

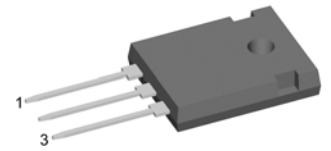
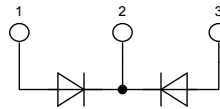
HiPerFRED²

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 HB



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:

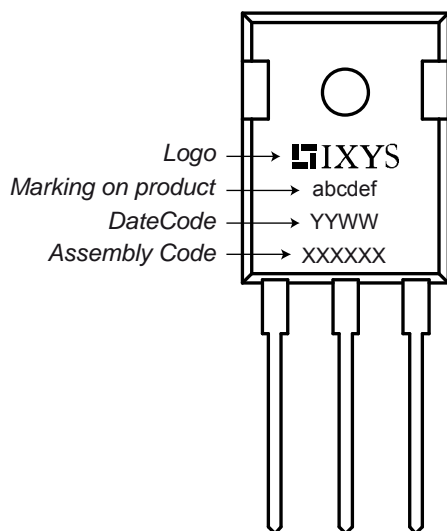
- Housing: TO-247
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

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	$I_F = 15\text{ A}$			1.38	V
		$I_F = 30\text{ A}$			1.61	V
		$I_F = 15\text{ A}$			1.13	V
		$I_F = 30\text{ A}$			1.39	V
I_{FAV}	average forward current	rectangular d = 0.5			15	A
V_{F0}	threshold voltage	} for power loss calculation only			0.84	V
r_F	slope resistance				15.9	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			190	A
I_{RM}	max. reverse recovery current				4	A
		$I_F = 15\text{ A}; V_R = 270\text{ V}$			5.5	A
t_{rr}	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$			45	ns
					70	ns
C_J	junction capacitance	$V_R = 200\text{ V}; f = 1\text{ MHz}$			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			0.25		K/W
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

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
- 400 = Reverse Voltage [V]
- HB = TO-247AD (3)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 30 C 400 HB	DPG30C400HB	Tube	30	505790

