

# 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

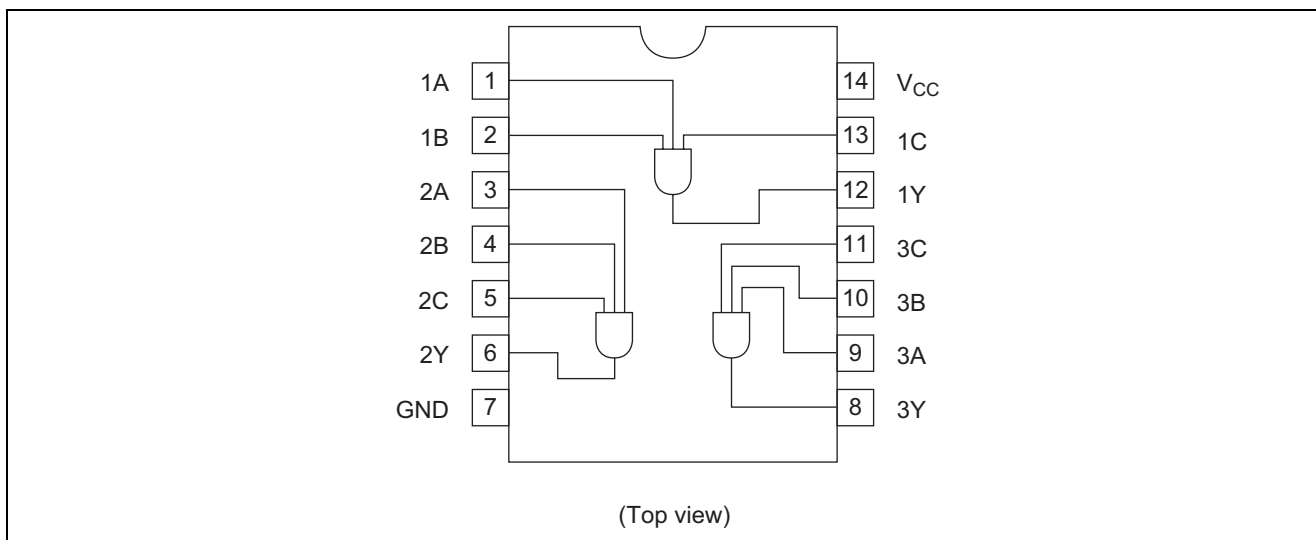
Part Name	Package Type	Package Code (Previous Code)	Package Abbreviation	Taping Abbreviation (Quantity)
HD74LS11P	DILP-14 pin	PRDP0014AB-B (DP-14AV)	P	—
HD74LS11FPEL	SOP-14 pin (JEITA)	PRSP0014DF-B (FP-14DAV)	FP	EL (2,000 pcs/reel)

### • 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)

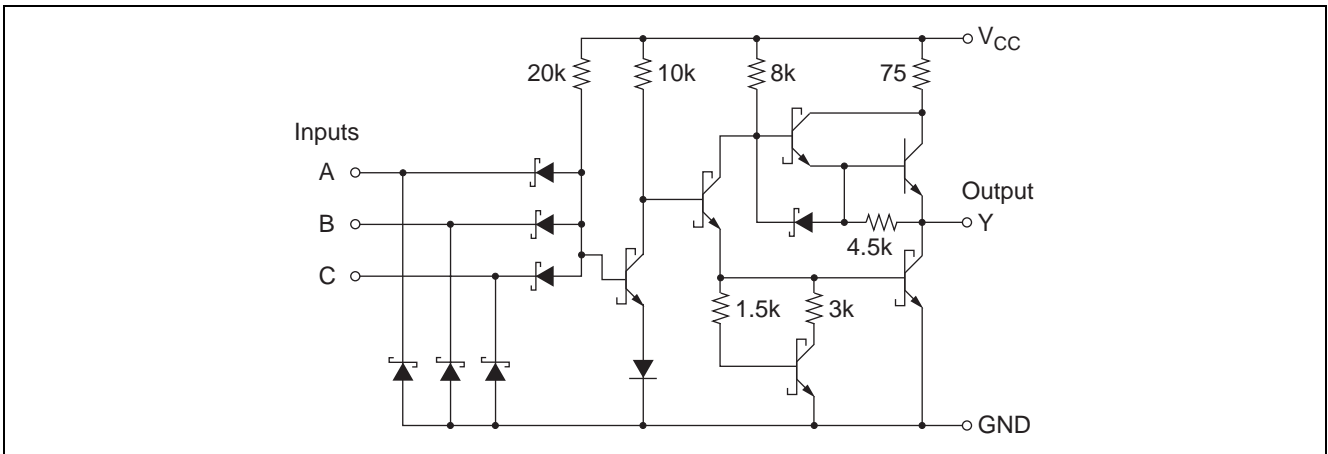
Note: Please consult the sales office for the above package availability.

