

# HD74HCT240

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

REJ03D0662-0200  
(Previous ADE-205-550)  
Rev.2.00  
Mar 30, 2006

### Description

The HD74HCT240 is an inverting buffer and has two active low enables ( $\overline{1G}$  and  $\overline{2G}$ ). Each enable independently controls 4 buffers. This device does not have schmitt trigger inputs.

### Features

- LSTTL Output Logic Level Compatibility as well as CMOS Output Compatibility
- High Speed Operation:  $t_{pd}$  (A to Y) = 11 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:  $1 \mu\text{A}$  max
- Low Quiescent Supply Current:  $I_{CC}$  (static) =  $4 \mu\text{A}$  max ( $T_a = 25^\circ\text{C}$ )
- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74HCT240P	DILP-20 pin	PRDP0020AC-B (DP-20NEV)	P	—
HD74HCT240FPEL	SOP-20 pin (JEITA)	PRSP0020DD-B (FP-20DAV)	FP	EL (2,000 pcs/reel)
HD74HCT240RPEL	SOP-20 pin (JEDEC)	PRSP0020DC-A (FP-20DBV)	RP	EL (1,000 pcs/reel)
HD74HCT240TELL	TSSOP-20 pin	PTSP0020JB-A (TTP-20DAV)	T	ELL (2,000 pcs/reel)

Note: Please consult the sales office for the above package availability.

### Function Table

Inputs		Output
$\overline{G}$	A	Y
H	X	Z
L	H	L
L	L	H

H : high level

L : low level

X : irrelevant

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



## Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	$V_{CC}$	4.5 to 5.5	V	
Input / Output voltage	$V_{IN}, V_{OUT}$	0 to $V_{CC}$	V	
Operating temperature	$T_a$	-40 to 85	°C	
Input rise / fall time <sup>1</sup>	$t_r, t_f$	0 to 500	ns	$V_{CC} = 4.5$ V

Notes: 1. This item guarantees maximum limit when one input switches.  
Waveform: Refer to test circuit of switching characteristics.

## Electrical Characteristics

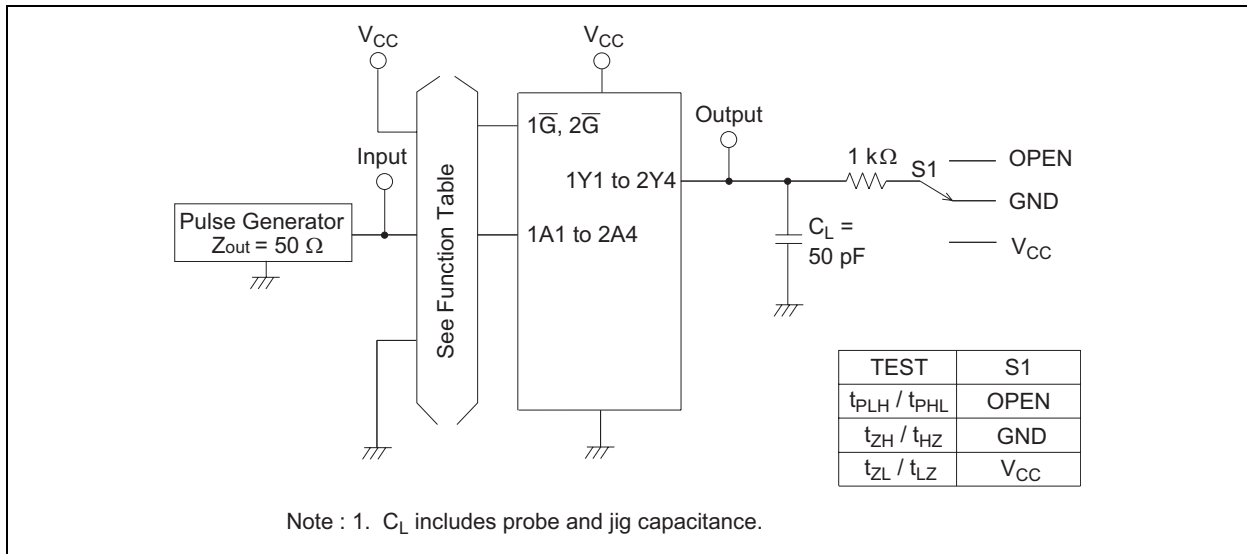
Item	Symbol	$V_{CC}$ (V)	$T_a = 25^\circ\text{C}$			$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Input voltage	$V_{IH}$	4.5 to 5.5	2.0	—	—	2.0	—	V		
	$V_{IL}$	4.5 to 5.5	—	—	0.8	—	0.8	V		
Output voltage	$V_{OH}$	4.5	4.4	—	—	4.4	—	V	$V_{in} = V_{IH}$ or $V_{IL}$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

