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# HD74HCT540/HD74HCT541

Octal Buffers/Line Drivers (with 3-state outputs)

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### Description

The HD74HCT540 is an inverting buffer and the HD74HCT541 is a non-inverting buffer. The 3-state control gate operates as a two-input NOR such that if either  $\overline{G_1}$  or  $\overline{G_2}$  are high, all eight outputs are in the high-impedance state.

### Features

- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation:  $t_{pd}$  (A to Y) = 12 ns typ ( $C_L = 50$  pF)
- High Output Current: Fanout of 15 LSTTL Loads
- Wide Operating Voltage:  $V_{CC} = 4.5$  to 5.5 V
- Low Input Current: 1  $\mu$ A max
- Low Quiescent Supply Current:  $I_{CC}$  (static) = 4  $\mu$ A max ( $T_a = 25^\circ\text{C}$ )

### Function Table

Inputs			Outputs Y	
$\overline{G_1}$	$\overline{G_2}$	A	HD74HCT540	HD74HCT541
L	L	L	H	L
L	L	H	L	H
H	X	X	Z	Z
X	H	X	Z	Z

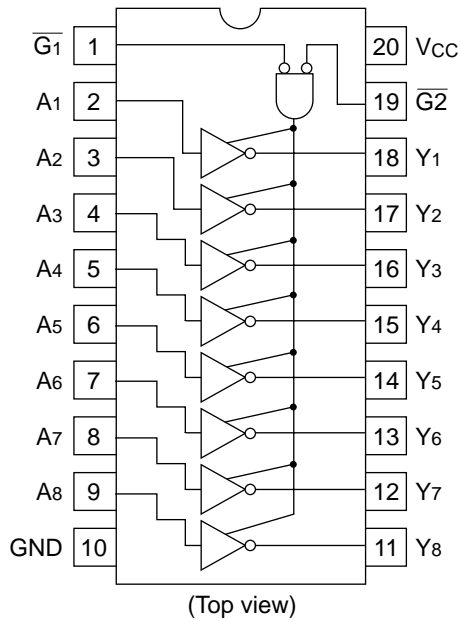
X : irrelevant

Z : Off (high-impedance) state of a 3-state output.

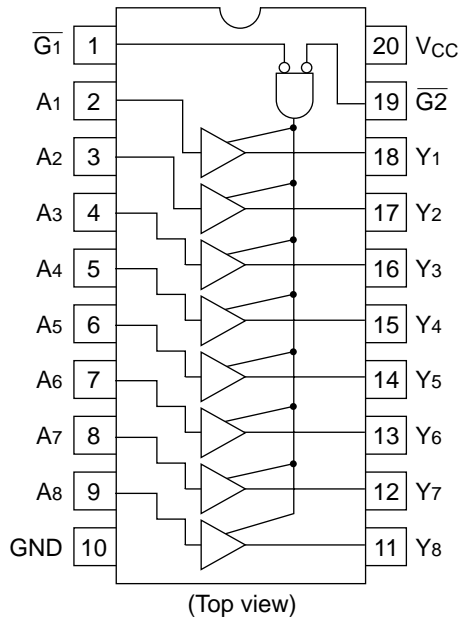
# HD74HCT540/HD74HCT541

## Pin Arrangement

### HD74HCT540



### HD74HCT541



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**Absolute Maximum Ratings**

Item	Symbol	Rating	Unit
Supply voltage range	$V_{CC}$	-0.5 to +7.0	V
Input voltage	$V_{IN}$	-0.5 to $V_{CC} + 0.5$	V
Output voltage	$V_{OUT}$	-0.5 to $V_{CC} + 0.5$	V
Output current	$I_{OUT}$	$\pm 35$	mA
DC current drain per $V_{CC}$ , GND	$I_{CC}$ , $I_{GND}$	$\pm 75$	mA
DC input diode current	$I_{IK}$	$\pm 20$	mA
DC output diode current	$I_{OK}$	$\pm 20$	mA
Power dissipation per package	$P_T$	500	mW
Storage temperature	Tstg	-65 to +150	°C

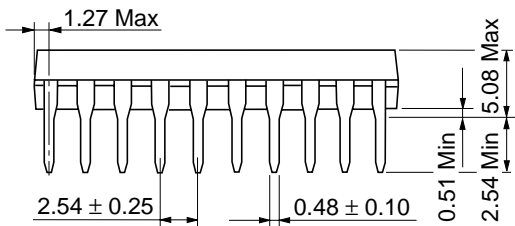
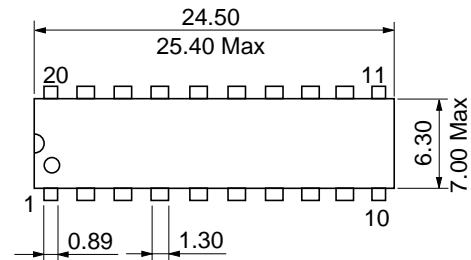
**DC Characteristics**

Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
		Min	Typ	Max	Min		Max	$V_{CC}$ (V)	
Input voltage	$V_{IH}$	2.0	—	—	2.0	—	V	4.5 to 5.5	
	$V_{IL}$	—	—	0.8	—	0.8	V	4.5 to 5.5	
Output voltage	$V_{OH}$	4.4	—	—	4.4	—	V	4.5	$V_{in} = V_{IH}$ or $V_{IL}$ , $I_{OH} = -20 \mu A$
		4.18	—	—	4.13	—		4.5	$I_{OH} = -6 mA$
	$V_{OL}$	—	—	0.1	—	0.1	V	4.5	$V_{in} = V_{IH}$ or $V_{IL}$ , $I_{OL} = 20 \mu A$
		—	—	0.26	—	0.33		4.5	$I_{OL} = 6 mA$
Off-state output current	$I_{OZ}$	—	—	$\pm 0.5$	—	$\pm 5.0$	$\mu A$	5.5	$V_{in} = V_{IH}$ or $V_{IL}$ , $V_{out} = V_{CC}$ or GND
Input current	$I_{in}$	—	—	$\pm 0.1$	—	$\pm 1.0$	$\mu A$	5.5	$V_{in} = V_{CC}$ or GND
Quiescent current	$I_{CC}$	—	—	4.0	—	40	$\mu A$	5.5	$V_{in} = V_{CC}$ or GND, $I_{out} = 0 \mu A$

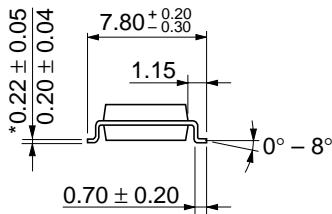
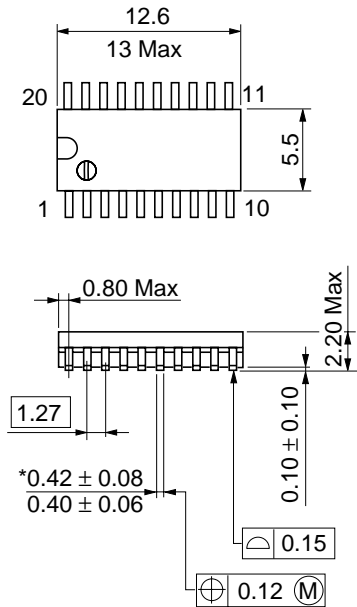
# HD74HCT540/HD74HCT541

AC Characteristics ( $C_L = 50$  pF, Input  $t_r = t_f = 6$  ns)

Item	Symbol	Ta = 25°C		Ta = -40 to +85°C		Unit	Test Conditions		
		Min	Typ	Max	Min		Max	V <sub>cc</sub> (V)	
Propagation delay time	t <sub>PLH</sub>	—	11	20	—	25	ns	4.5	HD74HCT540 only
	t <sub>PHL</sub>	—	12	20	—	25		4.5	
	t <sub>PLH</sub>	—	10	23	—	29	ns	4.5	HD74HCT541 only
	t <sub>PHL</sub>	—	13	23	—	29		4.5	
Output enable time	t <sub>ZL</sub>	—	16	30	—	38	ns	4.5	
	t <sub>ZH</sub>	—	20	30	—	38		4.5	
Output disable time	t <sub>LZ</sub>	—	15	30	—	38	ns	4.5	
	t <sub>HZ</sub>	—	15	30	—	38		4.5	
Output rise/fall time	t <sub>TLH</sub>	—	4	12	—	15	ns	4.5	
	t <sub>THL</sub>	—	4	12	—	15		4.5	
Input capacitance	C <sub>in</sub>	—	5	10	—	10	pF	—	

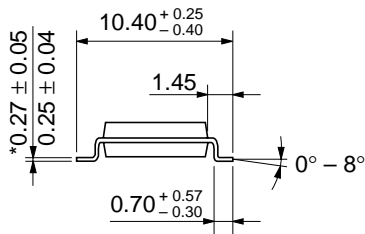
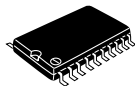
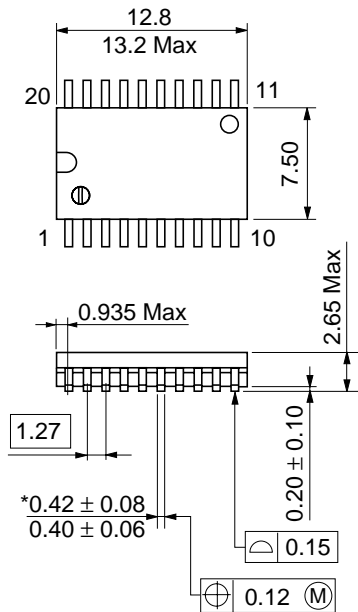


Hitachi Code	DP-20N
JEDEC	—
EIAJ	Conforms
Weight (reference value)	1.26 g



Hitachi Code	FP-20DA
JEDEC	—
EIAJ	Conforms
Weight (reference value)	0.31 g

\*Dimension including the plating thickness  
Base material dimension



Hitachi Code	FP-20DB
JEDEC	Conforms
EIAJ	—
Weight (reference value)	0.52 g

\*Dimension including the plating thickness  
 Base material dimension



\*Dimension including the plating thickness  
Base material dimension

Hitachi Code	TTP-20DA
JEDEC	—
EIAJ	—
Weight (reference value)	0.07 g



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