

**HiPerFRED<sup>2</sup>**

$V_{RRM}$  = 300V  
 $I_{FAV}$  = 2x 30A  
 $t_{rr}$  = 35ns

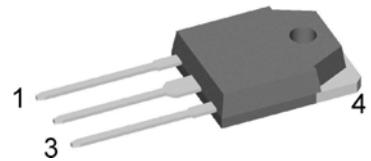
High Performance Fast Recovery Diode

Low Loss and Soft Recovery

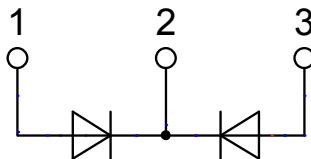
Common Cathode

**Part number**

DPG60C300QB



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-3P**

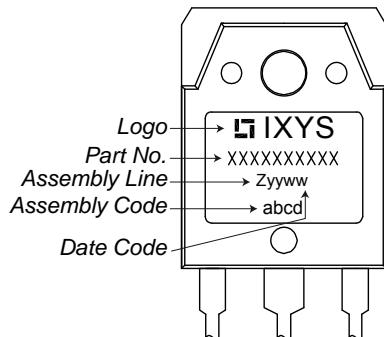
- Industry standard outline compatible with TO-247
- RoHS compliant
- Epoxy meets UL 94V-0

## 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 0.1	$\mu A$ mA
$V_F$	forward voltage drop	$I_F = 30 A$ $I_F = 60 A$ $I_F = 30 A$ $I_F = 60 A$	$T_{VJ} = 25^\circ C$ $T_{VJ} = 150^\circ C$		1.34 1.63 1.06 1.39	V V
$I_{FAV}$	average forward current	$T_C = 140^\circ C$ rectangular $d = 0.5$	$T_{VJ} = 175^\circ C$		30	A
$V_{F0}$ $r_F$	threshold voltage slope resistance } for power loss calculation only		$T_{VJ} = 175^\circ C$		0.70 10.5	V $m\Omega$
$R_{thJC}$	thermal resistance junction to case				0.95	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$P_{tot}$	total power dissipation		$T_C = 25^\circ C$		160	W
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}; V_R = 0 V$	$T_{VJ} = 45^\circ C$		360	A
$C_J$	junction capacitance	$V_R = 150 V$ $f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ C$	50		pF
$I_{RM}$	max. reverse recovery current		$T_{VJ} = 25^\circ C$ $T_{VJ} = 125^\circ C$	3 7		A
$t_{rr}$	reverse recovery time	$I_F = 30 A; V_R = 200 V$ $-di_F/dt = 200 A/\mu s$	$T_{VJ} = 25^\circ C$ $T_{VJ} = 125^\circ C$	35 55		ns ns

Package TO-3P			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	<i>RMS current</i>	per terminal <sup>1)</sup>			50	A
$T_{VJ}$	<i>virtual junction temperature</i>		-55		175	°C
$T_{op}$	<i>operation temperature</i>		-55		150	°C
$T_{stg}$	<i>storage temperature</i>		-55		150	°C
<b>Weight</b>				5		g
$M_d$	<i>mounting torque</i>		0.8		1.2	Nm
$F_c$	<i>mounting force with clip</i>		20		120	N

## Product Marking



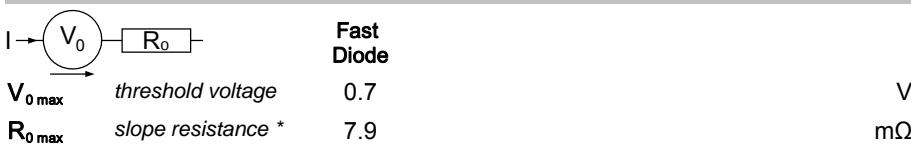
## Part number

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

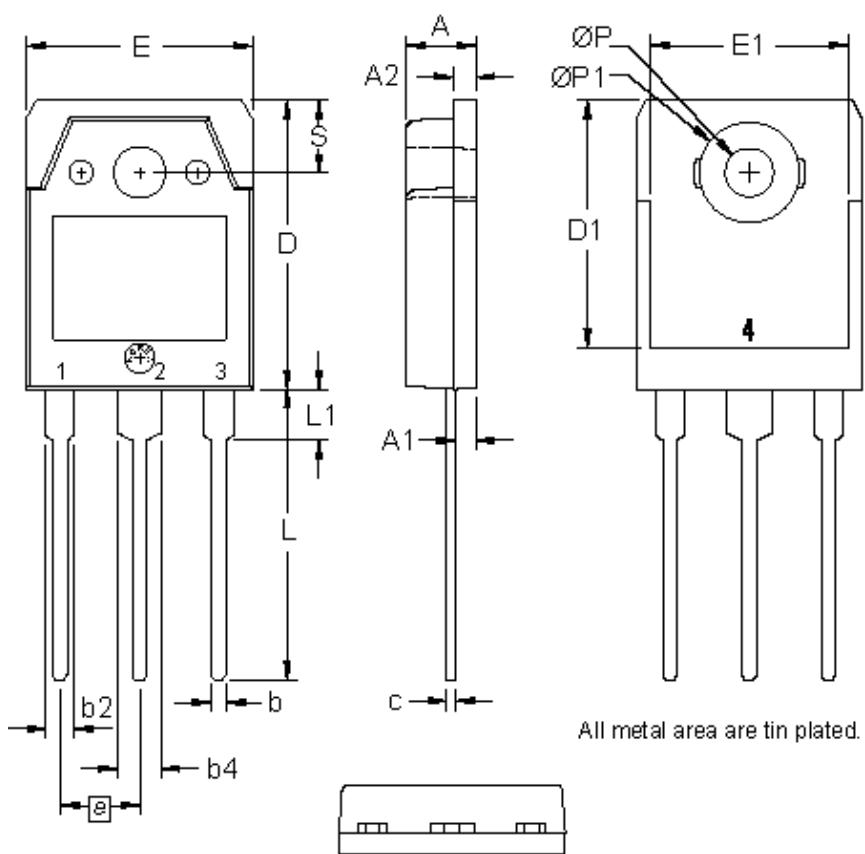
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DPG60C300QB	DPG60C300QB	Tube	30	501894

Similar Part	Package	Voltage class
DPG60C300HB	TO-247AD (3)	300
DPG60C300HJ	ISOPLUS247 (3)	300
DPG60C300PC	TO-263AB (D2Pak) (2)	300
DPF60C300HB	TO-247AD (3)	300
DPG80C300HB	TO-247AD (3)	300

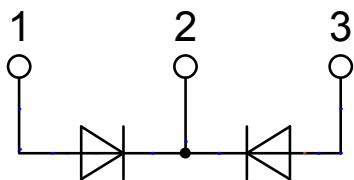
## Equivalent Circuits for Simulation

<sup>\*</sup> on die level $T_{VJ} = 175^\circ\text{C}$ 

## Outlines TO-3P



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45	BSC	0.215	BSC
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
ØP	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201



**Fast Diode**