

Sonic Fast Recovery Diode

$$V_{RRM} = 1200\text{ V}$$

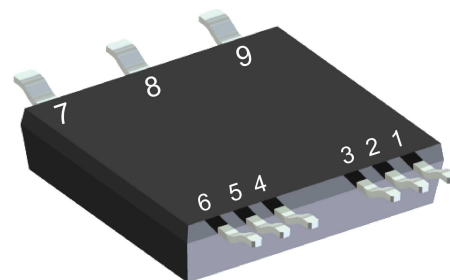
$$I_{DAV} = 60\text{ A}$$

$$t_{rr} = 160\text{ ns}$$

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

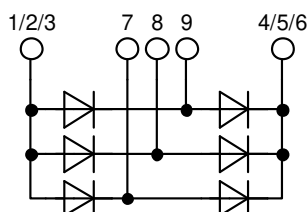
Part number

DHG60U1200LB



Backside: isolated

 E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} 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

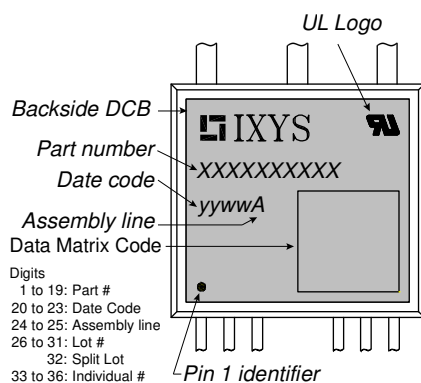
- Isolation Voltage: 3000 V~
- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

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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			2.00	V	
		I _F = 60 A				2.92	V	
		I _F = 20 A	T _{VJ} = 125°C			1.94	V	
		I _F = 60 A				3.15	V	
I _{DAV}	bridge output current	T _C = 80°C rectangular d = ⅓	T _{VJ} = 150°C			60	A	
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	} I _F = 20 A; V _R = 600 V -di _F /dt = 600 A/μs		T _{VJ} = 25 °C	19		A	
				T _{VJ} = 125 °C	25		A	
t _{rr}	reverse recovery time			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 description

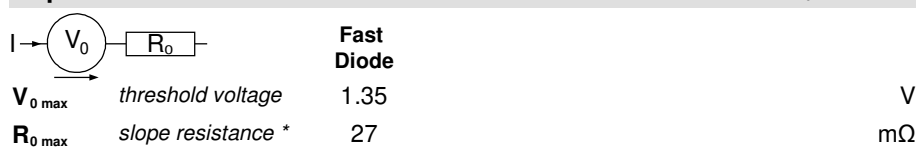
D = Diode
 H = Sonic Fast Recovery Diode
 G = extreme fast
 60 = Current Rating [A]
 U = 3- Rectifier Bridge
 1200 = Reverse Voltage [V]
 LB = SMPD-B

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG60U1200LB-TUB	DHG60U1200LB-TUB	Tube	20	524936
Alternative	DHG60U1200LB-TRR	DHG60U1200LB	Tape & Reel	200	524950

