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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

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

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HD74LS11 / HD74LS15

Triple 3-input Positive AND Gates /

Triple 3-input Positive AND Gates (with Open Collector Outputs)

REJ03D0397-0300

Rev.3.00

Jul.13.2005

Features

- Ordering Information

• HD74LS11

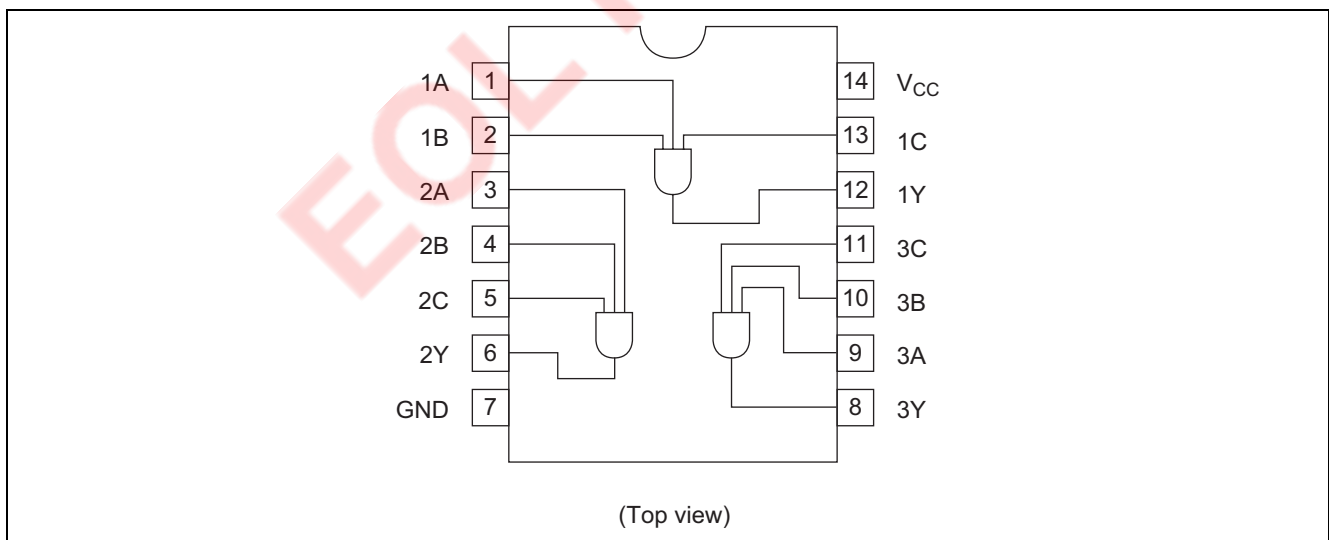
Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS11P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74LS11FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

• HD74LS15

Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS15FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

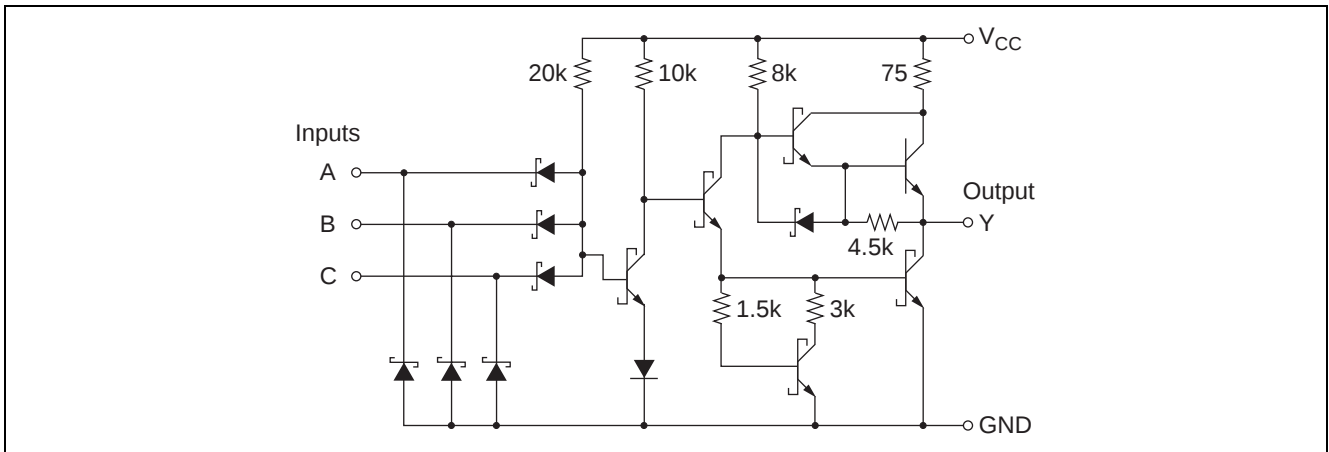
Note: Please consult the sales office for the above package availability.

