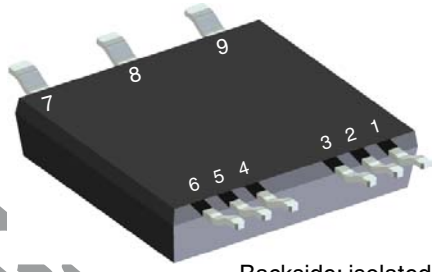
HiPerFRED²

V_{RRM} = 600 V
I_{DAV} = 60 A
t_{rr} = 40 ns

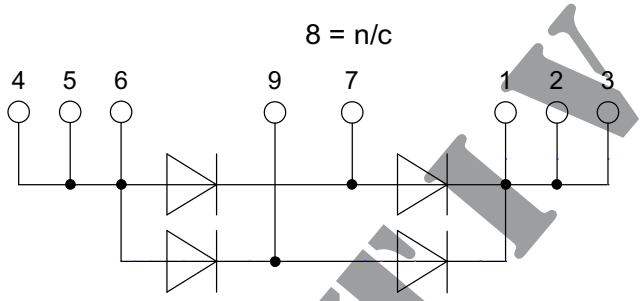
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
1~ Rectifier Bridge

Part number
DPG60B600LB



Backside: isolated

E72873



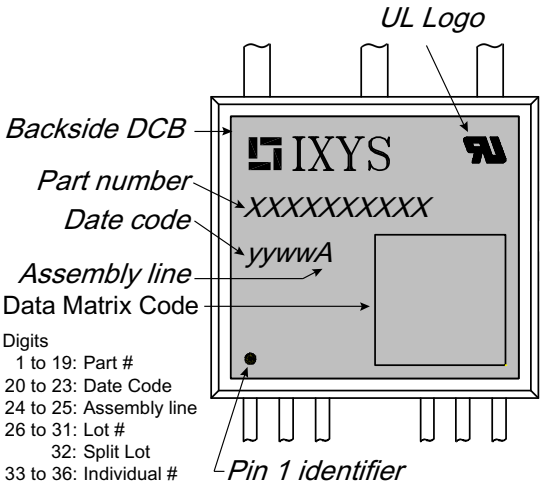
Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low Irm-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low Irm reduces:
  - Power dissipation within the diode
  - Turn-on loss in the commutating switch

Applications:
- Rectifiers in switch mode power supplies (SMPS)

Package: SMPD
- Isolation Voltage: 3000 V~ (t = 1s)
- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

Fast Diode				Ratings			
Symbol	**Definitions**	**Conditions**		**min.**	**typ.**	**max.**	
V_{RSM}	*max. non-repetitive rev. blocking voltage*		T_{VJ} = 25°C			600	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			600	V
I_R	*reverse current, drain current*	V_R = 600 V	T_{VJ} = 25°C T_{VJ} = 150°C			250 2	µA mA
V_F	*forward voltage drop*	I_F = 30 A I_F = 60 A	T_{VJ} = 25°C			2.51 3.19	V V
		I_F = 30 A I_F = 60 A	T_{VJ} = 150°C			1.59 2.21	V V
I_{D25} I_{D80}	*diode forward DC current*	T_C = 25°C T_C = 80°C	T_{VJ} = 175°C T_{VJ} = 175°C			77 58	A A
I_{DAV}	*bridge output current*	rectangular; d = 0.5; T_C = 125°C	T_{VJ} = 175°C			60	A
V_{F0} r_F	*threshold voltage* *slope resistance*	for power loss calculation only	T_{VJ} = 175°C			0.85 17	V mΩ
R_{thJC}	*thermal resistance junction to case*					101	K/W
R_{thJH}	*thermal resistance case to heatsink*	with thermal transfer paste (IXYS test setup)			0.40		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			135	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			250	A
C_J		V_R = 300 V; f = 1 MHz	T_{VJ} = 25°C		30		pF
I_{RM}	*max. reverse recovery current*	I_F = 30 A; V_R = 300 V $-di_F/dt$ = 400 A/µs	T_{VJ} = 25°C T_{VJ} = 125°C		5.5 12		A A
t_{rr}	*reverse recovery time*		T_{VJ} = 25°C T_{VJ} = 125°C		40 85		ns ns

