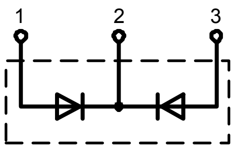
HiPerFRED

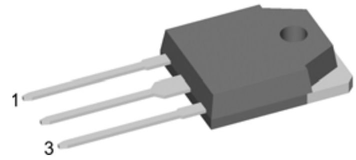
V_{RRM} = 200 V
I_{FAV} = 2x 30 A
t_{rr} = 35 ns

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

Part number *(Marking on product)*

DPG 60 C 200QB





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		Ratings min.	typ.	max.	Unit
V_{RRM}	*max. repetitive reverse voltage*		T_{VJ} = 25 °C			200	V
I_R	*reverse current*	V_R = 200 V	T_{VJ} = 25 °C			1	µA
		V_R = 200 V	T_{VJ} = 150 °C			0.1	mA
V_F	*forward voltage*	I_F = 30 A	T_{VJ} = 25 °C			1.34	V
		I_F = 60 A				1.63	V
		I_F = 30 A	T_{VJ} = 150 °C			1.06	V
		I_F = 60 A				1.39	V
I_{FAV}	*average forward current*	rectangular, d = 0.5	T_C = 135 °C			30	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 175 °C			0.70	V
r_F	*slope resistance*					10.5	mΩ
R_{thJC}	*thermal resistance junction to case*					0.95	K/W
T_{VJ}	*virtual junction temperature*			-55		175	°C
P_{tot}	*total power dissipation*		T_C = 25 °C			160	W
I_{FSM}	*max. forward surge current*	t_p = 10 ms (50 Hz), sine	T_{VJ} = 45 °C			300	A
I_{RM}	*max. reverse recovery current*	I_F = 30 A;	T_{VJ} = 25 °C		3		A
			T_{VJ} = 125 °C				A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 200 A/µs; V_R = 100 V	T_{VJ} = 25 °C		35		ns
			T_{VJ} = 125 °C				ns
C_J	*junction capacitance*	V_R = 100 V; f = 1 MHz	T_{VJ} = 25 °C		40		pF
E_{AS}	*non-repetitive avalanche energy*	I_{AS} = 9 A; L = 100 µH	T_{VJ} = 25 °C			4	mJ
I_{AR}	*repetitive avalanche current*	$V_A = 1.5 \cdot V_R$ typ.; f = 10 kHz				0.9	A

IXYS reserves the right to change limits, conditions and dimensions.

* Data according to IEC 60747and per diode unless otherwise specified

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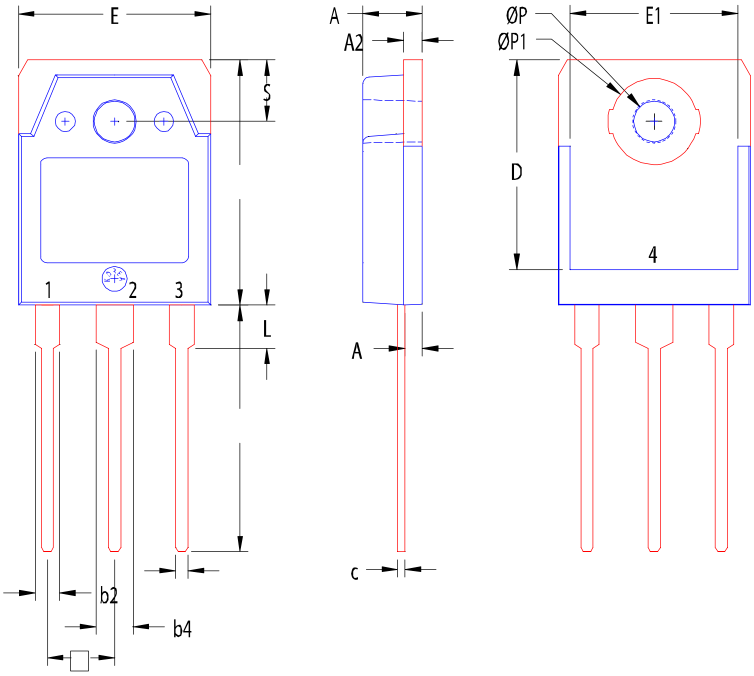
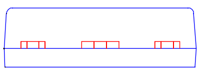
Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per pin*			50	A
R_{thCH}	*thermal resistance case to heatsink*			0.25		K/W
M_D	*mounting torque*		0.8		1.2	Nm
F_C	*mounting force with clip*		20		120	N
T_{stg}	*storage temperature*		-55		150	°C
Weight				5		g

* 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	INCHES MAX	MILLIMETERS MIN	MILLIMETERS 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.

