

HiPerFRED²

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

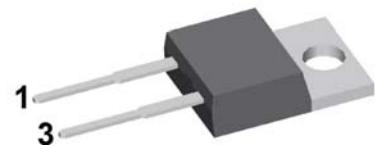
High Performance Fast Recovery Diode

Low Loss and Soft Recovery

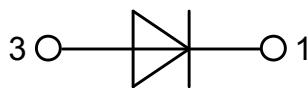
Single Diode

Part number

DPG10I300PA



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)

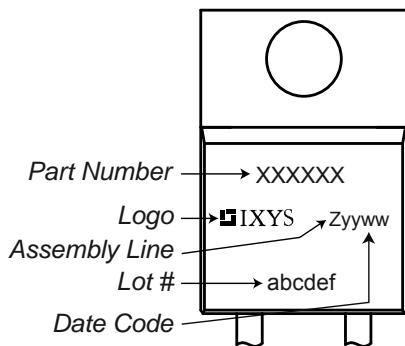
Package: TO-220

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

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	$T_C = 150^\circ C$ 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				2.3	K/W
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
P_{tot}	total power dissipation		$T_C = 25^\circ C$		65	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-220			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

Product Marking**Part number**

D = Diode
 P = HiPerFRED
 G = extreme fast
 10 = Current Rating [A]
 I = Single Diode
 300 = Reverse Voltage [V]
 PA = TO-220AC (2)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DPG10I300PA	DPG10I300PA	Tube	50	506640

Similar Part	Package	Voltage class
DPG10IM300UC	TO-252AA (DPak)	300

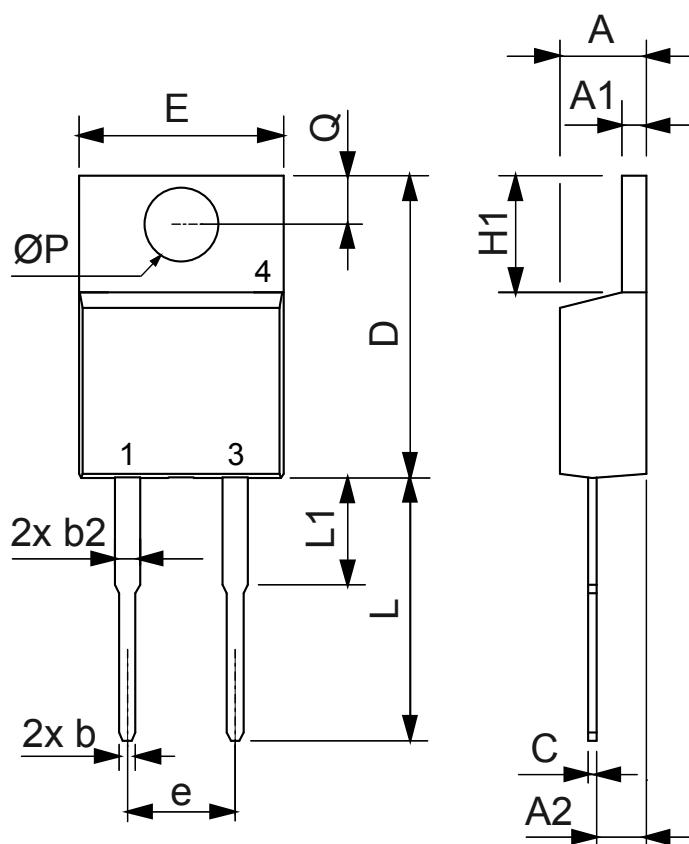
Equivalent Circuits for Simulation

* on die level

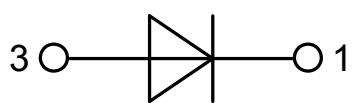
 $T_{VJ} = 175 \text{ }^{\circ}\text{C}$

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

Outlines TO-220



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08	BSC	0.200	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125



Fast Diode