



MOTOROLA

**TYPES SN54ALS27, SN74ALS27
TRIPLE 3-INPUT POSITIVE-NOR GATES**

000219

VSS 1702/1242

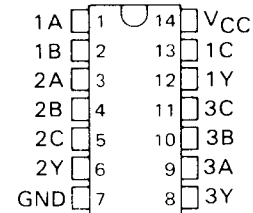
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description

These devices contain three independent 3-input NOR gates. They perform the boolean functions $Y = \overline{A+B+C}$ or $Y = \overline{A} \cdot \overline{B} \cdot \overline{C}$ in positive logic.

The SN54ALS27 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS27 is characterized for operation from 0°C to 70°C .

(TOP VIEW)

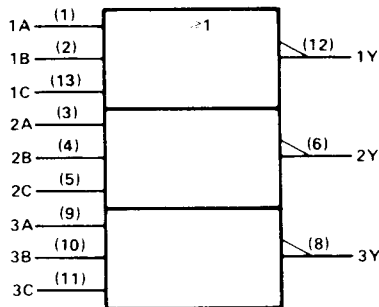


J Suffix—Case 632-07 (Ceramic)
N Suffix—Case 646-05 (Plastic)

FUNCTION TABLE (each gate)

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

logic symbol



Pin numbers shown are for J and N packages.

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TYPES SN54ALS27, SN74ALS27

TRIPLE 3-INPUT POSITIVE-NOR 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: SN54ALS27	-55 °C to 125 °C
SN74ALS27	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54ALS27			SN74ALS27			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		SN54ALS27			SN74ALS27			UNIT
			MIN	TYP†	MAX	MIN	TYP†	MAX	
V_{IK}	$V_{CC} = 4.5 \text{ V}$, $I_I = -18 \text{ mA}$				-1.5			-1.5	V
V_{OH}	$V_{CC} = 4.5 \text{ V}$, $I_{OH} = -0.4 \text{ mA}$		2.5	3.4		2.5			V
	$V_{CC} = 4.75 \text{ V}$, $I_{OH} = -0.4 \text{ mA}$					2.7	3.4		
V_{OL}	$V_{CC} = 4.5 \text{ V}$, $I_{OL} = 4 \text{ mA}$			0.25	0.4		0.25	0.4	V
	$V_{CC} = 4.75 \text{ V}$, $I_{OL} = 8 \text{ mA}$						0.35	0.5	
I_I	$V_{CC} = 5.5 \text{ V}$, $V_I = 7 \text{ V}$				0.1			0.1	mA
I_{IH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 2.7 \text{ V}$				20			20	μA
I_{IL}	$V_{CC} = 5.5 \text{ V}$, $V_{IL} = 0.4 \text{ V}$				-0.1			-0.1	mA
I_{OS}^*	$V_{CC} = 5.5 \text{ V}$, $V_O = \text{GND}$		-25		-150	-25		-150	mA
I_{CCH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0 \text{ V}$				2.0			2.0	mA
I_{CCL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 4.5 \text{ V}$				3.4			3.4	mA

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

*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)	$V_{CC} = 5 \text{ V},$ $C_L = 15 \text{ pF},$ $R_L = 500 \Omega,$ $T_A = 25^\circ\text{C}$	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V},$ $C_L = 50 \text{ pF},$ $R_L = 500 \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			ALS27	SN54ALS27		SN74ALS27		
			TYP	MIN	MAX	MIN	MAX	
t_{PLH}	Any	Y	9	4	27	4	27	ns
t_{PHL}	Any	Y	3	3	11	3	11	ns



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