



preliminary

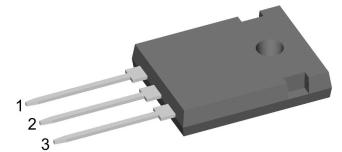
Sonic Fast Recovery Diode

$V_{RRM} = 1200\text{ V}$
 $I_{FAV} = 2 \times 20\text{ A}$
 $t_{rr} = 200\text{ ns}$

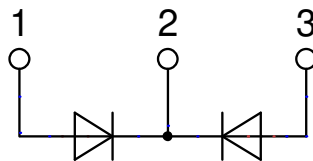
High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

Part number

DHG40C1200HB



Backside: cathode



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: TO-247

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice

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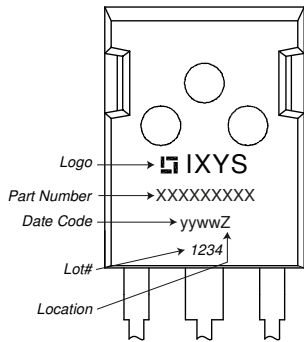
Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			1200	V	
I_R	reverse current, drain current	$V_R = 1200\text{ V}$	$T_{VJ} = 25^{\circ}C$		25	μA	
		$V_R = 1200\text{ V}$	$T_{VJ} = 125^{\circ}C$		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_{FAV}	average forward current	$T_C = 95^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}C$		20	A	
V_{FO}	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}C$		1.29	V	
r_F	slope resistance				43	m Ω	
R_{thJC}	thermal resistance junction to case				0.9	K/W	
R_{thCH}	thermal resistance case to heatsink			0.3		K/W	
P_{tot}	total power dissipation		$T_C = 25^{\circ}C$		140	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	} $I_F = 20\text{ A}; V_R = 600\text{ V}$ $-di_F/dt = 400\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}C$		15	A	
			$T_{VJ} = 125^{\circ}C$		20	A	
t_{rr}	reverse recovery time		$T_{VJ} = 25^{\circ}C$		200	ns	
			$T_{VJ} = 125^{\circ}C$		350	ns	



preliminary

Package TO-247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal ¹⁾			70	A
T_{VJ}	virtual junction temperature		-55		150	°C
T_{op}	operation temperature		-55		125	°C
T_{stg}	storage temperature		-55		150	°C
Weight				6		g
M_D	mounting torque		0.8		1.2	Nm
F_C	mounting force with clip		20		120	N

Product Marking



Part description

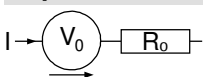
- D = Diode
- H = Sonic Fast Recovery Diode
- G = extreme fast
- 40 = Current Rating [A]
- C = Common Cathode
- 1200 = Reverse Voltage [V]
- HB = TO-247AD (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG40C1200HB	DHG40C1200HB	Tube	30	505138

Equivalent Circuits for Simulation

** on die level*

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

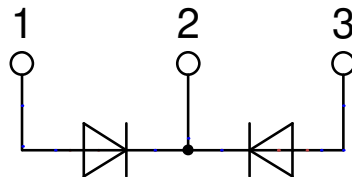
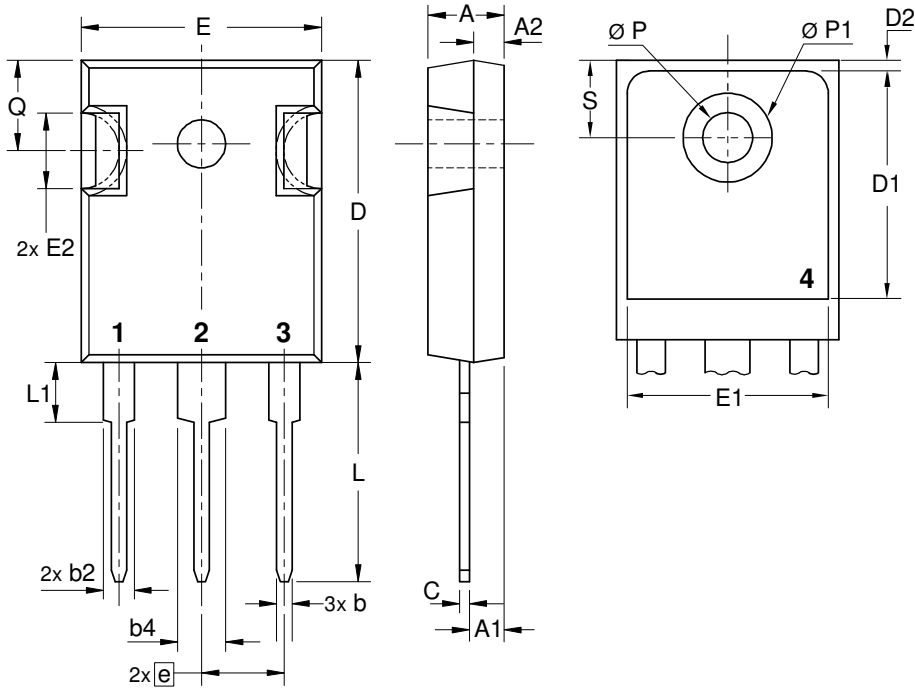


