

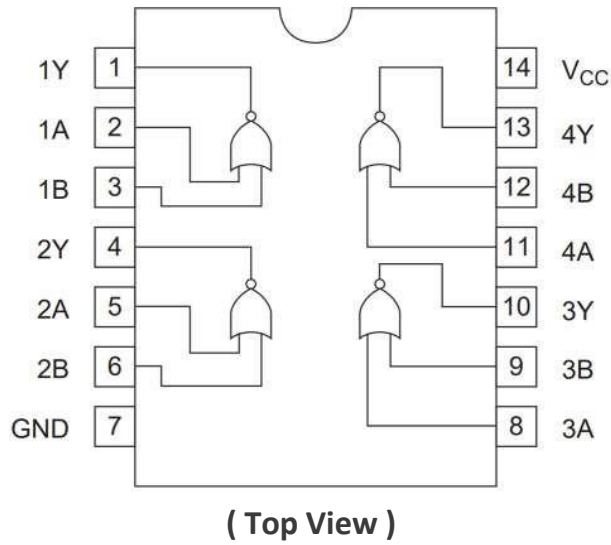
1. DESCRIPTION

The XL74LS02 and XD74LS02 are logic gate chips and member of 74LSxx IC series which are logic gates. There are four NOR gates in the chip and each gate has two inputs, hence the name QUADRUPLE TWO INPUT NOR GATE. These chips come up with internal protection from discharge using clamp diodes, which keep its protected from any internal voltage leakage activity.

2. FEATURES

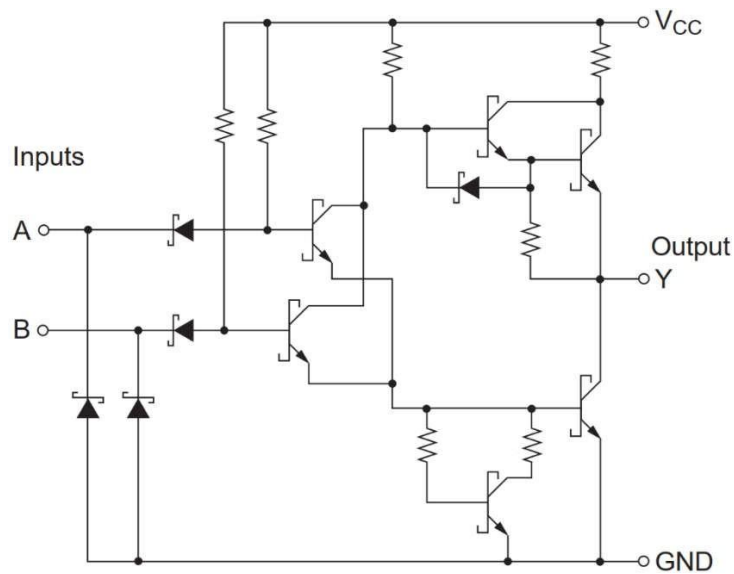
- The operating voltage range +4.75V to +5.25V
- The maximum current can draw from the output of the gate is 8mA
- The maximum ESD protection range for IC is 2KV (HBM) and 200V(CDM)
- The typical rise and fall time for IC is about 20ns
- Operating temperature is from 0 to 70 degree
- Storage temperature range is -50 to 150 degrees.
- Package option: XL74LS02 (SOP14) , XD74LS02 (DIP14)

3. PIN ARRANGEMENT AND LOGIC TRUTH TABLE



INPUT		OUTPUT
A	B	
H	X (H or L)	L
X (H or L)	H	L
L	L	H

4. EQUIVALENT CIRCUIT DIAGRAM



5. ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Supply voltage	VCC	7	V
Input voltage	VIN	7	V
Power dissipation	Pr	400	mW
Storage temperature	Tstg	-50 to +150	°C

Note:

- (1) Voltage value, unless otherwise noted, are with respect to network ground terminal.
- (2) Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

6. ESD RATINGS

Item	DEFINITION	VALUE	UNIT
V(ESD)	HBM (Human body model), all pins	2000	V
	CDM (Charged device model), all pins	200	V

7. RECOMMENDED OPERATING CONDITIONS

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	VCC	4.75	5.00	5.25	V
Output current	IOH	—	—	-400	μA
	IOL	—	—	8	mA
Operating temperature	Topr	0	25	70	°C

8. ELECTRICAL CHARACTERISTICS (TA= 0 °C to 70 °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} = 0.8 V, I _{OH} = -400 μA
	V _{OL}	—	—	0.5	V	I _{OL} = 8 mA
		—	—	0.4		I _{OL} = 4 mA
Input current	I _{IH}	—	—	20	μA	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	5.5	mA	V _{CC} = 5.25 V
	I _{CCL}	—	3.1	7.0	mA	V _{CC} = 5.25 V
Input clamp voltage	V _{IK}	—	—	-1.5	V	V _{CC} = 4.75 V, I _{IN} = -18 mA

9. SWITCHING CHARACTERISTICS (VCC = 5V, TA=25 °C)

Item	Symbol	min.	typ.	max.	Unit	Condition
Propagation delay time	t _{PLH}	—	12	20	ns	C _L = 15 pF, R _L = 2 kΩ
	t _{PHL}	—	12	20	ns	

