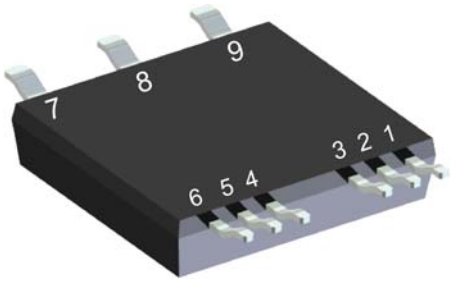
Sonic Fast Recovery Diode

V_{RRM} = 1200 V
I_{DAV} = 60 A
t_{rr} = 160 ns

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

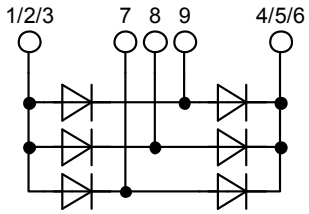
Part number

DHG60U1200LB



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:

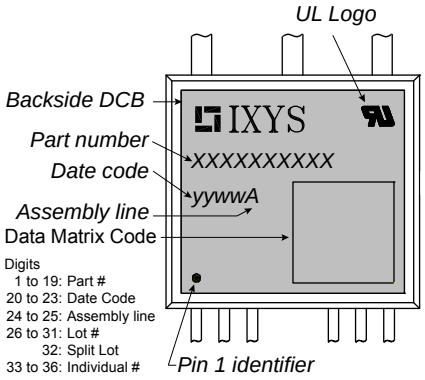
- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package: SMPD

- Isolation Voltage: 3000 V~
- 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	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current, drain current*	V_R = 1200 V	T_{VJ} = 25°C			50	µA
		V_R = 1200 V	T_{VJ} = 125°C			0.5	mA
V_F	*forward voltage drop*	I_F = 20 A	T_{VJ} = 25°C			1.99	V
		I_F = 60 A				1.93	V
		I_F = 20 A	T_{VJ} = 125°C			2.30	V
		I_F = 60 A				3.21	V
I_{DAV}	*bridge output current*	T_C = 80°C	T_{VJ} = 150°C			60	A
		rectangular d = 0.5					
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 150°C			1.35	V
r_F	*slope resistance* }					29	mΩ
R_{thJC}	*thermal resistance junction to case*					1.2	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.40		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			100	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine; V_R = 0 V	T_{VJ} = 45°C			200	A
C_J	*junction capacitance*	V_R = 600 V f = 1 MHz	T_{VJ} = 25°C		11		pF
I_{RM}	*max. reverse recovery current*		T_{VJ} = 25°C		19		A
		I_F = 20 A; V_R = 600 V	T_{VJ} = 125°C		25		A
t_{rr}	*reverse recovery time*	$-di_F/dt$ = 600 A/µs	T_{VJ} = 25°C		160		ns
			T_{VJ} = 125°C		280		ns

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



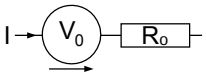
Part number

D = Diode
H = Sonic Fast Recovery Diode
G = extreme fast
60 = Current Rating [A]
U = 3~ Rectifier Bridge
1200 = Reverse Voltage [V]
LB = SMPD-B

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG60U1200LB	DHG60U1200LB	Blister	45	513421
Alternative	DHG60U1200LB-TRR	DHG60U1200LB	Tape & Reel	200	513414

