



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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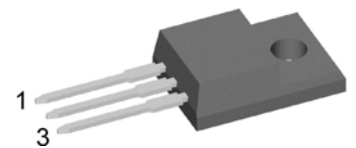
HiPerFRED²

$$\begin{aligned} V_{RRM} &= 300\text{ V} \\ I_{FAV} &= 2 \times 10\text{ A} \\ t_{rr} &= 35\text{ ns} \end{aligned}$$

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

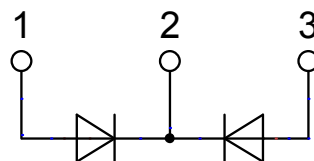
Part number

DPG20C300PN



Backside: isolated

 E72873



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)

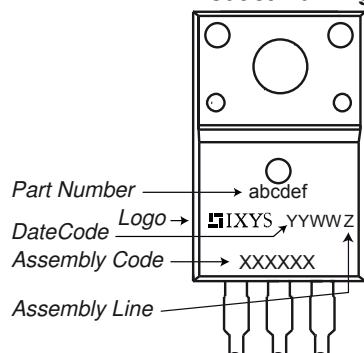
Package: TO-220FP

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

Fast Diode				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
V _{RSM}	max. non-repetitive reverse blocking voltage	T _{VJ} = 25°C				300	V	
V _{RRM}	max. repetitive reverse blocking voltage	T _{VJ} = 25°C				300	V	
I _R	reverse current, drain current	V _R = 300 V	T _{VJ} = 25°C			1	μA	
		V _R = 300 V	T _{VJ} = 150°C			0.06	mA	
V _F	forward voltage drop	I _F = 10 A	T _{VJ} = 25°C			1.27	V	
		I _F = 20 A				1.45	V	
		I _F = 10 A	T _{VJ} = 150°C			0.98	V	
		I _F = 20 A				1.17	V	
I _{FAV}	average forward current	T _C = 125°C rectangular d = 0.5	T _{VJ} = 175°C			10	A	
V _{FO}	threshold voltage	} for power loss calculation only		T _{VJ} = 175°C		0.74	V	
r _F	slope resistance					17.7	mΩ	
R _{thJC}	thermal resistance junction to case					4.4	K/W	
R _{thCH}	thermal resistance case to heatsink				0.50		K/W	
P _{tot}	total power dissipation	T _C = 25°C				35	W	
I _{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine; V _R = 0 V		T _{VJ} = 45°C		140	A	
C _J	junction capacitance	V _R = 150 V f = 1 MHz		T _{VJ} = 25°C		15	pF	
I _{RM}	max. reverse recovery current	I _F = 10 A; V _R = 200 V -di _F /dt = 200 A/μs		T _{VJ} = 25°C		3	A	
				T _{VJ} = 125°C		5.5	A	
t _{rr}	reverse recovery time			T _{VJ} = 25°C		35	ns	
				T _{VJ} = 125°C		45	ns	

Package TO-220FP				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal				35	A
T_{VJ}	virtual junction temperature			-55		175	°C
T_{op}	operation temperature			-55		150	°C
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
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to terminal	1.6	1.0			mm
$d_{Spb/Apb}$		terminal to backside	2.5	2.5			mm
V_{ISOL}	isolation voltage	t = 1 second	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500			V
		t = 1 minute		2100			V

Product Marking



Part number

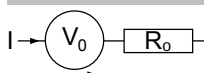
D = Diode
P = HiPerFRED
G = extreme fast
20 = Current Rating [A]
C = Common Cathode
300 = Reverse Voltage [V]
PN = TO-220ABFP (3)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DPG20C300PN	DPG20C300PN	Tube	50	503665

