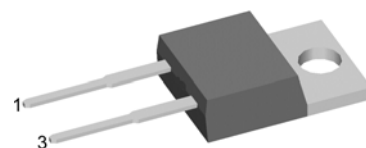


HiPerFRED²

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

Part number

DPF 30 I 300 PA



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:

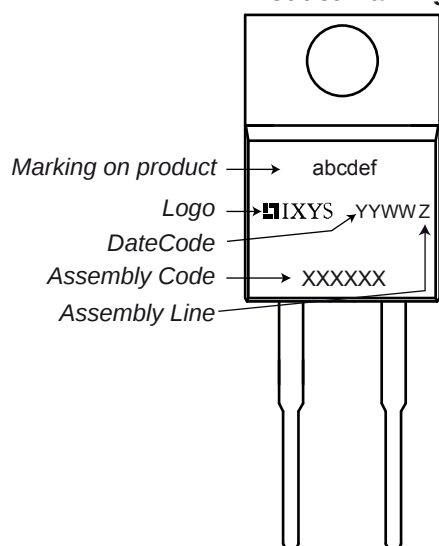
- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

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	$V_R = 300\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			5	μA
		$V_R = 300\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$			0.25	mA
V_F	forward voltage	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			1.17	V
		$I_F = 60\text{ A}$				1.37	V
		$I_F = 30\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$			0.98	V
		$I_F = 60\text{ A}$				1.21	V
I_{FAV}	average forward current	rectangular $d = 0.5$	$T_C = 145^{\circ}\text{C}$			30	A
V_{FO}	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^{\circ}\text{C}$		0.72	V
r_F	slope resistance					7.4	m Ω
R_{thJC}	thermal resistance junction to case					0.85	K/W
T_{VJ}	virtual junction temperature			-55		175	$^{\circ}\text{C}$
P_{tot}	total power dissipation		$T_C = 25^{\circ}\text{C}$			175	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine	$T_{VJ} = 45^{\circ}\text{C}$			390	A
I_{RM}	max. reverse recovery current		$T_{VJ} = 25^{\circ}\text{C}$		6		A
		$I_F = 30\text{ A}; V_R = 200\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		10		A
t_{rr}	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}\text{C}$		55		ns
			$T_{VJ} = 125^{\circ}\text{C}$		85		ns
C_J	junction capacitance	$V_R = 150\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		42		pF

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			35	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
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

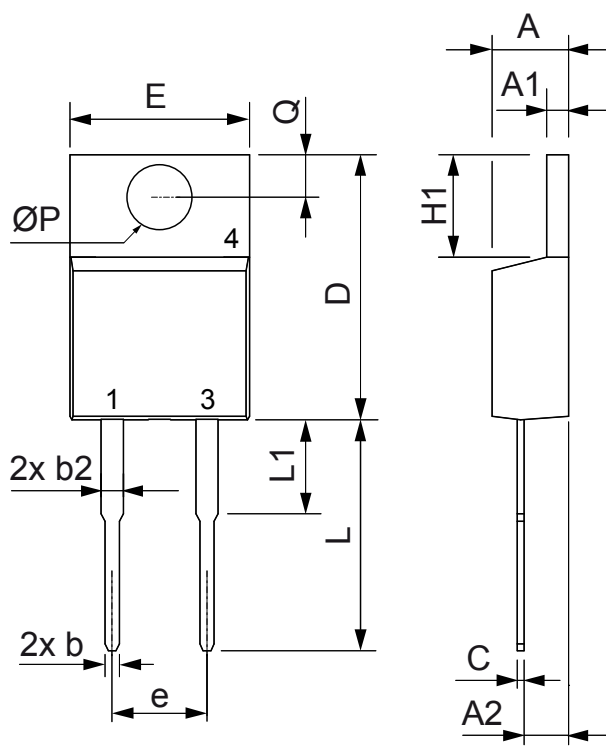


Part number

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

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPF 30 I 300 PA	DPF30I300PA	Tube	50	511414

Similar Part	Package	Voltage Class
DPG30I300PA	TO-220AC (2)	300
DPG30I300HA	TO-247AD (2)	300

