IXYS

advanced

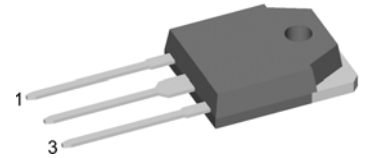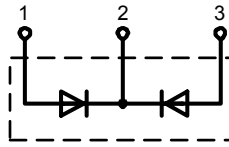## HiPerFRED

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

V_{RRM} = 300 V

I_{FAV} = 2x 60 A

t_{rr} = 35 ns

Part number   *(Marking on product)*

DPG 120 C 300QB

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm 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
- Epoxy meets UL 94V-0
- RoHS compliant

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage		T_{VJ} = 25 °C			300	V
I_R	reverse current	V_R = 300 V	T_{VJ} = 25 °C			1	µA
		V_R = 300 V	T_{VJ} = 150 °C			0.35	mA
V_F	forward voltage	I_F = 60 A	T_{VJ} = 25 °C			1.40	V
		I_F = 120 A				1.72	V
		I_F = 60 A	T_{VJ} = 150 °C			1.10	V
		I_F = 120 A				1.45	V
I_{FAV}	average forward current	rectangular, d = 0.5	T_C = 125 °C			60	A
V_{F0}	threshold voltage	T_{VJ} = 175 °C				0.69	V
r_F	slope resistance	} for power loss calculation only				5.8	mΩ
R_{thJC}	thermal resistance junction to case					0.55	K/W
T_{VJ}	virtual junction temperature			-55		175	°C
P_{tot}	total power dissipation		T_C = 25 °C			275	W
I_{FSM}	max. forward surge current	t_p = 10 ms (50 Hz), sine	T_{VJ} = 45 °C			550	A
I_{RM}	max. reverse recovery current	I_F = 60 A;	T_{VJ} = 25 °C		3		A
			T_{VJ} = 125 °C				A
t_{rr}	reverse recovery time	-di$_F$/dt = 200 A/µs	T_{VJ} = 25 °C		35		ns
		V_R = 100 V	T_{VJ} = 125 °C				ns
C_J	junction capacitance	V_R = 150 V; f = 1 MHz	T_{VJ} = 25 °C				pF
E_{AS}	non-repetitive avalanche energy	I_{AS} = A; L = 100 µH	T_{VJ} = 25 °C			tbd	mJ
I_{AR}	repetitive avalanche current	V_A = 1.5·V_R typ.; f = 10 kHz				tbd	A

Ratings

IXYS reserves the right to change limits, conditions and dimensions.   * Data according to IEC 60747and per diode unless otherwise specified

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Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I$_{RMS}$	RMS current	per pin*			70	A
R$_{thCH}$	thermal resistance case to heatsink			0.25		K/W
M$_D$	mounting torque		0.8		1.2	Nm
F$_C$	mounting force with clip		20		120	N
T$_{stg}$	storage temperature		-55		150	°C
Weight				5		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-3P
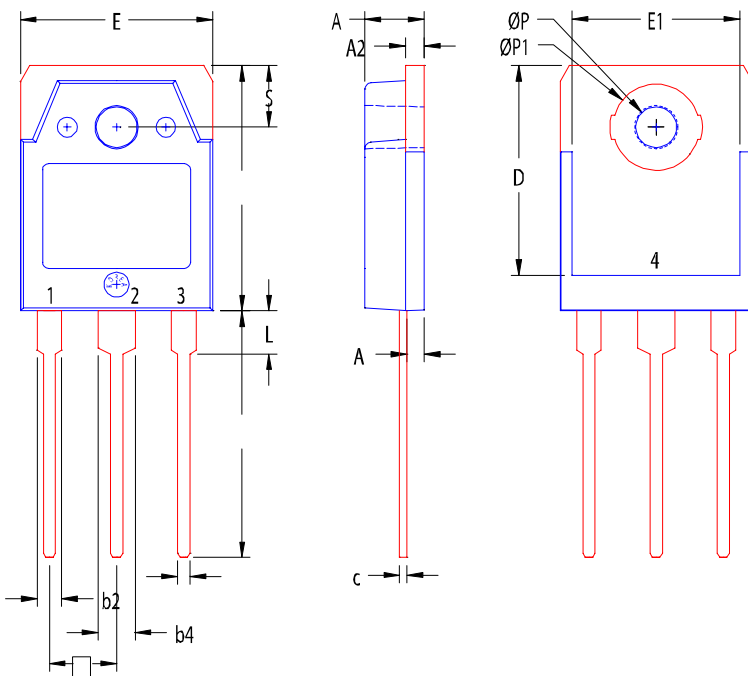
SYM	INCHES MIN	MAX	MILLIMETERS MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.791	19.80	20.10
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
ØP	.126	.134	3.20	3.40
ØP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

All metal area are tin plated.

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