

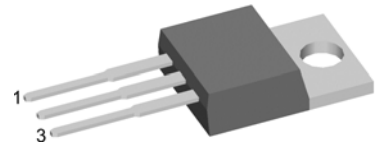
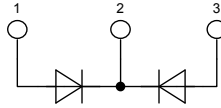
HiPerFRED²

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

$V_{RRM} = 400\text{ V}$
 $I_{FAV} = 2 \times 15\text{ A}$
 $t_{rr} = 45\text{ ns}$

Part number

DPG 30 C 400 PB



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:

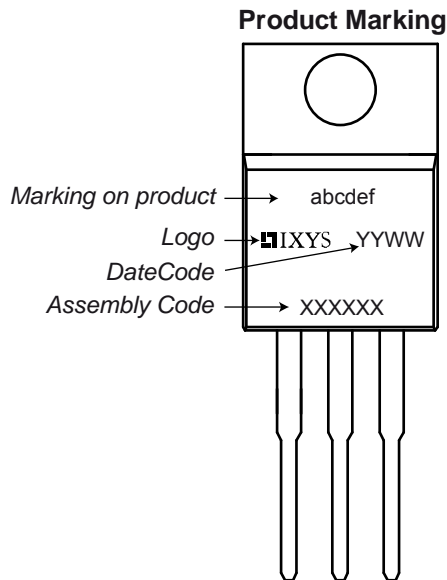
- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{RRM}	max. repetitive reverse voltage				400	V	
I_R	reverse current	$V_R = 400\text{ V}$			1	μA	
		$V_R = 400\text{ V}$			0.18	mA	
V_F	forward voltage	$I_F = 15\text{ A}$			1.39	V	
		$I_F = 30\text{ A}$			1.63	V	
		$I_F = 15\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.14	V
		$I_F = 30\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.40	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	$T_{VJ} = 175^\circ\text{C}$		0.84	V	
r_F	slope resistance				16.5	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 ms (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$		190	A	
I_{RM}	max. reverse recovery current		$T_{VJ} = 25^\circ\text{C}$		4	A	
		$I_F = 15\text{ A}; V_R = 270\text{ V}$	$T_{VJ} = 125^\circ\text{C}$		5.5	A	
t_{rr}	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$		45	ns	
			$T_{VJ} = 125^\circ\text{C}$		70	ns	
C_J	junction capacitance	$V_R = 200\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		16	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			0.50		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

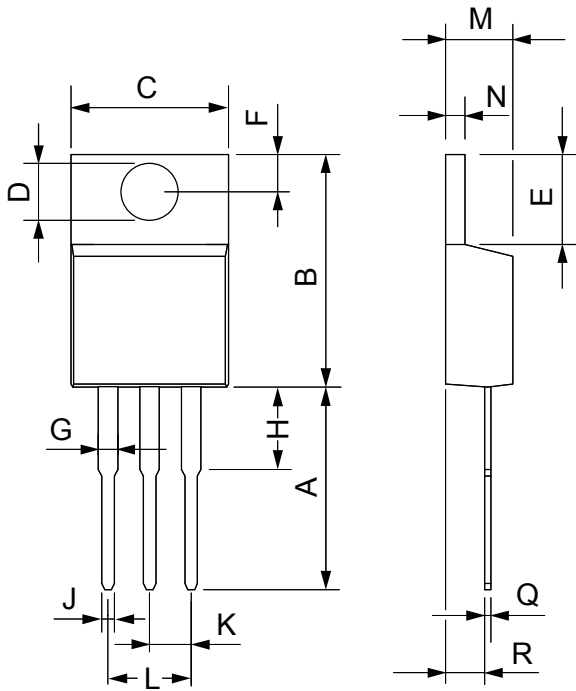
¹⁾ I_{RMS} is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.
 In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.


Part number

- D = Diode
- P = HiPerFRED
- G = extreme fast
- 30 = Current Rating [A]
- C = Common Cathode
- 400 = Reverse Voltage [V]
- PB = TO-220AB (3)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 30 C 400 PB	DPG30C400PB	Tube	50	507157

