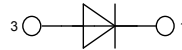


# HiPerFRED<sup>2</sup>

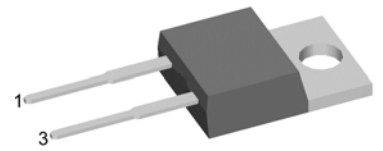
High Performance Fast Recovery Diode  
 Low Loss and Soft Recovery  
 Single Diode

Part number

**DPG 15 I 300 PA**



**V<sub>RRM</sub> = 300 V**  
**I<sub>FAV</sub> = 15 A**  
**t<sub>rr</sub> = 35 ns**



Backside: cathode

**Features / Advantages:**

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I<sub>rm</sub>-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I<sub>rm</sub> 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)

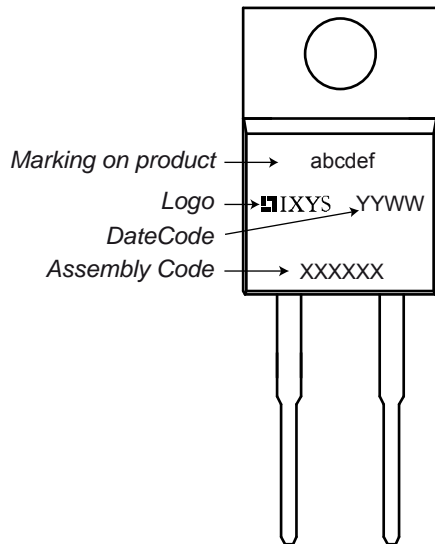
**Package:**

- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

**Ratings**

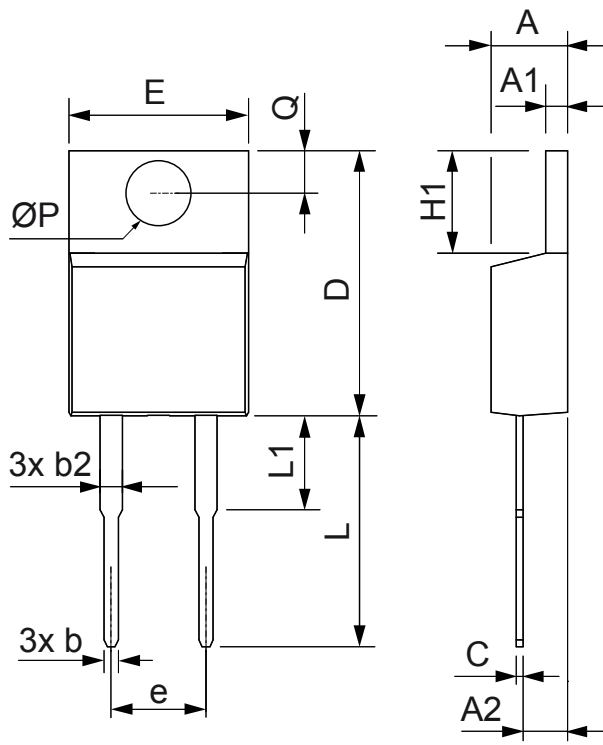
Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V <sub>RRM</sub>	max. repetitive reverse voltage	T <sub>VJ</sub> = 25 °C			300	V	
I <sub>R</sub>	reverse current	V <sub>R</sub> = 300 V			1	μA	
		V <sub>R</sub> = 300 V			0.08	mA	
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 15 A			1.26	V	
		I <sub>F</sub> = 30 A			1.51	V	
		I <sub>F</sub> = 15 A	T <sub>VJ</sub> = 150 °C			1.01	V
				I <sub>F</sub> = 30 A			1.29
I <sub>FAV</sub>	average forward current	rectangular d = 0.5	T <sub>C</sub> = 140 °C		15	A	
V <sub>F0</sub>	threshold voltage	} for power loss calculation only	T <sub>VJ</sub> = 175 °C		0.69	V	
r <sub>F</sub>	slope resistance				18	mΩ	
R <sub>thJC</sub>	thermal resistance junction to case				1.70	K/W	
T <sub>VJ</sub>	virtual junction temperature		-55		175	°C	
P <sub>tot</sub>	total power dissipation				90	W	
I <sub>FSM</sub>	max. forward surge current	t = 10 ms (50 Hz), sine	T <sub>VJ</sub> = 45 °C		240	A	
I <sub>RM</sub>	max. reverse recovery current		T <sub>VJ</sub> = 25 °C		3	A	
		I <sub>F</sub> = 15 A; V <sub>R</sub> = 200 V	T <sub>VJ</sub> = 125 °C		6.5	A	
t <sub>rr</sub>	reverse recovery time	-di <sub>F</sub> /dt = 200 A/μs	T <sub>VJ</sub> = 25 °C		35	ns	
			T <sub>VJ</sub> = 125 °C		55	ns	
C <sub>J</sub>	junction capacitance	V <sub>R</sub> = 150 V; f = 1 MHz	T <sub>VJ</sub> = 25 °C		20	pF	

