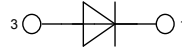


HiPerFRED²

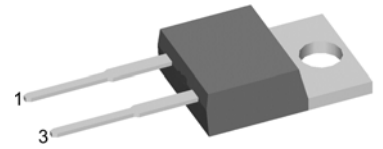
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

Part number

DPG 15 I 200 PA



$$\begin{aligned} V_{RRM} &= 200 \text{ V} \\ I_{FAV} &= 15 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$



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)

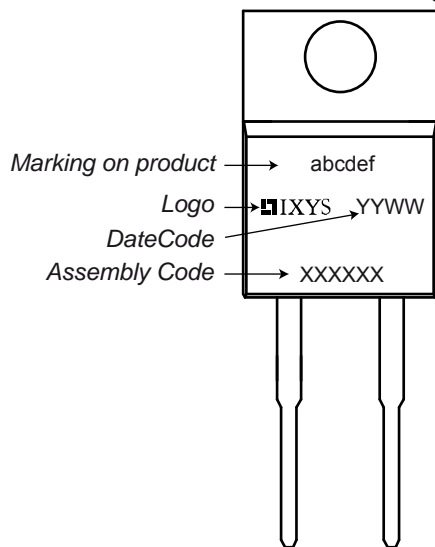
Package:

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

Ratings

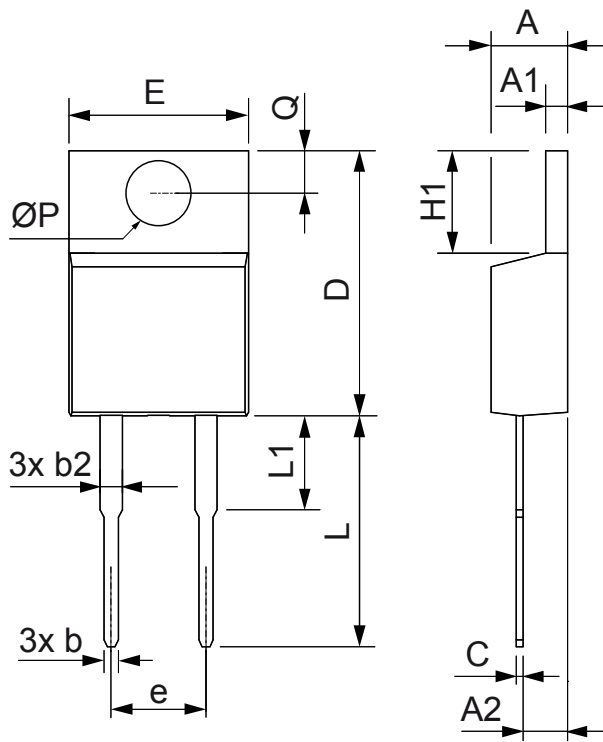
Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{RRM}	max. repetitive reverse voltage				200	V	
I_R	reverse current	$V_R = 200 \text{ V}$			1	μA	
		$V_R = 200 \text{ V}$			0.08	mA	
V_F	forward voltage	$I_F = 15 \text{ A}$			1.26	V	
		$I_F = 30 \text{ A}$			1.51	V	
		$I_F = 15 \text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.01	V
		$I_F = 30 \text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.29	V
I_{FAV}	average forward current	rectangular $d = 0.5$	$T_C = 140^\circ\text{C}$		15	A	
V_{F0}	threshold voltage	} for power loss calculation only	$T_{VJ} = 175^\circ\text{C}$		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		$T_C = 25^\circ\text{C}$		90	W	
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}$ (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$		240	A	
I_{RM}	max. reverse recovery current		$T_{VJ} = 25^\circ\text{C}$		3	A	
		$I_F = 15 \text{ A}; V_R = 130 \text{ V}$	$T_{VJ} = 125^\circ\text{C}$		6.5	A	
t_{rr}	reverse recovery time	$-di_F/dt = 200 \text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$		35	ns	
			$T_{VJ} = 125^\circ\text{C}$		55	ns	
C_J	junction capacitance	$V_R = 150 \text{ V}; f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		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
Weight				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
 200 = Reverse Voltage [V]
 PA = TO-220AC (2)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 15 I 200 PA	DPG15I200PA	Tube	50	506661

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
$\varnothing P$	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