## Switching Characteristics

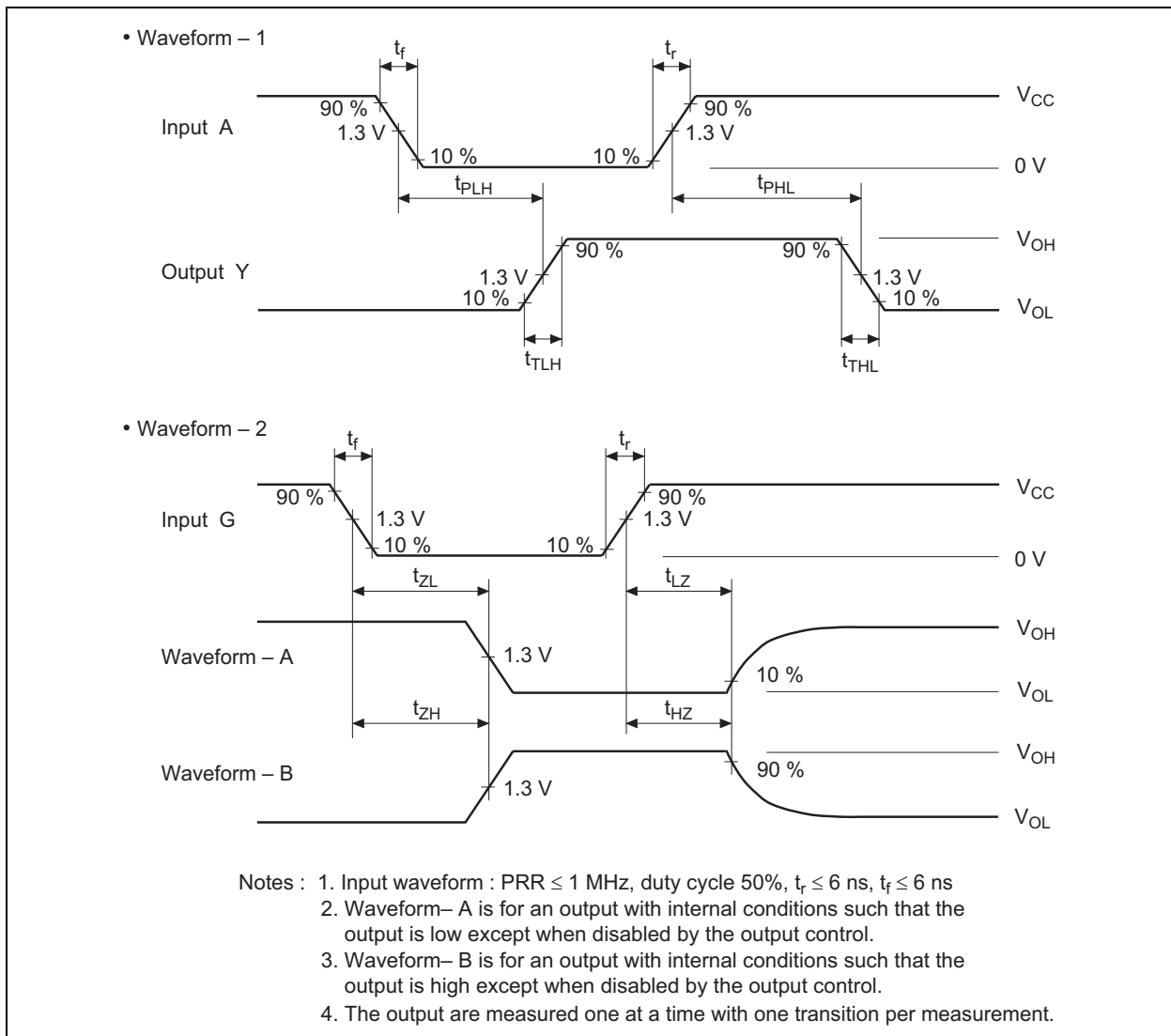
( $C_L = 50$  pF, Input  $t_r = t_f = 6$  ns)

