



MOTOROLA

**TYPES SN54ALS05, SN74ALS05
HEX INVERTERS WITH OPEN-COLLECTOR OUTPUTS**

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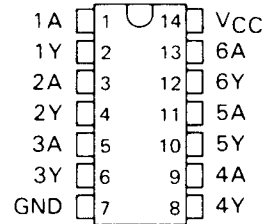
VSS 1702/1222

description

These devices contain six independent inverters. 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 SN54ALS05 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS05 is characterized for operation from 0°C to 70°C .

(TOP VIEW)

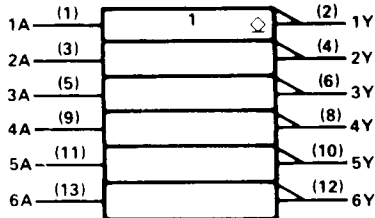


J Suffix—Case 632-07 (Ceramic)
N Suffix—Case 646-05 (Plastic)

FUNCTION TABLE (each inverter)

INPUT		OUTPUT	
A	Y	A	Y
H	L	L	H
L	H	H	L

logic symbol



Pin numbers shown are for J and N packages.

TYPES SN54ALS05, SN74ALS05

HEX INVERTERS 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: SN54ALS05	- 55 °C to 125 °C
SN74ALS05	0 °C to 70 °C
Storage temperature range	- 65 °C to 150 °C

recommended operating conditions

		SN54ALS05			SN74ALS05			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			V
V_{OH}	High-level output voltage				5.5			V
I_{OL}	Low-level output current				4			mA
					8			
T_A	Operating free-air temperature	- 55			125			°C

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

PARAMETER	TEST CONDITIONS	SN54ALS05			SN74ALS05			UNIT
		MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 \text{ V}$, $I_I = -18 \text{ mA}$				- 1.5			V
I_{OH}	$V_{CC} = 4.5 \text{ V}$, $V_{OH} = 5.5 \text{ V}$				0.1			mA
V_{OL}	$V_{CC} = 4.5 \text{ V}$, $I_{OL} = 4 \text{ mA}$	0.25			0.4			V
	$V_{CC} = 4.75 \text{ V}$, $I_{OL} = 8 \text{ mA}$				0.35			
I_I	$V_{CC} = 5.5 \text{ V}$, $V_I = 7 \text{ V}$				0.1			mA
I_{IH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 2.7 \text{ V}$				20			μA
I_{IL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0.4 \text{ V}$				- 0.1			mA
I_{CCH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0 \text{ V}$				1.2			mA
I_{CCL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 4.5 \text{ V}$				3.3			mA

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

switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5 \text{ V}$, $C_L = 15 \text{ pF}$, $R_L = 2 \text{ k}\Omega$, $T_A = 25 \text{ °C}$	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $C_L = 50 \text{ pF}$, $R_L = 2 \text{ k}\Omega$, $T_A = \text{MIN to MAX}$				UNIT
				SN54ALS05		SN74ALS05		
				TYP	MIN	MAX	MIN	
t_{PLH}	A	Y	13	5	26	5	22	ns
t_{PHL}	A	Y	8	4	23	4	19	ns

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