

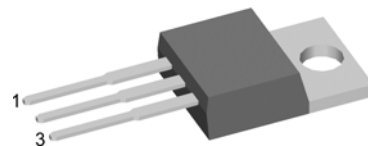
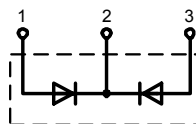
HiPerFRED²

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

$$\begin{aligned} V_{RRM} &= 300 \text{ V} \\ I_{FAV} &= 2 \times 15 \text{ A} \\ t_{rr} &= 35 \text{ ns} \end{aligned}$$

Part number

DPG 30 C 300PB



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-220AB
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

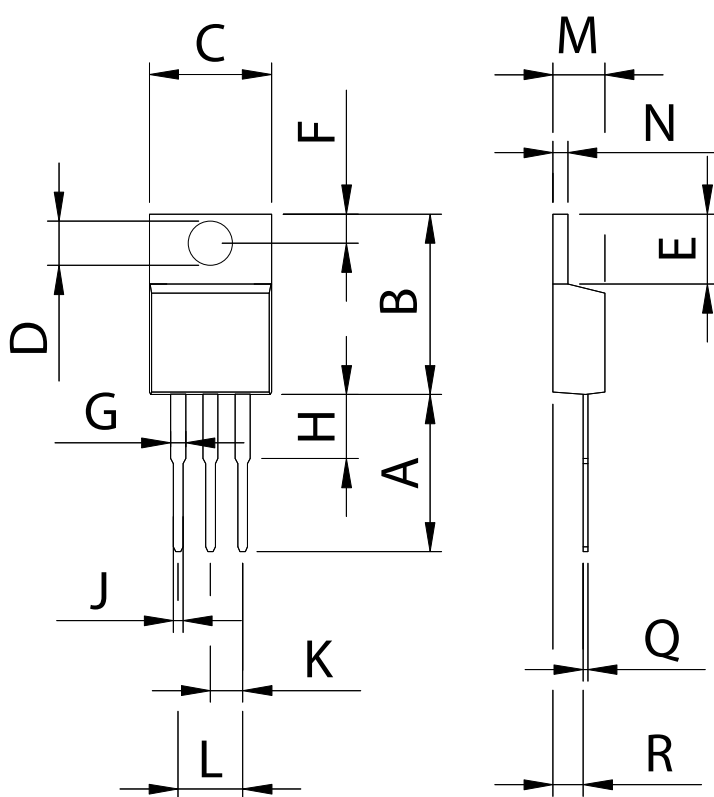
Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^\circ\text{C}$			300	V
I_R	reverse current	$V_R = 300 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$			1	μA
		$V_R = 300 \text{ V}$ $T_{VJ} = 150^\circ\text{C}$			0.08	mA
V_F	forward voltage	$I_F = 15 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$			1.25	V
		$I_F = 30 \text{ A}$			1.50	V
		$I_F = 15 \text{ A}$ $T_{VJ} = 150^\circ\text{C}$			1.00	V
		$I_F = 30 \text{ A}$			1.27	V
I_{FAV}	average forward current	rectangular, $d = 0.5$ $T_C = 140^\circ\text{C}$			15	A
V_{F0}	threshold voltage	$T_{VJ} = 175^\circ\text{C}$ for power loss calculation only			0.69	V
r_F	slope resistance				17.3	m Ω
R_{thJC}	thermal resistance junction to case				1.70	K/W
T_{VJ}	virtual junction temperature		-55		175	$^\circ\text{C}$
P_{tot}	total power dissipation	$T_C = 25^\circ\text{C}$			90	W
I_{FSM}	max. forward surge current	$t_p = 10 \text{ ms (50 Hz), sine}$ $T_{VJ} = 45^\circ\text{C}$			150	A
I_{RM}	max. reverse recovery current	$I_F = 20 \text{ A};$ $T_{VJ} = 25^\circ\text{C}$		3		A
		$-di_F/dt = 200 \text{ A}/\mu\text{s}$ $T_{VJ} = 125^\circ\text{C}$				A
t_{rr}	reverse recovery time	$V_R = 100 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$		35		ns
		$T_{VJ} = 125^\circ\text{C}$				ns
C_J	junction capacitance	$V_R = 150 \text{ V}; f = 1 \text{ MHz}$ $T_{VJ} = 25^\circ\text{C}$		tbd		pF
E_{AS}	non-repetitive avalanche energy	$I_{AS} = \text{tbd A}; L = 100 \mu\text{H}$ $T_{VJ} = 25^\circ\text{C}$			tbd	mJ
I_{AR}	repetitive avalanche current	$V_A = 1.5 \cdot V_R \text{ typ.}; f = 10 \text{ kHz}$			tbd	A

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per pin*			35	A
R_{thCH}	thermal resistance case to heatsink			0.25		K/W
M_D	mounting torque		0.4		0.6	Nm
F_C	mounting force with clip		20		60	N
T_{sta}	storage temperature		-55		150	°C
Weight				2		g

* 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.

Outlines TO-220AB



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	13.97	0.500	0.550
B	14.73	16.00	0.580	0.630
C	9.91	10.66	0.390	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	0.230	0.270
F	2.54	3.18	0.100	0.125
G	1.15	1.65	0.045	0.065
H	2.79	5.84	0.110	0.230
J	0.64	1.01	0.025	0.040
K	2.54	BSC	0.100	BSC
M	4.32	4.82	0.170	0.190
N	1.14	1.39	0.045	0.055
Q	0.35	0.56	0.014	0.022
R	2.29	2.79	0.090	0.110

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401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email amall@ameya360.com

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email service@ameya360.com

➤ Partnership :

Tel +86 (21) 64016692-8333

Email mkt@ameya360.com