Pin Arrangement

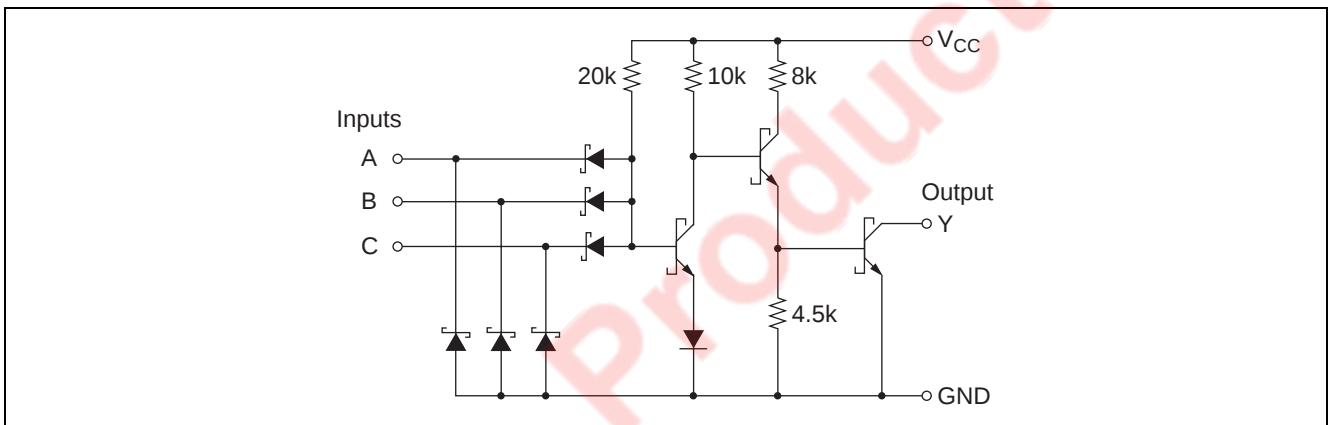


Circuit Schematic (1/3)

HD74LS11



HD74LS15



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	V_{CC} ^{Note}	7	V
Input voltage	V_{IN}	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

• HD74LS11

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

• HD74LS15

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{CC}	4.75	5.00	5.25	V
Output voltage	V_{OH}	—	—	5.5	V
Output current	I_{OL}	—	—	8	mA
Operating temperature	T_{opr}	−20	25	75	°C

Electrical Characteristics

• HD74LS11

(Ta = −20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input voltage	V_{IH}	2.0	—	—	V	
	V_{IL}	—	—	0.8	V	
Output voltage	V_{OH}	2.7	—	—	V	$V_{CC} = 4.75 \text{ V}$, $V_{IL} = 2 \text{ V}$, $I_{OH} = -400 \mu A$
	V_{OL}	—	—	0.5	V	$I_{OL} = 8 \text{ mA}$
		—	—	0.4		$I_{OL} = 4 \text{ mA}$
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}	—	1.8	3.6	mA	$V_{CC} = 5.25 \text{ V}$
	I_{CCL}	—	3.3	6.6	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: * $V_{CC} = 5 \text{ V}$, $T_a = 25^\circ\text{C}$

• HD74LS15

(Ta = −20 to +75 °C)

