
HD74BC540A

Octal Buffers/Line Drivers With 3 State Outputs

HITACHI

ADE-205-031 (Z)

Rev. 0

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Description

The HD74BC540A provides high drivability and operation equal to or better than high speed bipolar standard logic IC by using Bi-CMOS process. The device features low power dissipation that is about 1/5 of high speed bipolar logic IC, when the frequency is 10 MHz. The device has eight inverter drivers with three state outputs in a 20 pin package. When $\overline{G1}$ and $\overline{G2}$ is low level, this drivers set up output is enable.

Features

- Input/Output are at high impedance state when power supply is off.
- Built in input pull up circuit can make input pins be open, when not used.
- Input is TTL level.
- Wide operating temperature range
 $T_a = -40$ to $+85^{\circ}\text{C}$

Function Table

Inputs

$\overline{G1}$	$\overline{G2}$	A	Output Y
L	L	L	H
L	L	H	L
H	X	X	Z
X	H	X	Z

H : High level

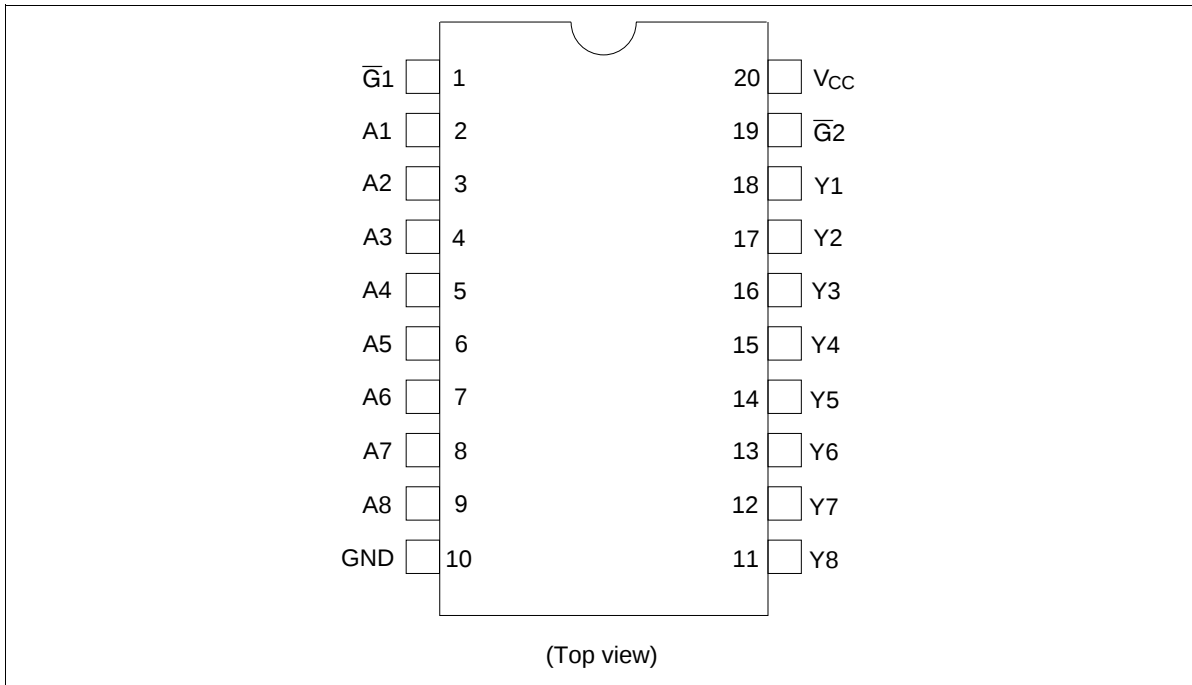
L : Low level

X : Immaterial

Z : High impedance

HD74BC540A

Pin Arrangement



Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	-0.5 to +7.0	V
Input diode current	I_{IK}	± 30	mA
Input voltage	V_{IN}	-0.5 to +7.5	V
Output voltage	V_{OUT}	-0.5 to +7.5	V
Off state output voltage	$V_{OUT(off)}$	-0.5 to +5.5	V
Storage temperature	Tstg	-65 to +150	°C

Note: 1. The absolute maximum ratings are values which must not individually be exceeded, and furthermore, no two of which may be realized at the same time.

