



**MOTOROLA**

**TYPES SN54ALS11, SN74ALS11  
TRIPLE 3-INPUT POSITIVE-AND GATES**

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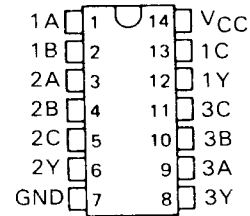
VSS 1701/1230

**description**

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

The SN54ALS11 is characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN74ALS11 is characterized for operation from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$ .

(TOP VIEW)

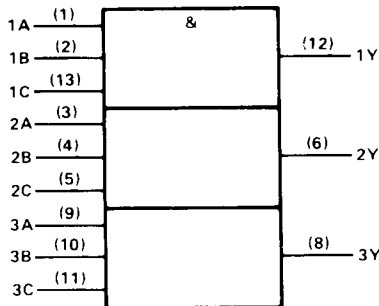


J Suffix—Case 632-07 (Ceramic)  
N Suffix—Case 646-05 (Plastic)

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**



Pin numbers shown are for J and N packages.

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# TYPES SN54ALS11, SN74ALS11

## TRIPLE 3-INPUT POSITIVE-AND GATES

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: SN54ALS11 .....	-55 °C to 125 °C
SN74ALS11 .....	0 °C to 70 °C
Storage temperature range .....	-65 °C to 150 °C

recommended operating conditions

		SN54ALS11			SN74ALS11			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			-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	SN54ALS11			SN74ALS11			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, $I_{OH} = -0.4$ mA	2.5	3.4		2.5			V
	$V_{CC} = 4.75$ V, $I_{OH} = -0.4$ mA				2.7	3.4		
$V_{OL}$	$V_{CC} = 4.5$ V, $I_{OL} = 4$ mA		0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.75$ 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
$I_{OS}^*$	$V_{CC} = 5.5$ V, $V_O = GND$	-25		-150	-25		-150	mA
$I_{CCH}$	$V_{CC} = 5.5$ V, $V_I = 4.5$ V			1.8			1.8	mA
$I_{CCL}$	$V_{CC} = 5.5$ V, $V_I = 0$ V			3.3			3.3	mA

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

\*The current produced by grounding the outputs is approximately twice that produced with 2.25 V on the outputs.

switching characteristics

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 5$ V, $C_L = 15$ pF, $R_L = 500$ Ω, $T_A = 25$ °C	$V_{CC} = 4.5$ V to 5.5 V, $C_L = 50$ pF, $R_L = 500$ Ω, $T_A = MIN$ to $MAX$				UNIT		
				ALS11		SN54ALS11			SN74ALS11	
				TYP	MIN	MAX	MIN		MAX	
$t_{PLH}$	Any	Y	12	5	23	5	20	ns		
$t_{PHL}$	Any	Y	6	3	13	3	13	ns		



**MOTOROLA Semiconductor Products Inc.**

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