

HiPerFRED²

V_{RRM} = 300V
 I_{FAV} = 2x 10A
 t_r = 35ns

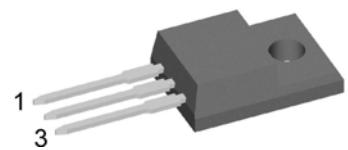
High Performance Fast Recovery Diode

Low Loss and Soft Recovery

Common Cathode

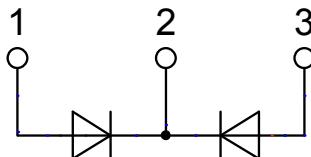
Part number

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)

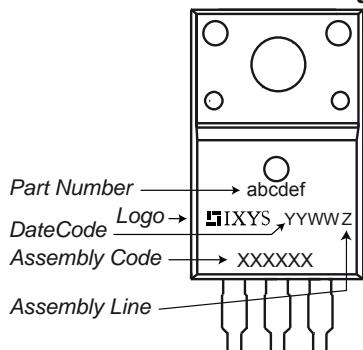
Package: TO-220FP

- 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

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^\circ C$			300	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^\circ C$			300	V
I_R	reverse current, drain current	$V_R = 300 V$ $V_R = 300 V$	$T_{VJ} = 25^\circ C$ $T_{VJ} = 150^\circ C$		1 0.06	μA mA
V_F	forward voltage drop	$I_F = 10 A$ $I_F = 20 A$ $I_F = 10 A$ $I_F = 20 A$	$T_{VJ} = 25^\circ C$ $T_{VJ} = 150^\circ C$		1.27 1.45 0.98 1.17	V V V V
I_{FAV}	average forward current	$T_C = 125^\circ C$ rectangular $d = 0.5$	$T_{VJ} = 175^\circ C$		10	A
V_{F0} r_F	threshold voltage slope resistance } for power loss calculation only		$T_{VJ} = 175^\circ C$		0.74 17.7	V $m\Omega$
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		$T_C = 25^\circ C$		35	W
I_{FSM}	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}; V_R = 0 V$	$T_{VJ} = 45^\circ C$		140	A
C_J	junction capacitance	$V_R = 150 V$ $f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ C$		15	pF
I_{RM}	max. reverse recovery current		$T_{VJ} = 25^\circ C$ $T_{VJ} = 125^\circ C$		3 5.5	A A
t_{rr}	reverse recovery time	$I_F = 10 A; V_R = 200 V$ $-di_F/dt = 200 A/\mu s$	$T_{VJ} = 25^\circ C$ $T_{VJ} = 125^\circ C$		35 45	ns 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
$d_{Spb/Abp}$			terminal to backside	2.5	2.5	mm
V_{ISOL}	isolation voltage	t = 1 second t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		2500 2100	V 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

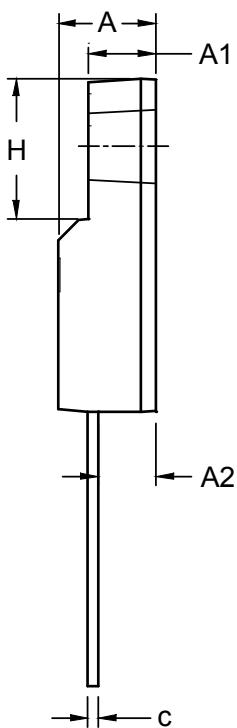
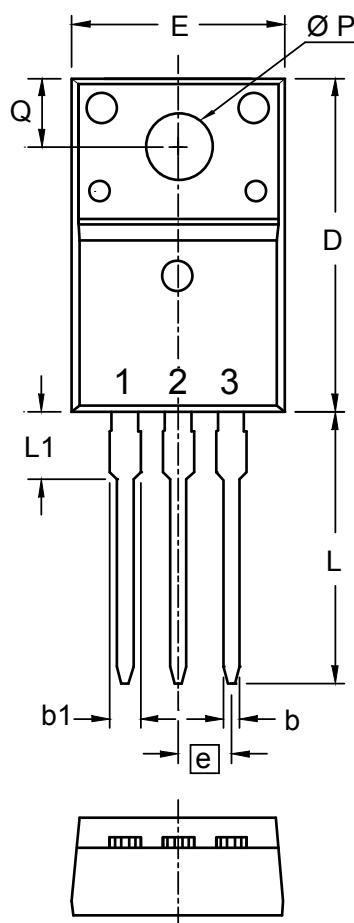
Equivalent Circuits for Simulation

* on die level

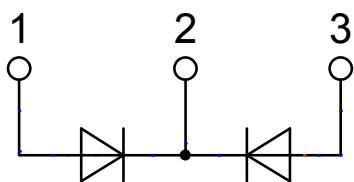
 $T_{VJ} = 175$ °C

	Fast Diode
$V_{0\max}$	threshold voltage
$R_{0\max}$	slope resistance *

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