Electrical Characteristics (Ta = -40 to +85°C)

Item	Symbol	V _{cc} (V)	Min	Max	Unit	Test Conditions
Input voltage	V _{IH}		2.0	—	V	
	V _{IL}		—	0.8	V	
Output voltage	V _{OH}	4.5	2.4	—	V	I _{OH} = -3 mA
		4.5	2.0	—	V	I _{OH} = -15 mA
	V _{OL}	4.5	—	0.5	V	I _{OL} = 48 mA
		4.5	—	0.55	V	I _{OL} = 64 mA
Input diode voltage	V _{IK}	4.5	—	-1.2	V	I _{IN} = -18 mA
Input current	I _I	5.5	—	-250	μA	V _{IN} = 0 V
		5.5	—	1.0	μA	V _{IN} = 5.5 V
		5.5	—	100	μA	V _{IN} = 7.0 V
Short circuit output current* ¹	I _{OS}	5.5	-100	-225	mA	V _{IN} = 0 or 5.5 V
Off state output current	I _{OZH}	5.5	—	50	μA	V _O = 2.7 V
	I _{OZL}	5.5	—	-50	μA	V _O = 0.5 V
Supply current	I _{CCL}	5.5	—	27.5	mA	V _{IN} = 0 or 5.5 V All outputs is "L"
	I _{CCH}	5.5	—	2.5	mA	V _{IN} = 0 or 5.5 V All outputs is "H"
	I _{CCZ}	5.5	—	2.5	mA	V _{IN} = 0 or 5.5 V All outputs is "Z"
	I _{CCT} * ²	5.5	—	1.5	mA	V _{IN} = 3.4V or 0.5V

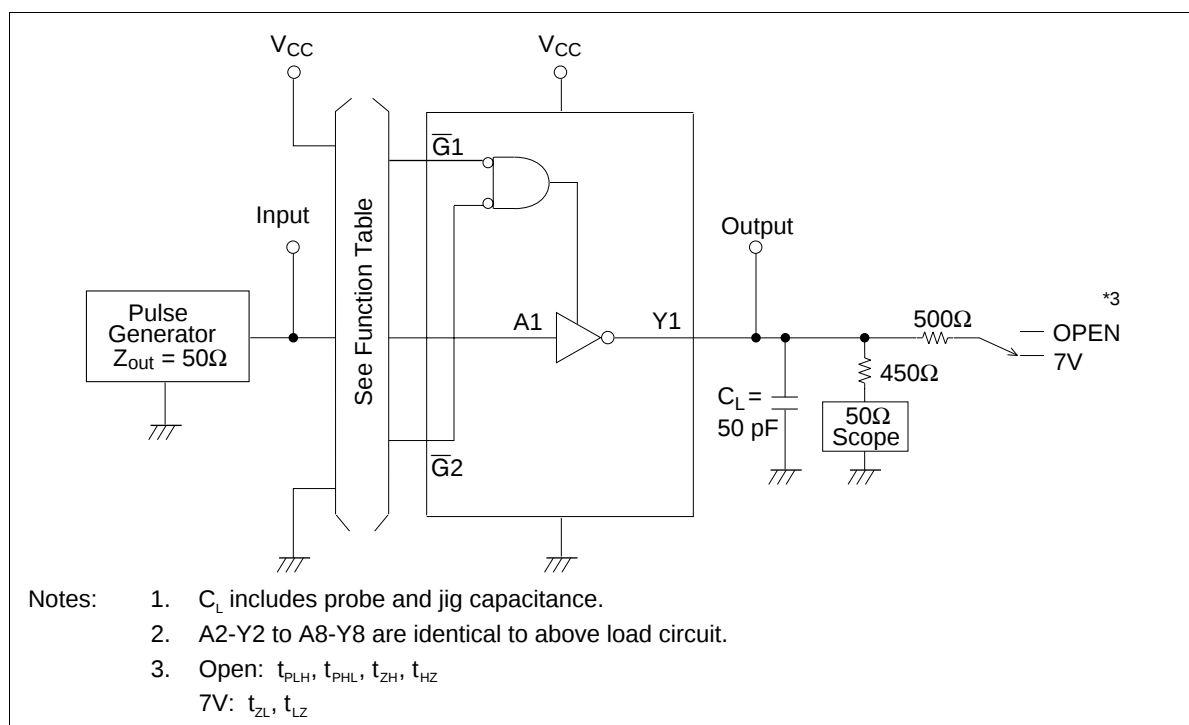
Notes: 1. Not more than one output should be shorted at a time and duration of the short circuit should not exceed one second.

