

TYPES SN54ALS1005, SN74ALS1005 HEX INVERTING BUFFERS WITH OPEN-COLLECTOR OUTPUTS

D2661, APRIL 1982—REVISED DECEMBER 1983

- Buffer Version of 'ALS05
- Package Options Include Both Plastic and Ceramic Chip Carriers in Addition to Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

description

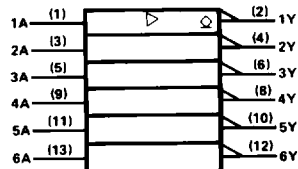
These devices contain six independent inverting buffers. They perform the Boolean function $Y = \bar{A}$. The open-collector outputs require pull-up resistors to perform correctly. They may be connected to other open-collector outputs to implement active-low wired-OR or active-high wired-AND functions. Open-collector devices are often used to generate higher V_{OH} levels.

The SN54ALS1005 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS1005 is characterized for operation from 0°C to 70°C .

FUNCTION TABLE (each inverter)

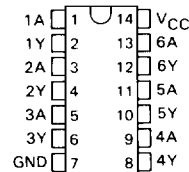
INPUT A	OUTPUT Y
H	L
L	H

logic symbol

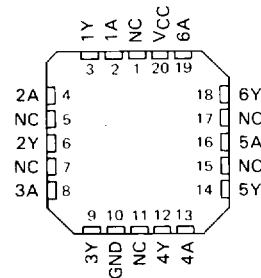


Pin numbers shown are for J and N packages.

SN54ALS1005 . . . J PACKAGE
SN74ALS1005 . . . N PACKAGE
(TOP VIEW)



SN54ALS1005 . . . FH PACKAGE
SN74ALS1005 . . . FN PACKAGE
(TOP VIEW)



NC — No internal connection

2

ALS AND AS CIRCUITS

TYPES SN54ALS1005, SN74ALS1005 HEX INVERTING BUFFERS WITH OPEN-COLLECTOR OUTPUTS

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

Supply voltage, V_{CC}	7 V
Input voltage	7 V
Off-state output voltage	7 V
Operating free-air temperature range: SN54ALS1005	-55 °C to 125 °C
SN74ALS1005	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54ALS1005			SN74ALS1005			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
V_{OH}	High-level output voltage			5.5			5.5	V
I_{OL}	Low-level output current			12			24	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		SN54ALS1005			SN74ALS1005			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 V$,	$I_I = -18 mA$			-1.5			-1.5	V
I_{OH}	$V_{CC} = 4.5 V$,	$V_{OH} = 5.5 V$			0.1			0.1	mA
V_{OL}	$V_{CC} = 4.5 V$,	$I_{OL} = 12 mA$		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.5 V$,	$I_{OL} = 24 mA$					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_{CCH}	$V_{CC} = 5.5 V$,	$V_I = 0 V$		0.9	3		0.9	3	mA
I_{CCL}	$V_{CC} = 5.5 V$,	$V_I = 4.5 V$		7	12		7	12	mA

† All typical values are at $V_{CC} = 5 V$, $T_A = 25 °C$

switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5 V$ to $5.5 V$, $C_L = 50 pF$, $R_L = 680 \Omega$, $T_A = MIN$ to MAX				UNIT
			SN54ALS1005		SN74ALS1005		
			MIN	MAX	MIN	MAX	
t_{PLH}	A	Y	5	35	5	30	ns
t_{PHL}			2	12	2	10	

NOTE 1: For load circuit and voltage waveforms, see page 1-12.

2 ALS AND AS CIRCUITS