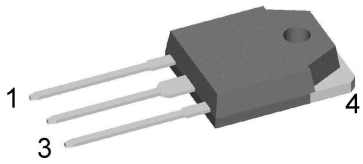
HiPerFRED²

V_{RRM}	=	300 V
I_{FAV}	= 2x	30 A
t_{rr}	=	35 ns

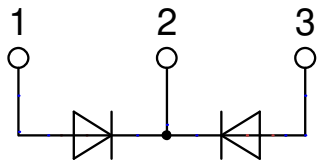
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DPG60C300QB



Backside: cathode



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

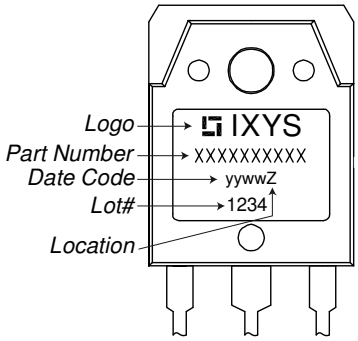
- Industry standard outline compatible with TO-247
- RoHS compliant
- Epoxy meets UL 94V-0

Fast Diode

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			300	V
I_R	*reverse current, drain current*	V_R = 300 V	T_{VJ} = 25°C			1	µA
		V_R = 300 V	T_{VJ} = 150°C			0.1	mA
V_F	*forward voltage drop*	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*	T_C = 140°C	T_{VJ} = 175°C			30	A
		rectangular d = 0.5					
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
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			160	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			360	A
C_J	*junction capacitance*	V_R = 150 V f = 1 MHz	T_{VJ} = 25°C		50		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25 °C		3		A
		I_F = 30 A; V_R = 200 V	T_{VJ} = 125 °C		7		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 200 A/µs	T_{VJ} = 25 °C		35		ns
			T_{VJ} = 125 °C		55		ns

Package TO-3P			Ratings			
Symbol	**Definition**	**Conditions**	**min.**	**typ.**	**max.**	**Unit**
I_{RMS}	*RMS current*	per terminal 1)			50	A
T_{VJ}	*virtual junction temperature*		-55		175	°C
T_{op}	*operation temperature*		-55		150	°C
T_{stg}	*storage temperature*		-55		150	°C
Weight				5		g
M_D	*mounting torque*		0.8		1.2	Nm
F_C	*mounting force with clip*		20		120	N

Product Marking



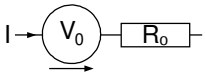
Part description

D = Diode
P = HiPerFRED
G = extreme fast
60 = Current Rating [A]
C = Common Cathode
300 = Reverse Voltage [V]
QB = TO-3P (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DPG60C300QB	DPG60C300QB	Tube	30	501894

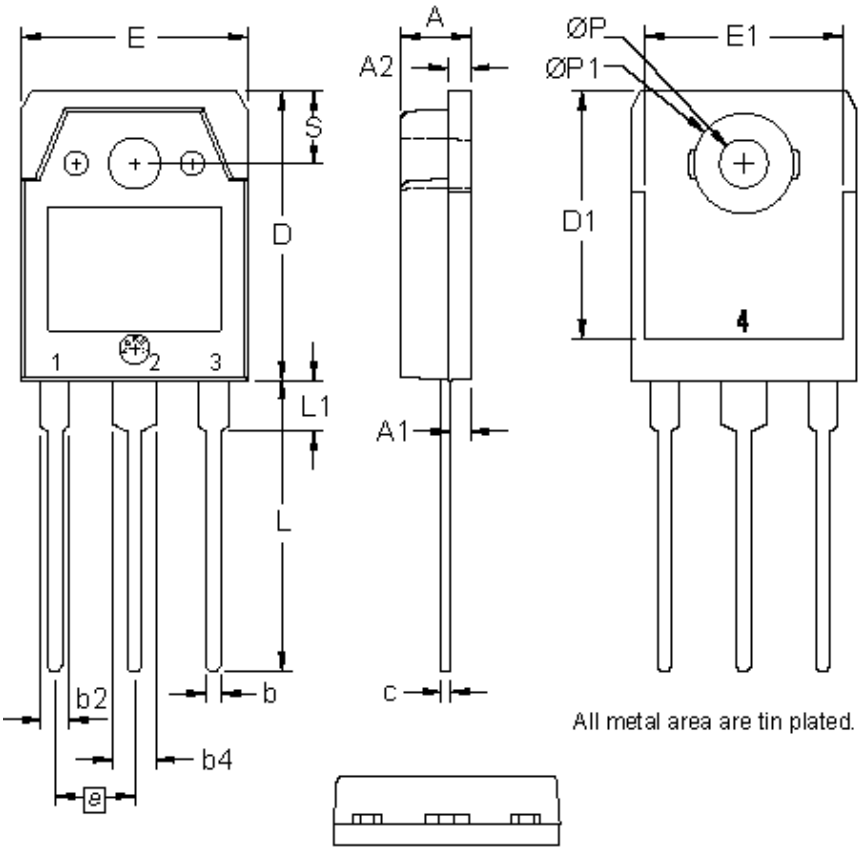
Similar Part	Package	Voltage class
DPG60C300HB	TO-247AD (3)	300
DPG60C300HJ	ISOPLUS247 (3)	300
DPG60C300PC	TO-263AB (D2Pak) (2)	300
DPF60C300HB	TO-247AD (3)	300
DPG80C300HB	TO-247AD (3)	300

