
HD74LV2G32A

Dual 2–input OR Gates

HITACHI

ADE-205-344 (Z)
1st. Edition
May 2000

Description

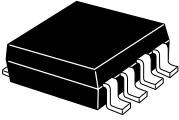
The HD74LV2G32A has dual two–input OR gates in a 8 pin package. Low voltage and high speed operation is suitable for the battery powered products (e.g., notebook computers), and the low power consumption extends the battery life.

Features

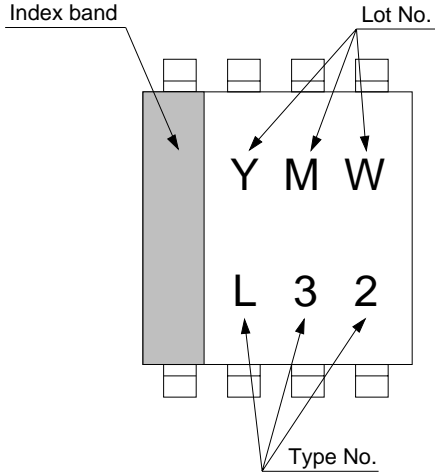
- The basic gate function is lined up as hitachi uni logic series.
- Supplied on emboss taping for high speed automatic mounting.
- Electrical characteristics equivalent to the HD74LV32A
Supply voltage range : 1.65 to 5.5 V
Operating temperature range : –40 to +85°C
- All inputs V_{IH} (Max.) = 5.5 V (@ V_{CC} = 0 V to 5.5 V)
All outputs V_O (Max.) = 5.5 V (@ V_{CC} = 0 V)
- Output current ± 6 mA (@ V_{CC} = 3.0 V to 3.6 V), ± 12 mA (@ V_{CC} = 4.5 V to 5.5 V)
- All the logical input has hysteresis voltage for the slow transition.

Outline and Article Indication

• HD74LV2G32A



US-8



Y : Year code
(the last digit of year)
M : Month code
W : Week code

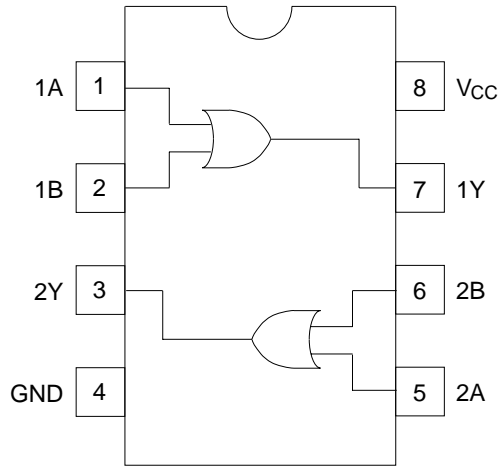
Function Table

Inputs		Output Y
A	B	
L	L	L
H	L	H
L	H	H
H	H	H

H : High level

L : Low level

Pin Arrangement



(Top view)

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Test Conditions
Supply voltage	V_{CC}	-0.5 to 7.0	V	
Input voltage	V_{IN}	-0.5 to 7.0	V	
Output voltage	V_{OUT}	-0.5 to $V_{CC} + 0.5$ -0.5 to 7.0	V	Output : H or L V_{CC} : OFF
Input diode current	I_{IK}	-20	mA	
Output diode current	I_{OK}	± 50	mA	
Output current	I_{OUT}	± 25	mA	
V_{CC} , GND current	I_{CC} or I_{GND}	± 50	mA	
Power dissipation	P_T	200	mW	
Storage temperature	T_{stg}	-65 to 150	$^{\circ}C$	

Recommended Operating Conditions

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC}	1.65 to 5.5	V
Input voltage	V_{IN}	0 to 5.5	V
Output voltage	V_{OUT}	0 to V_{CC}	V
Operating temperature	T_{opr}	-40 to +85	$^{\circ}C$
Input rise / fall time	t_r, t_f	0 to 300 ($V_{CC} = 1.65$ to 1.95 V) 0 to 200 ($V_{CC} = 2.3$ to 2.7 V) 0 to 100 ($V_{CC} = 3.0$ to 3.6 V) 0 to 20 ($V_{CC} = 4.5$ to 5.5 V)	ns