10. ORDERING INFORMATION

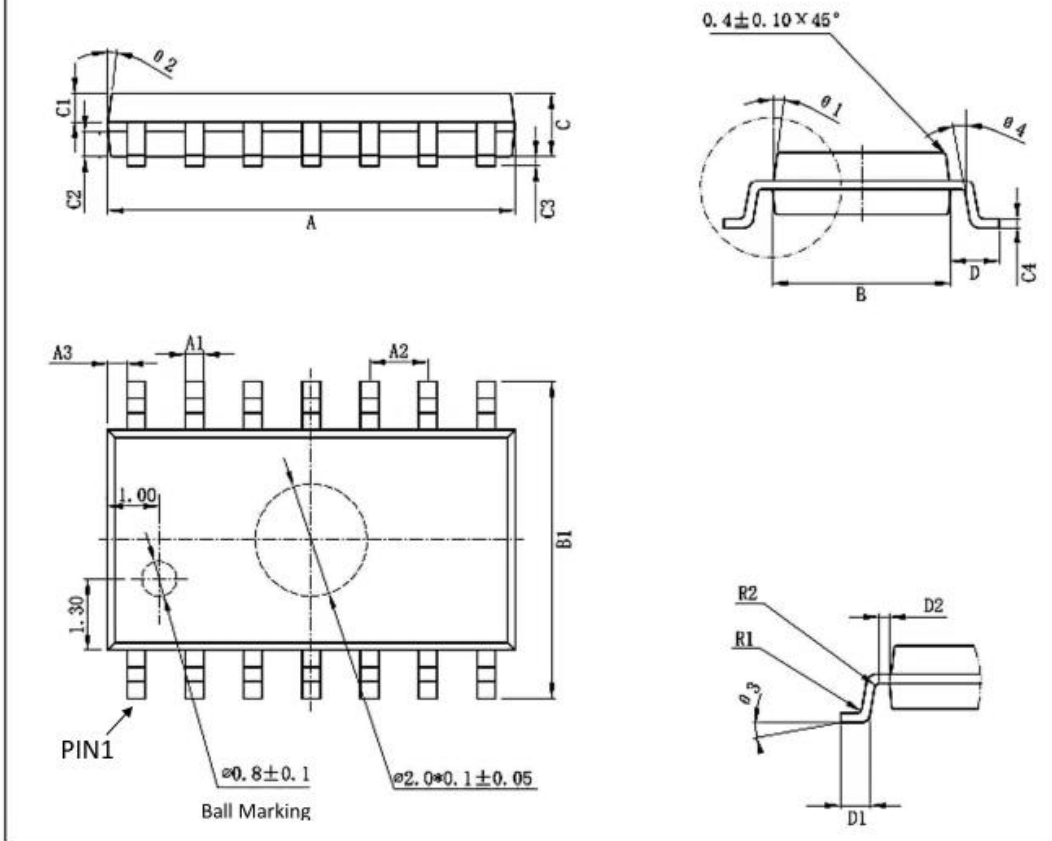
Ordering Information

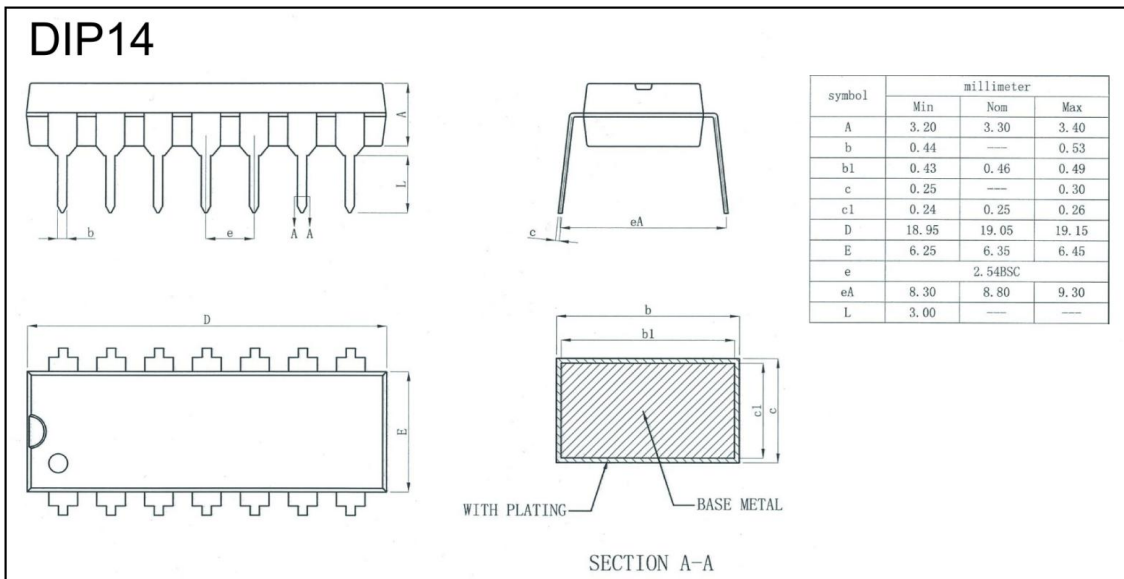
Part Number	Device Marking	Package Type	Body size (mm)	Temperature (°C)	MSL	Transport Media	Package Quantity
XL74LS02	XL74LS02	SOP14	8.75 * 4.00	-0 to 70	MSL3	T&R	2500
XD74LS02	XD74LS02	DIP14	19.05 * 6.35	-0 to 70	MSL3	Tube 25	1000

11. DIMENSIONAL DRAWINGS

SOP14

Mark	Size	Min (mm)	Max (mm)	Mark	Size	Min (mm)	Max (mm)
A		8.55	8.75	C4		0.193	0.213
A1		0.356	0.456	D		0.95	1.15
A2		1.27TYP		D1		0.40	0.70
A3		0.312TYP		D2		0.20TYP	
B		3.80	4.00	R1		0.20TYP	
B1		5.80	6.20	R2		0.20TYP	
C		1.40	1.60	θ1		8° ~ 12° TYP4	
C1		0.60	0.70	θ2		8° ~ 12° TYP4	
C2		0.55	0.65	θ3		0° ~ 8°	
C3		0.05	0.25	θ4		4° ~ 12°	





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