Fast Diode

$V_{0\ max}$	threshold voltage	1.29	V
$R_{0\ max}$	slope resistance *	40	mΩ



Outlines TO-247





Fast Diode

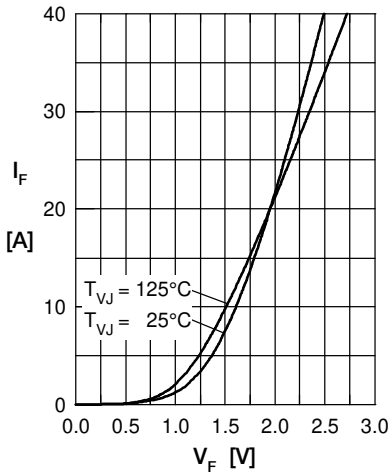


Fig. 1 Typ. Forward current versus V_F

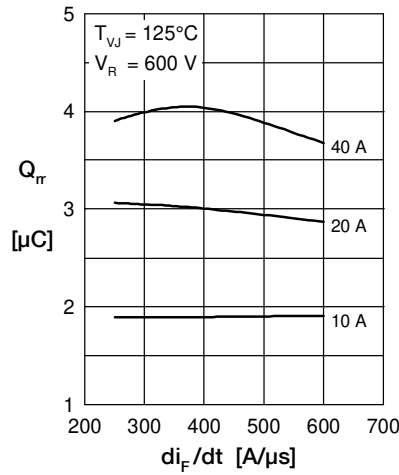


Fig. 2 Typ. reverse recov. charge Q_{rr} versus di/dt

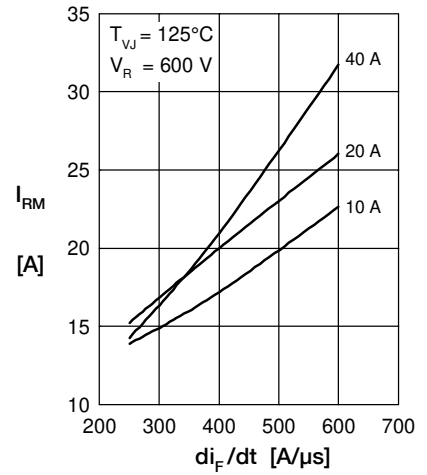


Fig. 3 Typ. peak reverse current I_{RM} versus di/dt

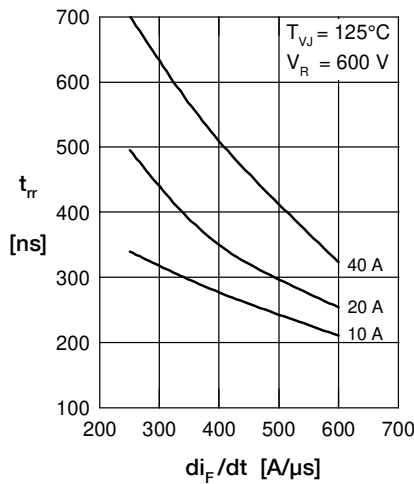


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

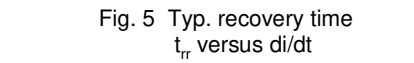


Fig. 5 Typ. recovery time t_{rr} versus di/dt

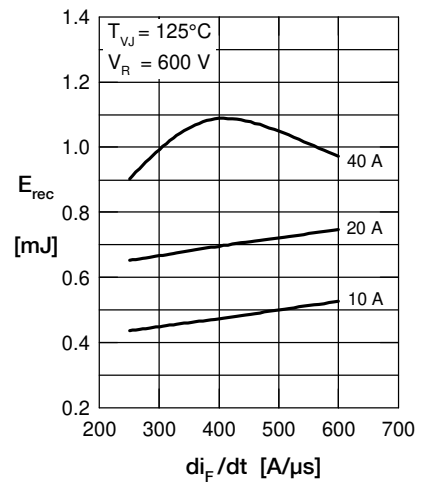


Fig. 6 Typ. recovery energy E_{rec} versus di/dt

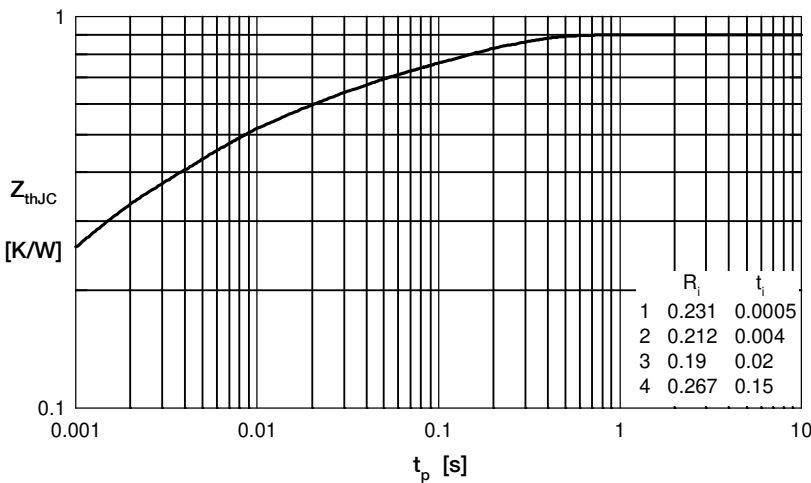


Fig. 7 Typ. transient thermal impedance junction to case