

advanced

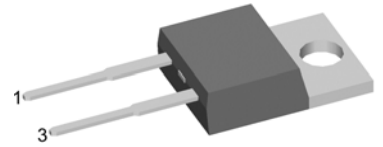
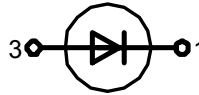
HiPerFRED²

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

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

Part number

DPG 10 I 300PA



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

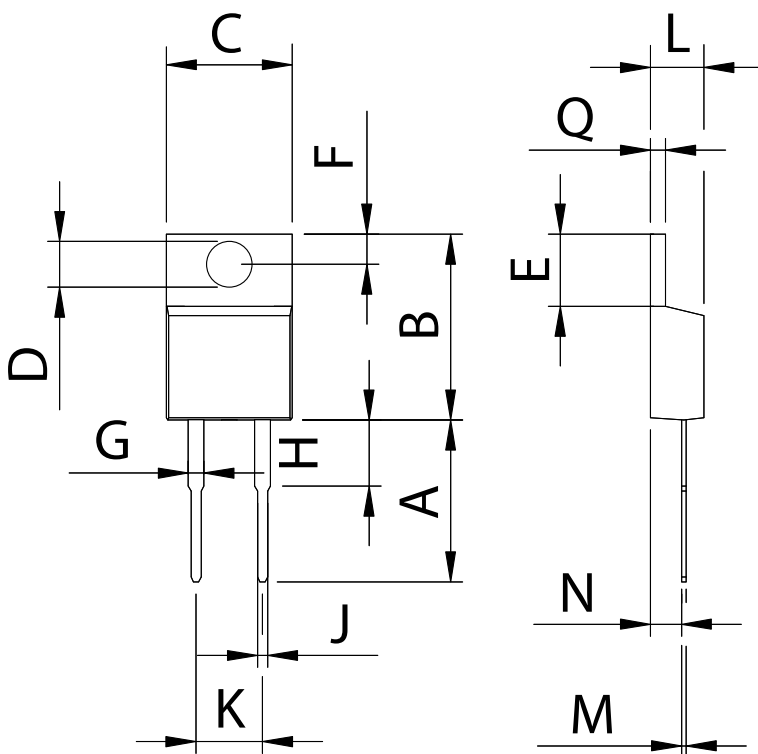
Ratings

Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25\text{ °C}$			300	V	
I_R	reverse current	$V_R = 300\text{ V}$			1	μA	
		$V_R = 300\text{ V}$			0.06	mA	
V_F	forward voltage	$I_F = 10\text{ A}$			1.27	V	
		$I_F = 20\text{ A}$			1.45	V	
		$I_F = 10\text{ A}$	$T_{VJ} = 150\text{ °C}$			0.98	V
		$I_F = 20\text{ A}$	$T_{VJ} = 150\text{ °C}$			1.17	V
I_{FAV}	average forward current	rectangular, $d = 0.5$			10	A	
V_{FO}	threshold voltage	} for power loss calculation only			0.74	V	
r_F	slope resistance				17.7	m Ω	
R_{thJC}	thermal resistance junction to case				2.30	K/W	
T_{VJ}	virtual junction temperature		-55		175	$^{\circ}\text{C}$	
P_{tot}	total power dissipation	$T_C = 25\text{ °C}$			65	W	
I_{FSM}	max. forward surge current	$t_p = 10\text{ ms (50 Hz), sine}$			100	A	
I_{RM}	max. reverse recovery current	$I_F = 10\text{ A};$		3		A	
		$-di_F/dt = 200\text{ A}/\mu\text{s}$	$T_{VJ} = 125\text{ °C}$			A	
t_{rr}	reverse recovery time	$V_R = 100\text{ V}$		35		ns	
			$T_{VJ} = 125\text{ °C}$			ns	
C_J	junction capacitance	$V_R = 150\text{ V}; f = 1\text{ MHz}$		tbd		pF	
E_{AS}	non-repetitive avalanche energy	$I_{AS} = \text{tbd A}; L = 100\text{ }\mu\text{H}$			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			0.50		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

* Irms 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-220AC


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	14.73	0.500	0.580
B	14.23	16.51	0.560	0.650
C	9.66	10.66	0.380	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.300	0.420
F	2.54	3.42	0.100	0.135
G	1.15	1.77	0.045	0.070
H	-	6.35	-	0.250
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.190	0.210
L	3.56	4.82	0.140	0.190
M	0.51	0.76	0.020	0.030
N	2.04	2.49	0.080	0.115
Q	0.64	1.39	0.025	0.055