

HD74HC132

Quad. 2-input NAND Schmitt Triggers

REJ03D0567-0200
 (Previous ADE-205-441)
 Rev.2.00
 Oct 11, 2005

Features

- High Speed Operation: $t_{pd} = 9.5 \text{ ns typ (} C_L = 50 \text{ pF)}$
- High Output Current: Fanout of 10 LSTTL Loads
- Wide Operating Voltage: $V_{CC} = 2 \text{ to } 6 \text{ V}$
- Low Input Current: $1 \mu\text{A max}$
- Low Quiescent Supply Current: $I_{CC} \text{ (static)} = 1 \mu\text{A max (} T_a = 25^\circ\text{C)}$
- Ordering Information

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74HC132P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74HC132FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)
HD74HC132RPEL	SOP-14 pin (JEDEC)	PRSP0014DE-A (FP-14DNV)	RP	EL (2,500 pcs/reel)

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

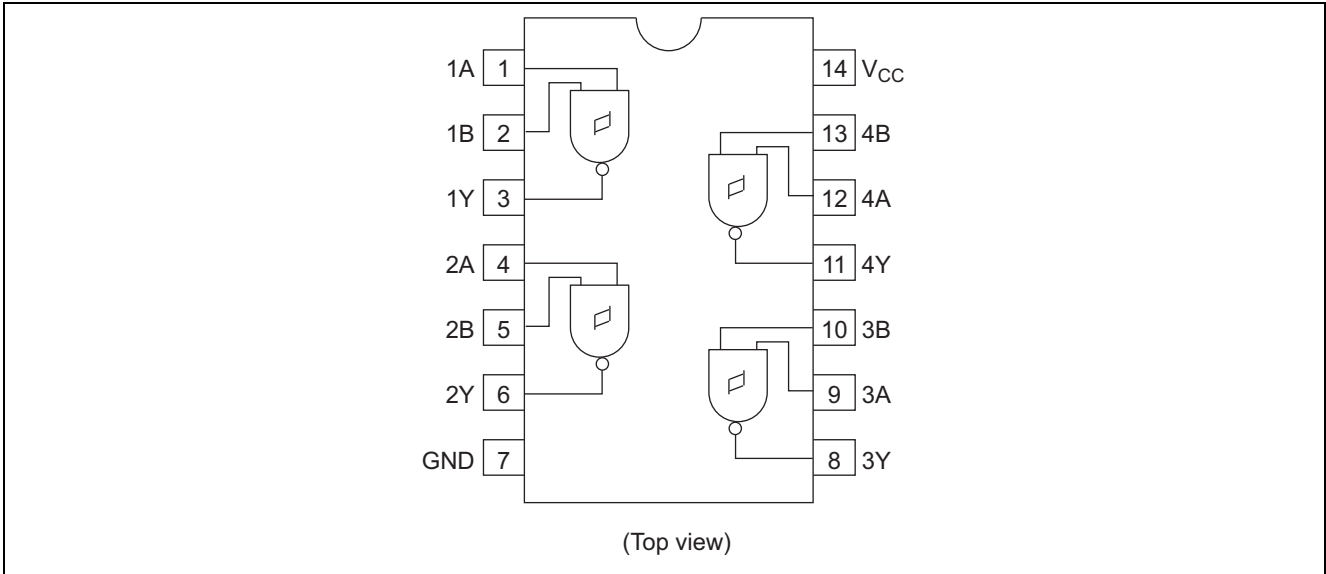
Function Table

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

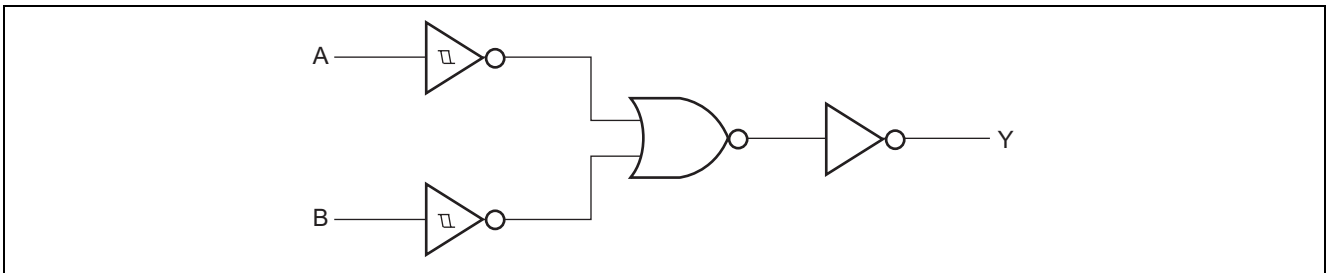
H : High level

L : Low level

Pin Arrangement



Logic Diagram (1/4)



