



preliminary

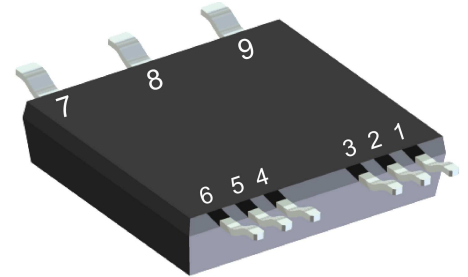
# Sonic Fast Recovery Diode

$V_{RRM} = 1200\text{ V}$   
 $I_{DAV} = 34\text{ A}$   
 $t_{rr} = 150\text{ ns}$

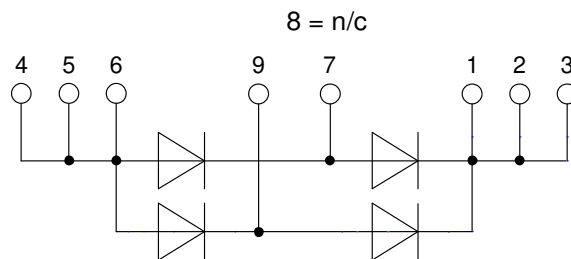
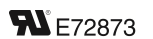
High Performance Fast Recovery Diode  
 Low Loss and Soft Recovery  
 1~ Rectifier Bridge

Part number

**DHG40B1200LB**



Backside: isolated



### 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

### Disclaimer Notice

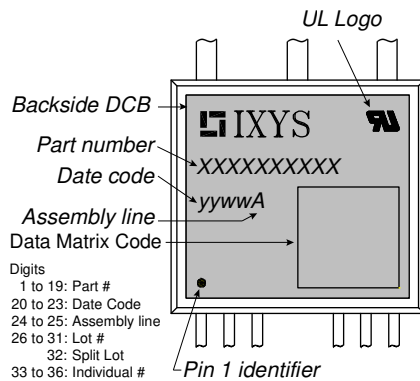
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Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
$I_R$	reverse current, drain current	$V_R = 1200\text{ V}$	$T_{VJ} = 25^{\circ}C$		40	$\mu A$	
		$V_R = 1200\text{ V}$	$T_{VJ} = 125^{\circ}C$		0.4	mA	
$V_F$	forward voltage drop	$I_F = 20\text{ A}$	$T_{VJ} = 25^{\circ}C$		2.24	V	
		$I_F = 40\text{ A}$			2.89	V	
		$I_F = 20\text{ A}$	$T_{VJ} = 125^{\circ}C$		2.24	V	
		$I_F = 40\text{ A}$			3.15	V	
$I_{DAV}$	bridge output current	$T_C = 80^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}C$		34	A	
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}C$		1.35	V	
$r_F$	slope resistance				43	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				1.5	K/W	
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W	
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		80	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^{\circ}C$		150	A	
$C_J$	junction capacitance	$V_R = 600\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}C$		8	pF	
$I_{RM}$	max. reverse recovery current	} $I_F = 15\text{ A}; V_R = 600\text{ V}$ $-di_F/dt = 600\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}C$		15	A	
			$T_{VJ} = 125^{\circ}C$		20	A	
$t_{rr}$	reverse recovery time		$T_{VJ} = 25^{\circ}C$		150	ns	
			$T_{VJ} = 125^{\circ}C$		250	ns	

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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
<b>Weight</b>				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	3000			V
		t = 1 minute	2500			V


**Part description**

D = Diode  
 H = Sonic Fast Recovery Diode  
 G = extreme fast  
 40 = Current Rating [A]  
 B = 1~ Rectifier Bridge  
 1200 = Reverse Voltage [V]  
 LB = SMPD-B

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG40B1200LB-TUB	DHG40B1200LB-TUB	Tube	20	525198
Alternative	DHG40B1200LB-TRR	DHG40B1200LB	Tape & Reel	200	524922

