Quad 2-input AND Gate

CJ74LV08 Logic

1 Introduction

The CJ74LV08 provides a quad 2-input AND function.

2 Available Packages

PART NUMBER	PACKAGE
CJ74LV08	SOP14
	TSSOP14

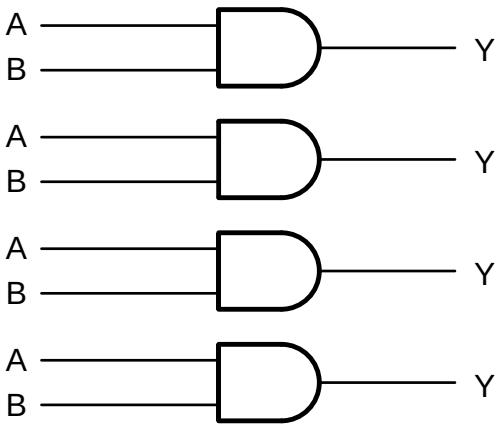
Note: For all available packages, please refer to the part Orderable Information.

3 Features

- Wide operating voltage: 1.0V to 5.5V
- Accepts TTL input levels between V_{CC}=2.7V and V_{CC}=3.6V
- Typical output ground bounce < 0.8V at V_{CC}=3.3V and T_{amb}=25°C
- Typical HIGH-level output voltage (V_{OH}) undershoot: >2V at V_{CC}=3.3V and T_{amb}=25°C
- Specified from -40°C to +125°C

4 Applications

- Servers
- Telecom Infrastructure
- PCs and Notebooks
- Combining Power Good Signals



Simplified schematic

5 Orderable Information

DEVICE	PACKAGE	OP TEMP	ECO PLAN	MSL	PACKING OPTION	SORT
CJ74LV08ADN	SOP14	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 4000 Units / Reel	Active
CJ74LV08BDN	TSSOP14	-40~125°C	RoHS & Green	Level 3 168HR	Tape and Reel 5000 Units / Reel	Active

Note:

ECO PLAN: For the RoHS and Green certification standards of this product, please refer to the official report provided by JSCJ.

MSL: Moisture Sensitivity Level. Determined according to JEDEC industry standard classification.

SORT: Specifically defined as follows:
Active: Recommended for new products;
Customized: Products manufactured to meet the specific needs of customers;
Preview: The device has been released and has not been fully mass produced. The sample may or may not be available;
NoRD: It is not recommended to use the device for new design. The device is only produced for the needs of existing customers;
Obsolete: The device has been discontinued.

6 Pin Configuration and Marking Information

6.1 Pin Configuration

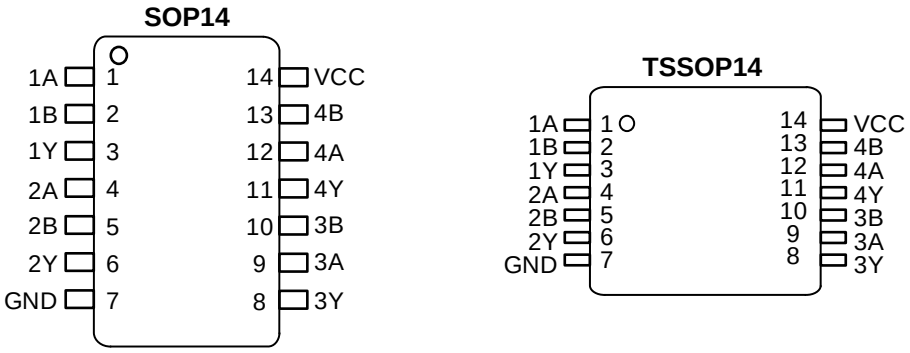


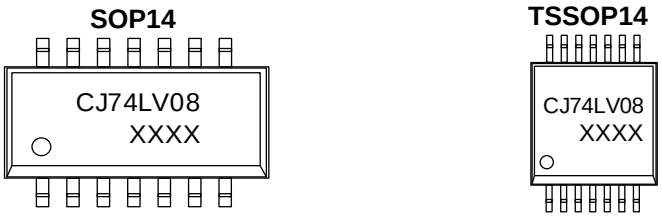
Figure 6-1 Pin configuration

6.2 Pin Function

PIN		I/O(1)	DESCRIPTION
No.	NAME		
1	1A	I	Data input
2	1B	I	Data input
3	1Y	O	Data output
4	2A	I	Data input
5	2B	I	Data input
6	2Y	O	Data output
7	GND	G	Ground (0V)
8	3Y	O	Data output
9	3A	I	Data input
10	3B	I	Data input
11	4Y	O	Data output
12	4A	I	Data input
13	4B	I	Data input
14	VCC	P	Supply voltage

(1) I-Input, O-Output, P-Power, G-Ground

6.3 Marking Information



XXXX: Code, indicates weekly record information.