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage range	V _{CC}	-0.5 to 7.0	V
Input / Output voltage	V _{in} , V _{out}	-0.5 to V _{CC} +0.5	V
Input / Output diode current	I _{IK} , I _{OK}	±20	mA
Output current	I _O	±25	mA
V _{CC} , GND current	I _{CC} or I _{GND}	±50	mA
Power dissipation	P _T	500	mW
Storage temperature	T _{stg}	-65 to +150	°C

Note: 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.

Recommended Operating Conditions

Item	Symbol	Ratings	Unit	Conditions
Supply voltage	V_{CC}	2 to 6	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*1	t_r, t_f	0 to unlimited	ns	$V_{CC} = 2.0\text{ V}$
		0 to unlimited		$V_{CC} = 4.5\text{ V}$
		0 to unlimited		$V_{CC} = 6.0\text{ V}$

Note: 1. This item guarantees maximum limit when one input switches.

Waveform: Refer to test circuit of switching characteristics.

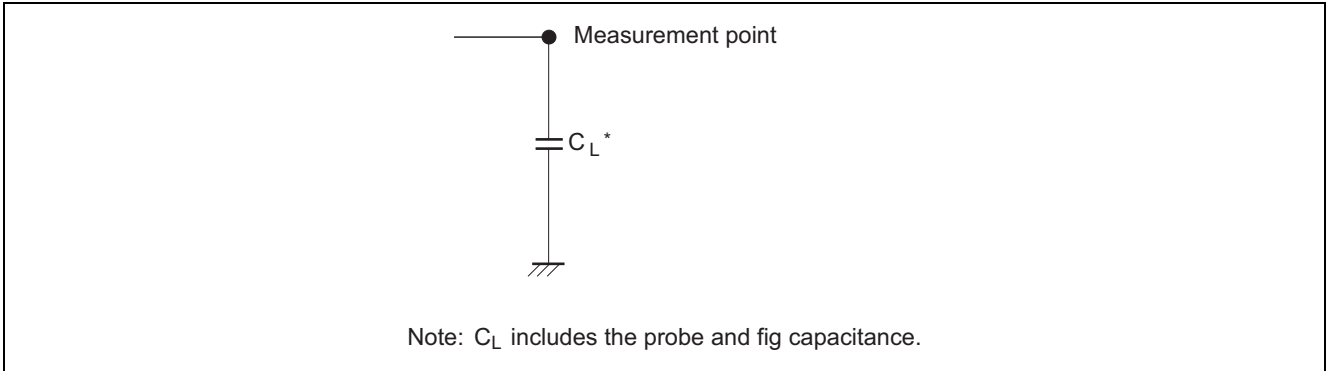
Electrical Characteristics

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Threshold voltage	V_{T+}	2.0	0.8	—	1.5	0.8	1.5	V		
		4.5	2.25	—	3.15	2.25	3.15			
		6.0	3.0	—	4.2	3.0	4.2			
	V_{T-}	2.0	0.2	—	1.0	0.2	1.0	V		
		4.5	0.9	—	2.25	0.9	2.25			
		6.0	1.2	—	3.0	1.2	3.0			
Hysteresis voltage	V_H	2.0	0.2	—	1.2	0.2	1.2	V		
		4.5	0.4	—	2.25	0.4	2.25			
		6.0	0.6	—	3.0	0.6	3.0			
Output voltage	V_{OH}	2.0	1.9	2.0	—	1.9	—	V	$V_{in} = V_{IH}$ or V_{IL}	$I_{OH} = -20\ \mu\text{A}$
		4.5	4.4	4.5	—	4.4	—			$I_{OH} = -4\ \text{mA}$
		6.0	5.9	6.0	—	5.9	—			$I_{OH} = -5.2\ \text{mA}$
		4.5	4.18	—	—	4.13	—			
		6.0	5.68	—	—	5.63	—			
	V_{OL}	2.0	—	0.0	0.1	—	0.1	V	$V_{in} = V_{IH}$ or V_{IL}	$I_{OL} = 20\ \mu\text{A}$
		4.5	—	0.0	0.1	—	0.1			$I_{OL} = 4\ \text{mA}$
		6.0	—	0.0	0.1	—	0.1			$I_{OL} = 5.2\ \text{mA}$
		4.5	—	—	0.26	—	0.33			
		6.0	—	—	0.26	—	0.33			
Input current	I_{in}	6.0	—	—	± 0.1	—	± 1.0	μA	$V_{in} = V_{CC}$ or GND	
Quiescent supply current	I_{CC}	6.0	—	—	1.0	—	10	μA	$V_{in} = V_{CC}$ or GND, $I_{out} = 0\ \mu\text{A}$	