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal			35	A
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N

**Product Marking**

**Part number**

- D = Diode
- P = HiPerFRED
- G = extreme fast
- 15 = Current Rating [A]
- I = Single Diode
- 300 = Reverse Voltage [V]
- PA = TO-220AC (2)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 15 I 300 PA	DPG15I300PA	Tube	50	506633

**Outlines TO-220**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08	BSC	0.200	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

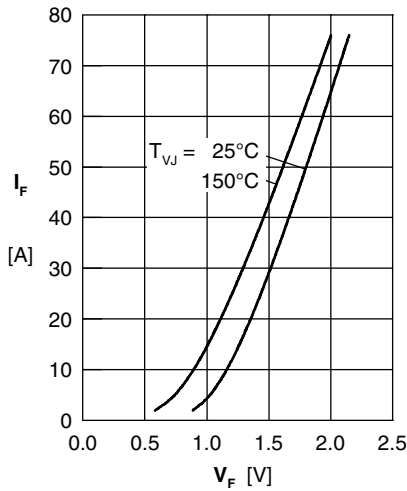


Fig. 1 Forward current  $I_F$  vs.  $V_F$

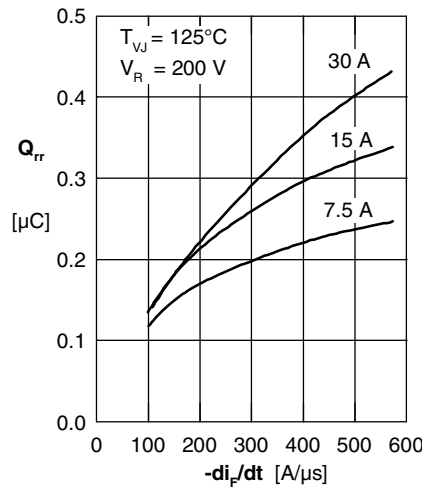