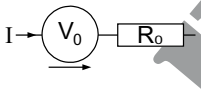
Package SMPD			Ratings			
Symbol	**Definitions**	**Conditions**	**min.**	**typ.**	**max.**	
I_{RMS}	*RMS current*	wide pin standard pin			100 60	A A
T_{stg} T_{op} T_{VJ}	*storage temperature* *opertation temperature* *virtual junction temperature*		-55 -55 -55		125 150 175	°C °C °C
Weight				8.5		g
F_C	*mounting force with clip*		40		130	N
$d_{Spp/App}$ $d_{Spb/Apb}$	*creepage distance on surface /* *striking distance through air*	terminal to terminal terminal to backside	1.6 4.0			mm mm
V_{ISOL}	*isolation voltage*	t = 1 second t = 1 minute 50/60 Hz; RMS; I_{ISOL} < 1 mA		3000 2500		V V



Part number
D = Diode
P = HiPerFRED
G = extreme fast
60 = Current Rating [A]
B = 1~ Rectifier Bridge
600 = Reverse Voltage [V]
LB = SMPD-B

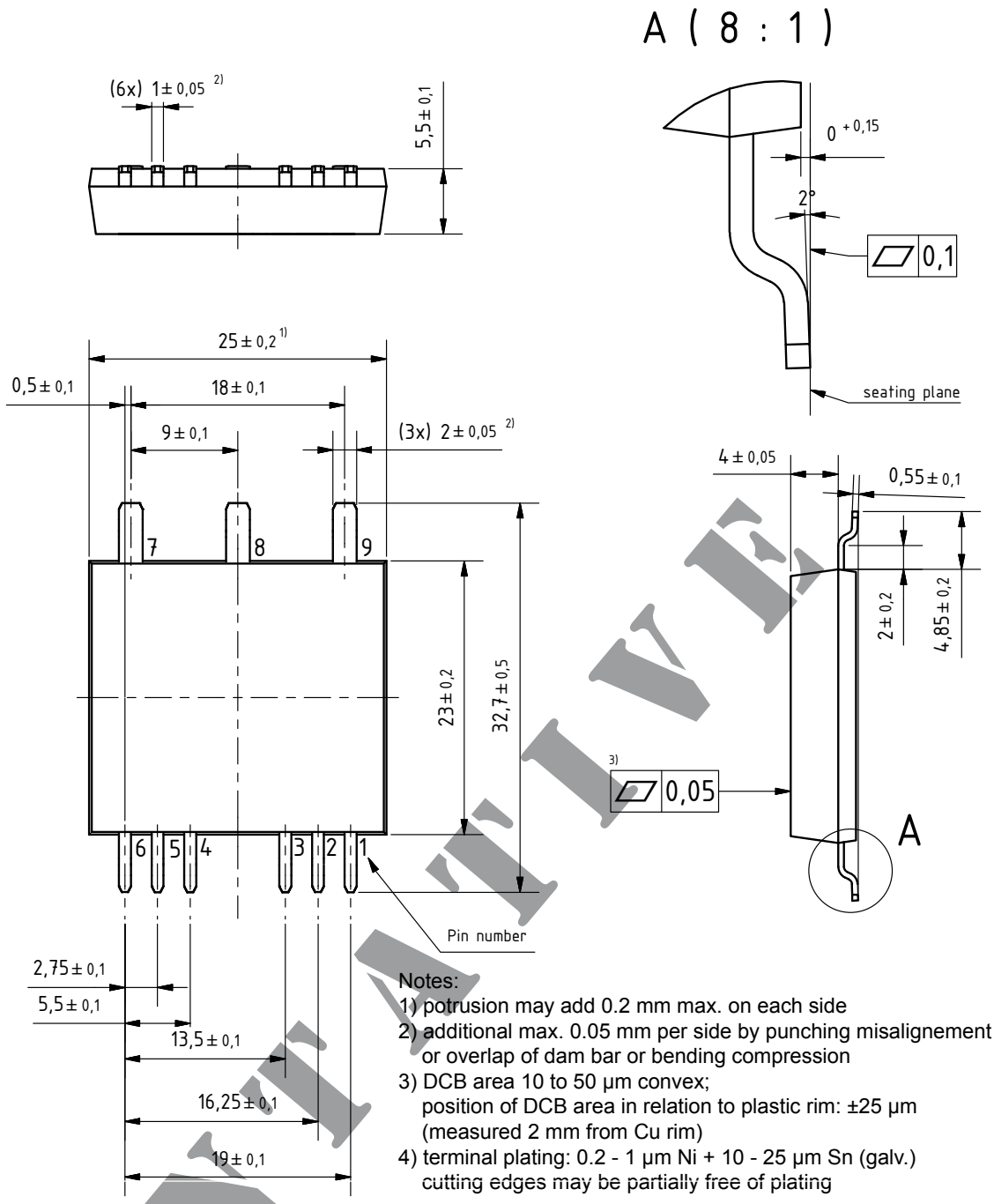
Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Ordering Code
Standard	DPG60B600LB	DPG60B600LB	Blister	45	512859
	DPG60B600LB-TRR	DPG60B600LB	Tape&Reel	200	512852