Electrical Characteristic

• Ta = -40 to 85°C

Item	Symbol	V _{CC} (V) *	Min	Typ	Max	Unit	Test condition
Input voltage	V _{IH}	1.65 to 1.95	V _{CC} ×0.75	—	—	V	
		2.3 to 2.7	V _{CC} ×0.7	—	—		
		3.0 to 3.6	V _{CC} ×0.7	—	—		
		4.5 to 5.5	V _{CC} ×0.7	—	—		
	V _{IL}	1.65 to 1.95	—	—	V _{CC} ×0.25		
		2.3 to 2.7	—	—	V _{CC} ×0.3		
		3.0 to 3.6	—	—	V _{CC} ×0.3		
		4.5 to 5.5	—	—	V _{CC} ×0.3		
Hysteresis voltage	V _H	1.8	—	0.25	—	V	V _T ⁺ - V _T ⁻
		2.5	—	0.30	—		
		3.3	—	0.35	—		
		5.0	—	0.45	—		
Output voltage	V _{OH}	Min to Max	V _{CC} -0.1	—	—	V	I _{OH} = -50 μA
		1.65	1.4	—	—		I _{OH} = -1 mA
		2.3	2.0	—	—		I _{OH} = -2 mA
		3.0	2.48	—	—		I _{OH} = -6 mA
		4.5	3.8	—	—		I _{OH} = -12 mA
	V _{OL}	Min to Max	—	—	0.1		I _{OL} = 50 μA
		1.65	—	—	0.3		I _{OL} = 1 mA
		2.3	—	—	0.4		I _{OL} = 2 mA
		3.0	—	—	0.44		I _{OL} = 6 mA
		4.5	—	—	0.55		I _{OL} = 12 mA
Input current	I _{IN}	0 to 5.5	—	—	±1	μA	V _{IN} = 5.5 V or GND
Quiescent supply current	I _{CC}	5.5	—	—	10	μA	V _{IN} = V _{CC} or GND, I _O = 0
Output leakage current	I _{OFF}	0	—	—	5	μA	V _O = 5.5 V
Input capacitance	C _{IN}	3.3	—	2.5	—	pF	V _{IN} = V _{CC} or GND

Note: For conditions shown as Min or Max, use the appropriate values under recommended operating conditions.

Switching Characteristics

• $V_{CC} = 1.8 \pm 0.15 \text{ V}$

Item	Symbol	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t_{PLH}	—	12.3	22.5	1.0	25.0	ns	$C_L = 15 \text{ pF}$	A or B	Y
	t_{PHL}	—	17.7	31.0	1.0	34.0		$C_L = 50 \text{ pF}$		

• $V_{CC} = 2.5 \pm 0.2 \text{ V}$

Item	Symbol	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t_{PLH}	—	7.1	12.8	1.0	15.0	ns	$C_L = 15 \text{ pF}$	A or B	Y
	t_{PHL}	—	9.6	16.2	1.0	19.0		$C_L = 50 \text{ pF}$		

• $V_{CC} = 3.3 \pm 0.3 \text{ V}$

Item	Symbol	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t_{PLH}	—	5.0	7.9	1.0	9.5	ns	$C_L = 15 \text{ pF}$	A or B	Y
	t_{PHL}	—	6.9	11.4	1.0	13.0		$C_L = 50 \text{ pF}$		

• $V_{CC} = 5.0 \pm 0.5 \text{ V}$

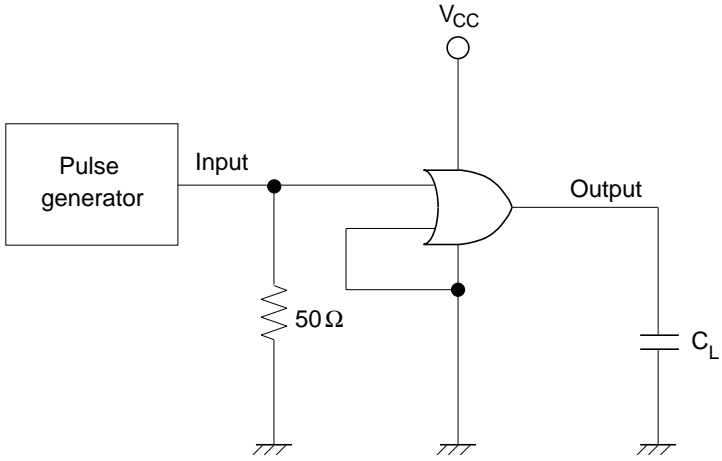
Item	Symbol	$T_a = 25^\circ\text{C}$			$T_a = -40 \text{ to } 85^\circ\text{C}$		Unit	Test Conditions	FROM (Input)	TO (Output)
		Min	Typ	Max	Min	Max				
Propagation delay time	t_{PLH}	—	3.6	5.5	1.0	6.5	ns	$C_L = 15 \text{ pF}$	A or B	Y
	t_{PHL}	—	4.9	7.5	1.0	8.5		$C_L = 50 \text{ pF}$		

