

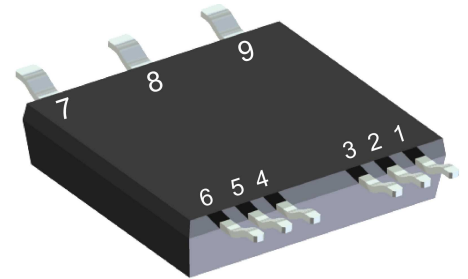
Sonic Fast Recovery Diode

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

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

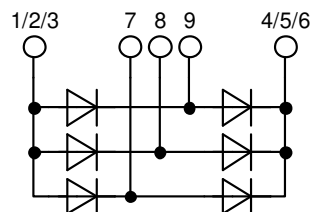
Part number

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

Disclaimer Notice

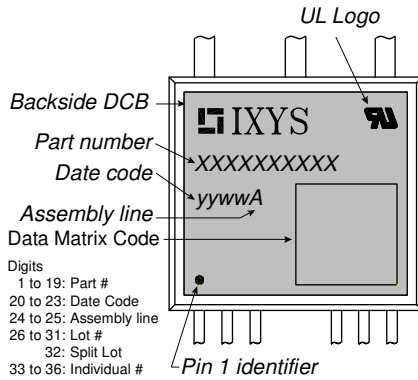
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Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
I_R	reverse current, drain current	$V_R = 1200 V$	$T_{VJ} = 25^{\circ}C$		50	μA	
		$V_R = 1200 V$	$T_{VJ} = 125^{\circ}C$		0.5	mA	
V_F	forward voltage drop	$I_F = 20 A$	$T_{VJ} = 25^{\circ}C$		2.00	V	
		$I_F = 60 A$			2.92	V	
		$I_F = 20 A$	$T_{VJ} = 125^{\circ}C$		1.94	V	
		$I_F = 60 A$			3.15	V	
I_{DAV}	bridge output current	$T_C = 80^{\circ}C$ rectangular $d = 1/3$	$T_{VJ} = 150^{\circ}C$		60	A	
V_{FO}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}C$		1.35	V	
r_F	slope resistance				29	m Ω	
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		$T_C = 25^{\circ}C$		100	W	
I_{FSM}	max. forward surge current	$t = 10 ms; (50 Hz), sine; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		200	A	
C_J	junction capacitance	$V_R = 600 V f = 1 MHz$	$T_{VJ} = 25^{\circ}C$		11	pF	
I_{RM}	max. reverse recovery current	} $I_F = 20 A; V_R = 600 V$ $-di_F / dt = 600 A/\mu s$	$T_{VJ} = 25^{\circ}C$		19	A	
			$T_{VJ} = 125^{\circ}C$		25	A	
t_{rr}	reverse recovery time		$T_{VJ} = 25^{\circ}C$		160	ns	
			$T_{VJ} = 125^{\circ}C$		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	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

