

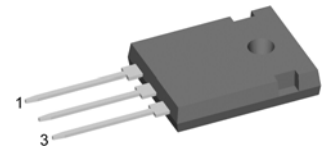
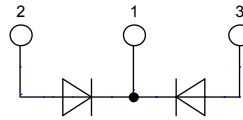
# Sonic Fast Recovery Diode

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

$V_{RRM} = 600\text{ V}$   
 $I_{FAV} = 2 \times 20\text{ A}$   
 $t_{rr} = 40\text{ ns}$

Part number

**DHG 40 C 600 HB**



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:

- Housing: TO-247
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

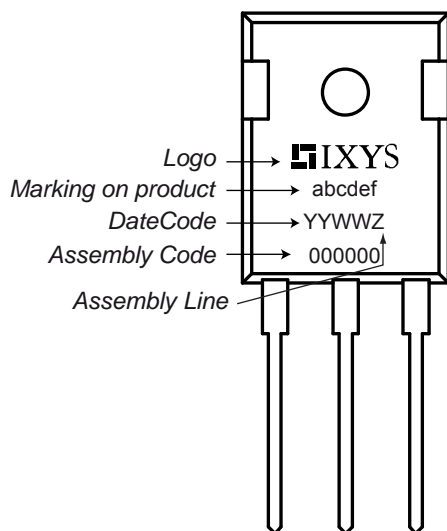
## Ratings

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$V_{RRM}$	max. repetitive reverse voltage				600	V
$I_R$	reverse current	$V_R = 600\text{ V}$			25	$\mu\text{A}$
		$V_R = 600\text{ V}$			1.5	mA
$V_F$	forward voltage	$I_F = 20\text{ A}$			2.24	V
		$I_F = 40\text{ A}$			3.15	V
		$I_F = 20\text{ A}$			2.19	V
		$I_F = 40\text{ A}$			3.21	V
$I_{FAV}$	average forward current	rectangular $d = 0.5$			20	A
$V_{F0}$	threshold voltage	} for power loss calculation only			1.12	V
$r_F$	slope resistance				49	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				0.90	K/W
$T_{VJ}$	virtual junction temperature		-55		150	$^{\circ}\text{C}$
$P_{tot}$	total power dissipation				140	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			150	A
$I_{RM}$	max. reverse recovery current				8	A
		$I_F = 20\text{ A}; V_R = 300\text{ V}$			12	A
$t_{rr}$	reverse recovery time	$-di_F/dt = 450\text{ A}/\mu\text{s}$			40	ns
					60	ns
$C_J$	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$			12	pF

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			70	A
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				6		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

<sup>1)</sup>  $I_{RMS}$  is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2).  
 In case of (1) and a common cathode/anode configuration with a non-isolated backside, the current capability can be increased by connecting the backside.

### Product Marking

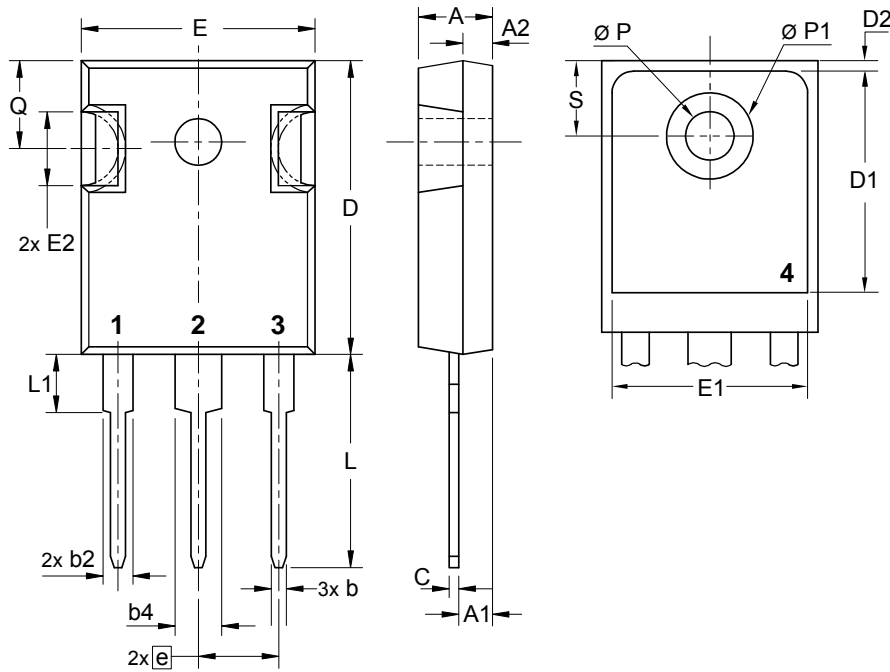


### Part number

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

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG 40 C 600 HB	DHG40C600HB	Tube	30	505145

Similar Part	Package	Voltage Class
DHG40C600PB	TO-220AB (3)	600

**Outlines TO-247**


Sym.	Inches		Millimeter	
	min.	max.	min.	max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.215 BSC		5.46 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39

