

HD74HCT540/HD74HCT541

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

HITACHI

ADE-205-558 (Z)
1st. Edition
Sep. 2000

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 ($T_a = 25^\circ C$)

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

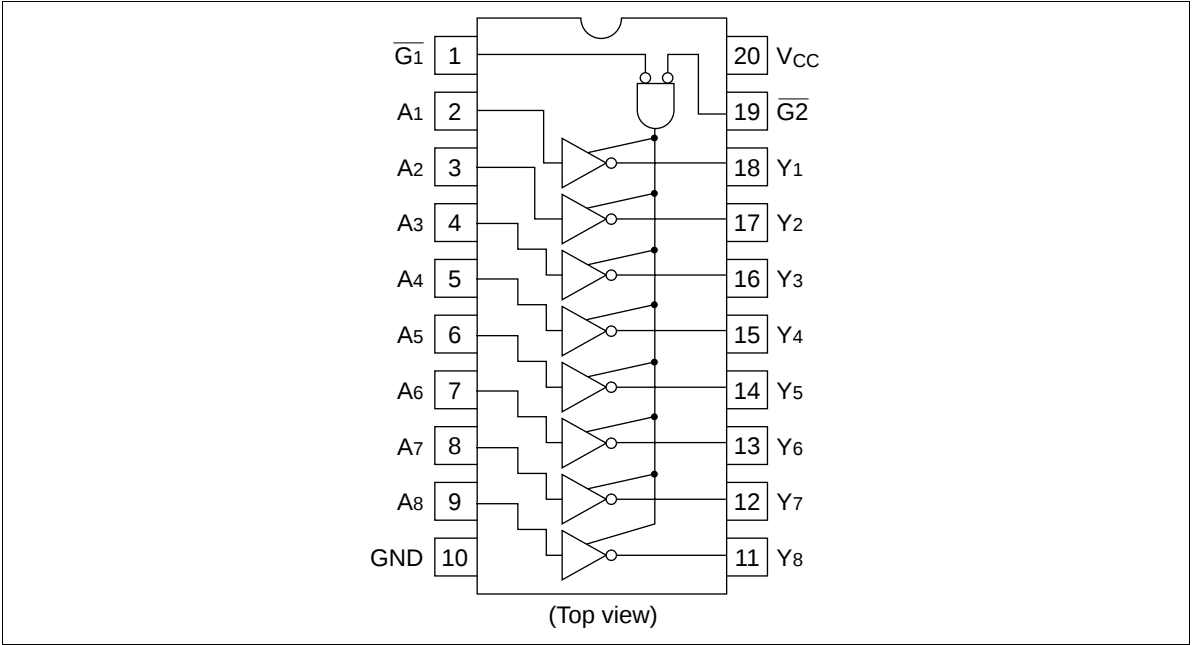
X : irrelevant

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

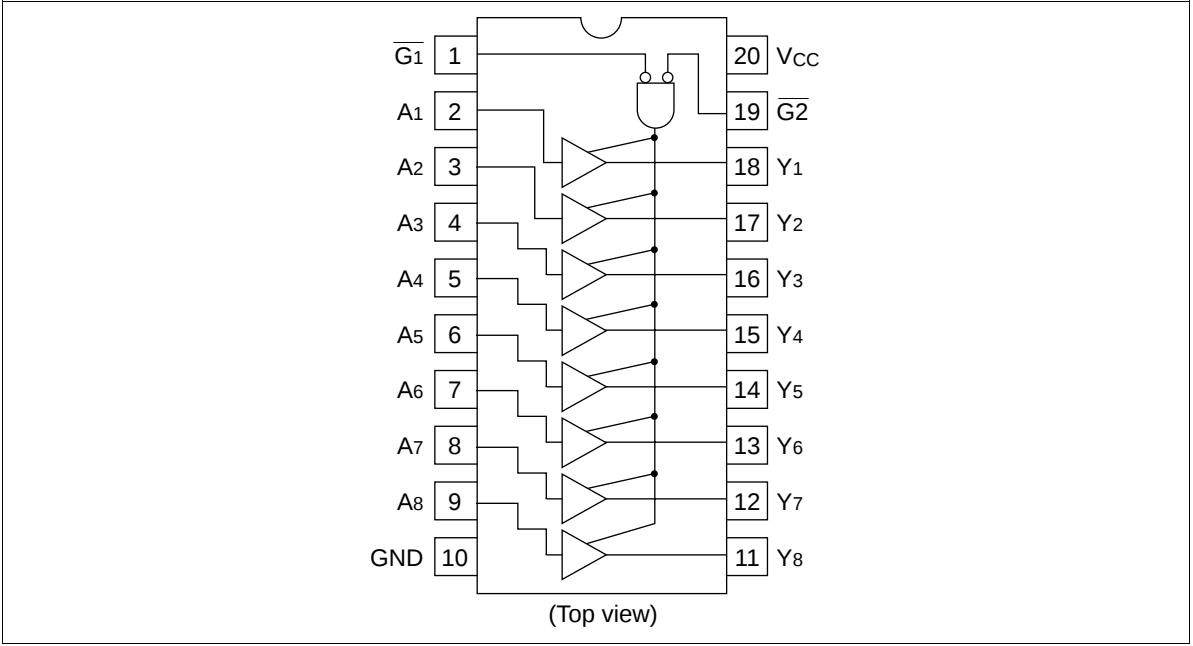
HD74HCT540/HD74HCT541

Pin Arrangement

HD74HCT540



HD74HCT541



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}	±35	mA
DC current drain per V_{CC} , GND	I_{CC} , I_{GND}	±75	mA
DC input diode current	I_{IK}	±20	mA
DC output diode current	I_{OK}	±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		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 Vin = V_{IH} or V_{IL} $I_{OH} = -20 \mu A$
		4.18	—	—	4.13	—		4.5 $I_{OH} = -6 \text{ mA}$