Equivalent Circuits for Simulation ** on die level* T_{VJ} = 175°C

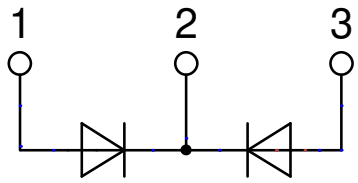


		Fast Diode	
$V_{0\ max}$	*threshold voltage*	0.7	V
$R_{0\ max}$	*slope resistance **	7.9	mΩ

Outlines TO-3P



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45 BSC		0.215 BSC	
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
Ø P	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201



Fast Diode

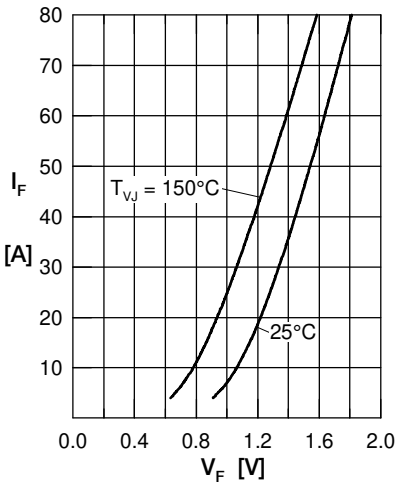


Fig. 1 Forward current I_F versus V_F

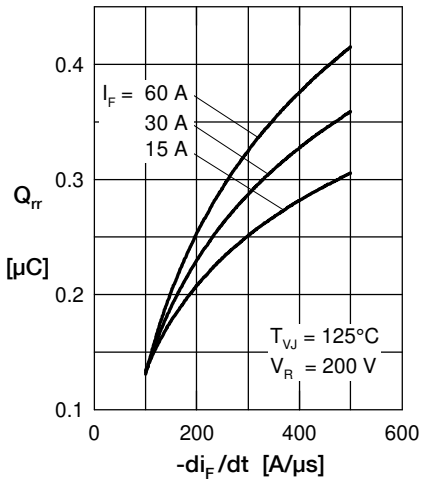


Fig. 2 Typ. reverse recov. charge Q_{rr} versus $-di_F/dt$

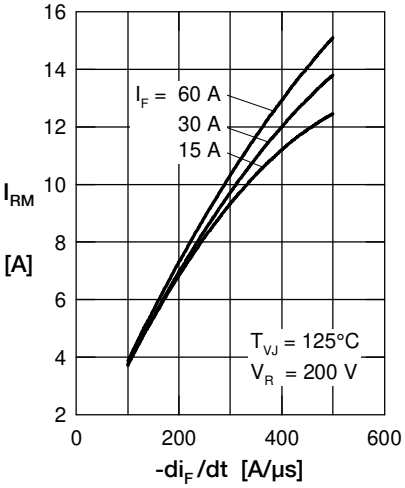


