

# 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

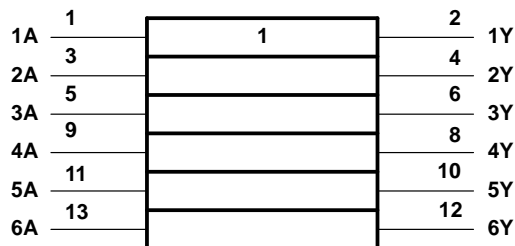
These devices contain six independent noninverters. They perform the Boolean function  $Y = A$ .

The SN54ALS34 and SN54AS34 are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS34 and SN74AS34 are characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

**FUNCTION TABLE**  
(each buffer)

INPUT A	OUTPUT Y
H	H
L	L

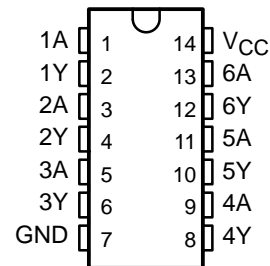
## logic symbol†



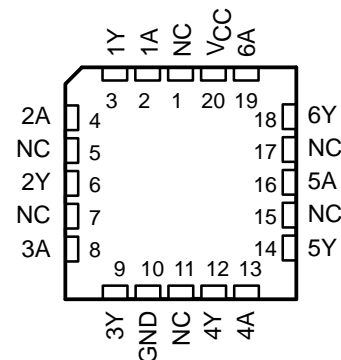
† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

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

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

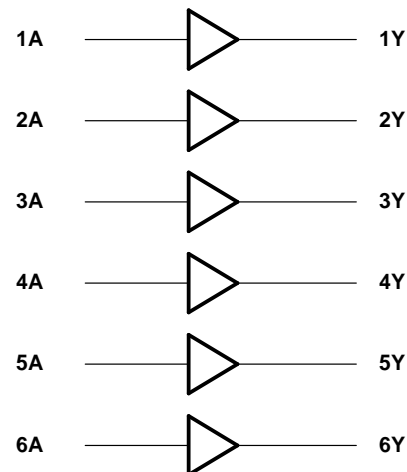


**SN54ALS34, SN54AS34 . . . FK PACKAGE**  
(TOP VIEW)



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*.



# SN54AS34, SN74AS34 HEX NONINVERTERS

SDAS058A – D2261, DECEMBER 1983 – REVISED MAY 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
$I_{OI}$	$V_{CC} = 5.5$ 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 <sub>CC</sub> = 4.5 V to 5.5 V, C <sub>L</sub> = 50 pF, R <sub>L</sub> = 500 Ω, T <sub>A</sub> = MIN to MAX				UNIT
			SN54AS34		SN74AS34		
			MIN	MAX	MIN	MAX	
t <sub>PLH</sub>	A	Y	1	6.5	1	5.5	ns
t <sub>PHL</sub>			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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