	V_{OL}	—	—	0.1	—	0.1	V	4.5 Vin = V_{IH} or V_{IL} $I_{OL} = 20 \mu A$
		—	—	0.26	—	0.33		4.5 $I_{OL} = 6 \text{ mA}$
Off-state output current	I_{OZ}	—	—	±0.5	—	±5.0	μA	5.5 Vin = V_{IH} or V_{IL} , Vout = V_{CC} or GND
Input current	I_{in}	—	—	±0.1	—	±1.0	μA	5.5 Vin = V_{CC} or GND
Quiescent current	I_{CC}	—	—	4.0	—	40	μA	5.5 Vin = V_{CC} or GND, Iout = 0 μA

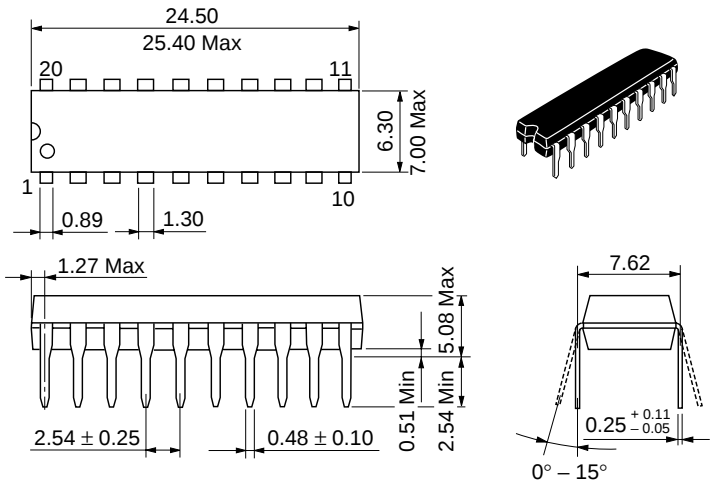
HD74HCT540/HD74HCT541

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 _{CC} (V)	
Propagation delay time	t _{PLH}	—	11	20	—	25	ns	4.5	HD74HCT540 only
	t _{PHL}	—	12	20	—	25		4.5	
	t _{PLH}	—	10	23	—	29	ns	4.5	HD74HCT541 only
	t _{PHL}	—	13	23	—	29		4.5	
Output enable time	t _{ZL}	—	16	30	—	38	ns	4.5	
	t _{ZH}	—	20	30	—	38		4.5	
Output disable time	t _{LZ}	—	15	30	—	38	ns	4.5	
	t _{HZ}	—	15	30	—	38		4.5	
Output rise/fall time	t _{TLH}	—	4	12	—	15	ns	4.5	
	t _{THL}	—	4	12	—	15		4.5	
Input capacitance	C _{in}	—	5	10	—	10	pF	—	