Equivalent Circuits for Simulation

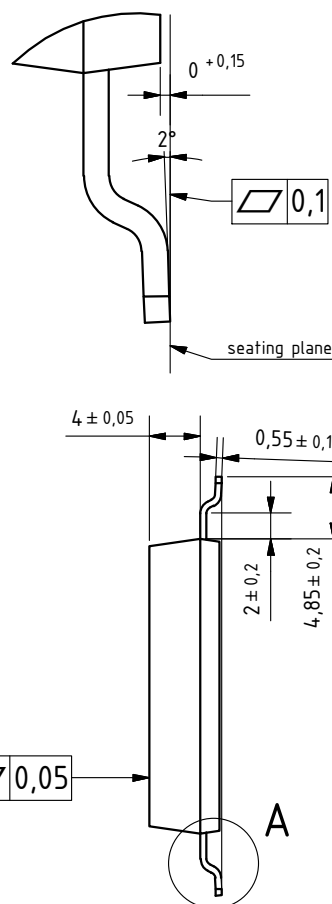
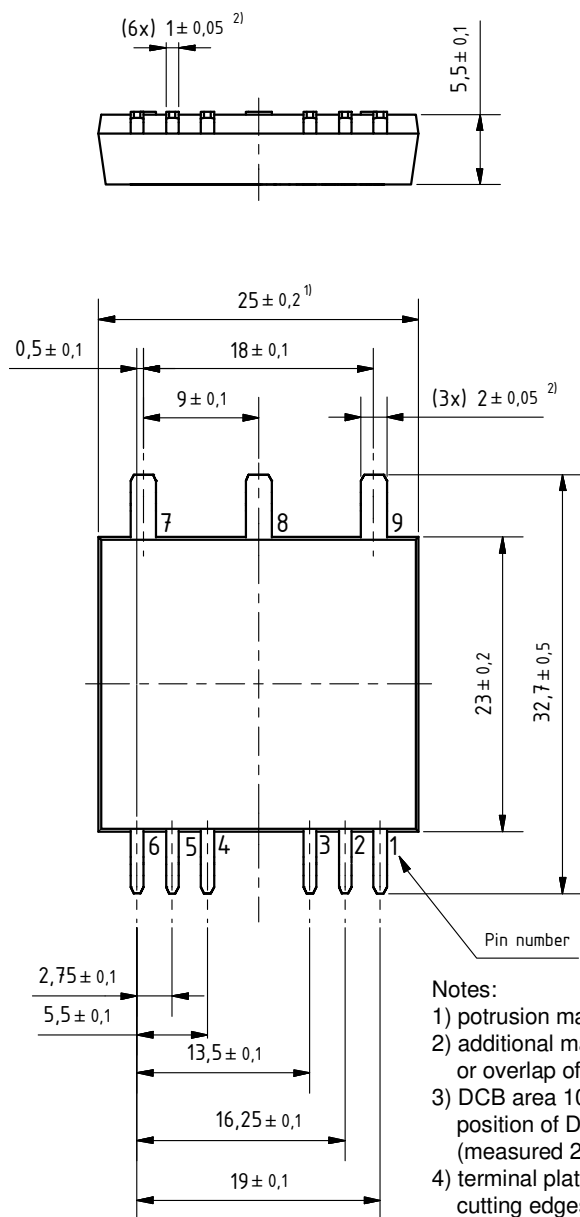
* on die level

$T_{VJ} = 150^\circ\text{C}$



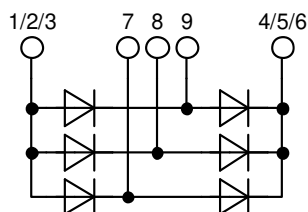
Outlines SMPD

A (8 : 1)



Notes:

- 1) potrusion may add 0.2 mm max. on each side
- 2) additional max. 0.05 mm per side by punching misalignment 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: $\pm 25 \mu\text{m}$
(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