Similar Part	Package	Voltage class
DPG20C300PB	TO-220AB (3)	300

Equivalent Circuits for Simulation

* on die level

 $T_{VJ} = 175^\circ\text{C}$ 

Fast Diode

 $V_{0\max}$ threshold voltage

0.74

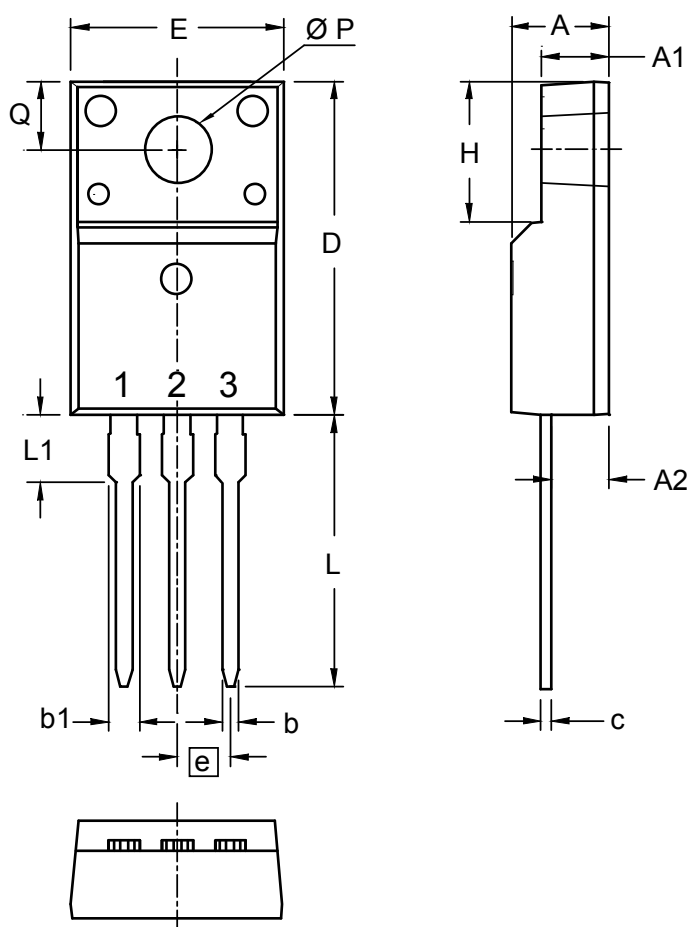
V

 $R_{0\max}$ slope resistance *

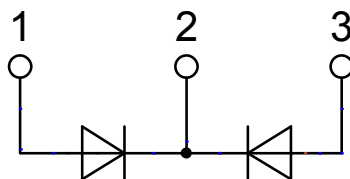
14.5

mΩ

Outlines TO-220FP



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
ØP	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134