**Equivalent Circuits for Simulation**

\* on die level

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

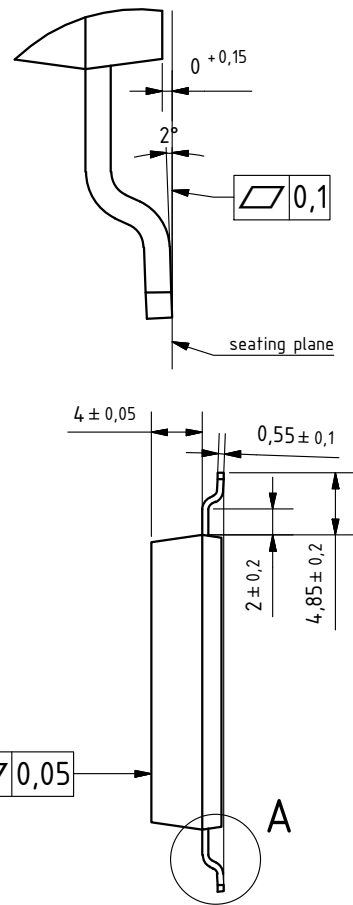
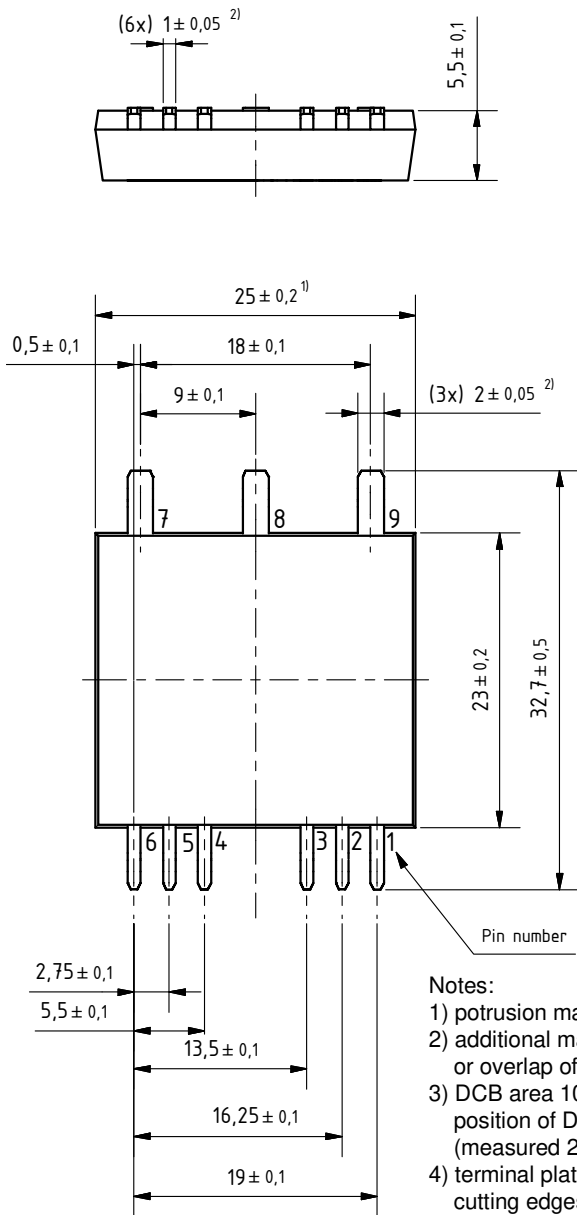
**Fast Diode**

$V_{0\text{ max}}$	threshold voltage	1.35	V
$R_{0\text{ max}}$	slope resistance *	41	mΩ



Outlines SMPD

A ( 8 : 1 )



Notes:

- 1) protusion 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  $\mu\text{m}$  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  $\mu\text{m}$  Ni + 10 - 25  $\mu\text{m}$  Sn (gal v.) cutting edges may be partially free of plating

$8 = n/c$