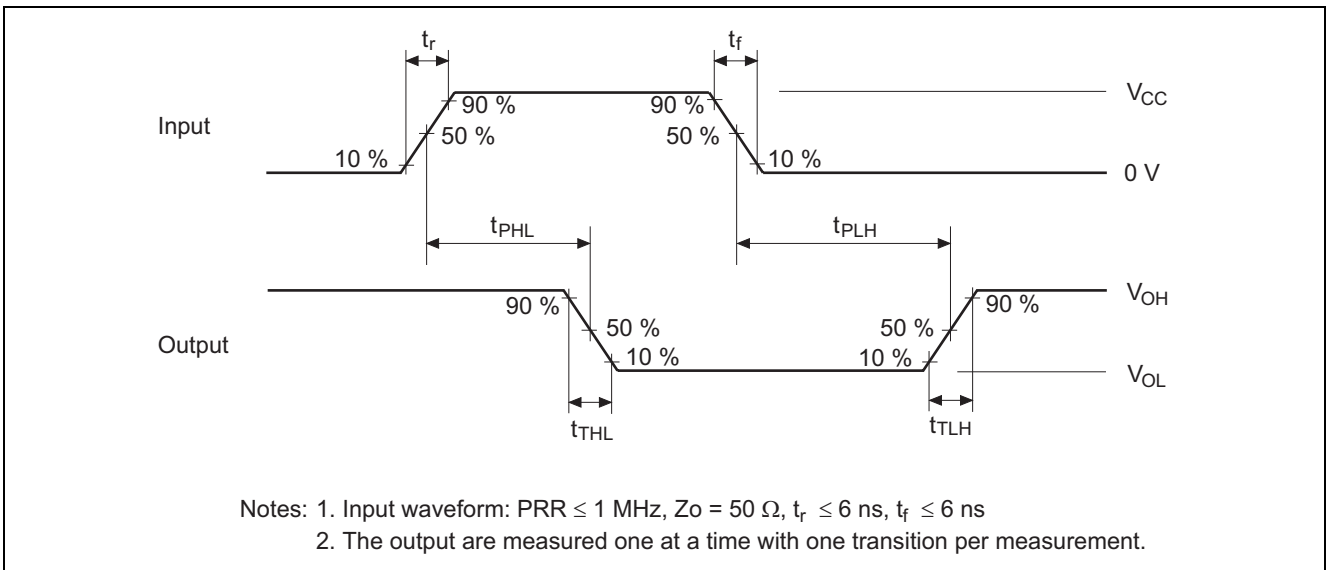
Switching Characteristics ($C_L = 50\ \text{pF}$, Input $t_r = t_f = 6\ \text{ns}$)

Item	Symbol	V_{CC} (V)	$T_a = 25^\circ\text{C}$			$T_a = -40\text{ to }+85^\circ\text{C}$		Unit	Test Conditions	
			Min	Typ	Max	Min	Max			
Propagation delay time	t_{PLH}	2.0	—	—	100	—	125	ns		
		4.5	—	8	20	—	25			
		6.0	—	—	17	—	21			
	t_{PHL}	2.0	—	—	100	—	125	ns		
		4.5	—	11	20	—	25			
		6.0	—	—	17	—	21			
Output rise/fall time	t_{TLH}, t_{THL}	2.0	—	—	75	—	95	ns		
		4.5	—	5	15	—	19			
		6.0	—	—	13	—	16			
Input capacitance	C_{in}	—	—	5	10	—	10	pF		