Similar Part	Package	Voltage Class
DPG30C400HB	TO-247AD (3)	400

Outlines TO-220


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

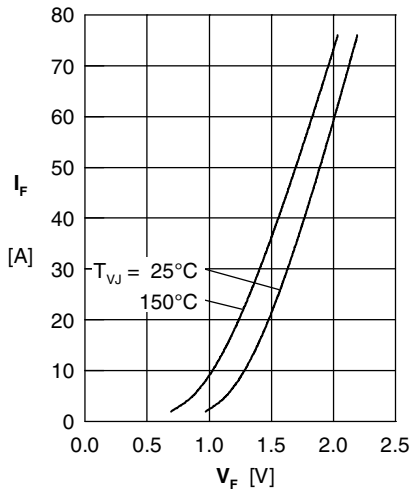


Fig. 1 Forward current I_F vs. V_F

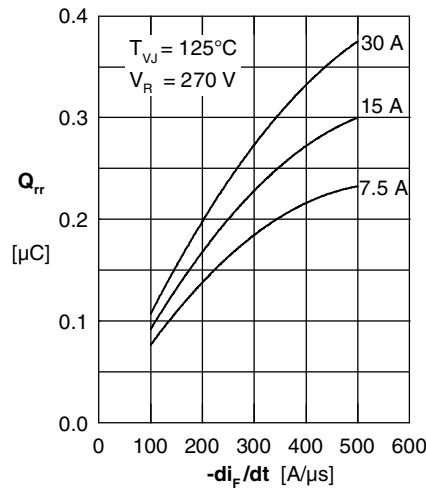


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

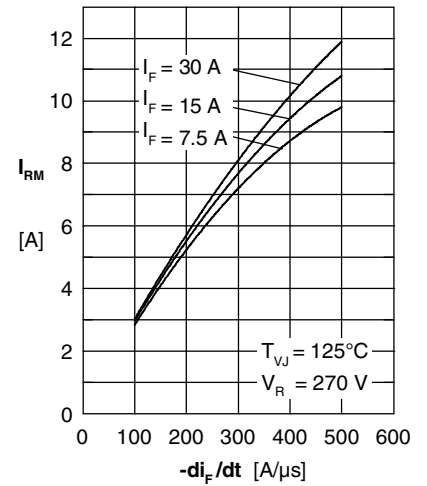


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

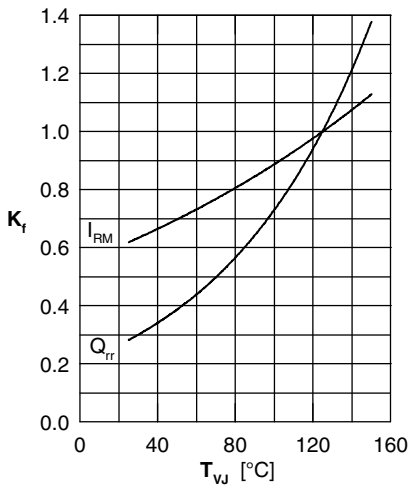


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

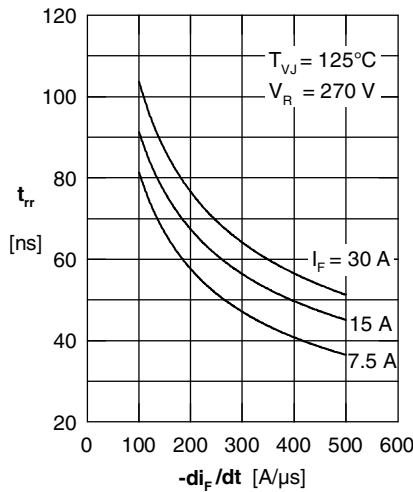


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

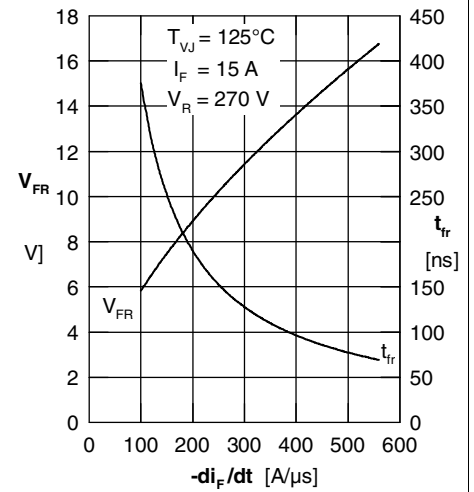


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

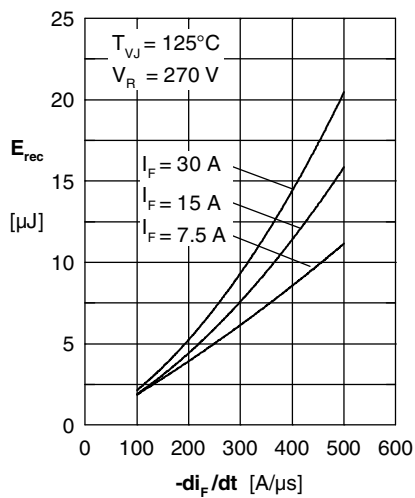


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

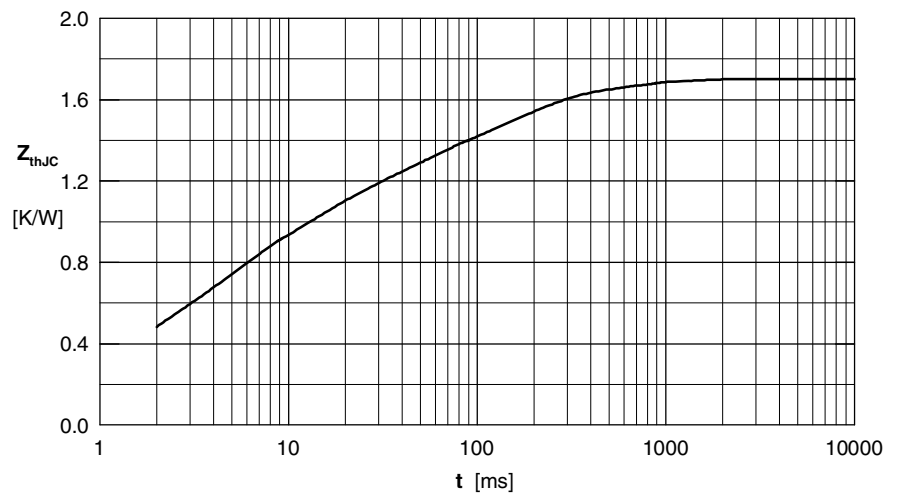


Fig. 8 Transient thermal resistance junction to case