$T_{VJ} = 150\text{ °C}$

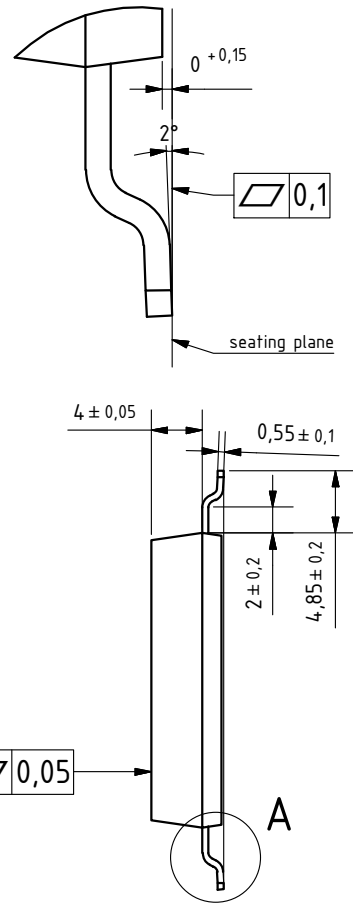
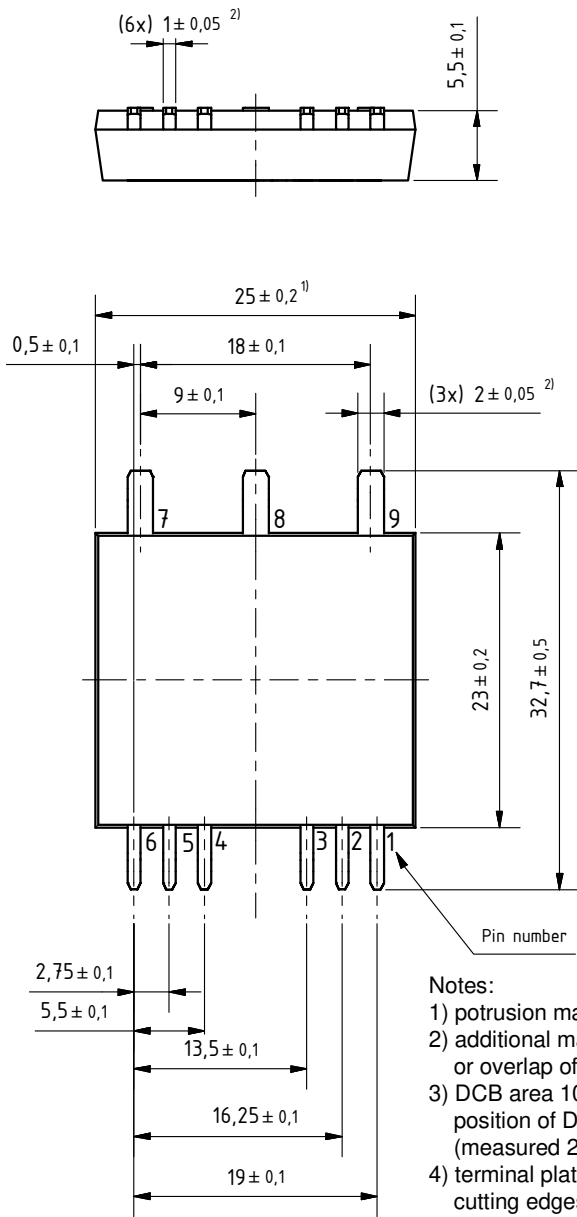


Symbol	Definition	Value	Unit
$V_{0\ max}$	threshold voltage	1.35	V
$R_{0\ max}$	slope resistance *	27	mΩ



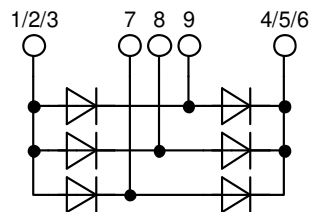
Outlines SMPD

A (8 : 1)



Notes:

- 1) protrusion 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

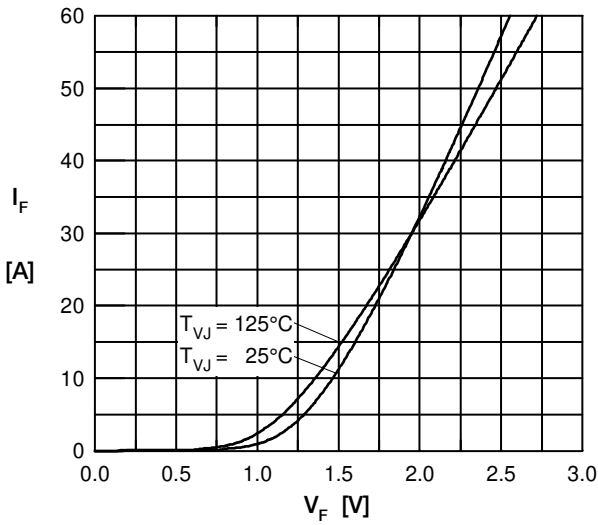


Fig. 7 Typ. Forward current versus V_F

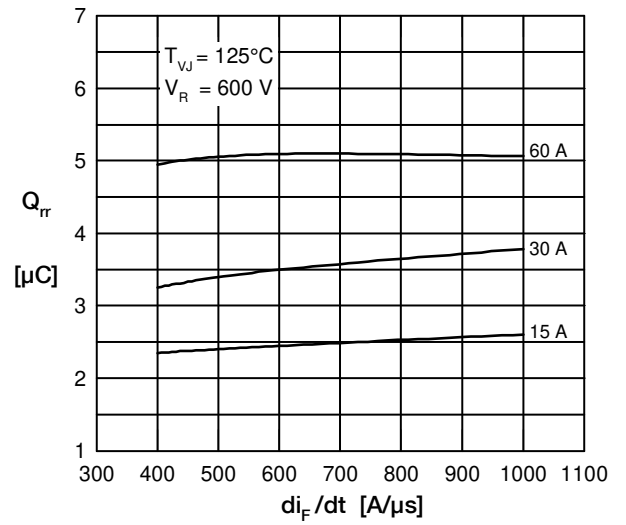


Fig. 8 Typ. reverse recov.charge Q_{rr} vs. di/dt

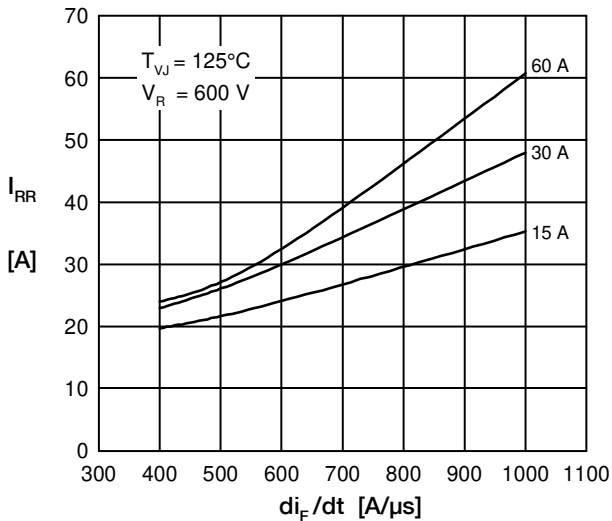


Fig. 9 Typ. peak reverse current I_{RM} vs. di/dt

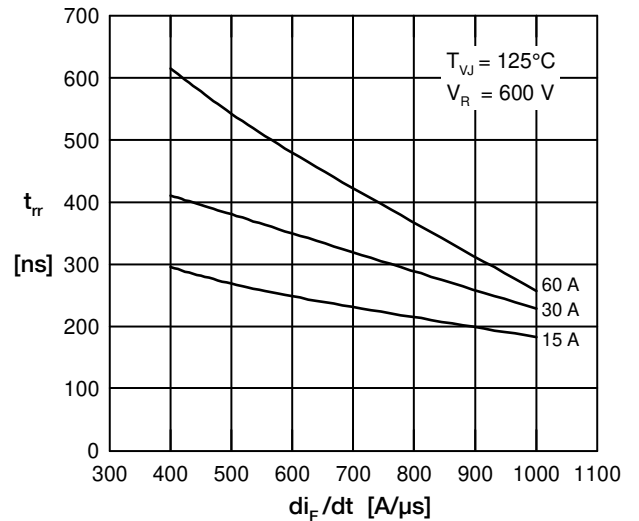


Fig. 10 Typ. recovery time t_{rr} versus di/dt

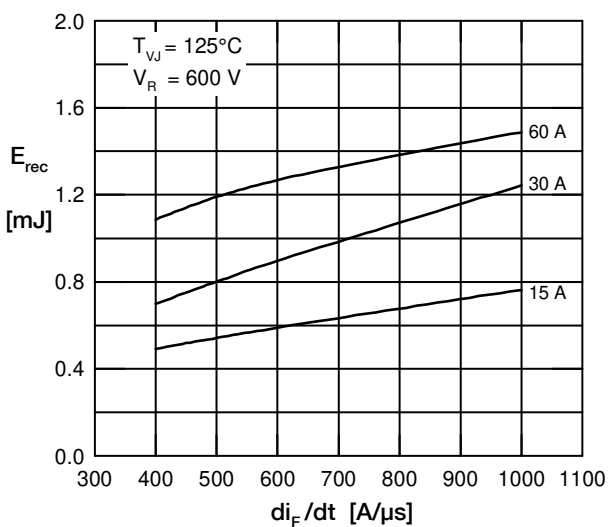


Fig.11 Typ. recovery energy E_{rec} versus di/dt

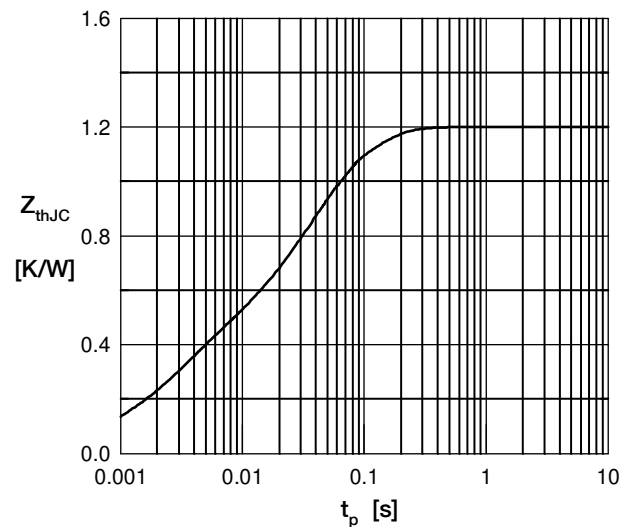


Fig. 12 Typ. transient thermal impedance