

HiPerFRED²

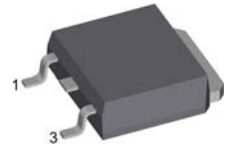
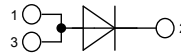
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

$V_{RRM} = 300\text{ V}$
 $I_{FAV} = 10\text{ A}$
 $t_{rr} = 35\text{ ns}$

Part number

DPG 10 IM 300 UC

Marking on Product: PAOGUI



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:

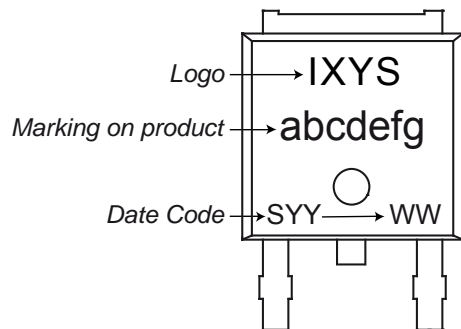
- Housing: TO-252 (DPak)
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

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	
		$V_R = 300\text{ V}$			0.06	mA	
V_F	forward voltage	$I_F = 10\text{ A}$			1.27	V	
		$I_F = 20\text{ A}$			1.45	V	
		$I_F = 10\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			0.98	V
		$I_F = 20\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.17	V
I_{FAV}	average forward current	rectangular $d = 0.5$			10	A	
V_{F0}	threshold voltage	} for power loss calculation only			0.74	V	
r_F	slope resistance				18	m Ω	
R_{thJC}	thermal resistance junction to case				2.30	K/W	
T_{VJ}	virtual junction temperature		-55		175	$^\circ\text{C}$	
P_{tot}	total power dissipation				65	W	
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			140	A	
I_{RM}	max. reverse recovery current				3	A	
		$I_F = 10\text{ A}; V_R = 200\text{ V}$			5.5	A	
t_{rr}	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$			35	ns	
					45	ns	
C_J	junction capacitance	$V_R = 150\text{ V}; f = 1\text{ MHz}$			15	pF	

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per pin ¹⁾			20	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
T_{stg}	storage temperature		-55		150	°C
Weight				0.3		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


- a) P = Semiconductor
- b) A = Current Rating
- c) O = Voltage Class
- d) G = Technology
- e) U = Package
- f) I = Configuration

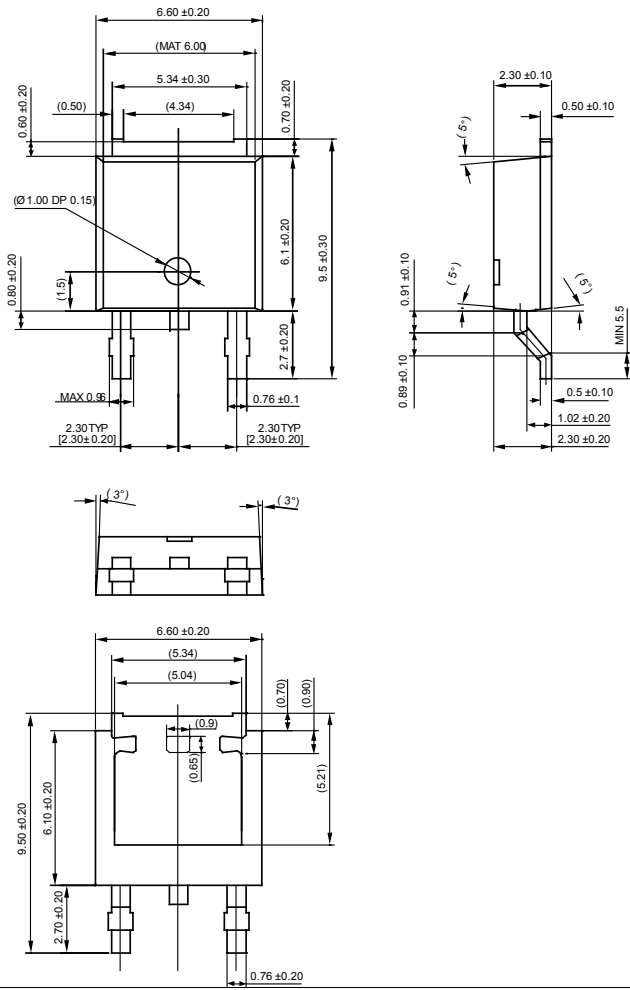
Part number

- D = Diode
- P = HiPerFRED
- G = extreme fast
- 10 = Current Rating [A]
- IM = Single Diode
- 300 = Reverse Voltage [V]
- UC = TO-252AA (DPak)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 10 IM 300 UC	PAOGUI	Tape & Reel	2500	505682

Similar Part	Package	Voltage Class
DPG10I300PA	TO-220AC (2)	300

Outlines TO-252 (DPak)



