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SN54ALS34, SN54AS34, SN74ALS34, SN74AS34 HEX NONINVERTERS

D2261, DECEMBER 1983—REVISED MAY 1986

- Noninverters
- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

description

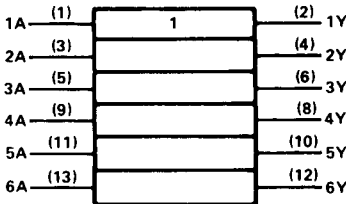
These devices contain six independent noninverters. They perform the Boolean function $Y = A$.

The SN54ALS34 and SN54AS34 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS34 and SN74AS34 are characterized for operation from 0°C to 70°C .

FUNCTION TABLE (each buffer)

INPUT A	OUTPUT Y
H	H
L	L

logic symbol†

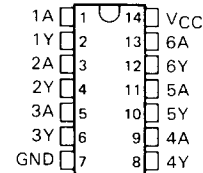


†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for D, J, and N packages.

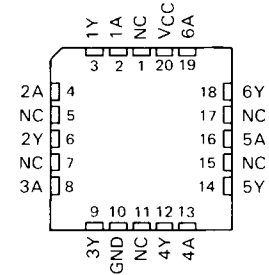
SN54ALS34, SN54AS34 . . . J PACKAGE
SN74ALS34, SN74AS34 . . . D OR N PACKAGE

(TOP VIEW)



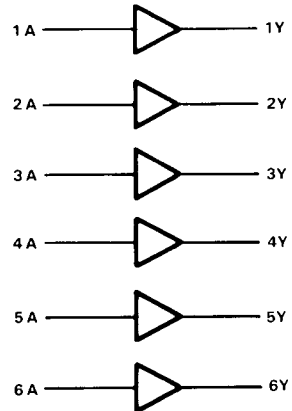
SN54ALS34, SN54AS34 . . . FK PACKAGE

(TOP VIEW)



NC—No internal connection

logic diagram (positive logic)



PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

**TEXAS
INSTRUMENTS**

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SN54ALS34, SN74ALS34 HEX NONINVERTERS

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Operating free-air temperature range: SN54ALS34	-55°C to 125°C
SN74ALS34	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54ALS34			SN74ALS34			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.7			0.8	V
I_{OH}	High-level output current			-0.4			-0.4	mA
I_{OL}	Low-level output current			4			8	mA
T_A	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS	SN54ALS34			SN74ALS34			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 V, I_I = -18 mA$			1.2			1.2	V
V_{OH}	$V_{CC} = 4.5 V$ to 5.5 V, $I_{OH} = -0.4 mA$	$V_{CC}-2$			$V_{CC}-2$			V
V_{OL}	$V_{CC} = 4.5 V, I_{OL} = 4 mA$		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5 V, I_{OL} = 8 mA$					0.35	0.5	
I_I	$V_{CC} = 5.5 V, V_I = 7 V$			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5 V, V_I = 2.7 V$			20			20	μA
I_{IL}	$V_{CC} = 5.5 V, V_I = 0.4 V$			-0.1			-0.1	mA
$I_{O†}$	$V_{CC} = 5.5 V, V_O = 2.25 V$	-30		-112	-30		-112	mA
I_{CCH}	$V_{CC} = 5.5 V, V_I = 4.5 V$		3.1	5		3.1	5	mA
I_{CCL}	$V_{CC} = 5.5 V, V_I = 0 V$		5	8		5	8	mA

†All typical values are at $V_{CC} = 25^\circ C$.

†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 (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5 V, C_L = 50 pF, R_L = 500 \Omega, T_A = 25^\circ C$				UNIT	
			$V_{CC} = 4.5 V$ to 5.5 V, $C_L = 50 pF, R_L = 500 \Omega, T_A = MIN$ to MAX					
			'ALS34		SN74ALS34			
			MIN	MAX	MIN	MAX		
t_{PLH}	A	Y	9.4	4	18	4	15	ns
t_{PHL}			5	1	12	1	10	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.

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ALS and AS Circuits

absolute maximum ratings over operating free-air temperature range (unless otherwise noted),

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Operating free-air temperature range: SN54AS34	-55°C to 125°C
SN74AS34	0°C to 70°C
Storage temperature range	-65°C to 150°C

recommended operating conditions

		SN54AS34			SN74AS34			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V_{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V_{IH}	High-level input voltage	2			2			V
V_{IL}	Low-level input voltage			0.8			0.8	V
I_{OH}	High-level output current			-2			-2	mA
I_{OL}	Low-level output current			20			20	mA
T_A	Operating free-air temperature	-55		125	0		70	°C

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

PARAMETER	TEST CONDITIONS	SN54AS34			SN74AS34			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 V, I_I = -18 mA$			-1.2			-1.2	V
V_{OH}	$V_{CC} = 4.5 V \text{ to } 5.5 V, I_{OH} = -2 mA$	$V_{CC}-2$			$V_{CC}-2$			V
V_{OL}	$V_{CC} = 4.5 V, I_{OL} = 20 mA$		0.35	0.5		0.35	0.5	V
I_I	$V_{CC} = 5.5 V, V_I = 7 V$			0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5 V, V_I = 2.7 V$			20			20	μA
I_{IL}	$V_{CC} = 5.5 V, V_I = 0.4 V$			-0.1			-0.1	mA
$I_{O\ddagger}$	$V_{CC} = 5.5 V, V_O = 2.25 V$	-30		-112	-30		-112	mA
I_{CCH}	$V_{CC} = 5.5 V, V_I = 4.5 V$		7.4	12		7.4	12	mA
I_{CCL}	$V_{CC} = 5.5 V, V_I = 0 V$		21.3	34.6		21.3	34.6	mA

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

‡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 (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 V \text{ to } 5.5 V,$ $C_L = 50 pF,$ $R_L = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54AS34		SN74AS34		
			MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	1	6.5	1	5.5	ns
t_{PHL}			1	7	1	6	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1.