7 Specifications

7.1 Absolute Maximum Ratings

Voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	MAX.	UNIT
V_{CC}	Supply voltage	-		-0.5	+7.0	V
I_{IK}	Input clamping current	V_I < -0.5V or V_I > V_{CC}+0.5V		-	±20	mA
I_{OK}	Output clamping current	V_O < -0.5V or V_O > V_{CC}+0.5V		-	±50	mA
I_O	Output current	V_O= -0.5V to (V_{CC}+0.5V)		-	±25	mA
I_{CC}	Supply current	-		-	50	mA
I_{GND}	Ground current	-		-50	-	mA
T_{stg}	Storage temperature	-		-65	+150	°C
T_L	Soldering temperature	10s	SOP/TSSOP	-	260	°C

Note: Absolute maximum ratings indicate sustained limits beyond which damage to the device may occur. All voltage parameters are absolute voltages referenced to GND. The thermal resistance and power dissipation ratings are measured under board mounted and still air conditions.

7.2 Recommended Operating Conditions

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CC}	Supply voltage	-	1.0	3.3	5.5	V
V_I	Input voltage	-	0	-	V_{CC}	V
V_O	Output voltage	-	0	-	V_{CC}	V
T_{amb}	Ambient temperature	-	-40	-	+125	°C

7.3 Electrical Characteristics

7.3.1 DC Characteristics

T_{amb}=-40°C to +125°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
V_{IH}	HIGH-level input voltage	V_{CC}=1.2V		0.9	-	-	V
		V_{CC}=2.0V		1.4	-	-	V
		V_{CC}=2.7V to 3.6V		2.0	-	-	V
		V_{CC}=4.5V to 5.5V		0.7xV_{CC}	-	-	V
V_{IL}	LOW-level input voltage	V_{CC}=1.2V		-	-	0.3	V
		V_{CC}=2.0V		-	-	0.6	V
		V_{CC}=2.7V to 3.6V		-	-	0.8	V
		V_{CC}=4.5V to 5.5V		-	-	0.3xV_{CC}	V
V_{OH}	HIGH-level output voltage	V_I = V_{IH} or V_{IL}	I_O=-100uA; V_{CC}=2.0V	1.8	2.0	-	V
			I_O=-100uA; V_{CC}=2.7V	2.5	2.7	-	V
			I_O=-100uA; V_{CC}=3.0V	2.8	3.0	-	V
			I_O=-100uA; V_{CC}=4.5V	4.3	4.5	-	V
			I_O=-6mA; V_{CC}=3.0V	2.2	2.82	-	V
			I_O=-12mA; V_{CC}=4.5V	3.5	4.2	-	V
V_{OL}	LOW-level output voltage	V_I = V_{IH} or V_{IL}	I_O=100uA; V_{CC}=2.0V	-	0	0.2	V
			I_O=100uA; V_{CC}=2.7V	-	0	0.2	V
			I_O=100uA; V_{CC}=3.0V	-	0	0.2	V
			I_O=100uA; V_{CC}=4.5V	-	0	0.2	V
			I_O=6mA; V_{CC}=3.0V	-	0.25	0.50	V
			I_O=12mA; V_{CC}=4.5V	-	0.35	0.65	V
I_I	Input leakage current	V_I=V_{CC} or GND; V_{CC}=5.5V		-	-	1.0	uA
I_{CC}	Supply current	V_I=V_{CC} or GND; I_O=0A; V_{CC}=5.5V		-	-	40	uA
ΔI_{CC}	Additional supply current	Per input; V_I=V_{CC}-0.6V; V_{CC}=2.7V to 3.6V		-	-	850	uA

Note: All typical values are measured at T_{amb}=25°C.

7.3.2 AC Characteristics

T_{amb}=-40°C to +125°C, voltages are referenced to GND (ground=0V), unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS		MIN.	TYP.	MAX.	UNIT
t_{pd}	nA, nB to nY; propagation delay	See Figure 8-4	V_{CC}=1.2V	-	16	-	ns
			V_{CC}=2.0V	-	5	10.0	ns
			V_{CC}=2.7V	-	3.4	6.8	ns
			V_{CC}=3.0V to 3.6V; C_L=15pF	-	2.3	-	ns
			V_{CC}=3.0V to 3.6V	-	2.5	5.0	ns
			V_{CC}=4.5V to 5.5V	-	2.0	4.0	ns

Note:

(1) Typical values are measured at T_{amb}=25°C.

(2) t_{pd} is the same as t_{PLH} and t_{PHL}.

(3) Typical values are measured at nominal supply voltage (V_{CC}=3.3V).