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

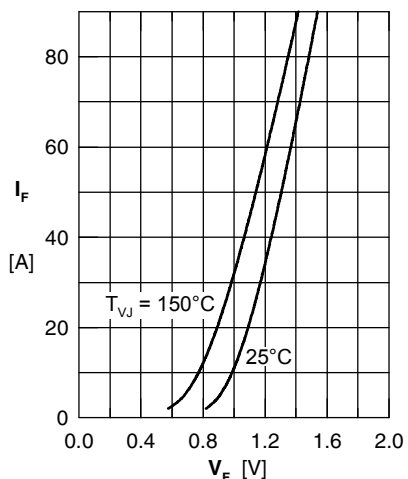


Fig. 1 Forward current I_F versus forward voltage V_F

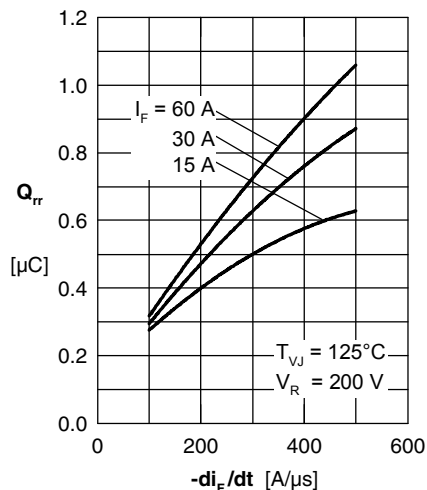


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

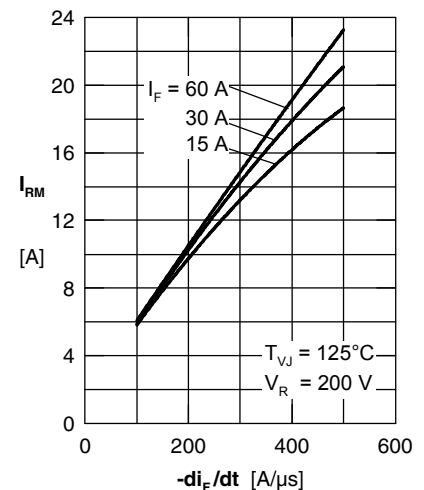


Fig. 3 Typ. reverse recovery current I_{RM} versus $-di_F/dt$

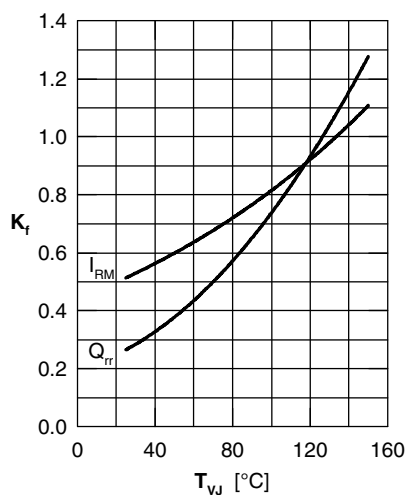


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

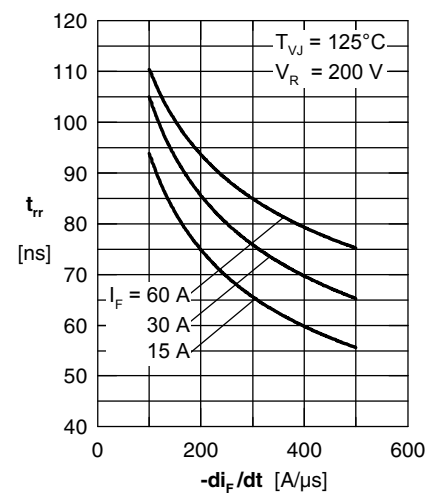


Fig. 5 Typ. reverse recovery time t_{rr} versus $-di_F/dt$

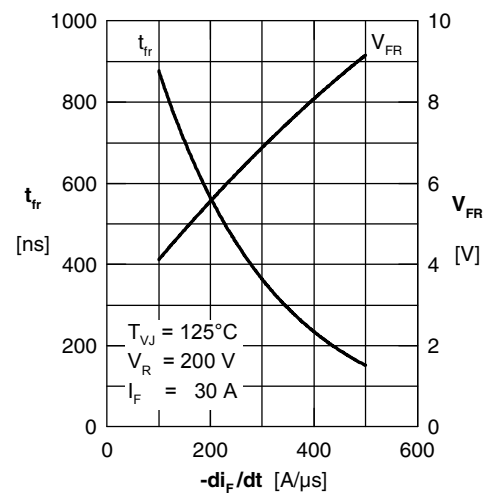


Fig. 6 Typ. forward recovery voltage V_{FR} & forward recovery time t_{fr} vs. di_F/dt

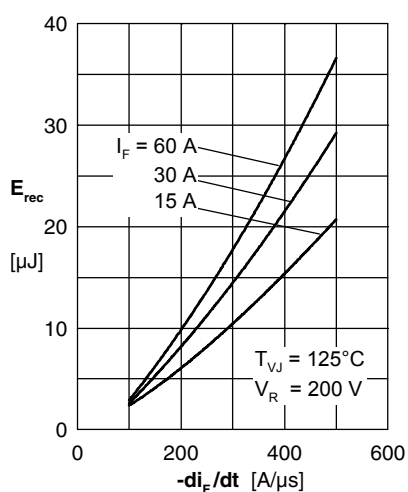


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

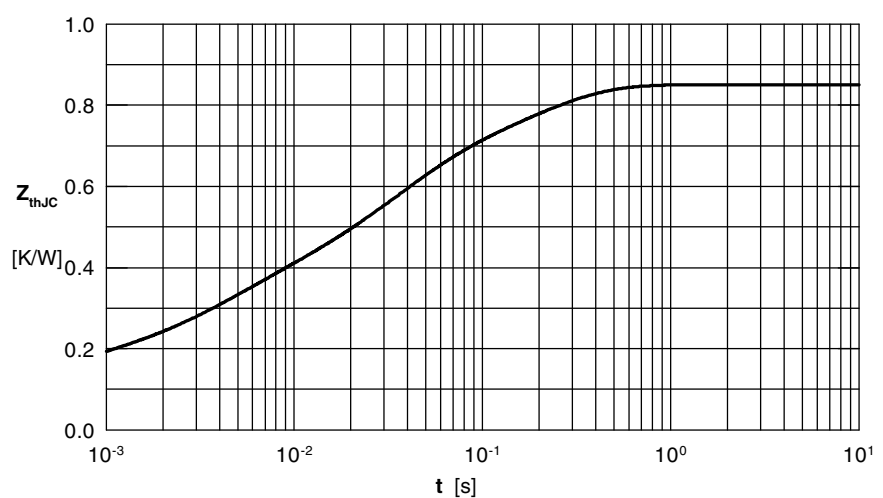


Fig. 8 Transient thermal impedance junction to case