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SDAS010E - APRIL 1982 - REVISED OCTOBER 2012

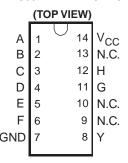
8-INPUT POSITIVE-NAND GATES

Check for Samples: SN54ALS30A, SN54AS30, SN74ALS30A, SN74AS30

FEATURES

- 8-Input Positive-NAND Gates
- Available in J, DW, N, and FK Packages

SN54ALS30A, SN54AS30 . . . J PACKAGE SN74ALS30A, SN74AS30 . . . DW OR N PACKAGE SN74AS30 . . . DB PACKAGE

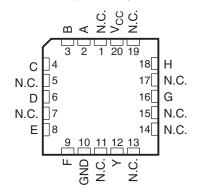


DESCRIPTION

These devices contain an 8-input positive-NAND gate and perform the following Boolean functions in positive logic:

$$Y = \overline{A \cdot B \cdot C \cdot D \cdot E \cdot F \cdot G \cdot H}$$
or
$$Y = \overline{A} + \overline{B} + \overline{C} + \overline{D} + \overline{E} + \overline{F} + \overline{G}$$

SN54ALS30A, SN54AS30 . . . FK PACKAGE (TOP VIEW)



N.C. – No internal connection

ORDERING INFORMATION

T _A	PACKA	GE ^{(1) (2)}	ORDERABLE PART NUMBER	TOP-SIDE MARKING
	PDIP – N	Tuba	SN74ALS30AN	SN74ALS30AN
	PDIP - N	Tube	SN74AS30N	SN74AS30N
		Tube	SN74AS30AD	A1 C20A
0°C to 70°C	SOIC - D	Tape and reel	SN74ALS30ADR	ALS30A
	201C - D	Tube	SN74AS30D	AS30
		Tape and reel	SN74AS30DR	A330
	SSOP - DB	Tape and reel	SN74AS30DBR	AS30
	CDIP – J	Tube	SNJ54ALS30AJ	SNJ54ALS30AJ
5500 to 40500	CDIP – J	Tube	SNJ54AS30J	SNJ54AS30J
–55°C to 125°C	LCCC -FK	Tube	SNJ54ALS30AFK	SNJ54ALS30AFK
	LCCC -FK	rube	SNJ54AS30FK	SNJ54AS30FK

⁽¹⁾ Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

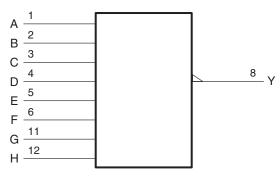
⁽²⁾ For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI website at www.ti.com.



Table 1. FUNCTION TABLE

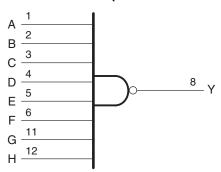
INPUTS A-H	OUTPUT Y
All inputs H	L
One or more inputs L	Н

LOGIC SYMBOL



A. This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin number shown are for the D, DB, J, and N packages.

LOGIC DIAGRAM (POSITIVE LOGIC)



Pin number shown are for the D, DB, J, and N packages.

ABSOLUTE MAXIMUM RATINGS(1)

over operating free-air temperature range (unless otherwise noted)

			MIN	MAX	UNIT
V_{CC}	Supply voltage range		-0.5	7	V
V_{I}	Input voltage range		-0.5	7	V
		D package		86	
θ_{JA}	Package thermal impedance (2)	DB package		96	°C/W
		N package		80	
T _{stg}	Storage temperature range		-65	150	°C

⁽¹⁾ 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.

(2) The package thermal impedance is calculated in accordance with JESD 51-7.

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RECOMMENDED OPERATING CONDITIONS

over operating free-air temperature range (unless otherwise noted)

			MIN	NOM	MAX	UNIT	
V_{CC}	Supply voltage		4.5	5	5.5	V	
V _{IH}	High-level input voltage		2			V	
V _{IL}	Low-level input voltage	_			0.8 ⁽¹⁾ 0.7 ⁽²⁾	V	
	IPob Issael sudmid summed	'ALS30A			-0.4	A	
I _{OH}	High-level output current	'AS30			-2	mA	
		SN54ALS30A			4		
I_{OL}	Low-level output current	SN74ALS30A			8	mA	
		'AS30			20		
_	On arcting from air to magneture	SN54ALS30A, SN54AS30	- 55		125	°C	
T_A	Operating free-air temperature	SN74ALS30A, SN74AS30	0		70		

Applies to the 'AS30 and SN74ALS30A across the full operating temperature range, and SN54ALS30A over the temperature range of -55°C to 7°°C.