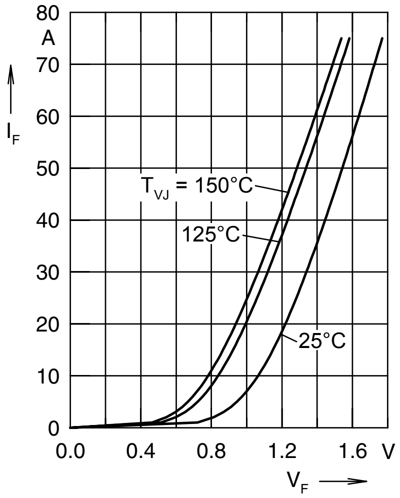


Fig. 1 Forward current I_F vs. V_F

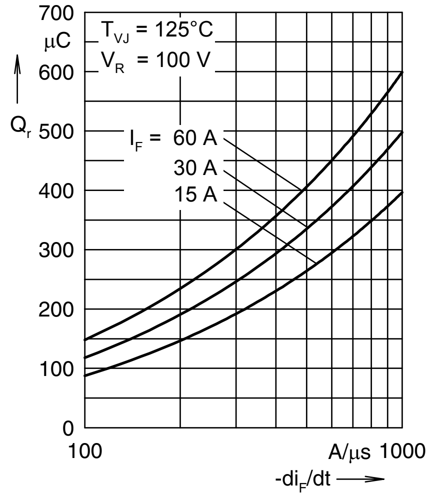


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

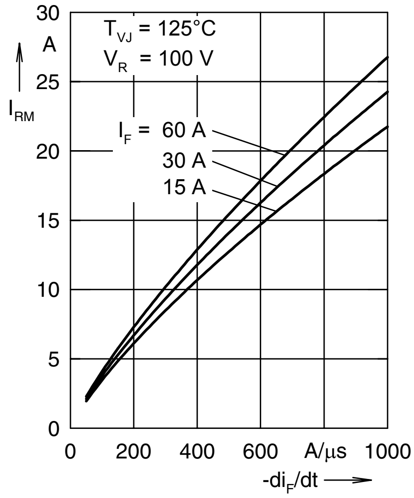


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

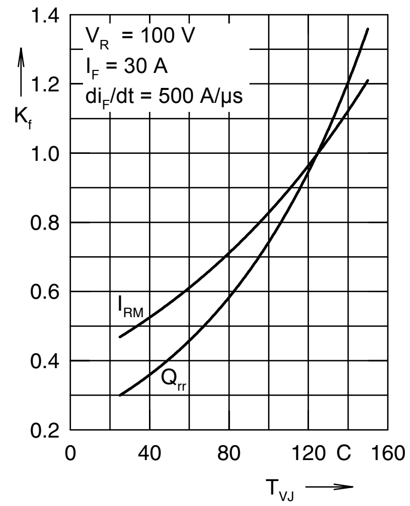


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

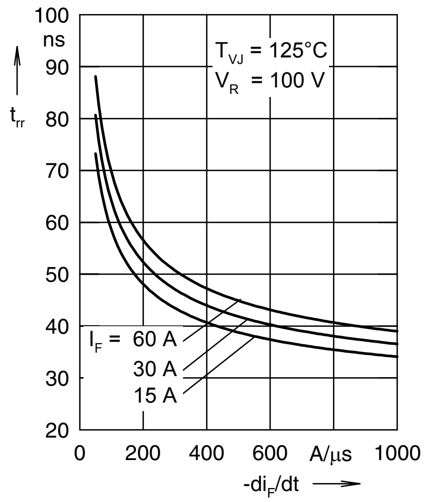


Fig. 5 Typ. recovery time t_{rr} vs. $-di_F/dt$

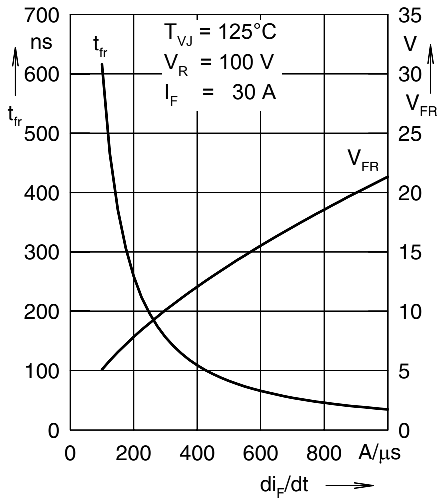


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

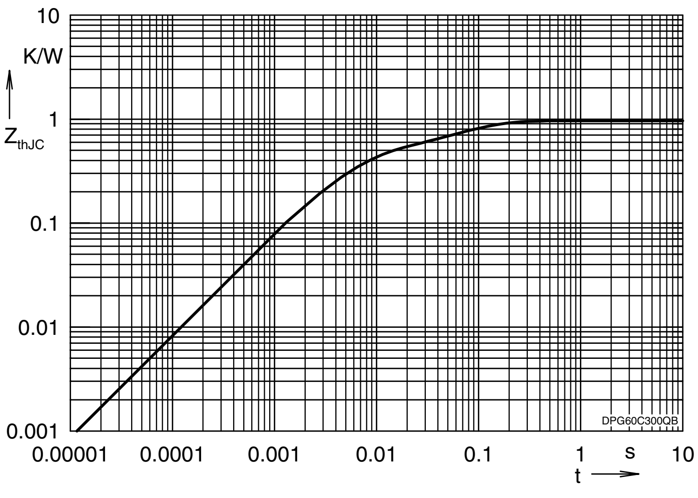


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} [K/W]	t_i [s]
1	0.505	0.005
2	0.195	0.0003
3	0.250	0.041

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