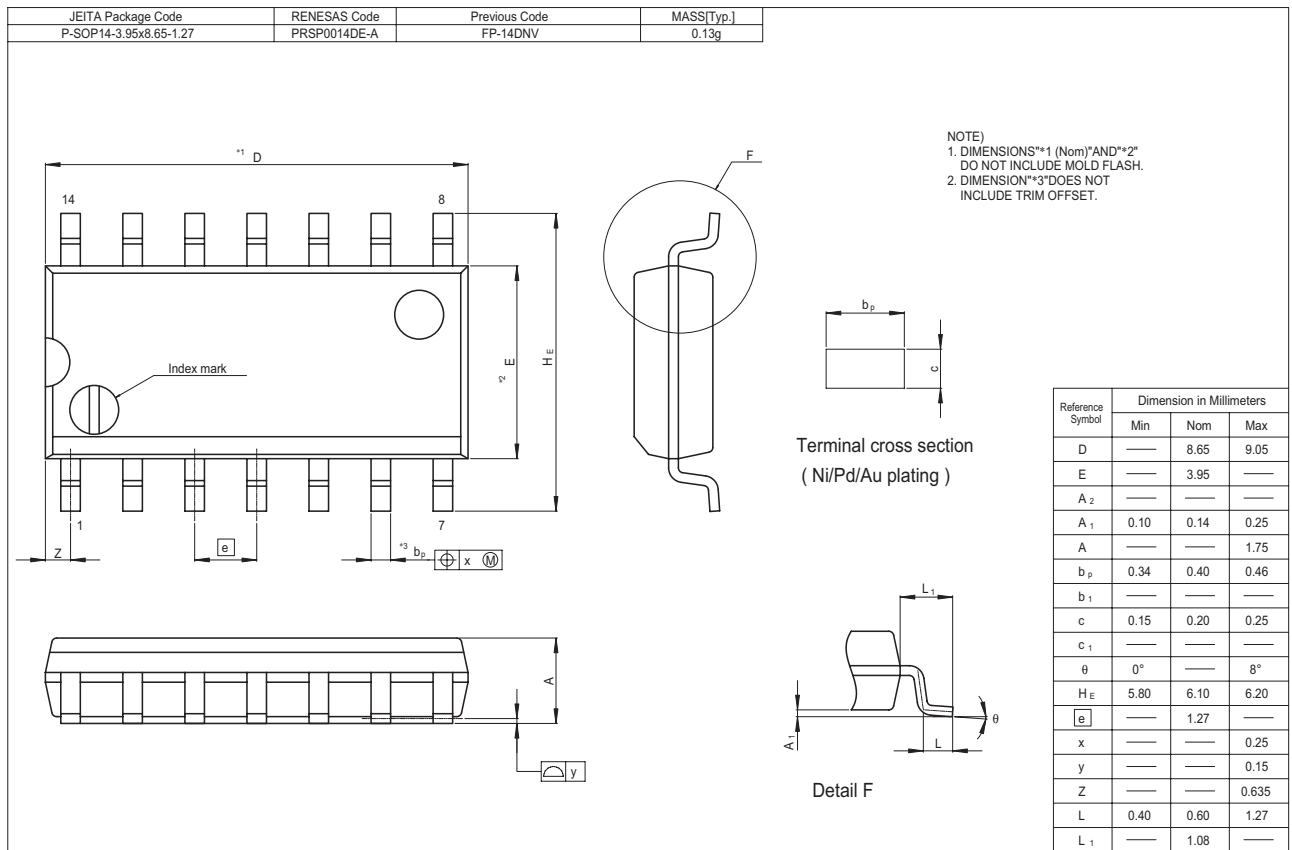
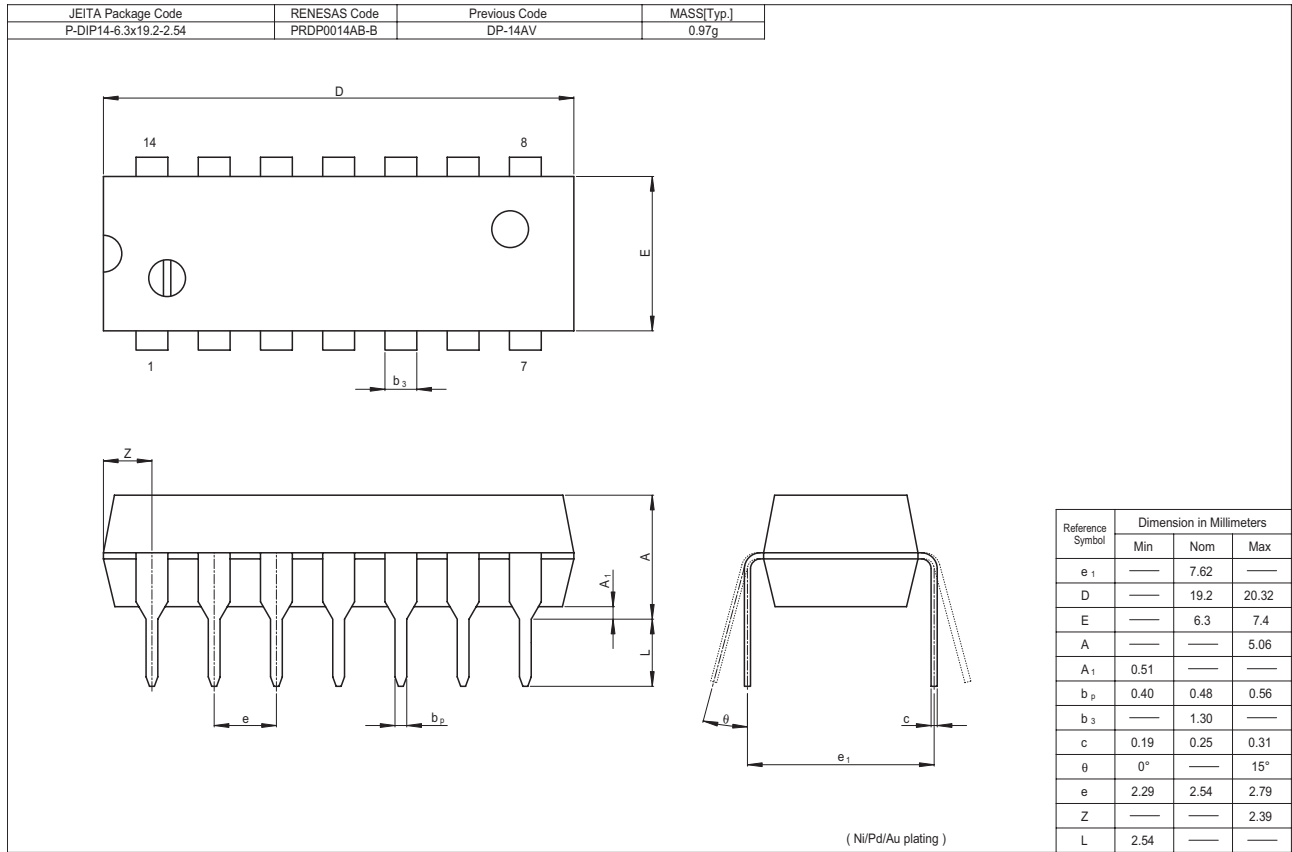
Test Circuit