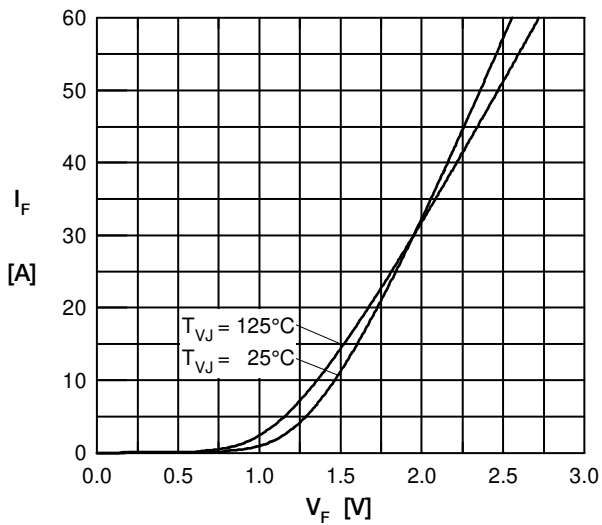
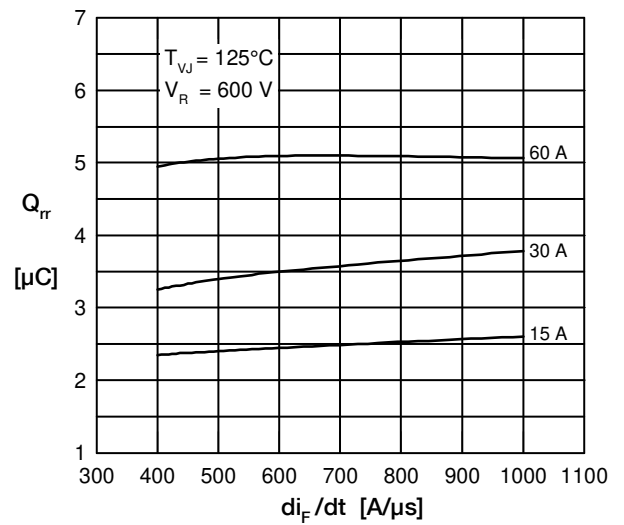
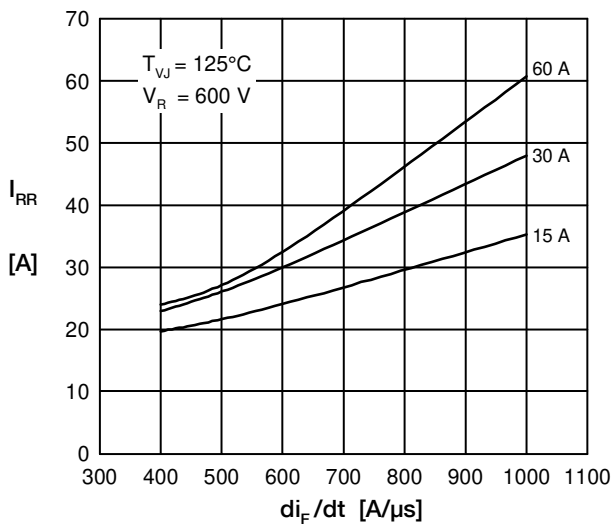
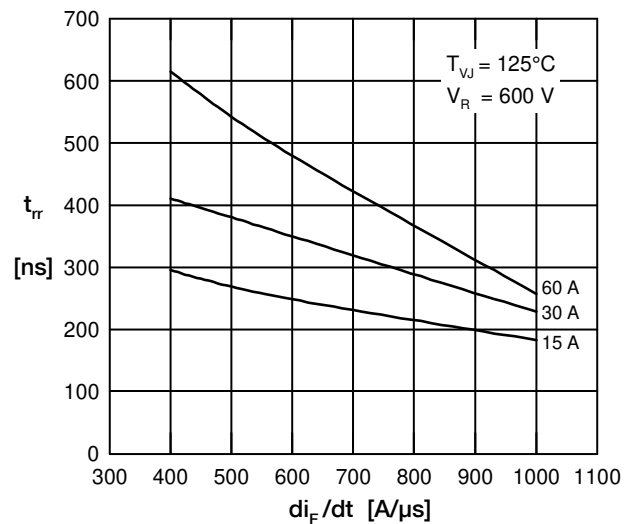
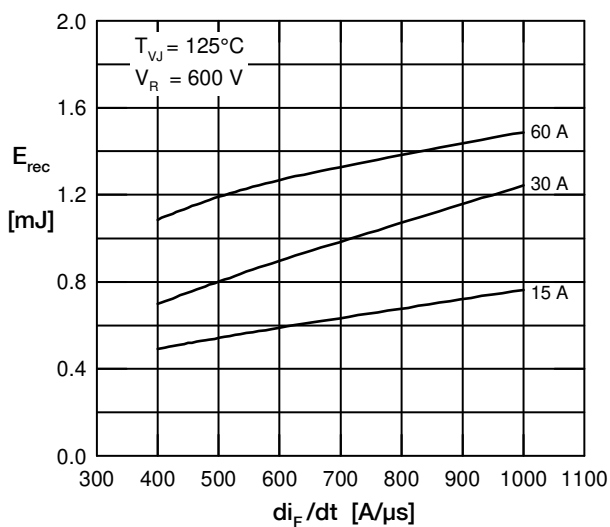
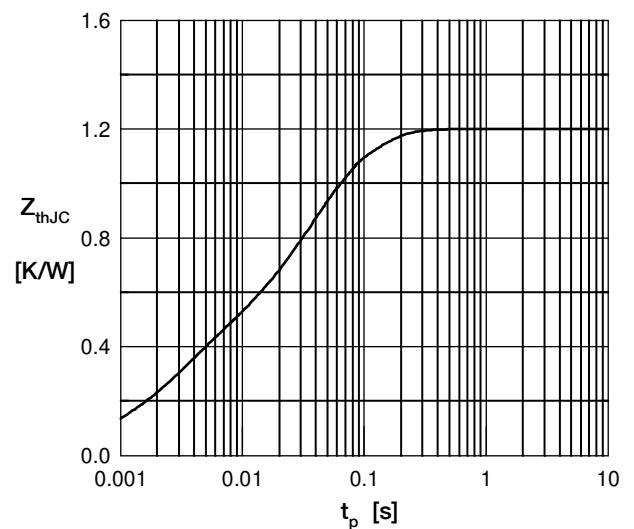
Fast Diode

 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