2. When input by the TTL level, it shows I_{CC} increase at per one input pin.

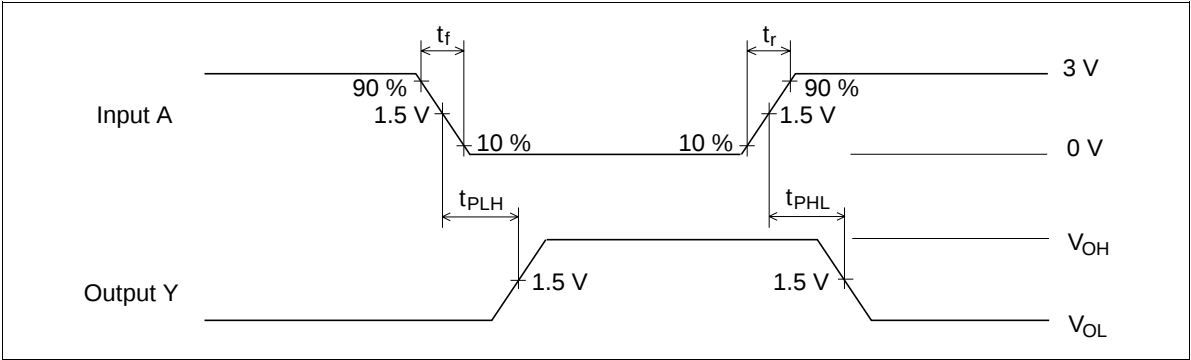
Switching Characteristics ($C_L = 50 \text{ pF}$)

Item	Symbol	Ta = 25°C V _{CC} = 5.0 V		Ta = -40 to +85°C V _{CC} = 5.0 V ±10		Unit	Test Conditions
		Min	Max	Min	Max		
Propagation delay time	t _{PLH}	3.0	6.0	3.0	7.0	ns	See under figure
	t _{PHL}	3.0	6.0	3.0	7.0		
Output enable time	t _{ZH}	3.0	9.0	3.0	11.0	ns	
	t _{ZL}	3.0	9.0	3.0	11.0		
Output disable time	t _{HZ}	3.0	8.0	3.0	10.0	ns	
	t _{LZ}	3.0	8.0	3.0	10.0		
Input capacitance	C _{IN}	3.0(Typ)		—		pF	V _{IN} = V _{CC} or GND
Output capacitance	C _O	15.0(Typ)		—		pF	V _O = V _{CC} or GND

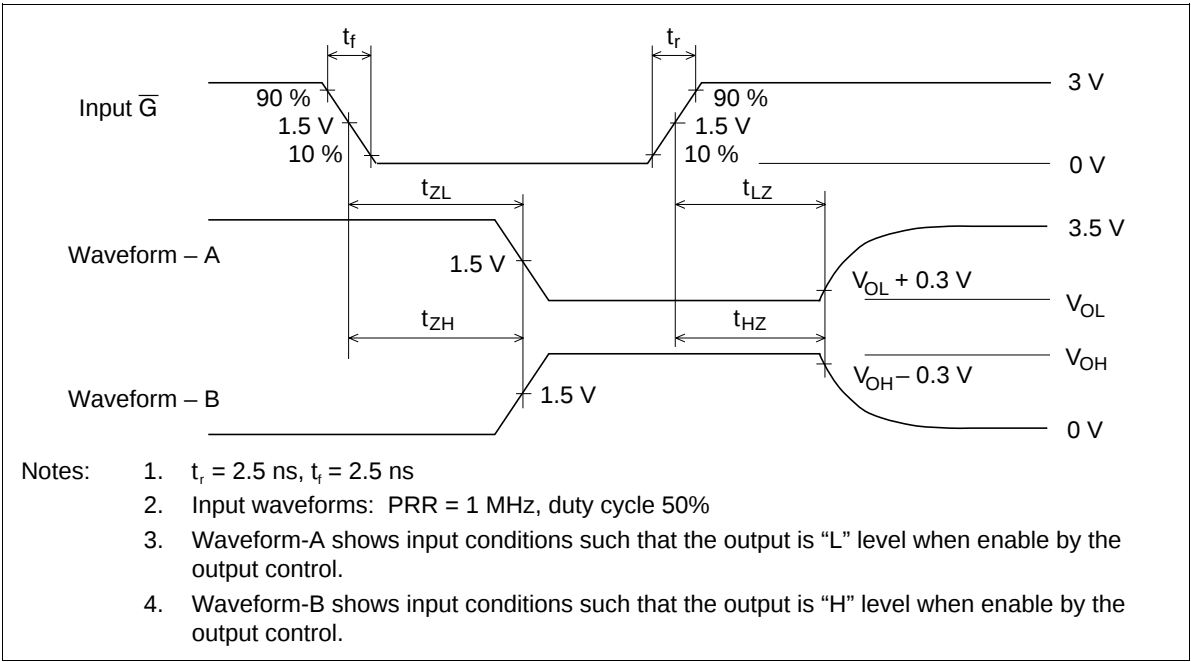
Test circuit



Waveforms-1



Waveforms-2



Package Dimensions

Unit: mm

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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

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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 Straße 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) 778322
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Hitachi Asia Pte. Ltd. 16 Collyer Quay #20-00 Hitachi Tower Singapore 049318 Tel: 535-2100 Fax: 535-1533 Hitachi Asia Ltd. Taipei Branch Office 3F, Hung Kuo Building. No.167, Tun-Hwa North Road, Taipei (105) Tel: <886> (2) 2718-3666 Fax: <886> (2) 2718-8180
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Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., 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

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