ELECTRICAL CHARACTERISTICS

over operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITION	MIN	TYP ⁽¹⁾	MAX	UNIT	
V	\/ A.F.\/	'ALS30A				1.5	V
V_{IK}	$V_{CC} = 4.5 \text{ V},$	$I_1 = -18 \text{ mA}$	'AS30			-1.5	V
V	\\\\ \A \(\) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	$I_{OH} = -0.4 \text{ mA}$	'ALS30A	V _{CC} – 2			V
V_{OH}	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V},$	$I_{OH} = -2 \text{ mA}$	'AS30	V _{CC} – 2			V
		I _{OL} = 4 mA	'ALS30A		0.25	0.4	
V_{OL}	$V_{CC} = 4.5 \text{ V}$	$I_{OL} = 8 \text{ mA}$	SN74ALS30A		0.35	0.5	V
		$I_{OL} = 20 \text{ mA}$	'AS30		0.35	0.5	
I _I	$V_{CC} = 5.5 \text{ V},$	V _I = 7 V	•			0.1	mA
I _{IH}	V _{CC} = 5.5 V,	V _I = 2.7 V				20	μΑ
1	\/ F F \/	V 0.4V	'ALS30A			-0.1	A
I _{IL}	$V_{CC} = 5.5 \text{ V},$	$V_I = 0.4 V$	'AS30			-0.5	mA
			SN54ALS30A	-20		-112	
I _O ⁽²⁾	$V_{CC} = 5.5 V$,	$V_0 = 2.25 \text{ V}$	SN74ALS30A	-30		-112	mA
			'AS30	-30		-112	
1	\/ F.F.\/	V 0.V	'ALS30A		0.22	0.36	A
ICCH	I_{CCH} $V_{CC} = 5.5 \text{ V},$	$V_I = 0 V$	'AS30		0.9	1.5	mA
1	\/ F.F.\/	\/ 4 E \/	'ALS30A		0.54	0.9	A
^I CCL	I_{CCL} $V_{CC} = 5.5 \text{ V},$	$V_{I} = 4.5 \text{ V}$	'AS30		3	4.9	mA

⁽¹⁾ All typical values are at $V_{CC} = 5 \text{ V}$, $T_A = 25^{\circ}\text{C}$.

SWITCHING CHARACTERISTICS

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over recommended operating conditions (unless otherwise noted (see Figure 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)		MIN	MAX	UNIT
			SN54ALS30A	3	15	
	A, B, C, D, E, F, G, or H	Y	SN74ALS30A	3	10	ns
t _{PLH}			SN54AS30	1	5.5	
			SN74AS30	1	5	

Product Folder Links: SN54ALS30A SN54AS30 SN74ALS30A SN74AS30

⁽²⁾ Applies to the SN54ALS30A over the temperature range of 70°C to 125°C.

⁽²⁾ The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS}.



SWITCHING CHARACTERISTICS (continued)

over recommended operating conditions (unless otherwise noted (see Figure 1)

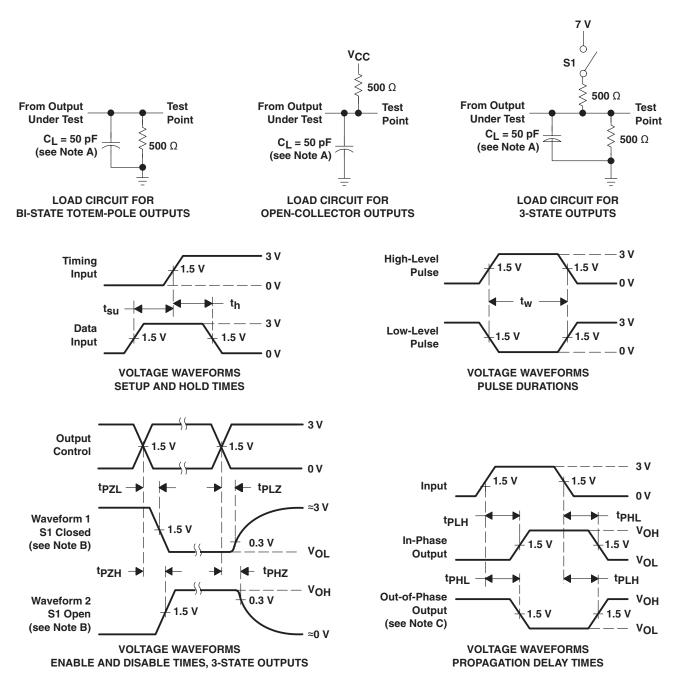
PARAMETER	FROM (INPUT)	TO (OUTPUT)		MIN	MAX	UNIT
			SN54ALS30A	3	15	
	A, B, C, D, E, F, G, or H	Y	SN74ALS30A	3	12	ns
t _{PHL}			SN54AS30	1	5	
			SN74AS30	1	4.5	

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PARAMETER MEASUREMENT INFORMATION



- A. C_L includes probe and jig capacitance.
- B. Waveform 1 is for an output with internal conditions such that the output is low except when disabled by the output control. Waveform 2 is for an output with internal conditions such that the output is high except when disabled by the output control.
- C. When measuring propagation delay items of 3-state outputs, switch S1 is open.
- D. All input pulses have the following characteristics: PRR \leq 1 MHz, t_r = t_f = 2 ns, duty cycle = 50%.
- E. The outputs are measured one at a time with one transition per measurement.