Waveforms

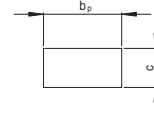
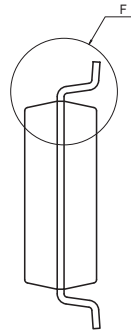
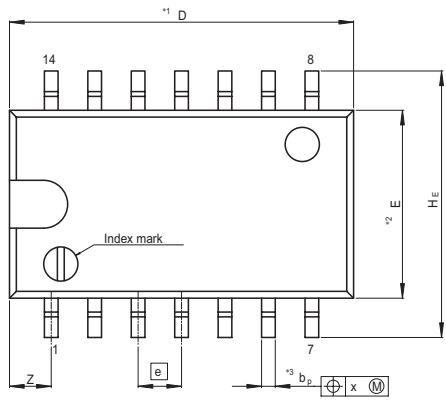


Package Dimensions

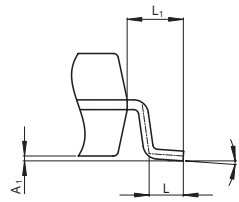


HD74HC132

JEITA Package Code P-SOP14-5.5x10.06-1.27	RENESAS Code PRSP0014DF-B	Previous Code FP-14DAV	MASS[Typ.] 0.23g
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Terminal cross section
(Ni/Pd/Au plating)



Detail F

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

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	10.06	10.5
E	—	5.50	—
A ₂	—	—	—
A ₁	0.00	0.10	0.20
A	—	—	2.20
b _p	0.34	0.40	0.46
b ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
H _E	7.50	7.80	8.00
e	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	1.42
L	0.50	0.70	0.90
L ₁	—	1.15	—

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