Fig. 3 Typ. reverse recov. current I_{RM} versus $-di_F/dt$

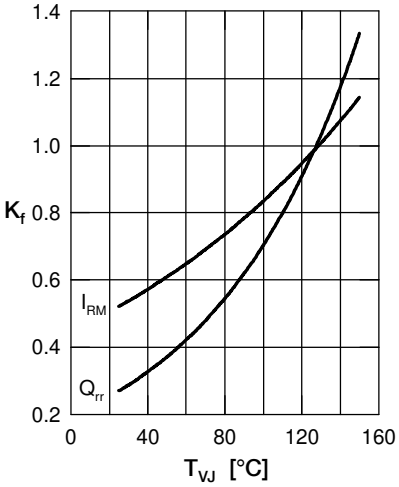


Fig. 4 Typ. dynamic parameters Q_{rr}, I_{RM} versus T_{VJ}

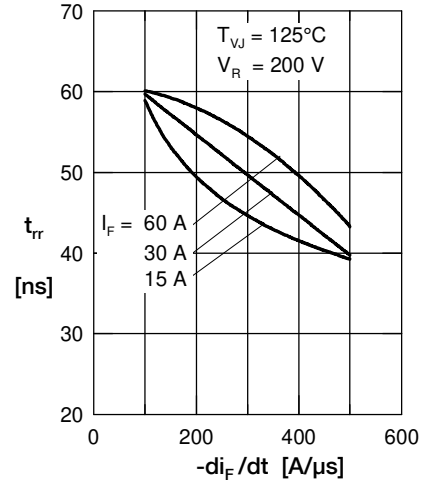


Fig. 5 Typ. reverse recov. time t_{rr} versus $-di_F/dt$

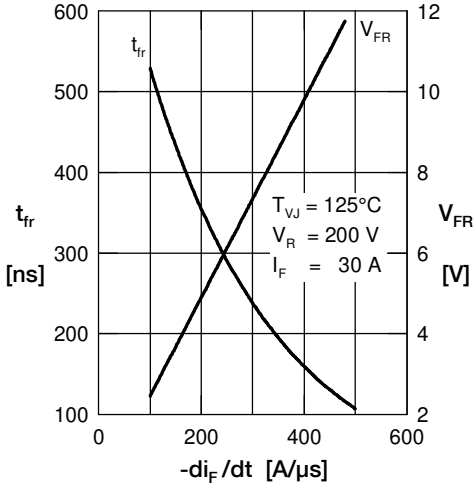


Fig. 6 Typ. forward recov. voltage V_{FR} V_{FR} & time t_{fr} versus di_F/dt

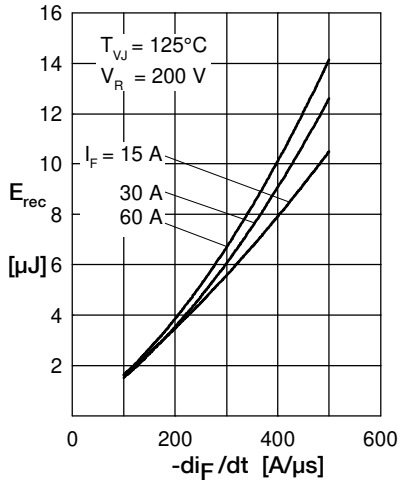


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

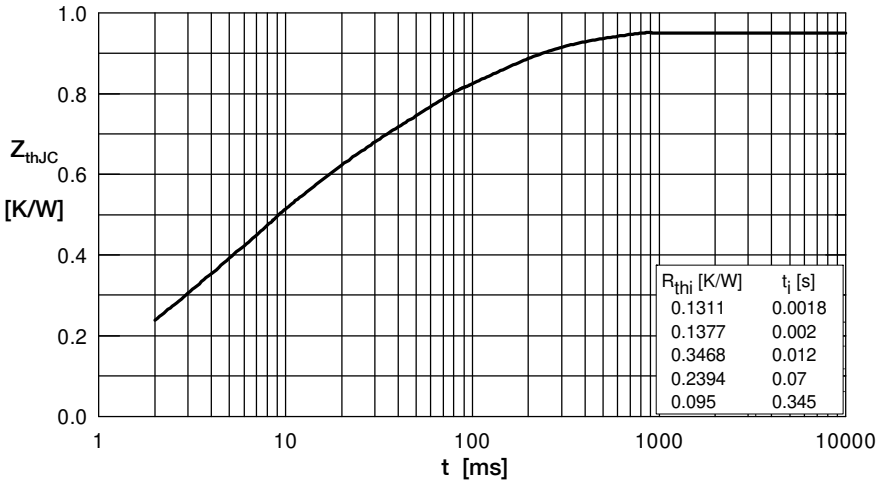


Fig. 8 Transient thermal impedance junction to case

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