

SN54ALS34, SN54AS34, SN74ALS34, SN74AS34 HEX NONINVERTERS

SDAS058A – 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

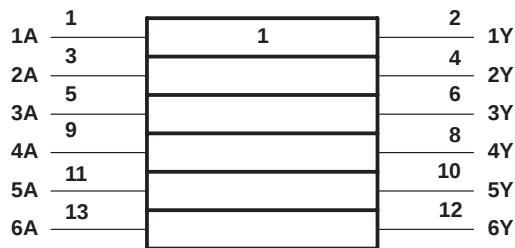
These devices contain six independent noninverters. They perform the Boolean function $Y = A$.

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)

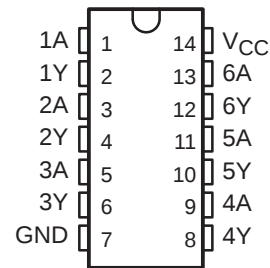
INPUT A	OUTPUT Y
H	H
L	L

logic symbol[†]

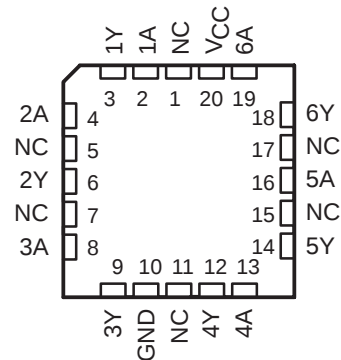


[†] This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, and N packages.

SN54ALS34, SN54AS34 . . . J PACKAGE
SN74ALS34, SN74AS34 . . . D OR N PACKAGE
(TOP VIEW)

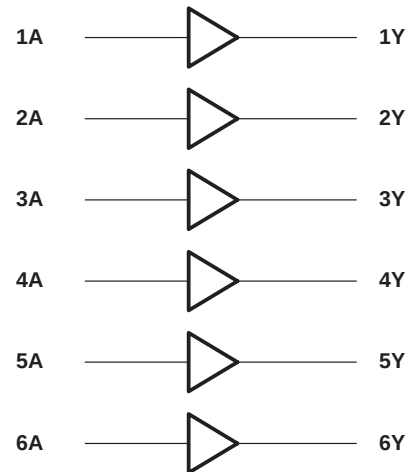


SN54ALS34, SN54AS34 . . . FK PACKAGE
(TOP VIEW)



NC—No internal connection

logic diagram (positive logic)



SN54ALS34, SN74ALS34 HEX NONINVERTERS

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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
$I_{O}^{\ddagger}$	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	–30		–112	–30		–112	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 4.5$ V		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 $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

[‡] 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, $R_L = 500\ \Omega$, $T_A = 25^\circ\text{C}$	$V_{CC} = 4.5$ V to 5.5 V, $C_L = 50$ pF, $R_L = 500\ \Omega$, $T_A = \text{MIN to MAX}$		UNIT
			'ALS34	SN54ALS34	SN74ALS34	
			TYP	MIN	MAX	
t_{PLH}	A	Y	9.4	4	18	ns
t_{PHL}			5	1	12	

NOTE 1: Load circuit and voltage waveforms are shown in Section 1 of *ALS/AS Logic Data Book, 1986*.



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 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_{O1}	$V_{CC} = 5.5$ 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, $T_A = 25^\circ\text{C}$.

‡ 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 to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 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 2: Load circuit and voltage waveforms are shown in Section 1 of *ALS/AS Logic Data Book, 1986*.

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