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April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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HD74LS14

Hex Schmitt Trigger Inverters

REJ03D0399-0400

Rev.4.00

Apr 07, 2009

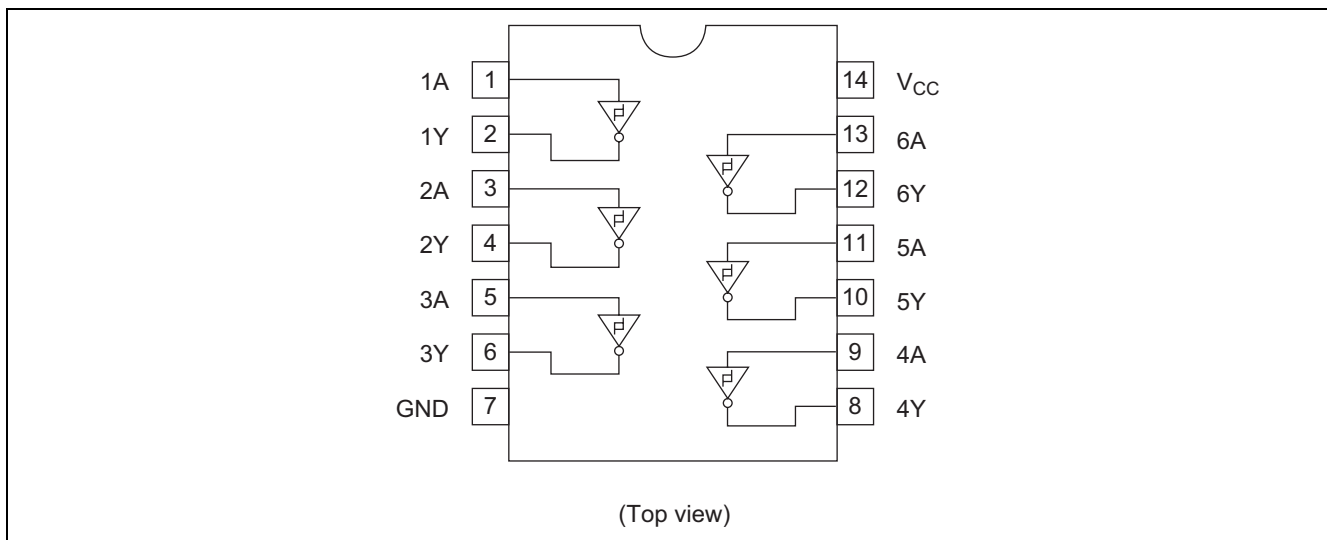
Features

- Ordering Information

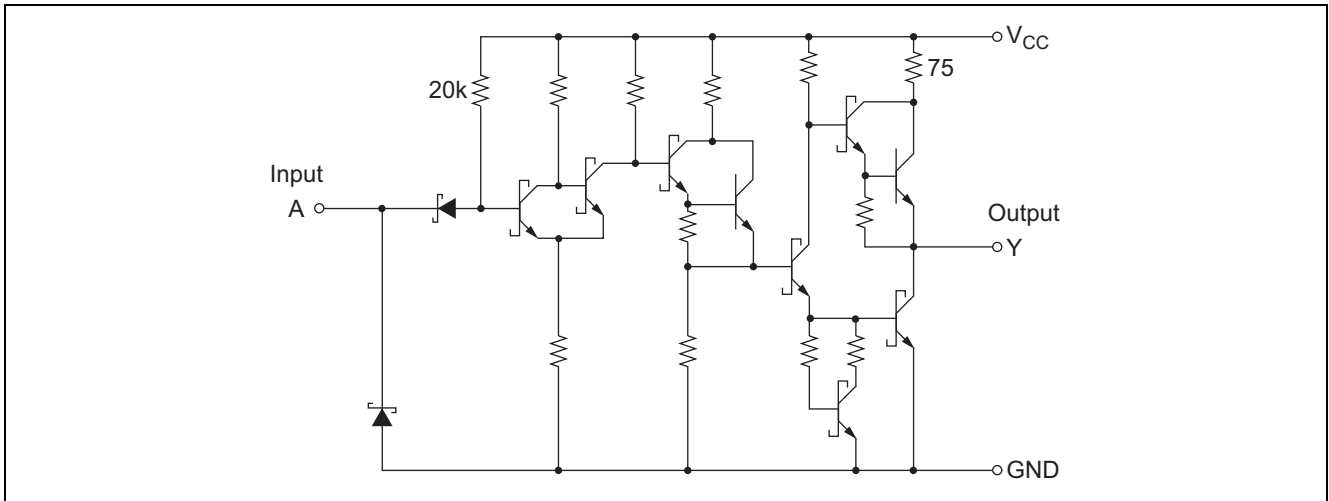
Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS14P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74LS14FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)
HD74LS14RPEL	SOP-14 pin (JEDEC)	PRSP0014DE-A (FP-14DNV)	RP	EL (2,500 pcs/reel)