Operating Characteristics

- $C_L = 50 \text{ pF}$

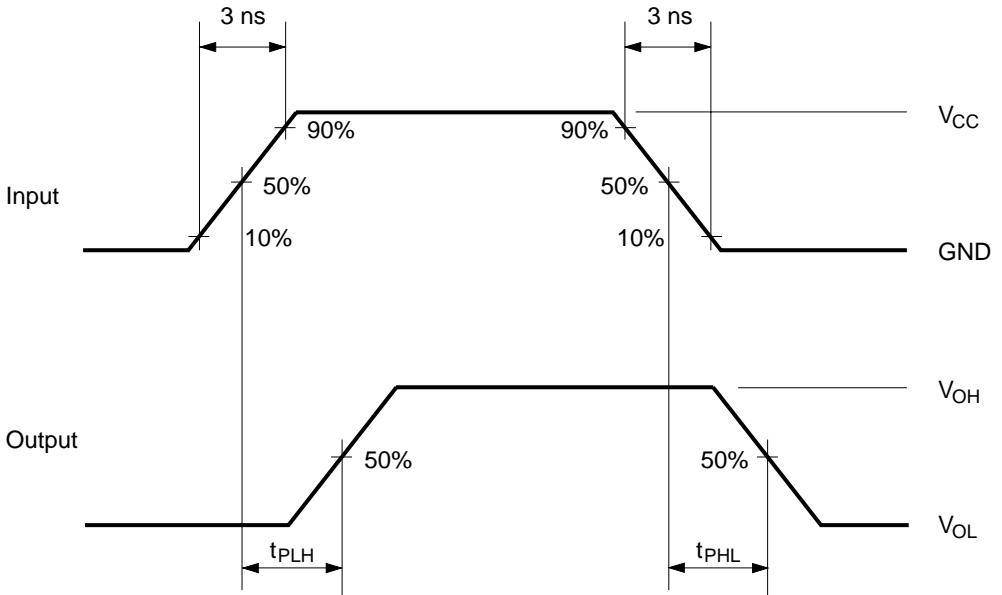
Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$			Unit	Test Conditions
			Min	Typ	Max		
Power dissipation capacitance	C_{PD}	3.3	—	9.5	—	pF	f = 10 MHz
		5.0	—	11.5	—		

Test Circuit



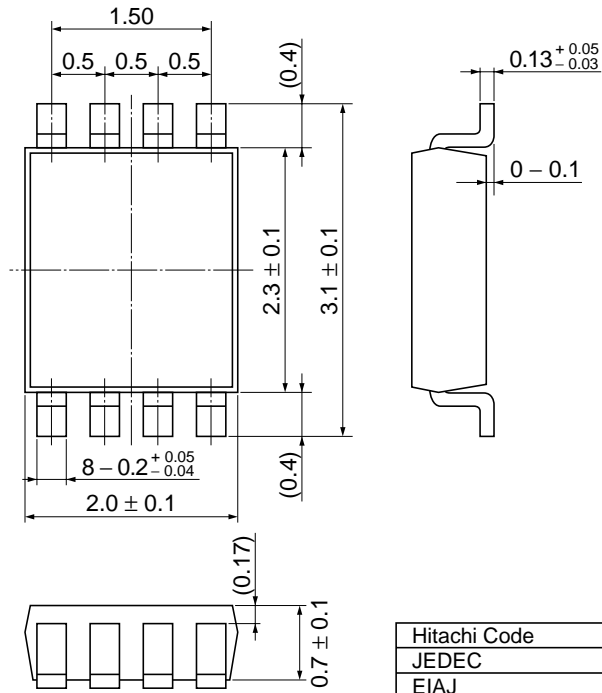
Note: Operating current test time, output is open.

• Waveforms



Package Dimensions

Unit : mm



Hitachi Code	US-8
JEDEC	SSOP-8
EIAJ	—
Mass (reference value)	—

Cautions

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL	North America	: http://semiconductor.hitachi.com/
	Europe	: http://www.hitachi-eu.com/hel/ecg
	Asia	: http://www.hitachi.com.sg/grp3/sicd
	Japan	: http://www.hitachi.co.jp/Sicd/indx.htm

For further information write to:

Hitachi Semiconductor
(America) Inc.
179 East Tasman Drive,
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe GmbH
Electronic Components Group
Dornacher StraÙe 3
D-85622 Feldkirchen, Munich
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
Electronic Components Group.
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585160

Hitachi Asia Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3rd Flr, Hung Kuo Building, No.167,
Tun Hwa North Road, Taipei (105)
Taiwan
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180
Telex: 23222 HAS-TP

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7th Flr, North Tower, World Finance Centre,
Harbour City, Canton Road, Tsim Sha Tsui,
Kowloon, Hong Kong
Tel: <852> (2) 735 9218
Fax: <852> (2) 730 0281
Telex: 40815 HITEC HX

Copyright ' Hitachi, Ltd., 2000. All rights reserved. Printed in Japan.
Colophon 1.0