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



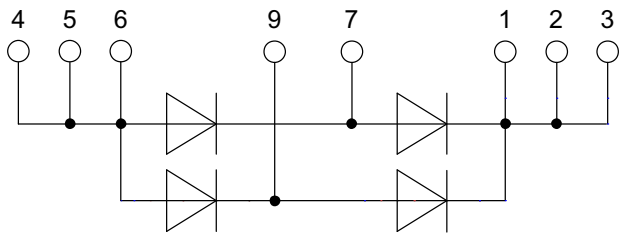
$V_{0\ max}$	*threshold voltage*	0.85	V
$R_{0\ max}$	*slope resistance **	17	mΩ

Outlines SMPD



Notes:
1) potrusion may add 0.2 mm max. on each side
2) additional max. 0.05 mm per side by punching misalignement or overlap of dam bar or bending compression
3) DCB area 10 to 50 µm convex; position of DCB area in relation to plastic rim: ±25 µm (measured 2 mm from Cu rim)
4) terminal plating: 0.2 - 1 µm Ni + 10 - 25 µm Sn (galv.) cutting edges may be partially free of plating

8 = n/c



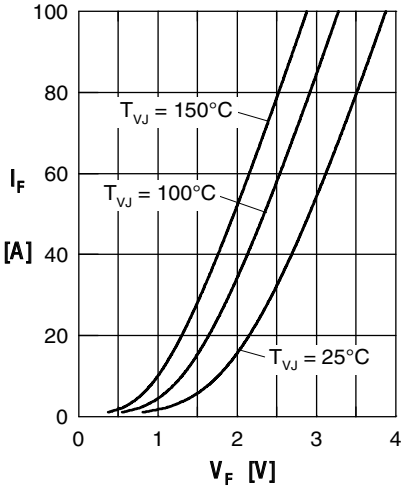


Fig. 1 Forward current I_F versus V_F