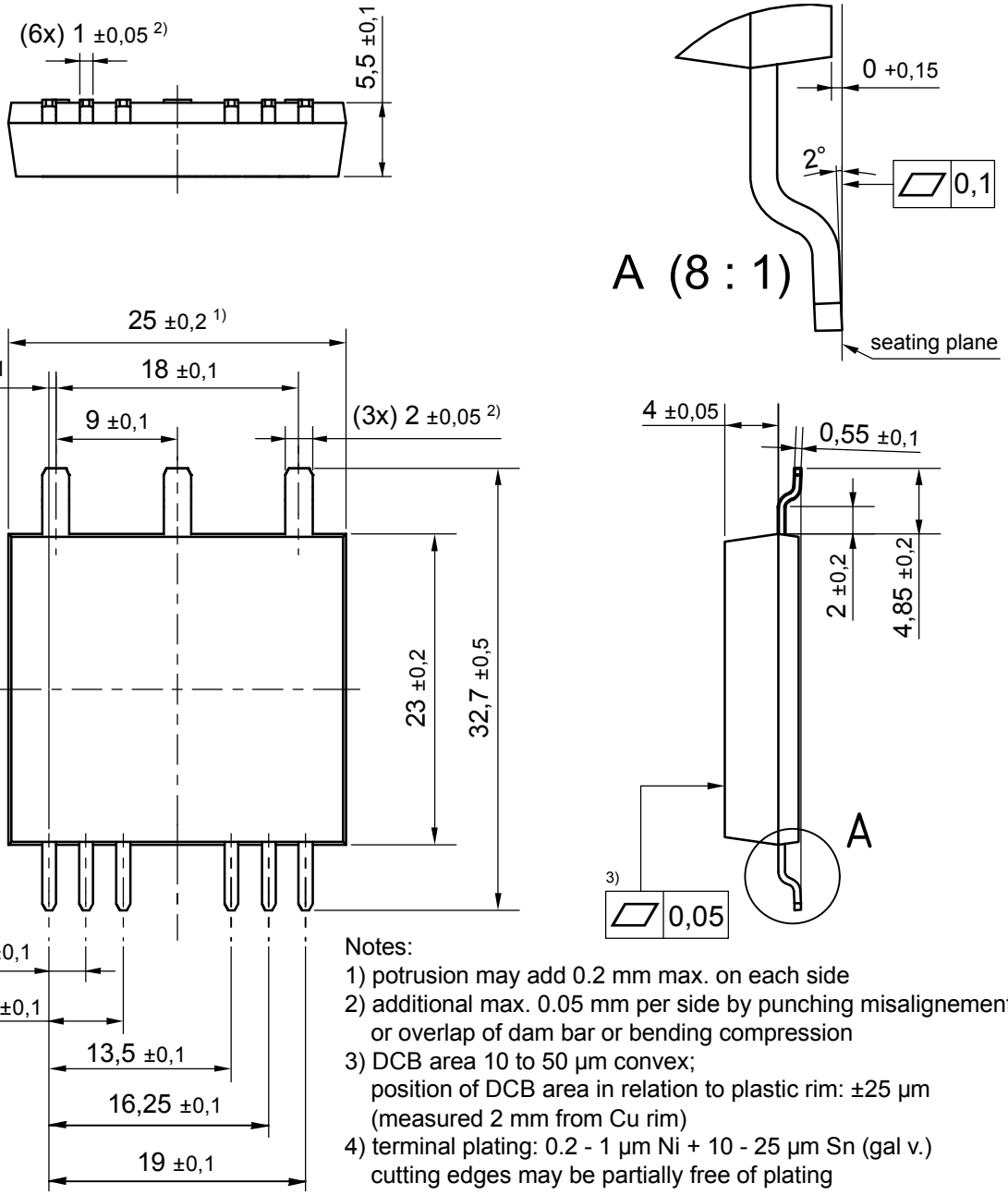
Equivalent Circuits for Simulation

** on die level* T_{VJ} = 150 °C

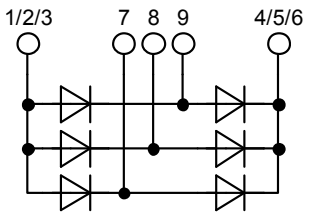


		Fast Diode	
$V_{0\,max}$	*threshold voltage*	1.35	V
$R_{0\,max}$	*slope resistance **	27	mΩ

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 (gal v.) cutting edges may be partially free of plating