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

Pin Arrangement



Circuit Schematic (1/6)



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Input voltage	V_{IN}	7	V
Supply voltage	V_{CC}	7	V
Power dissipation	P_T	400	mW
Storage temperature	T_{stg}	-65 to +150	°C

Note: Voltage value, unless otherwise noted, are with respect to network ground terminal.

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output current	I_{OH}	—	—	-400	μA
	I_{OL}	—	—	8	mA
Operating temperature	T_{opr}	-20	25	75	°C

Electrical Characteristics

(Ta = -20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input threshold voltage	V_{T^+}	1.4	1.6	1.9	V	$V_{CC} = 5\text{ V}$
	V_{T^-}	0.5	0.7	1.0	V	$V_{CC} = 5\text{ V}$
Hysteresis	$V_{T^+} - V_{T^-}$	0.4	0.9	—	V	$V_{CC} = 5\text{ V}$
Output voltage	V_{OH}	2.7	—	—	V	$V_{CC} = 4.75\text{ V}$, $V_I = 0.5\text{ V}$, $I_{OH} = -400\text{ }\mu\text{A}$
	V_{OL}	—	—	0.5	V	$V_{CC} = 4.75\text{ V}$, $V_I = 1.9\text{ V}$
		—	—	0.4		
Input threshold current	I_{T^+}	—	-0.14	—	mA	$V_{CC} = 5\text{ V}$, $V_I = V_{T^+}$
	I_{T^-}	—	-0.18	—	mA	$V_{CC} = 5\text{ V}$, $V_I = V_{T^-}$
Input current	I_{IH}	—	—	20	μA	$V_{CC} = 5.25\text{ V}$, $V_I = 2.7\text{ V}$
	I_{IL}	—	—	-0.4	mA	$V_{CC} = 5.25\text{ V}$, $V_I = 0.4\text{ V}$
	I_I	—	—	0.1	mA	$V_{CC} = 5.25\text{ V}$, $V_I = 7\text{ V}$
Short-circuit output current	I_{OS}	-20	—	-100	mA	$V_{CC} = 5.25\text{ V}$
Supply current	I_{CCH}	—	8.6	16	mA	$V_{CC} = 5.25\text{ V}$
	I_{CCL}	—	12	21	mA	$V_{CC} = 5.25\text{ V}$
Input clamp voltage	V_{IK}	—	—	-1.5	V	$V_{CC} = 4.75\text{ V}$, $I_{IN} = -18\text{ mA}$