Similar Part	Package	Voltage Class
DPG30C400PB	TO-220AB (3)	400

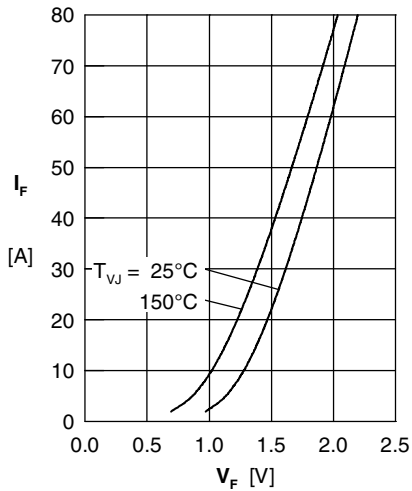


Fig. 1 Forward current I_F vs. V_F

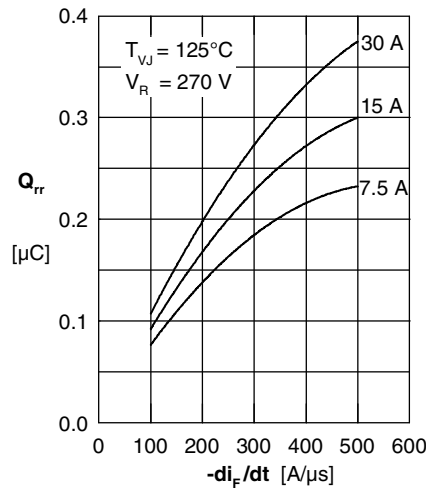


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

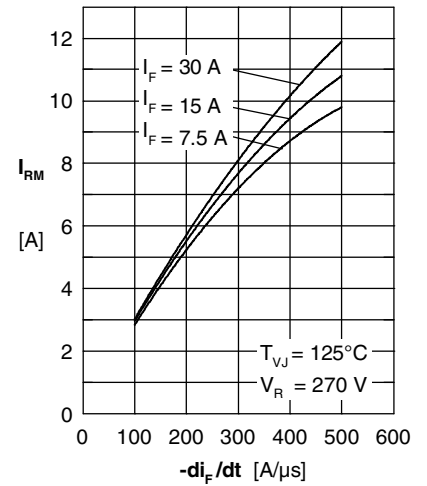


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

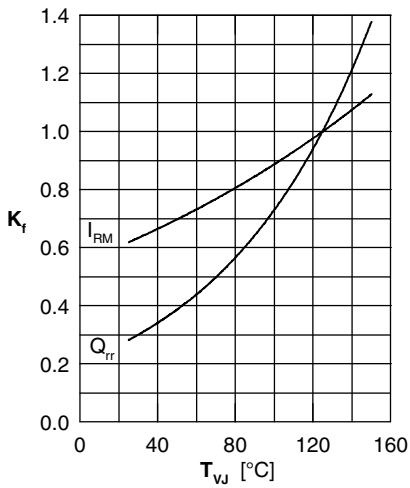


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

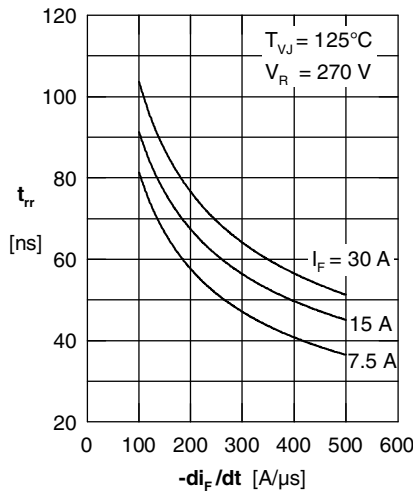


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

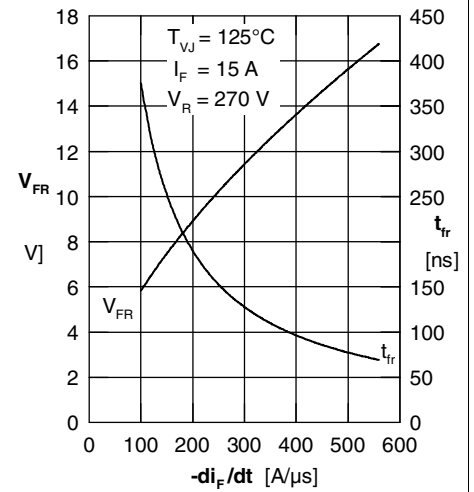


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

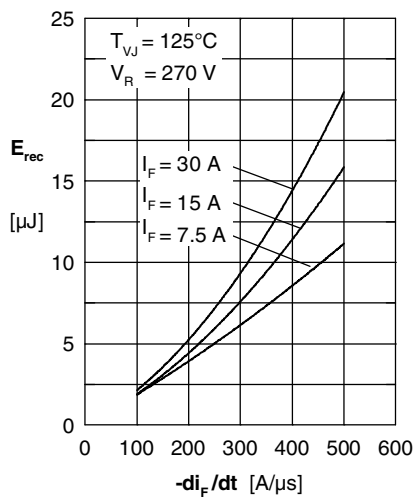


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

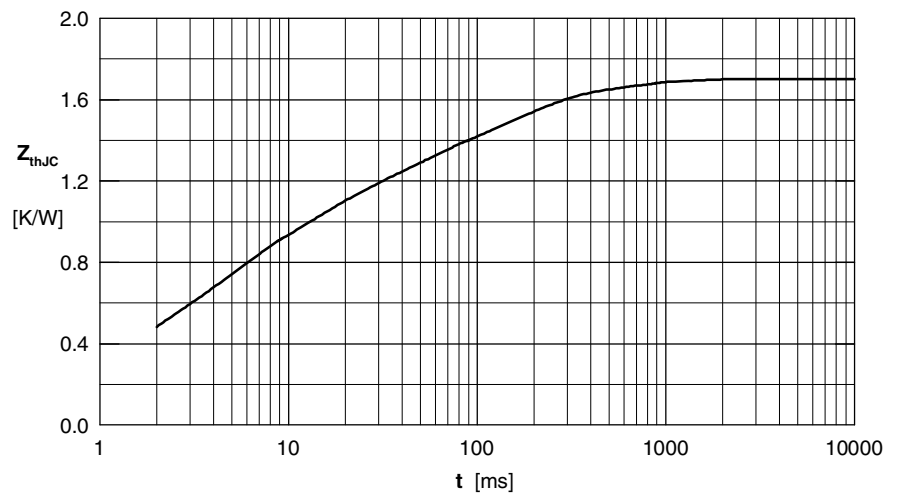


Fig. 8 Transient thermal resistance junction to case