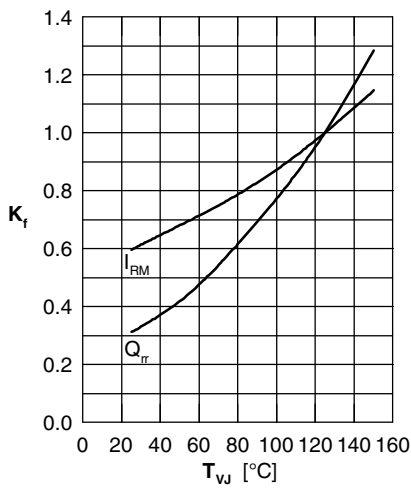


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

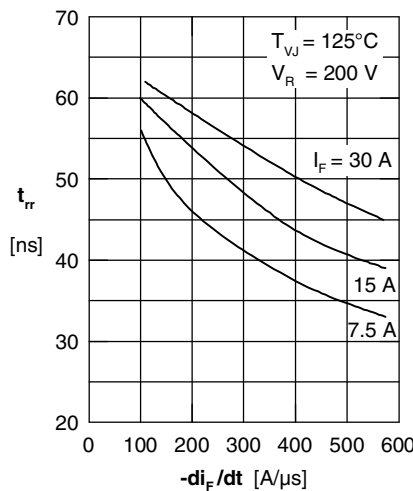


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

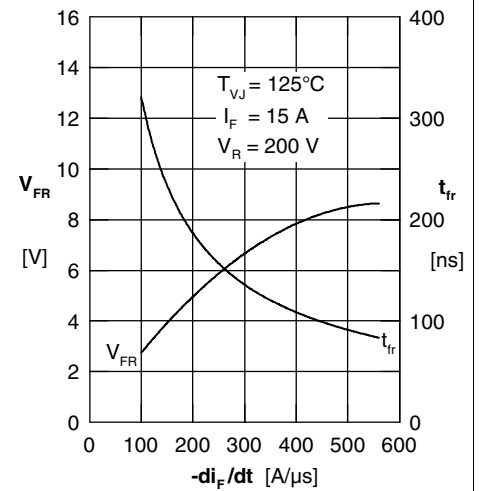


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

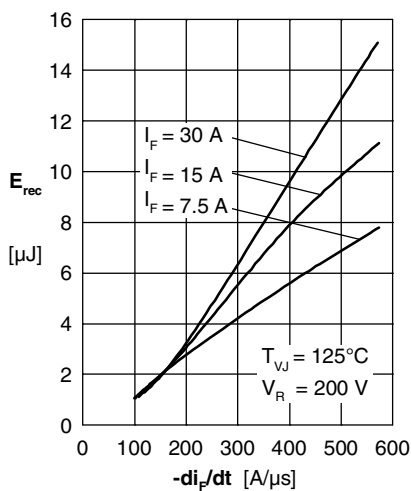


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

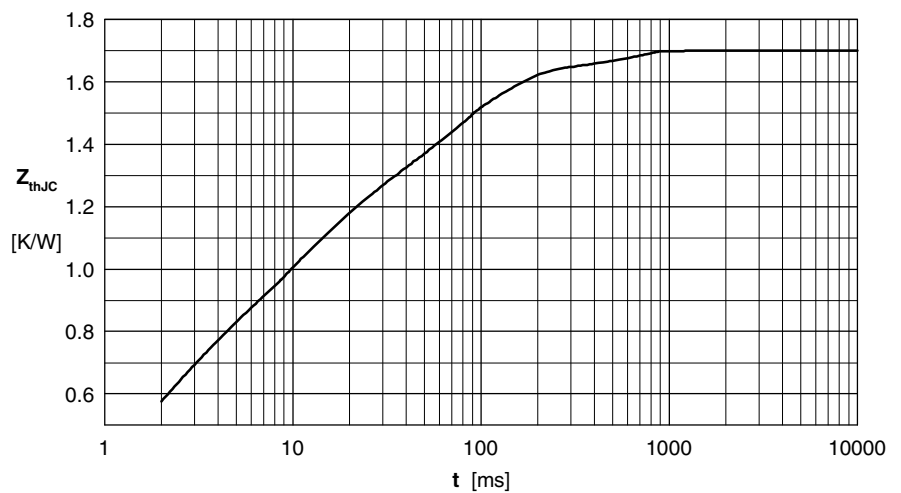


Fig. 8 Transient thermal resistance junction to case