Note: * $V_{CC} = 5\text{ V}$, $T_a = 25^\circ\text{C}$

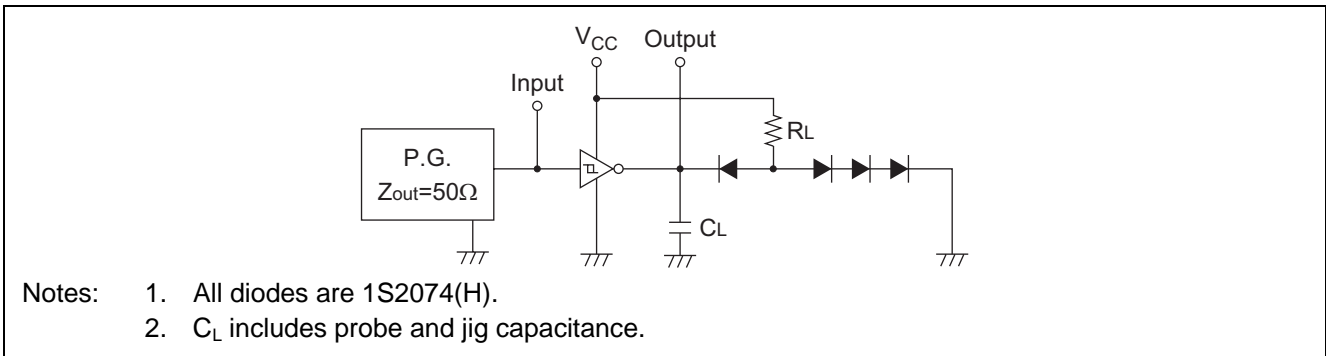
Switching Characteristics

(V_{CC} = 5 V, T_a = 25°C)

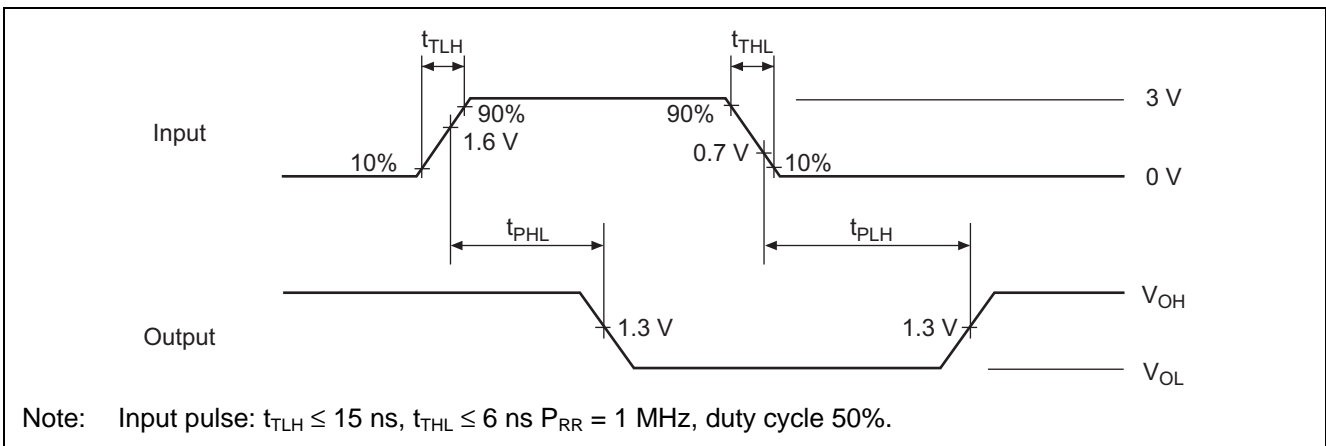
Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t_{PLH}	—	15	22	ns	$C_L = 15\text{ pF}$, $R_L = 2\text{ k}\Omega$
	t_{PHL}	—	15	22	ns	

Testing Method

Test Circuit

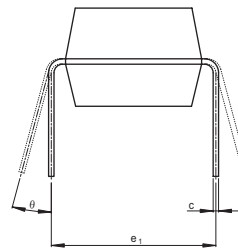
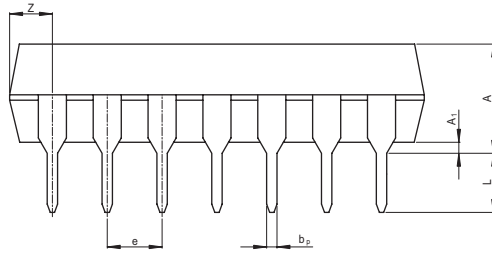
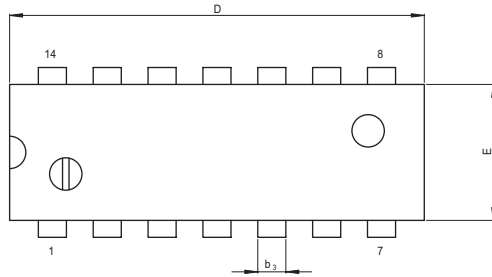