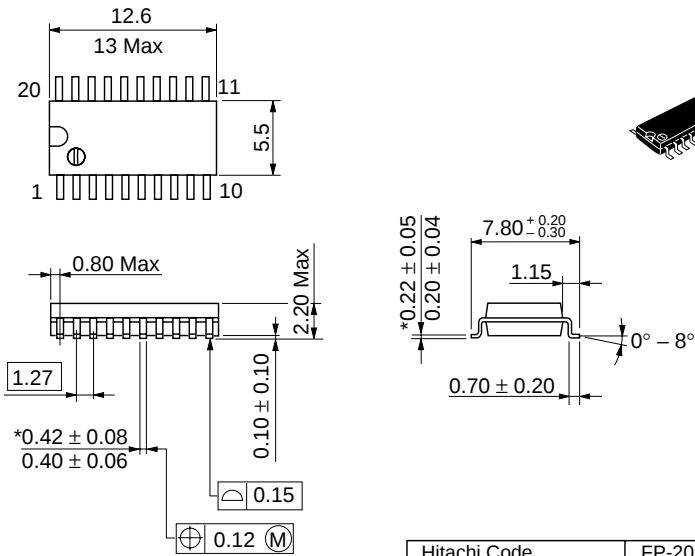
Package Dimensions

Unit: mm



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

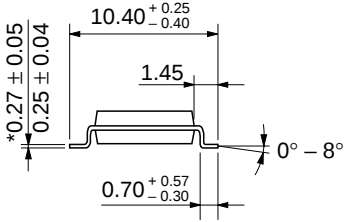
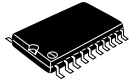
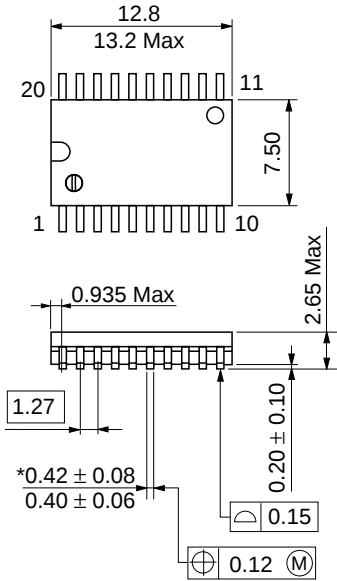
Unit: mm



*Dimension including the plating thickness
Base material dimension

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

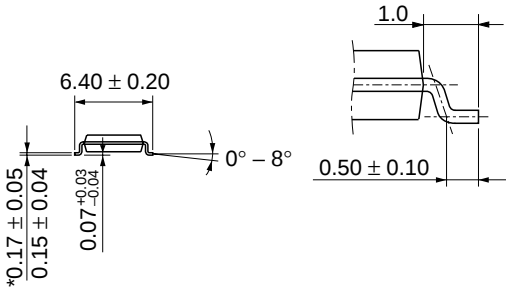
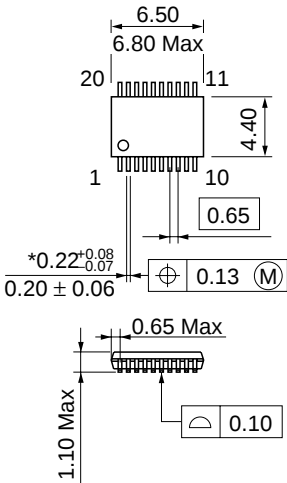
Unit: mm



*Dimension including the plating thickness
Base material dimension

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

Unit: mm



*Dimension including the plating thickness
Base material dimension

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

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