Item	Symbol	min.	typ.*	max.	Unit	Condition
Input voltage	V_{IH}	2.0	—	—	V	
	V_{IL}	—	—	0.8	V	
Output voltage	V_{OL}	—	—	0.5	V	$I_{OL} = 8 \text{ mA}$
		—	—	0.4		$I_{OL} = 4 \text{ mA}$
						$V_{CC} = 4.75 \text{ V}$, $V_{IH} = 0.8 \text{ V}$
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	$V_{CC} = 5.25 \text{ V}$, $V_I = 7 \text{ V}$
Output current	I_{OH}	—	—	100	μA	$V_{CC} = 4.75 \text{ V}$, $V_{OH} = 5.5 \text{ V}$
Supply current	I_{CCH}	—	1.8	3.6	mA	$V_{CC} = 5.25 \text{ V}$
	I_{CCL}	—	3.3	6.6	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

• HD74LS11

(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	—	8	15	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PHL}	—	10	20	ns	

• HD74LS15

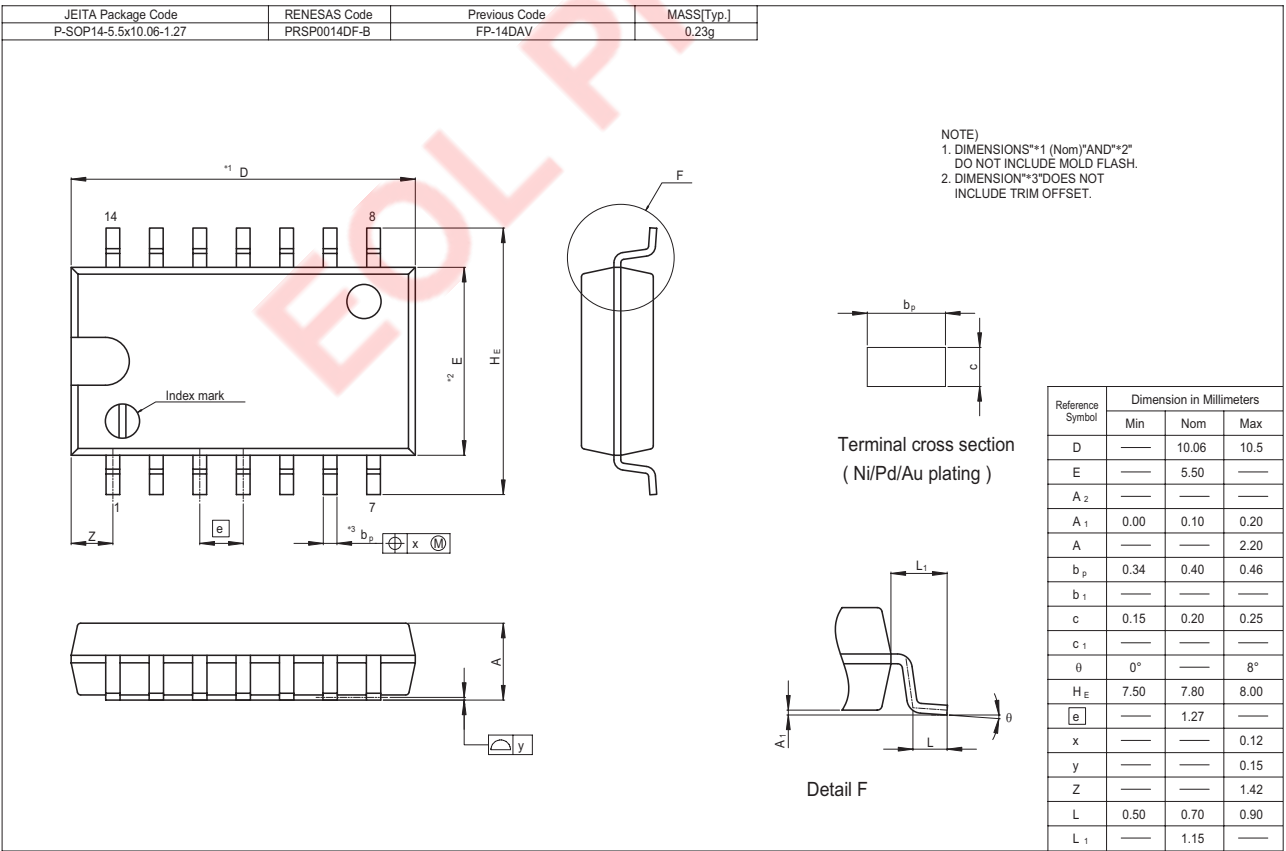
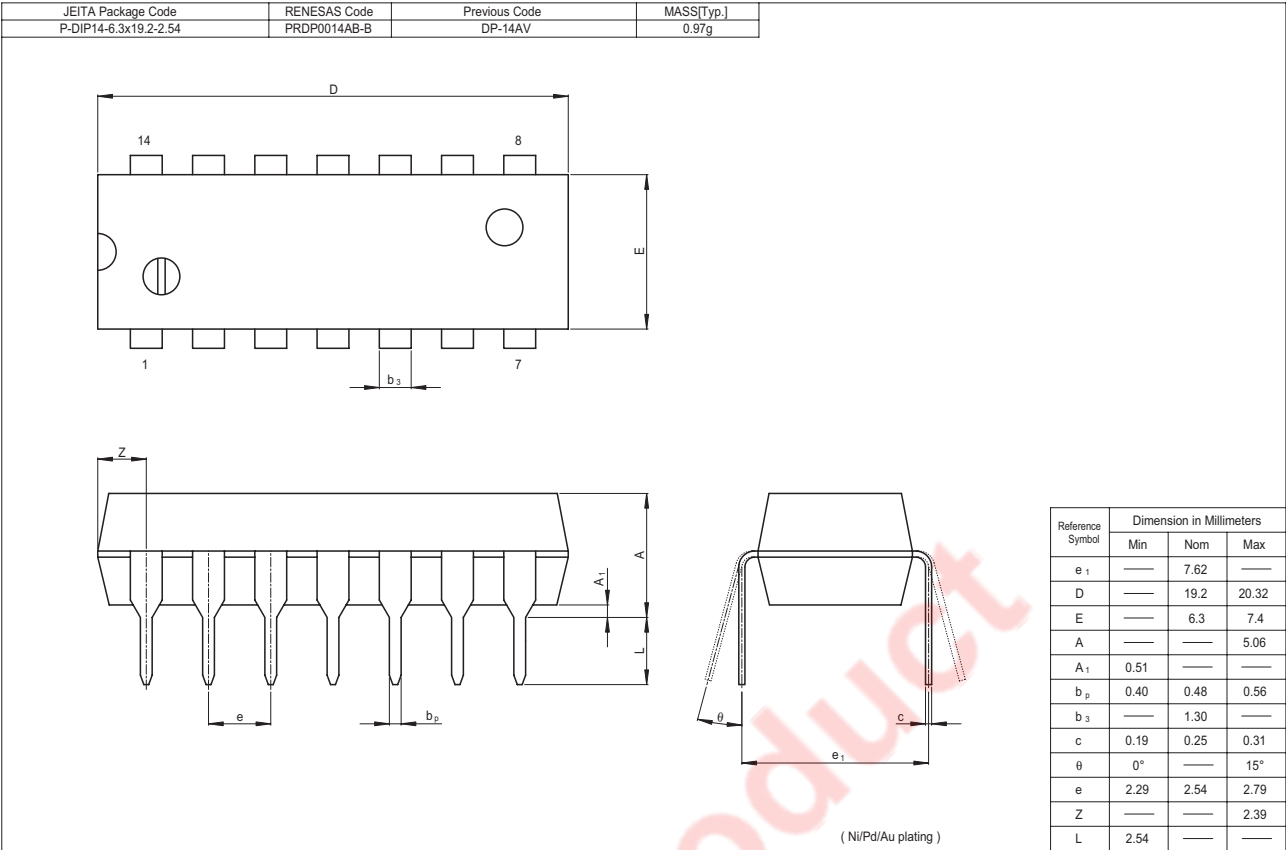
(V_{CC} = 5 V, Ta = 25°C)

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	—	20	35	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PHL}	—	17	35	ns	

Note: Refer to Test Circuit and Waveform of the Common Item "TTL Common Matter (Document No.: REJ27D0005-0100)".

EOL Product

Package Dimensions



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