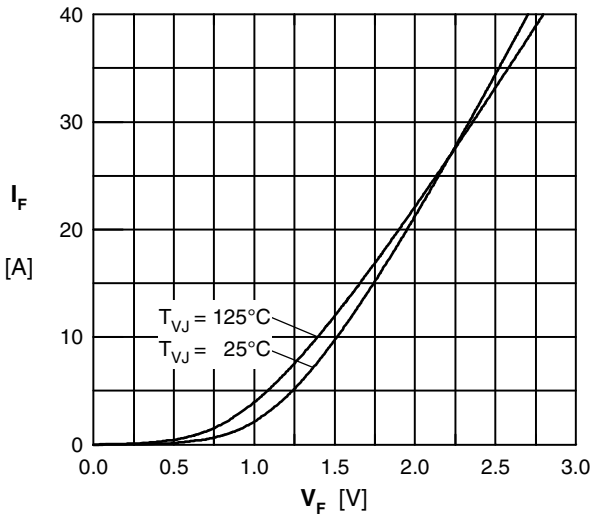


Fig. 1 Typ. Forward current versus  $V_F$

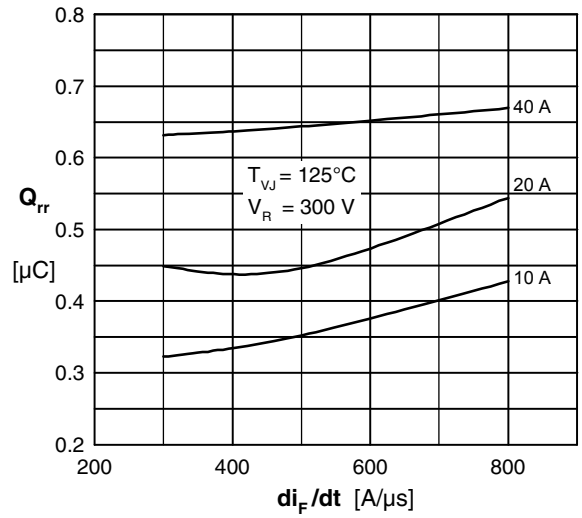


Fig. 2 Typ. reverse recov.charge  $Q_{rr}$  vs.  $di/dt$

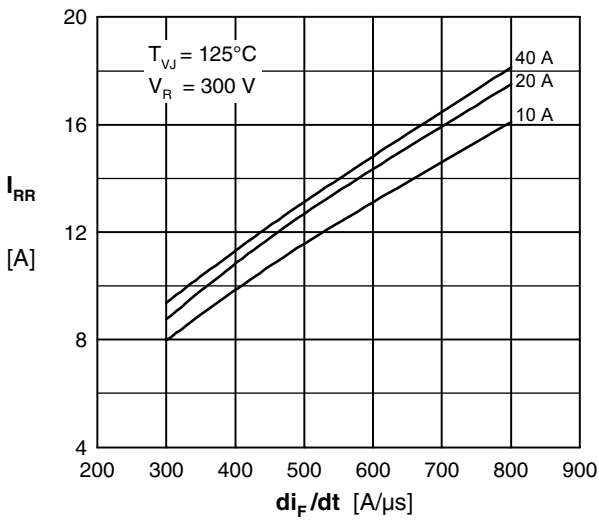


Fig. 3 Typ. peak reverse current  $I_{RM}$  vs.  $di/dt$

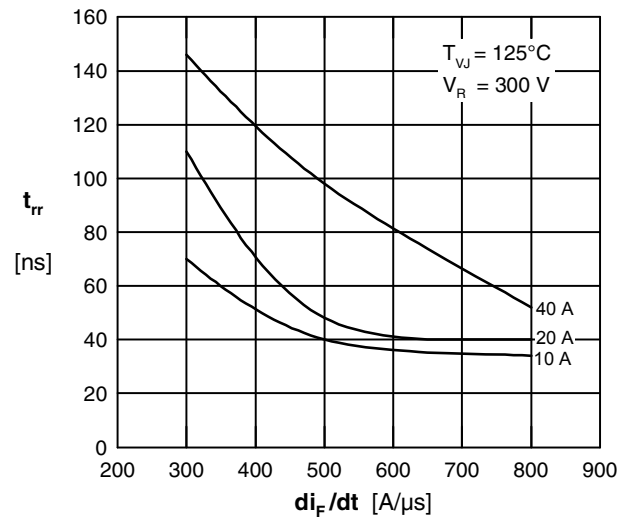


Fig. 4 Typ. recovery time  $t_{rr}$  versus  $di/dt$

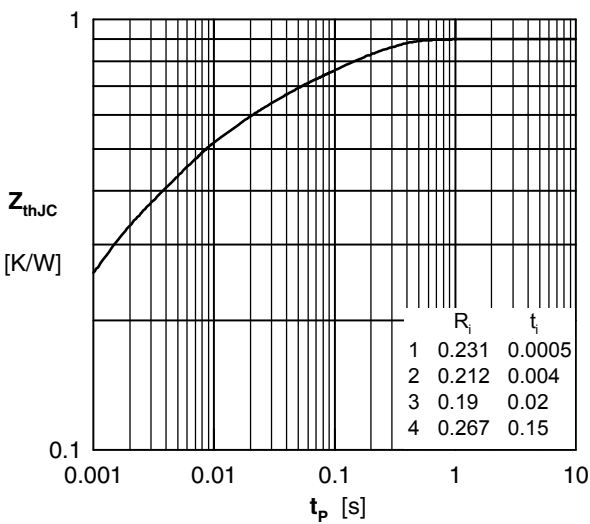


Fig. 5 Typ. transient thermal impedance

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