Item	Symbol	$V_{CC}$ (V)	$T_a = 25^\circ\text{C}$			$T_a = -40$ to $+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Propagation delay time	$t_{PHL}$	4.5	—	13	20	—	25	ns		
	$t_{PLH}$	4.5	—	9	20	—	25			
Output enable time	$t_{ZL}$	4.5	—	14	30	—	38	ns		
	$t_{ZH}$	4.5	—	12	30	—	38			
Output disable time	$t_{LZ}$	4.5	—	14	30	—	38	ns		
	$t_{HZ}$	4.5	—	18	30	—	38			
Output rise/fall time	$t_{TLH}$	4.5	—	4	12	—	15	ns		
	$t_{THL}$									
Input capacitance	$C_{in}$	—	—	5	10	—	10	pF		

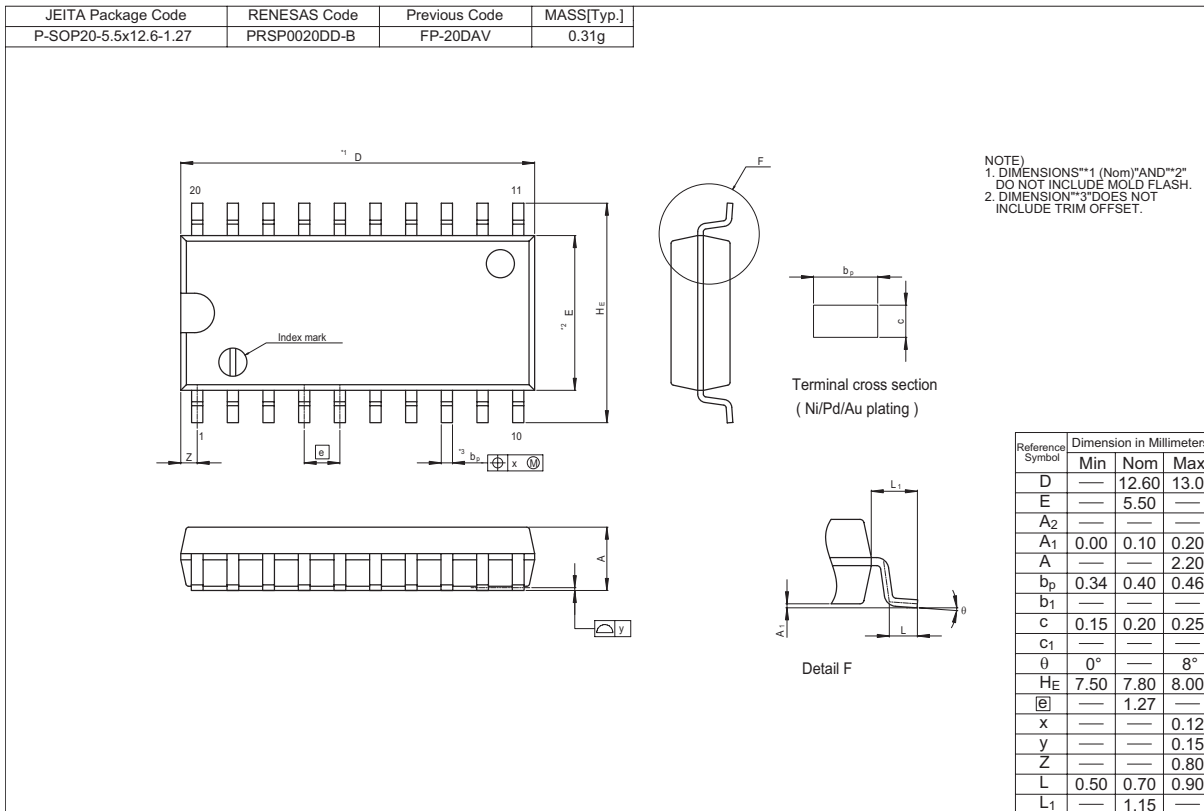
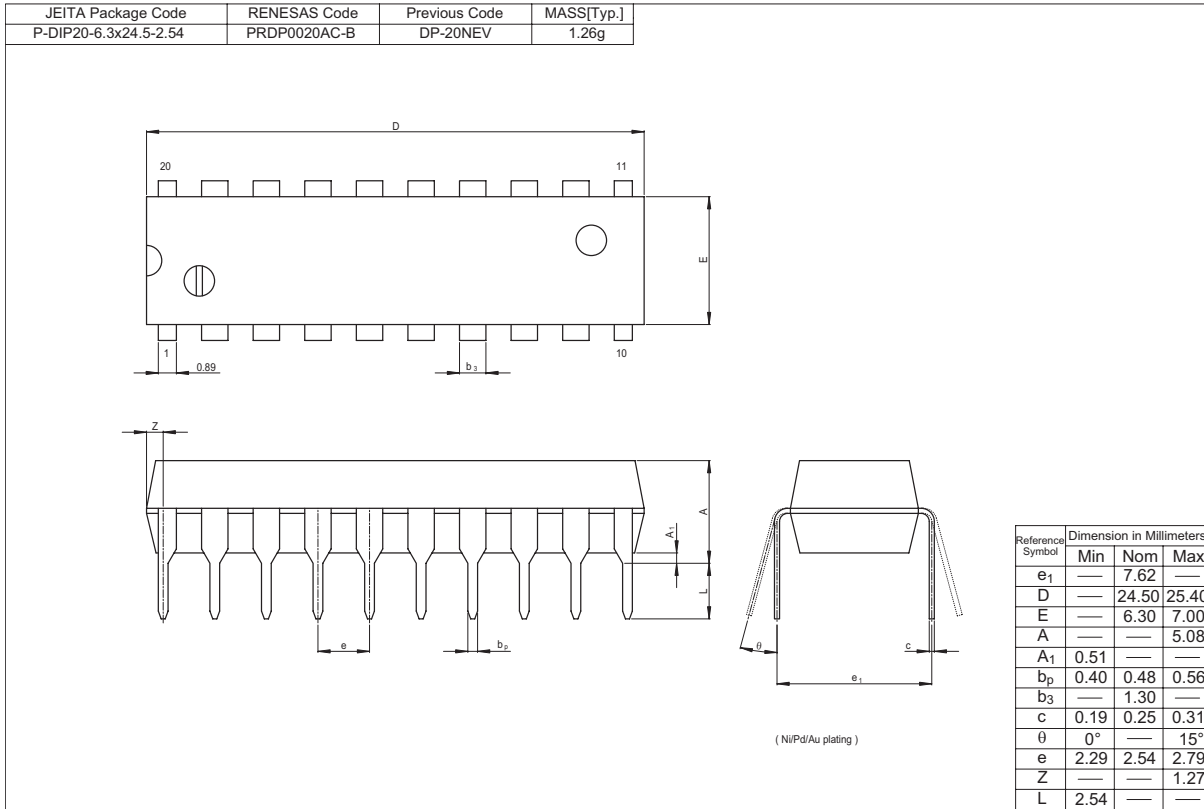
Test Circuit