8 Detailed Description

8.1 Overview

The CJ74LV08 provides a quad 2-input AND function.

8.2 Functional Block Diagram

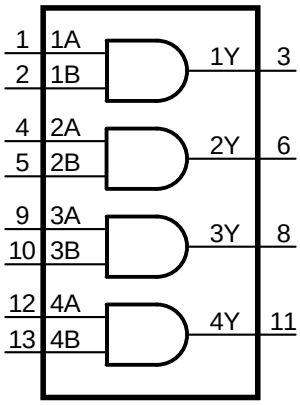


Figure 8-1 Logic symbol

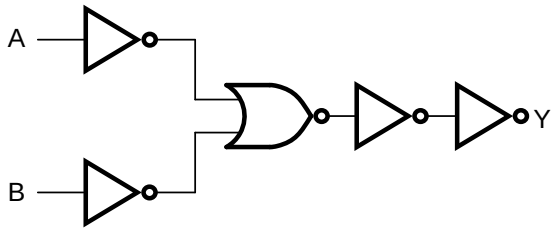


Figure 8-2 Logic diagram (one gate)

8.3 Function Table

INPUT		OUTPUT
nA	**nB**	**nY**
L	X	L
X	L	L
H	H	H

Note: H=HIGH voltage level; L=LOW voltage level; X=don't care.

8.4 Testing Circuit

8.4.1 AC Testing Circuit

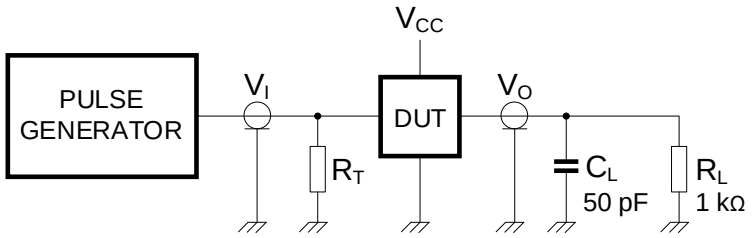


Figure 8-3 Test circuit for switching times

Definitions for test circuit:

C_L=Load capacitance including jig and probe capacitance.

R_L=Load resistance.

R_T=Termination resistance should be equal to the output impedance Z_o of the pulse generator.

8.4.2 AC Testing Waveforms

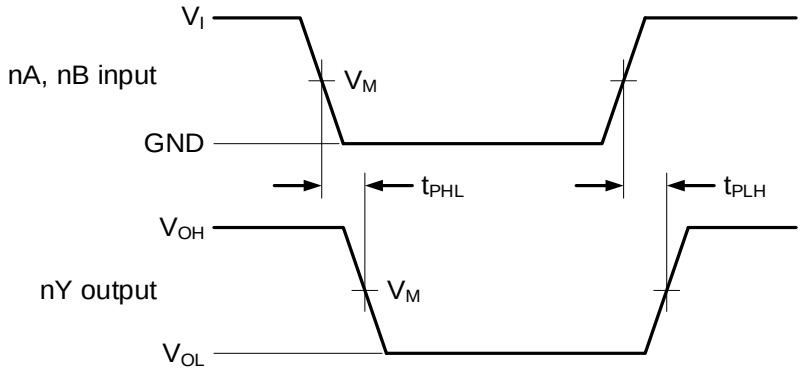


Figure 8-4 The input (nA, nB) to output (nY) propagation delays

8.4.3 Measurement Points

SUPPLY VOLTAGE	INPUT	OUTPUT
V_{CC}	**V_M**	**V_M**
< 2.7V	0.5xV_{CC}	0.5xV_{CC}
2.7V to 3.6V	1.5V	1.5V
≥ 4.5V	0.5xV_{CC}	0.5xV_{CC}