Fig. 2 Typ. reverse recovery charge  $Q_{rr}$  versus  $-di_F/dt$

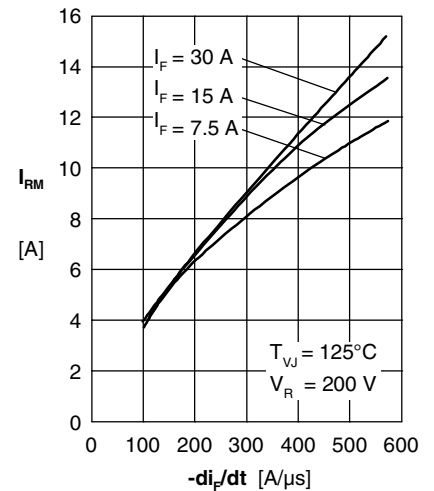


Fig. 3 Typ. peak reverse current  $I_{RM}$  versus  $-di_F/dt$

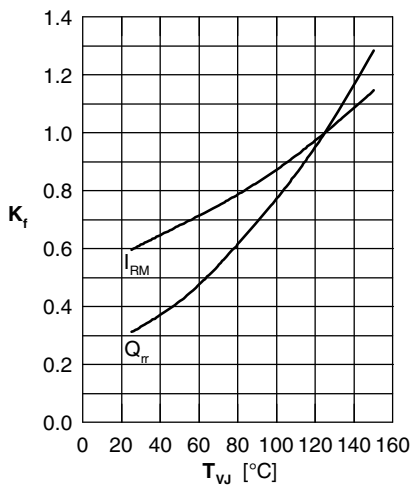


Fig. 4 Dynamic parameters  $Q_{rr}$ ,  $I_{RM}$  versus  $T_{VJ}$

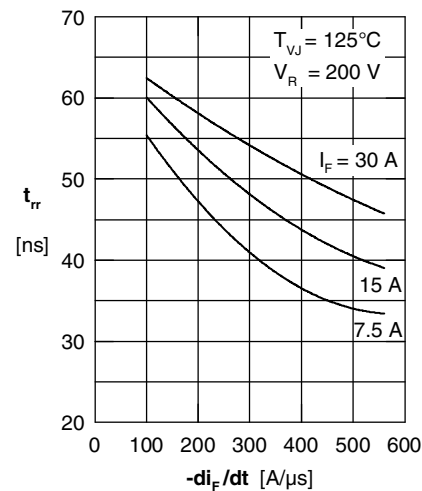


Fig. 5 Typ. recovery time  $t_{rr}$  vs.  $-di_F/dt$

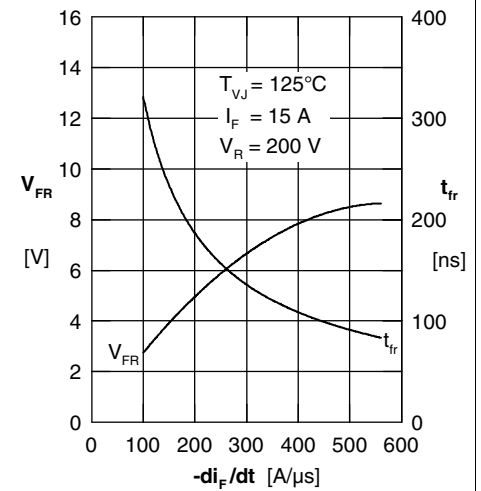


Fig. 6 Typ. peak forward voltage  $V_{FR}$  and  $t_{rr}$  versus  $di_F/dt$

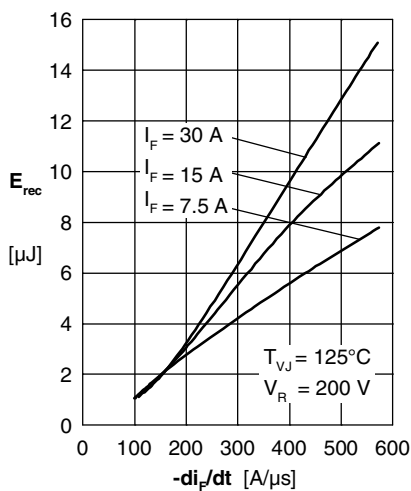


Fig. 7 Typ. recovery energy  $E_{rec}$  versus  $-di_F/dt$

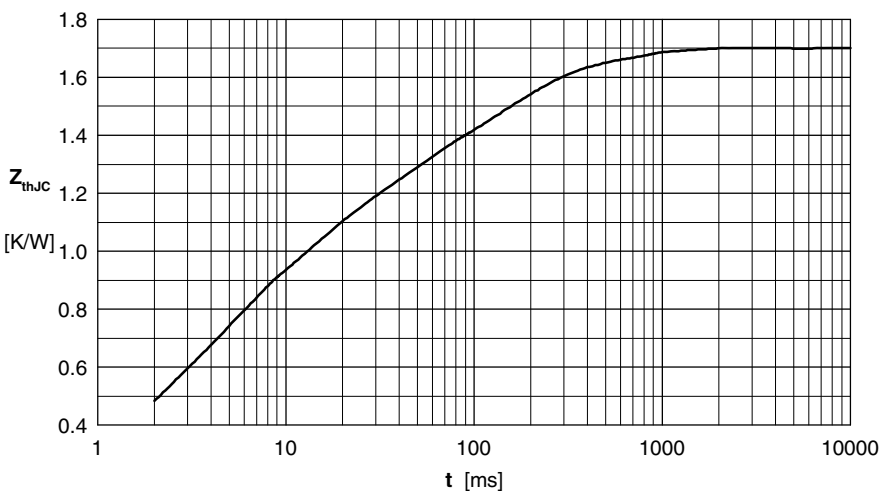


Fig. 8 Transient thermal resistance junction to case