Waveforms

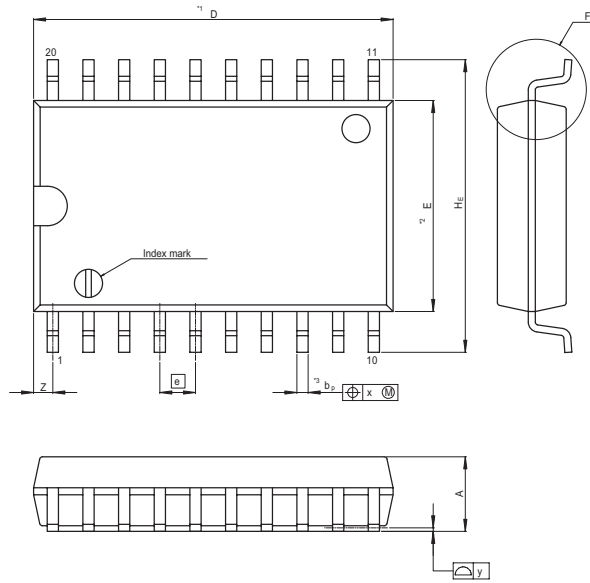


Package Dimensions

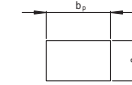


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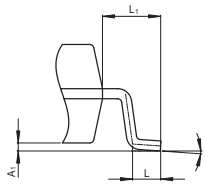
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP20-7.5x12.8-1.27	PRSP0020DC-A	FP-20DBV	0.52g



NOTE)  
 1. DIMENSIONS\*\*1 (Nom)\*AND\*\*2\*  
 @ DO NOT INCLUDE MOLD FLASH.  
 2. DIMENSION\*\*3\*DOES NOT  
 @ INCLUDE TRIM OFFSET.



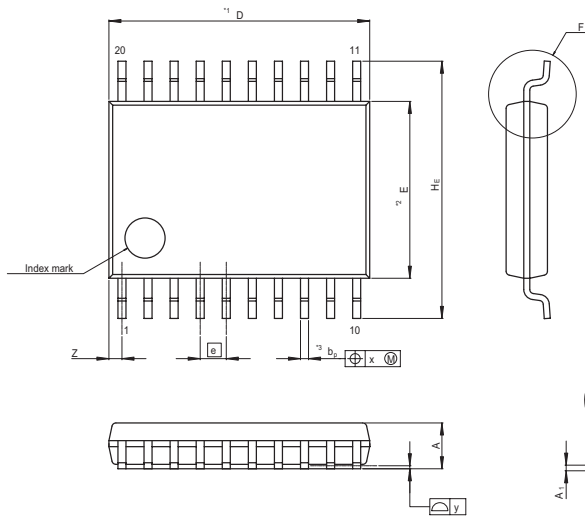
Terminal cross section  
( Ni/Pd/Au plating )



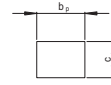
Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	12.80	13.2
E	—	7.50	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.10	0.20	0.30
A	—	—	2.65
b <sub>D</sub>	0.34	0.40	0.46
b <sub>1</sub>	—	—	—
c	0.20	0.25	0.30
c <sub>1</sub>	—	—	—
θ	0°	—	8°
H <sub>E</sub>	10.00	10.40	10.65
@	—	1.27	—
x	—	—	0.12
y	—	—	0.15
z	—	—	0.935
L	0.40	0.70	1.27
L <sub>1</sub>	—	1.45	—

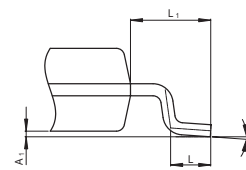
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-TSSOP20-4.4x6.5-0.65	PTSP0020JB-A	TTP-20DAV	0.07g



NOTE)  
 1. DIMENSIONS\*\*1 (Nom)\*AND\*\*2\*  
 DO NOT INCLUDE MOLD FLASH.  
 2. DIMENSION\*\*3\*DOES NOT  
 INCLUDE TRIM OFFSET.



Terminal cross section  
( Ni/Pd/Au plating )



Detail F

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	6.50	6.80
E	—	4.40	—
A <sub>2</sub>	—	—	—
A <sub>1</sub>	0.03	0.07	0.10
A	—	—	1.10
b <sub>D</sub>	0.15	0.20	0.25
b <sub>1</sub>	—	—	—
c	0.10	0.15	0.20
c <sub>1</sub>	—	—	—
θ	0°	—	8°
H <sub>E</sub>	6.20	6.40	6.60
@	—	0.65	—
x	—	—	0.13
y	—	—	0.10
z	—	—	0.65
L	0.4	0.5	0.6
L <sub>1</sub>	—	1.0	—

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