Waveform



Package Dimensions

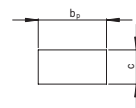
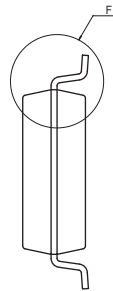
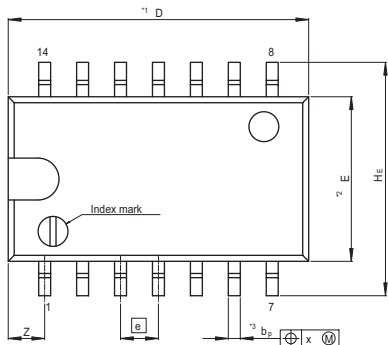
JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-DIP14-6.3x19.2-2.54	PRDP0014AB-B	DP-14AV	0.97g



(Ni/Pd/Au plating)

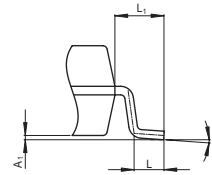
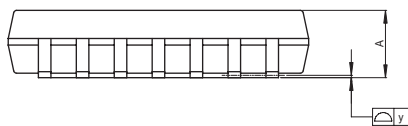
Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
e ₁	—	7.62	—
D	—	19.2	20.32
E	—	6.3	7.4
A	—	—	5.06
A ₁	0.51	—	—
b _p	0.40	0.48	0.56
b ₃	—	1.30	—
c	0.19	0.25	0.31
θ	0°	—	15°
e	2.29	2.54	2.79
Z	—	—	2.39
L	2.54	—	—

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP14-5.5x10.06-1.27	PRSP0014DF-B	FP-14DAV	0.23g



Terminal cross section (Ni/Pd/Au plating)

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

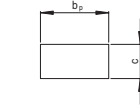
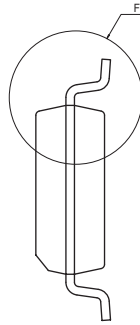
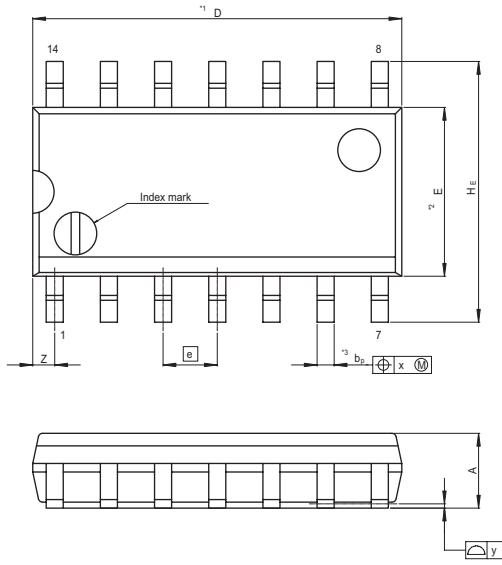


Detail F

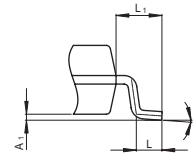
Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	10.06	10.5
E	—	5.50	—
A ₂	—	—	—
A ₁	0.00	0.10	0.20
A	—	—	2.20
b _p	0.34	0.40	0.46
b ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
H _E	7.50	7.80	8.00
ⓐ	—	1.27	—
x	—	—	0.12
y	—	—	0.15
Z	—	—	1.42
L	0.50	0.70	0.90
L ₁	—	1.15	—

HD74LS14

JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
P-SOP14-3.95x8.65-1.27	PRSP0014DE-A	FP-14DNV	0.13g



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	—	8.65	9.05
E	—	3.95	—
A ₂	—	—	—
A ₁	0.10	0.14	0.25
A	—	—	1.75
b _p	0.34	0.40	0.46
d ₁	—	—	—
c	0.15	0.20	0.25
c ₁	—	—	—
θ	0°	—	8°
HE	5.80	6.10	6.20
Ⓜ	—	1.27	—
x	—	—	0.25
y	—	—	0.15
Z	—	—	0.635
L	0.40	0.60	1.27
L ₁	—	1.08	—

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