## Pin Arrangement

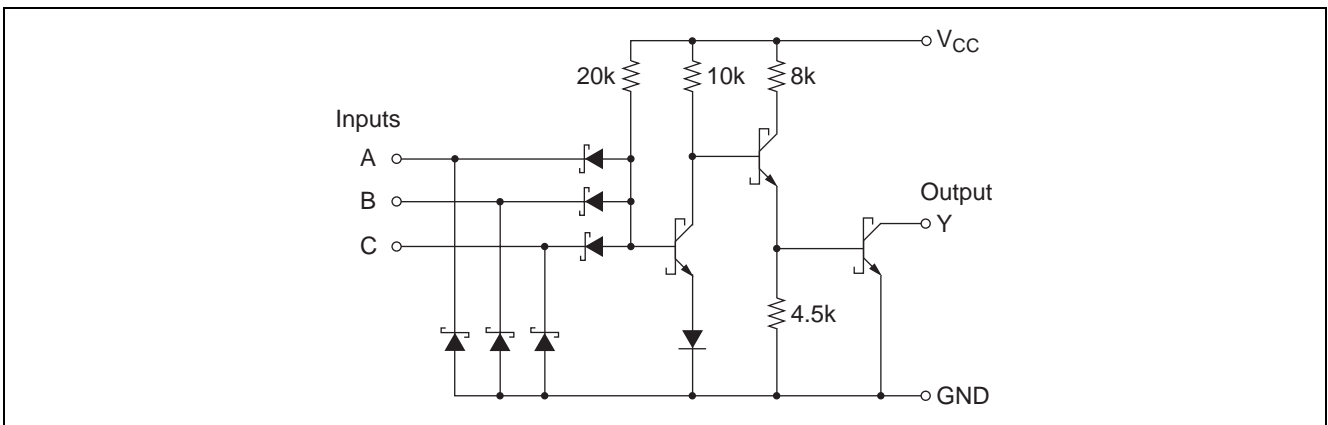


Circuit Schematic (1/3)

HD74LS11



HD74LS15



Absolute Maximum Ratings

Item	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$ <sup>Note</sup>	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	$\mu A$
	$I_{OL}$	—	—	8	mA
Operating temperature	$T_{opr}$	-20	25	75	$^{\circ}C$

### • 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	$^{\circ}C$

## Electrical Characteristics

### • HD74LS11

( $T_a = -20$  to  $+75^{\circ}C$ )

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	$V_{CC} = 4.75 V, V_{IL} = 2 V, I_{OH} = -400 \mu A$
	$V_{OL}$	—	—	0.5	V	$V_{CC} = 4.75 V, V_{IH} = 0.8 V$
		—	—	0.4		
Input current	$I_{IH}$	—	—	20	$\mu A$	$V_{CC} = 5.25 V, V_I = 2.7 V$
	$I_{IL}$	—	—	-0.4	mA	$V_{CC} = 5.25 V, V_I = 0.4 V$
	$I_I$	—	—	0.1	mA	$V_{CC} = 5.25 V, V_I = 7 V$
Short-circuit output current	$I_{OS}$	-20	—	-100	mA	$V_{CC} = 5.25 V$
Supply current	$I_{CCH}$	—	1.8	3.6	mA	$V_{CC} = 5.25 V$
	$I_{CCL}$	—	3.3	6.6	mA	$V_{CC} = 5.25 V$
Input clamp voltage	$V_{IK}$	—	—	-1.5	V	$V_{CC} = 4.75 V, I_{IN} = -18 mA$

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

### • HD74LS15

( $T_a = -20$  to  $+75^{\circ}C$ )