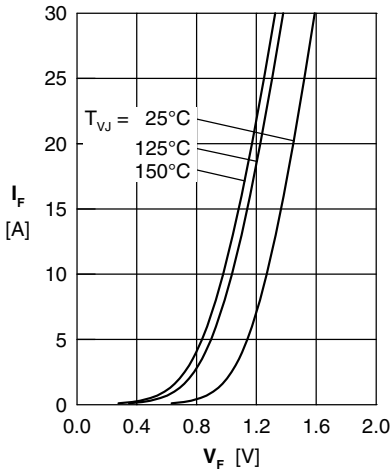


Fig. 1 Forward current I_F vs. V_F

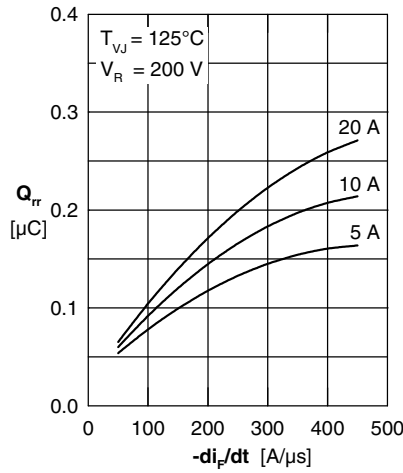


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

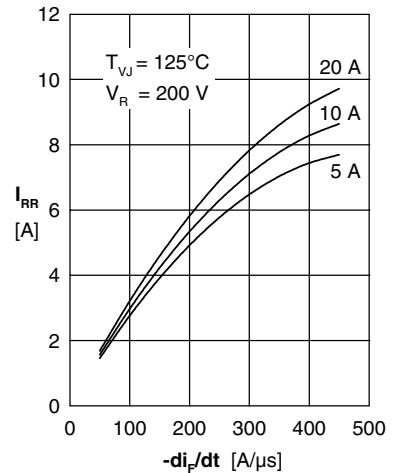


Fig. 3 Typ. peak reverse current I_{RR} versus $-di_F/dt$

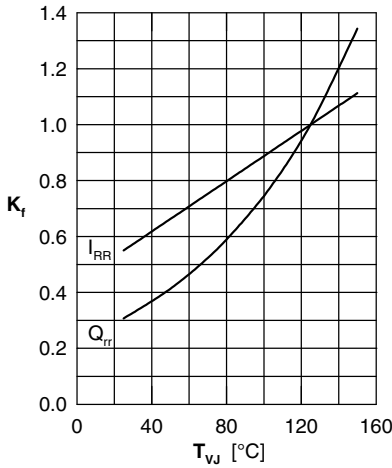


Fig. 4 Dynamic parameters Q_{rr} , I_{RR} versus T_{VJ}

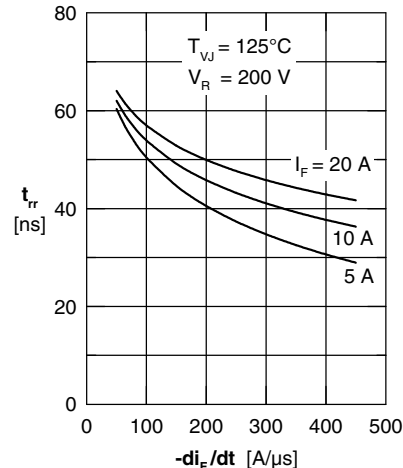


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

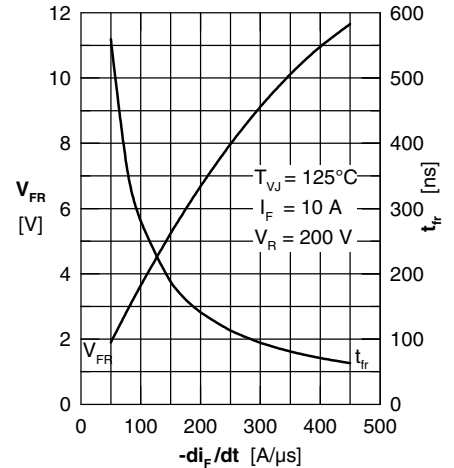


Fig. 6 Typ. peak forward voltage V_{FR} and t_{rr} versus di_F/dt

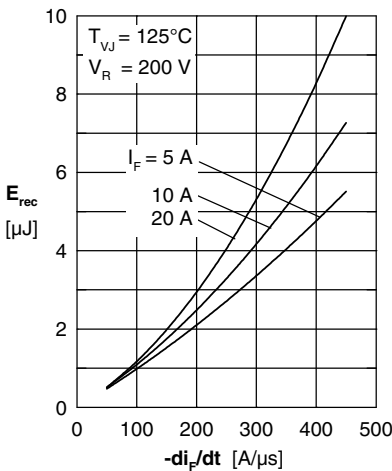


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

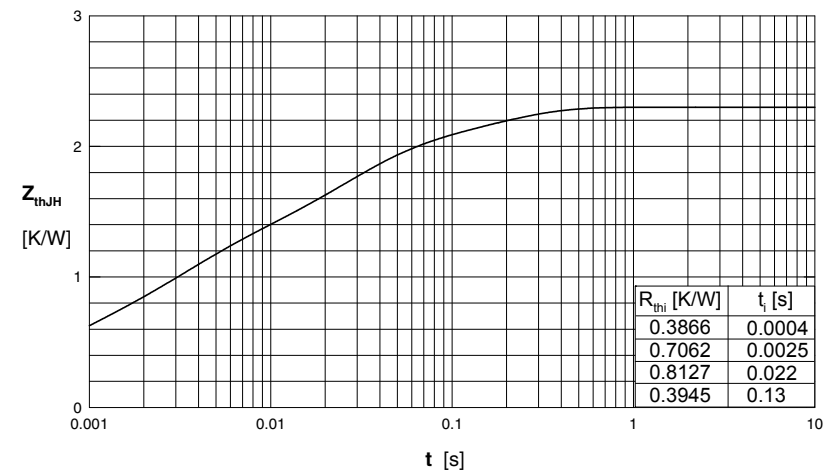


Fig. 8 Transient thermal resistance junction to case