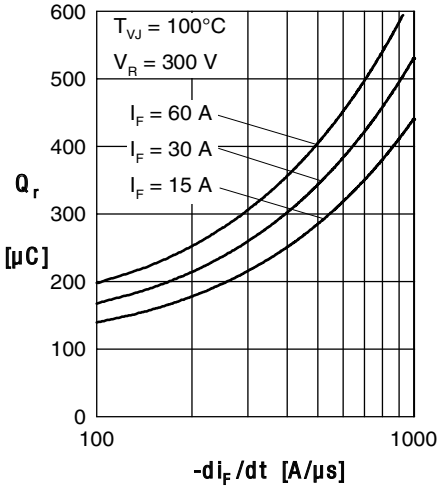


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

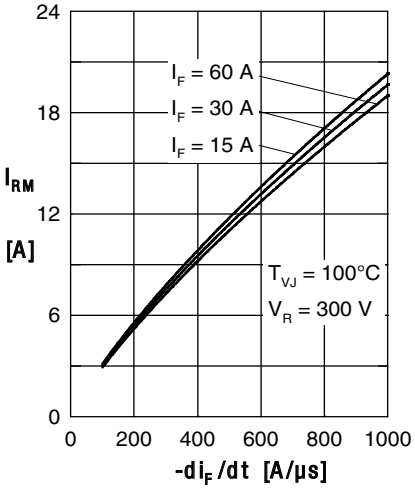


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

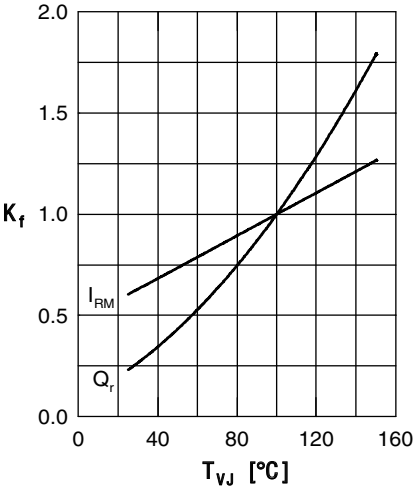


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

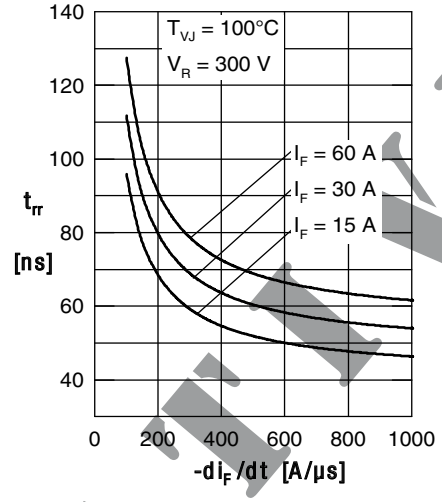


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

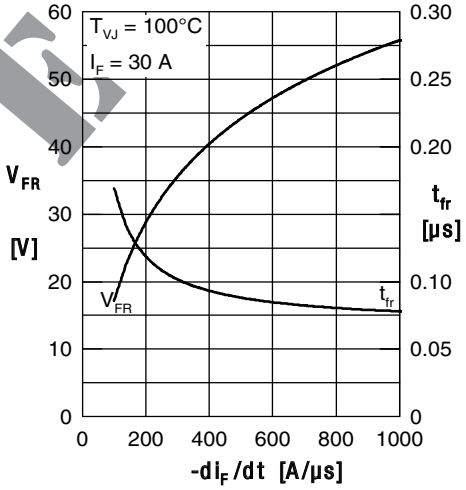


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

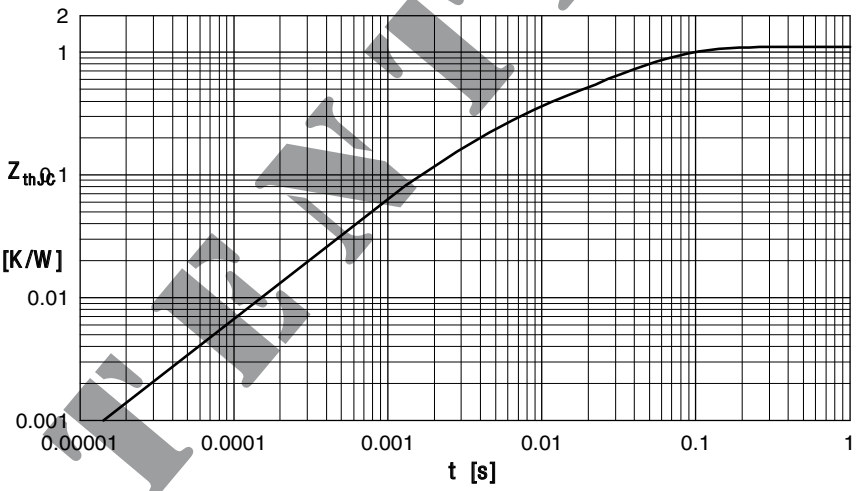


Fig. 7 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.465	0.0052
2	0.179	0.0003
3	0.256	0.0396