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	$V_{CC} = 4.75 V, V_{IH} = 0.8 V$
		—	—	0.4		
Input current	$I_{IH}$	—	—	20	$\mu A$	$V_{CC} = 5.25 V, V_I = 2.7 V$
	$I_{IL}$	—	—	-0.4	mA	$V_{CC} = 5.25 V, V_I = 0.4 V$
	$I_I$	—	—	0.1	mA	$V_{CC} = 5.25 V, V_I = 7 V$
Output current	$I_{OH}$	—	—	100	$\mu A$	$V_{CC} = 4.75 V, V_{OH} = 5.5 V$
Supply current	$I_{CCH}$	—	1.8	3.6	mA	$V_{CC} = 5.25 V$
	$I_{CCL}$	—	3.3	6.6	mA	$V_{CC} = 5.25 V$
Input clamp voltage	$V_{IK}$	—	—	-1.5	V	$V_{CC} = 4.75 V, I_{IN} = -18 mA$

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

## Switching Characteristics

### • HD74LS11

( $V_{CC} = 5\text{ V}$ ,  $T_a = 25^\circ\text{C}$ )

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	$t_{PLH}$	—	8	15	ns	$C_L = 15\text{ pF}$ , $R_L = 2\text{ k}\Omega$
	$t_{PHL}$	—	10	20	ns	