Fast Diode

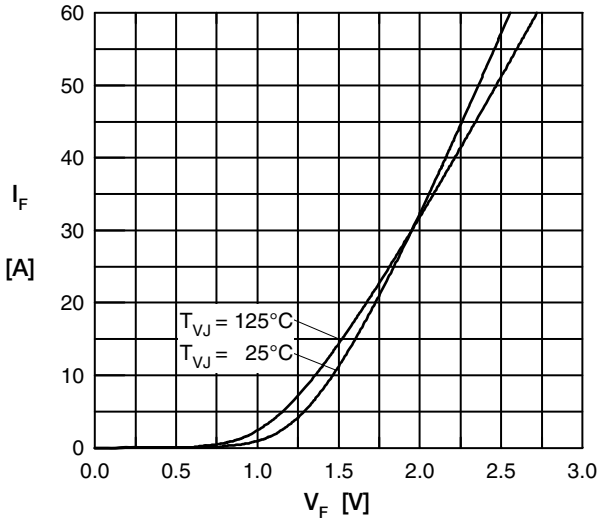


Fig. 7 Typ. Forward current versus V_F

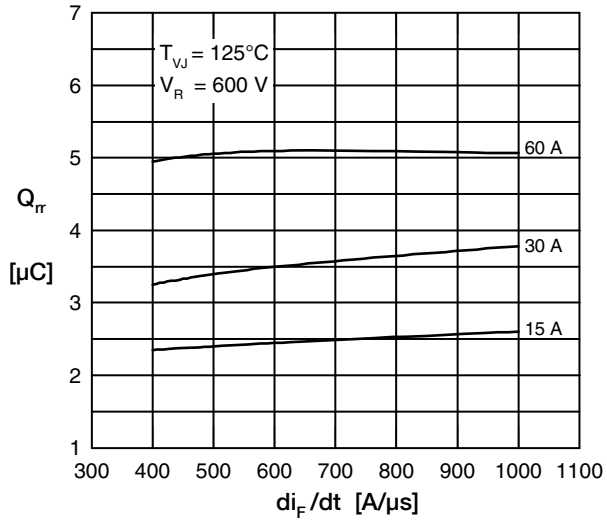


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

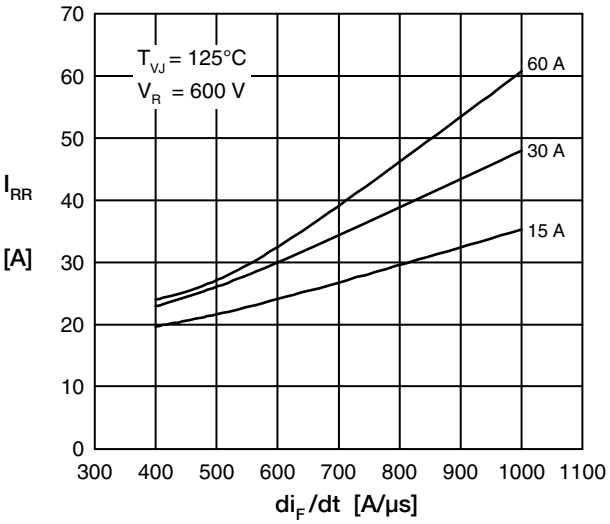


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

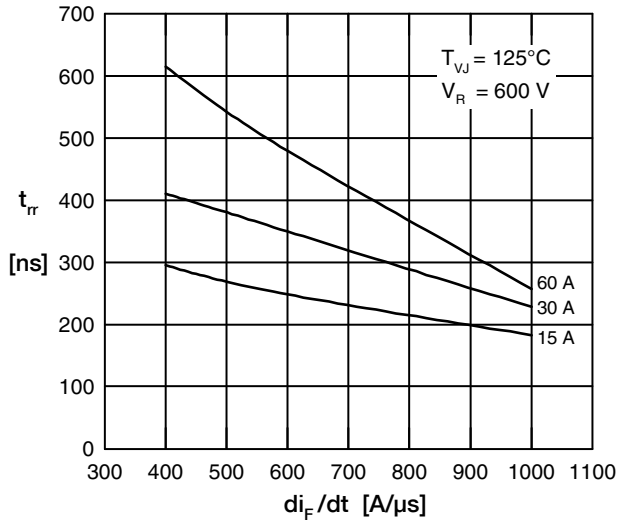


Fig. 10 Typ. recovery time t_{rr} versus di/dt

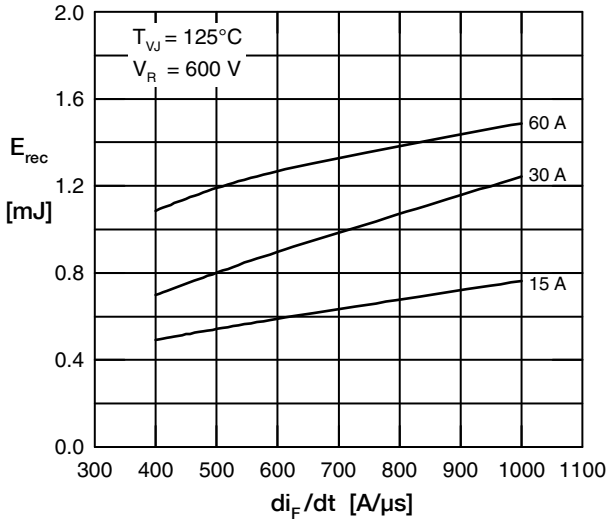


Fig.11 Typ. recovery energy E_{rec} versus di/dt

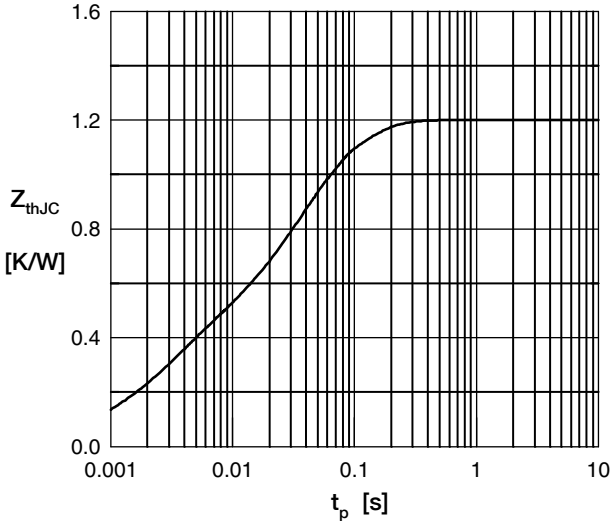


Fig. 12 Typ. transient thermal impedance