Figure 1. Load Circuits and Voltage Waveforms

SN54ALS30A, SN54AS30, SN74ALS30A, SN74AS30



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Ch	nanges from Original (April 2009) to Revision E	Page
•	Updated ORDERING INFORMATION table.	1





25-Oct-2016

PACKAGING INFORMATION

Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Sample
5962-86837012A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 86837012A SNJ54ALS 30AFK	Sample
5962-8683701DA	ACTIVE	CFP	W	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-8683701DA SNJ54ALS30AW	Sample
5962-9755801QCA	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9755801QC A SNJ54AS30J	Sample
JM38510/37004B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 37004B2A	Sample
JM38510/37004BCA	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	JM38510/ 37004BCA	Sample
M38510/37004B2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	JM38510/ 37004B2A	Sample
M38510/37004BCA	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	JM38510/ 37004BCA	Sample
SN54ALS30AJ	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	SN54ALS30AJ	Sample
SN74ALS30AD	NRND	SOIC	D	14	50	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS30A	
SN74ALS30ADR	NRND	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS30A	
SN74ALS30ADRE4	NRND	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS30A	
SN74ALS30AN	NRND	PDIP	N	14	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74ALS30AN	
SN74ALS30AN3	OBSOLETE	PDIP	N	14		TBD	Call TI	Call TI	0 to 70		
SN74ALS30ANSR	NRND	SO	NS	14	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	ALS30A	
SN74AS30D	NRND	SOIC	D	14	50	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	AS30	
SN74AS30DR	NRND	SOIC	D	14	2500	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	AS30	



PACKAGE OPTION ADDENDUM

25-Oct-2016

Orderable Device	Status	Package Type	Package Drawing	Pins	Package Qty	Eco Plan	Lead/Ball Finish (6)	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Samples
SN74AS30N	NRND	PDIP	N	14	25	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74AS30N	
SNJ54ALS30AFK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 86837012A SNJ54ALS 30AFK	Samples
SNJ54ALS30AJ	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	SNJ54ALS30AJ	Samples
SNJ54ALS30AW	ACTIVE	CFP	W	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-8683701DA SNJ54ALS30AW	Samples
SNJ54AS30J	ACTIVE	CDIP	J	14	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9755801QC A SNJ54AS30J	Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes. **Pb-Free** (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between

the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

- (3) MSL, Peak Temp. The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.
- (4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.
- (5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.



PACKAGE OPTION ADDENDUM

25-Oct-2016

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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OTHER QUALIFIED VERSIONS OF SN54ALS30A, SN54AS30, SN74ALS30A, SN74AS30:

Catalog: SN74ALS30A, SN74AS30

Military: SN54ALS30A, SN54AS30

NOTE: Qualified Version Definitions:

- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications

PACKAGE MATERIALS INFORMATION

www.ti.com 18-Aug-2014

TAPE AND REEL INFORMATION





Α0	Dimension designed to accommodate the component width
	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74ALS30ADR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1
SN74ALS30ANSR	SO	NS	14	2000	330.0	16.4	8.2	10.5	2.5	12.0	16.0	Q1
SN74AS30DR	SOIC	D	14	2500	330.0	16.4	6.5	9.0	2.1	8.0	16.0	Q1

www.ti.com 18-Aug-2014



*All dimensions are nominal

ı									
	Device	Package Type	Package Drawing	Pins SPQ		Length (mm)	Width (mm)	Height (mm)	
	SN74ALS30ADR	SOIC	D	14	2500	367.0	367.0	38.0	
	SN74ALS30ANSR	SO	NS	14	2000	367.0	367.0	38.0	
	SN74AS30DR	SOIC	D	14	2500	367.0	367.0	38.0	

14 LEADS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package is hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
- E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F14)

CERAMIC DUAL FLATPACK



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only.
- E. Falls within MIL STD 1835 GDFP1-F14



D (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Body length does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.006 (0,15) each side.
- Body width does not include interlead flash. Interlead flash shall not exceed 0.017 (0,43) each side.
- E. Reference JEDEC MS-012 variation AB.



D (R-PDSO-G14)

PLASTIC SMALL OUTLINE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Publication IPC-7351 is recommended for alternate designs.
- D. Laser cutting apertures with trapezoidal walls and also rounding corners will offer better paste release. Customers should contact their board assembly site for stencil design recommendations. Refer to IPC-7525 for other stencil recommendations.
- E. Customers should contact their board fabrication site for solder mask tolerances between and around signal pads.



N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- The 20 pin end lead shoulder width is a vendor option, either half or full width.



FK (S-CQCC-N**)

LEADLESS CERAMIC CHIP CARRIER

28 TERMINAL SHOWN



- A. All linear dimensions are in inches (millimeters).
- B. This drawing is subject to change without notice.
- C. This package can be hermetically sealed with a metal lid.
- D. Falls within JEDEC MS-004



MECHANICAL DATA

NS (R-PDSO-G**)

14-PINS SHOWN

PLASTIC SMALL-OUTLINE PACKAGE



- A. All linear dimensions are in millimeters.
- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.



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Products Applications

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