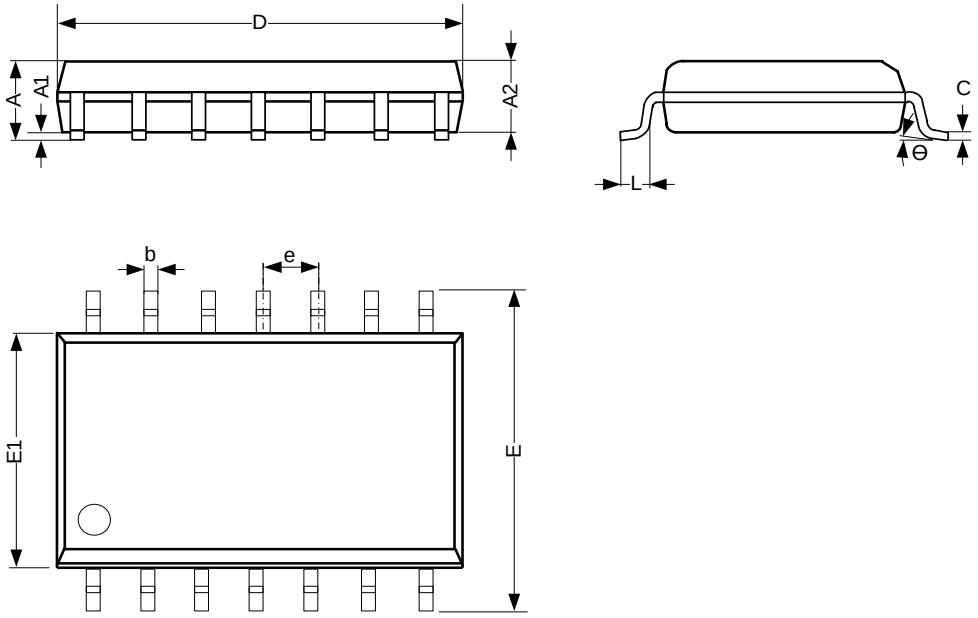
8.4.4 Test Data

SUPPLY VOLTAGE	INPUT	
V_{CC}	**V_I**	**t_r , t_f**
< 2.7V	V_{CC}	≤ 2.5ns
2.7V to 3.6V	2.7V	≤ 2.5ns
≥ 4.5V	V_{CC}	≤ 2.5ns

9 Mechanical Information

9.1 SOP14 Mechanical Information

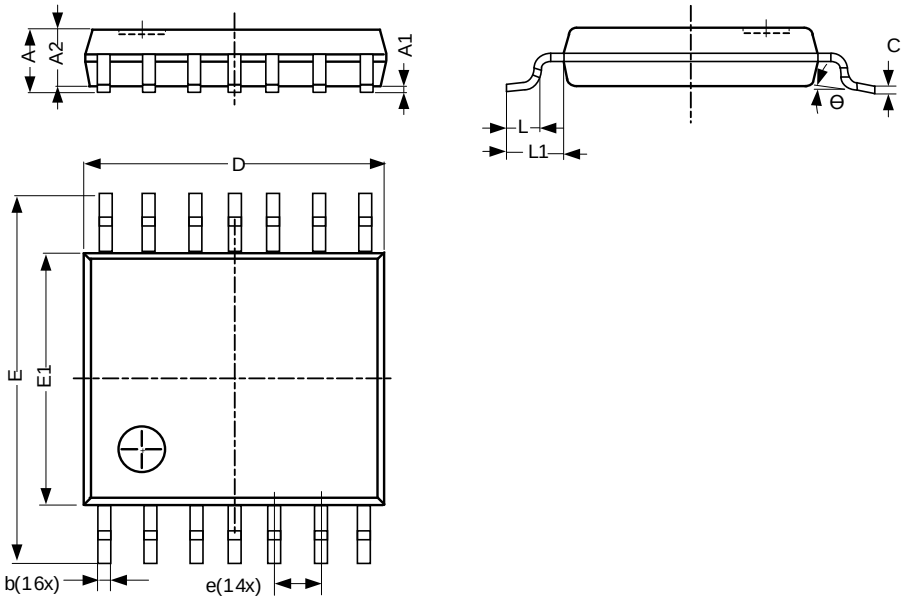
9.1.1 SOP14 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	1.50	-	1.75
A1	0.05	-	0.25
A2	1.30	-	-
b	0.33	-	0.50
c	0.19	-	0.25
D	8.43	-	8.76
E	5.80	-	6.25
E1	3.75	-	4.00
e	1.27 BSC		
L	0.40	-	0.89
Θ	0°	-	8°
Unit: mm			

9.2 TSSOP14 Mechanical Information

9.2.1 TSSOP14 Outline Dimensions



SYMBOL	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	-	-	1.20
A1	0.05	-	0.15
A2	0.80	-	1.05
b	0.19	-	0.30
c	0.09	-	0.20
D	4.90	-	5.10
E	6.20	-	6.60
E1	4.30	-	4.50
e	0.65 BSC		
L	0.45	-	0.75
L1	-	1.00	-
Θ	0°	-	8°
Unit: mm			

10 Notes and Revision History

10.1 Associated Product Family and Others

To view other products of the same type or IC products of other types, click the official website of JSCJ -- ***https:www.jscj-elec.com*** for more details.

10.2 Notes

Electrostatic Discharge Caution

This IC may be damaged by ESD. Relevant personnel shall comply with correct installation and use specifications to avoid ESD damage to the IC. If appropriate measures are not taken to prevent ESD damage, the hazards caused by ESD include but are not limited to degradation of integrated circuit performance or complete damage of integrated circuit. For some precision integrated circuits, a very small parameter change may cause the whole device to be inconsistent with its published specifications.

DISCLAIMER

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