

# SN54ALS1011A, SN74ALS1011A TRIPLE 3-INPUT POSITIVE-AND BUFFERS

D2661, APRIL 1982 - REVISED MAY 1986

- Buffer Version of 'ALS11
- 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

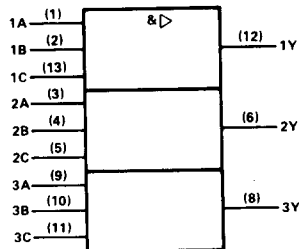
These devices contain three independent 3-input AND buffers. They perform the Boolean functions  $Y = A \cdot B \cdot C$  or  $Y = \overline{A + B + C}$  in positive logic.

The SN54ALS1011A is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS1011A is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

FUNCTION TABLE (each gate)

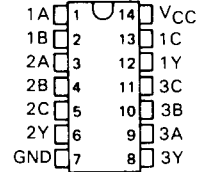
INPUTS			OUTPUT
A	B	C	Y
H	H	H	H
L	X	X	L
X	L	X	L
X	X	L	L

## logic symbol†

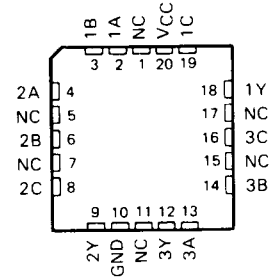


†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.  
Pin numbers shown are for D, J, and N packages.

SN54ALS1011A . . . J PACKAGE  
SN74ALS1011A . . . D OR N PACKAGE  
(TOP VIEW)

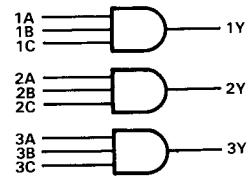


SN54ALS1011A . . . FK PACKAGE  
(TOP VIEW)



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.

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ALS and AS Circuits

# SN54ALS1011A, SN74ALS1011A TRIPLE 3-INPUT POSITIVE-AND BUFFERS

## 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: SN54ALS1011A .....	-55 °C to 125 °C
SN74ALS1011A .....	0 °C to 70 °C
Storage temperature range .....	-65 °C to 150 °C

## recommended operating conditions

		SN54ALS1011A			SN74ALS1011A			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			-1			-2.6	mA
$I_{OL}$	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	SN54ALS1011A		SN74ALS1011A		UNIT		
		MIN	TYP†	MAX	MIN		TYP†	MAX
$V_{IK}$	$V_{CC} = 4.5 V, I_I = -18 mA$			-1.5		-1.5	V	
$V_{OH}$	$V_{CC} = 4.5 V \text{ to } 5.5 V, I_{OH} = -0.4 mA$	$V_{CC}-2$		$V_{CC}-2$		V		
	$V_{CC} = 4.5 V, I_{OH} = -1 mA$	2.4	3.3					
	$V_{CC} = 4.5 V, I_{OH} = -2.6 mA$			2.4	3.2			
$V_{OL}$	$V_{CC} = 4.5 V, I_{OL} = 12 mA$	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	
$I_{O†}$	$V_{CC} = 5.5 V, V_O = 2.25 V$	-30		-112	-30	-112	mA	
$I_{CCH}$	$V_{CC} = 5.5 V, V_I = 4.5 V$		1.4	2.3		1.4	2.3	mA
$I_{CCL}$	$V_{CC} = 5.5 V, V_I = 0 V$		4.3	7		4.3	7	mA

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

‡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
			SN54ALS1011A		SN74ALS1011A		
			MIN	MAX	MIN	MAX	
$t_{PLH}$	Any	Y	2	12	2	10	ns
$t_{PHL}$			3	11	3	9	

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

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