Fast Diode

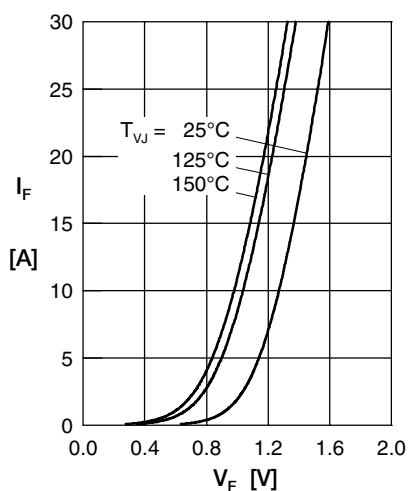


Fig. 1 Forward current I_F versus V_F

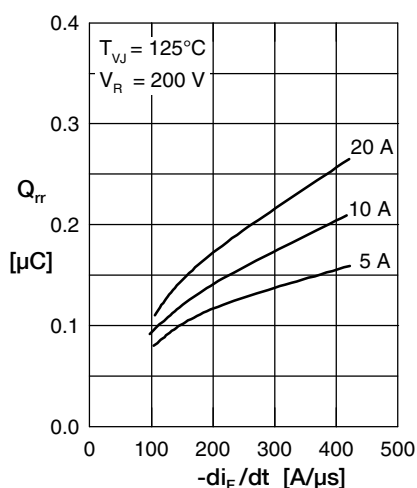


Fig. 2 Typ. reverse recov. charge Q_{rr} versus $-di_F/dt$

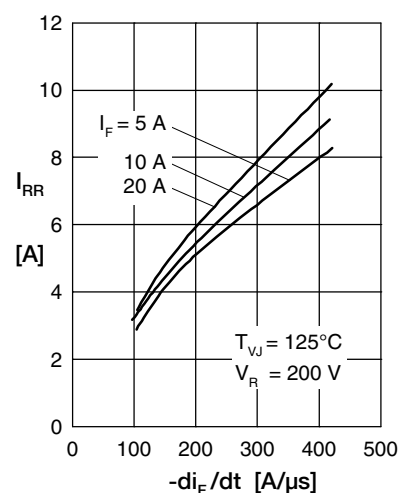


Fig. 3 Typ. reverse recov. current I_{RR} versus $-di_F/dt$

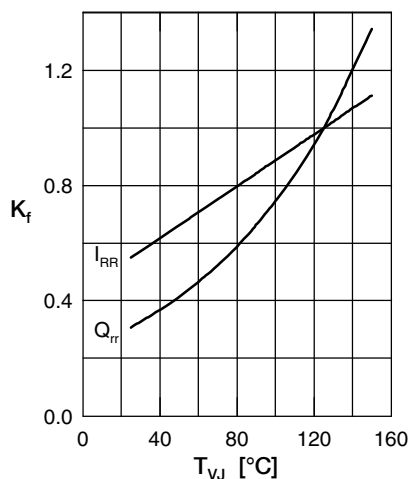


Fig. 4 Typ. dynamic parameters K_f , I_{RR} , Q_{rr} versus T_{VJ}

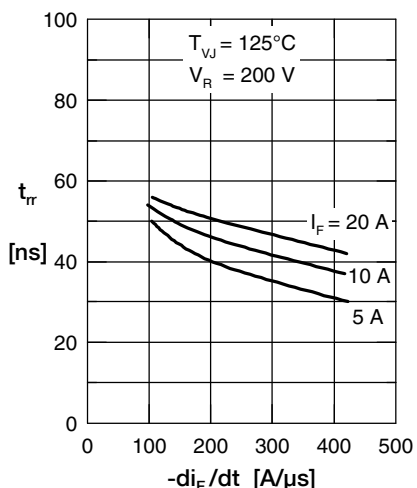


Fig. 5 Typ. reverse recov. time t_{rr} versus $-di_F/dt$

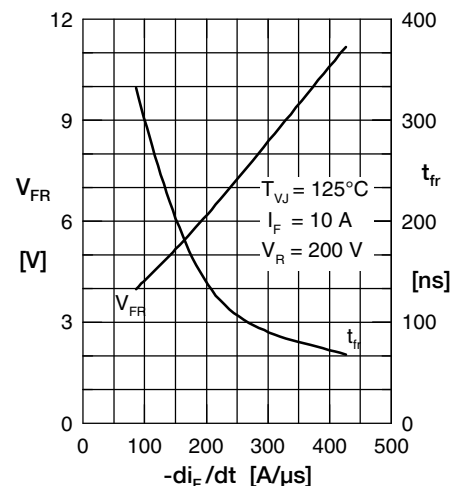


Fig. 6 Typ. forward recov. voltage V_{FR} and t_{fr} versus $-di_F/dt$

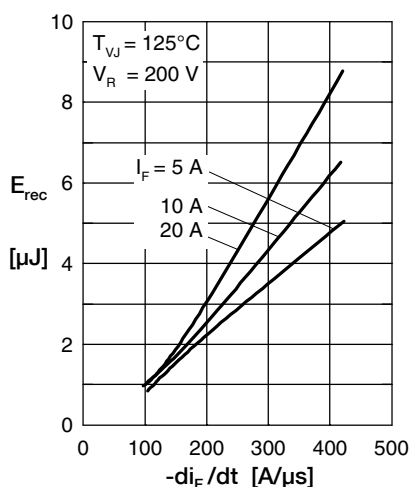


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

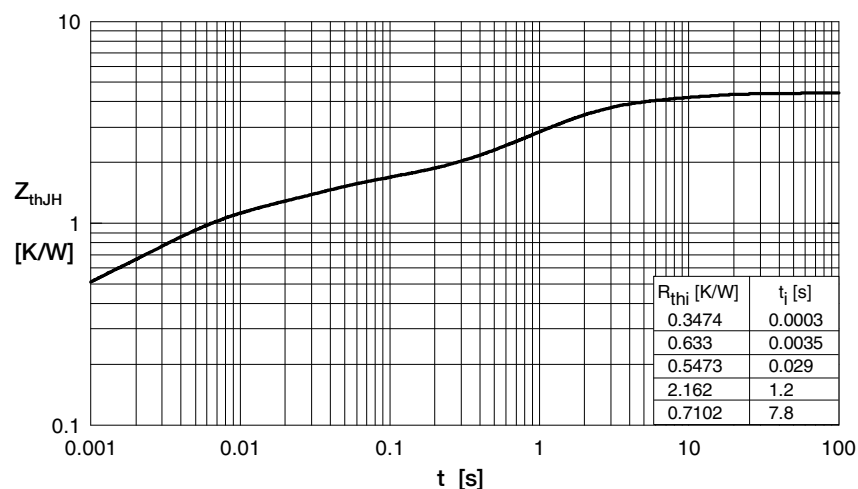


Fig. 8 Transient thermal resistance junction to case