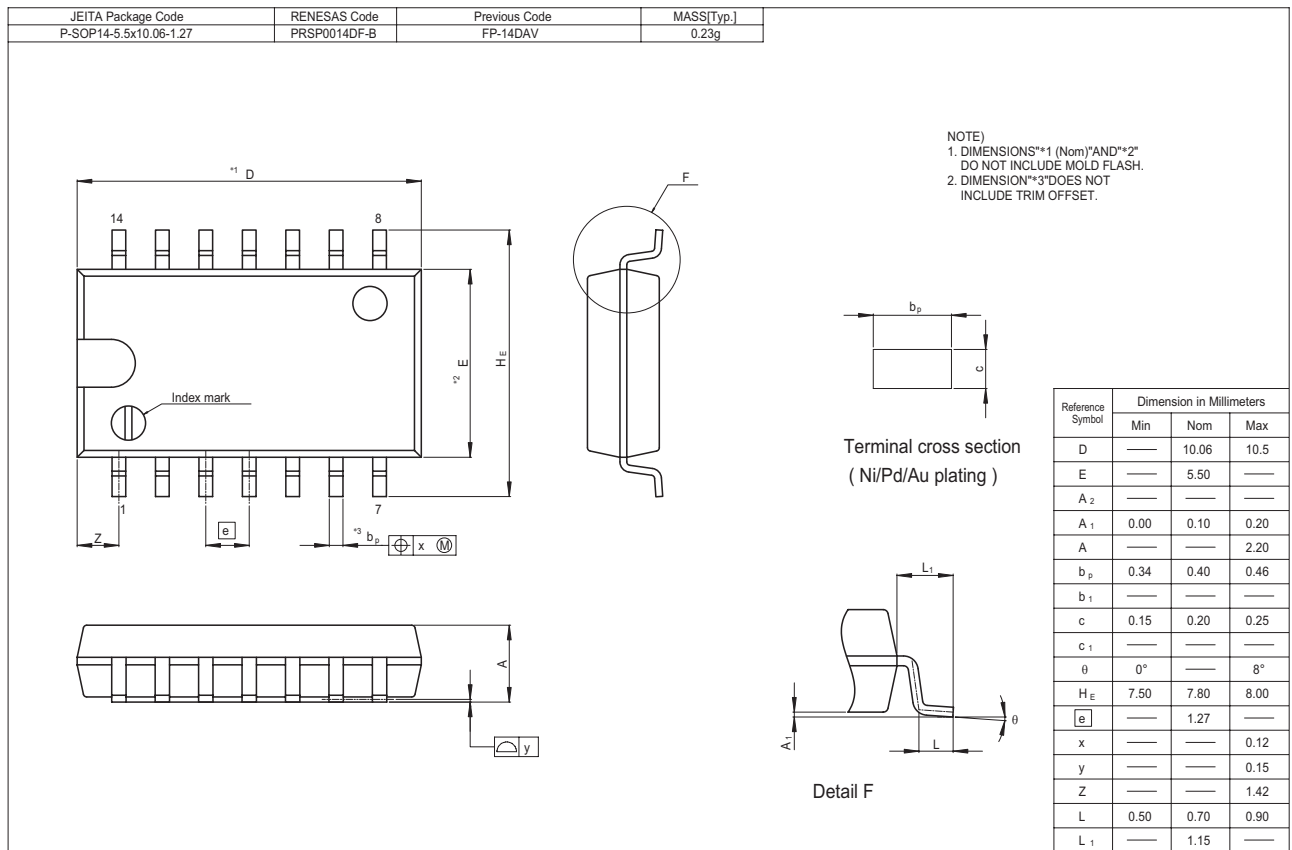
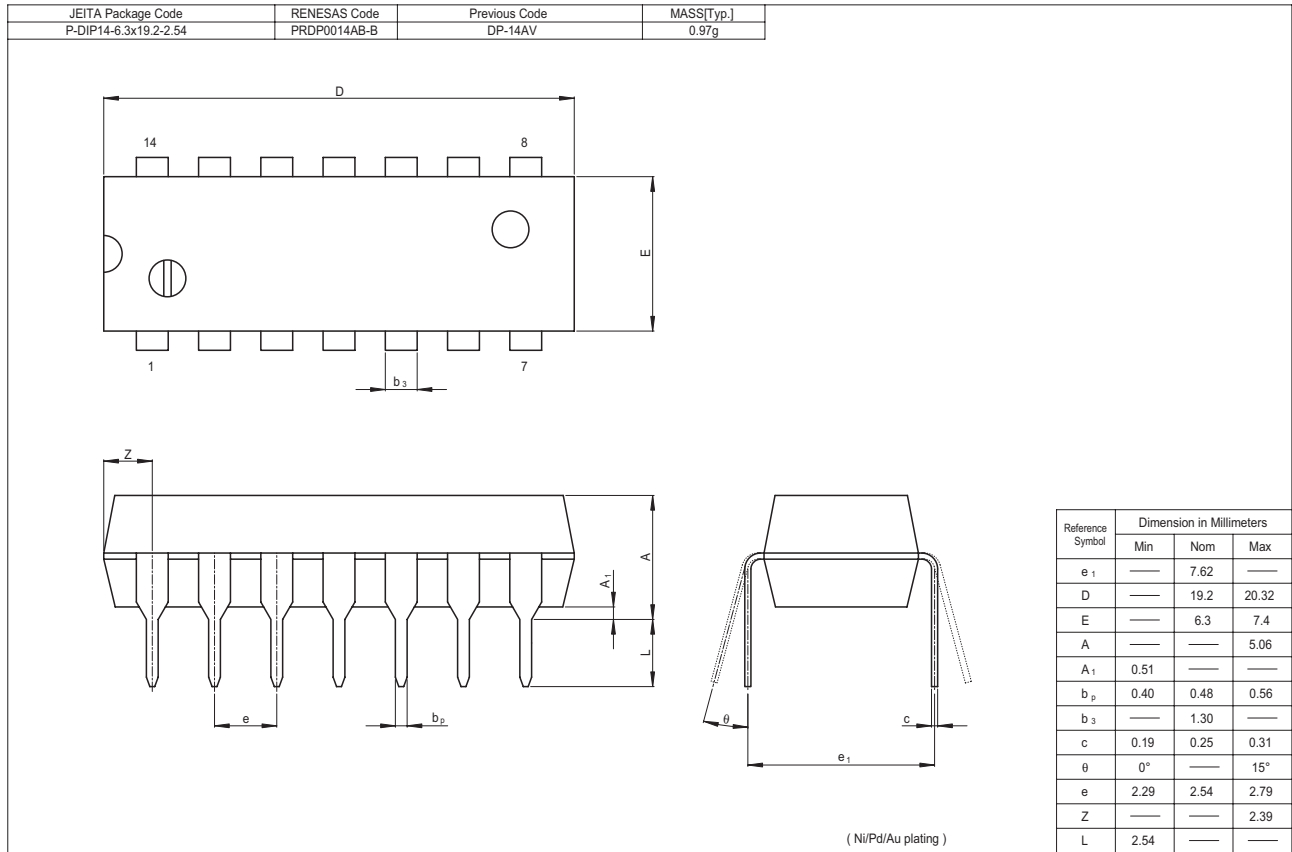
### • HD74LS15

( $V_{CC} = 5\text{ V}$ ,  $T_a = 25^\circ\text{C}$ )

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	$t_{PLH}$	—	20	35	ns	$C_L = 15\text{ pF}$ , $R_L = 2\text{ k}\Omega$
	$t_{PHL}$	—	17	35	ns	

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

Package Dimensions



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