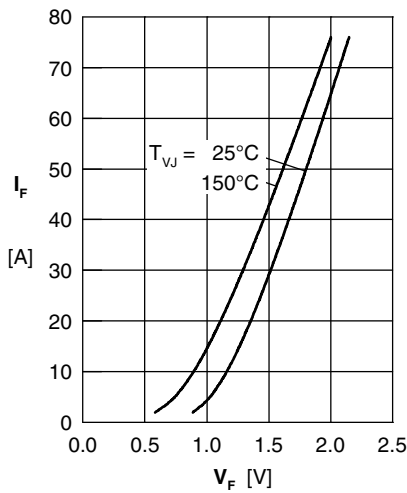


Fig. 1 Forward current I_F vs. V_F

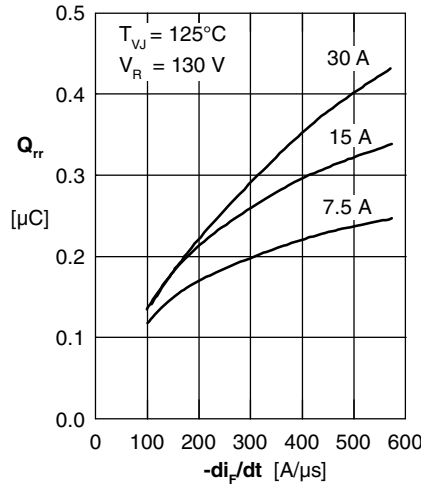


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

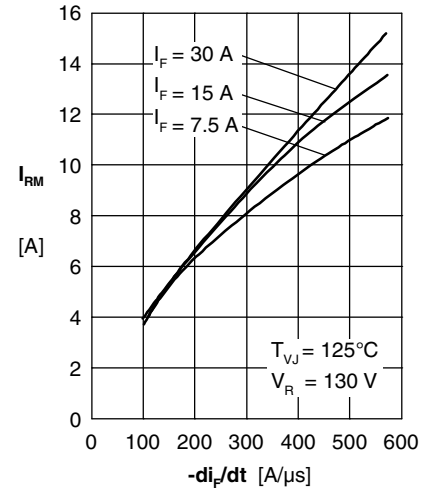


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

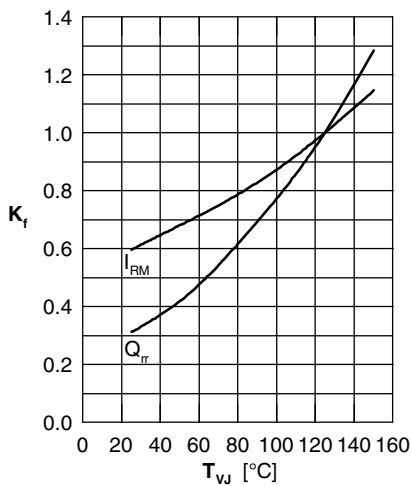


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

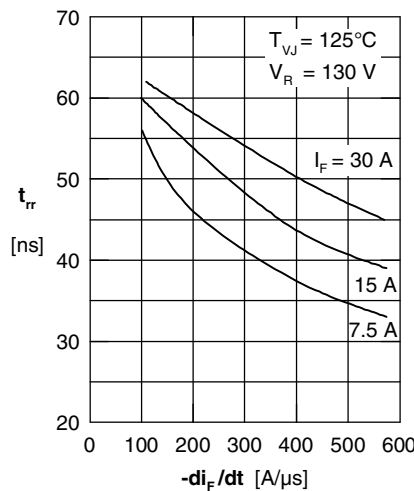


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

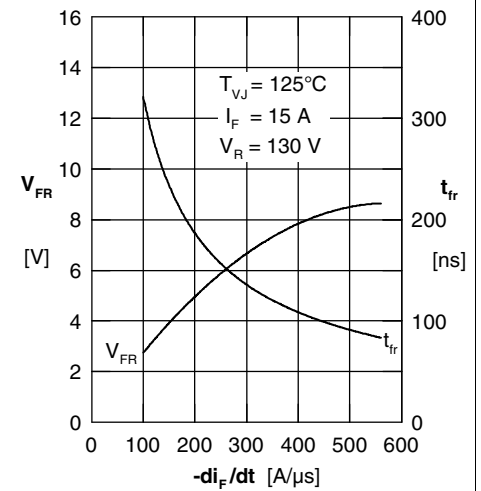


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

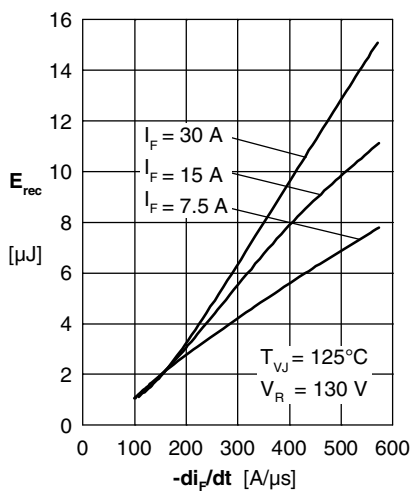


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

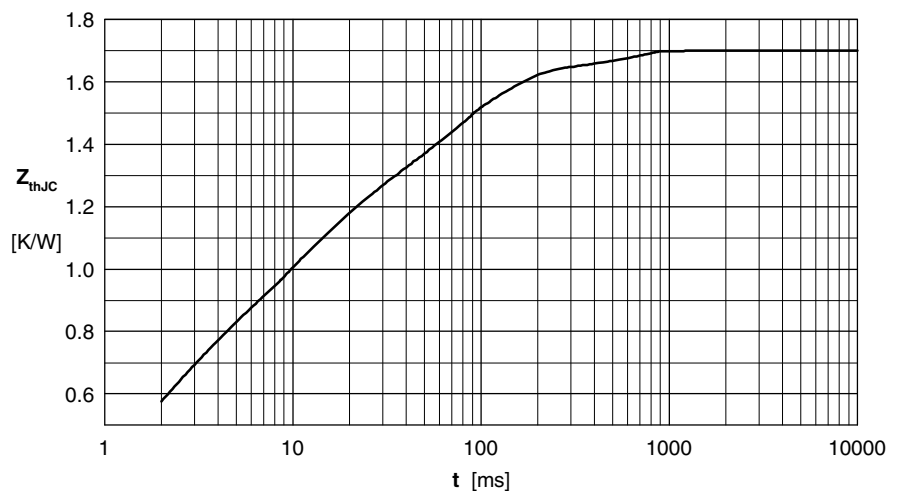


Fig. 8 Transient thermal resistance junction to case