

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

SN54ALS27, SN54AS27, SN74ALS27, SN74AS27 TRIPLE 3-INPUT POSITIVE-NOR GATES

D2661, APRIL 1982—REVISED MAY 1986

- 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

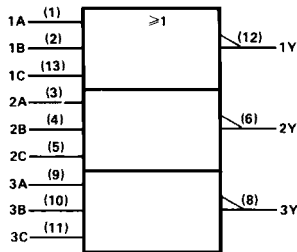
These devices contain three independent 3-input NOR gates. They perform the Boolean functions $Y = A + B + C$ or $Y = \bar{A} \cdot \bar{B} \cdot \bar{C}$ in positive logic.

The SN54ALS27 and SN54AS27 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74ALS27 and SN74AS27 are characterized for operation from 0°C to 70°C .

FUNCTION TABLE (each gate)

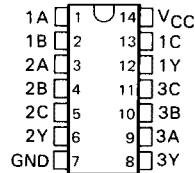
INPUTS			OUTPUT
A	B	C	Y
H	X	X	L
X	H	X	L
X	X	H	L
L	L	L	H

logic symbol†

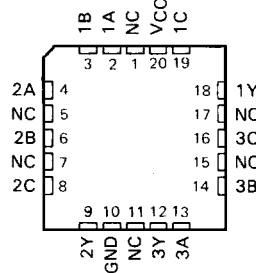


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, and N packages.

SN54ALS27, SN54AS27 . . . J PACKAGE
SN74ALS27, SN74AS27 . . . D OR N PACKAGE
(TOP VIEW)

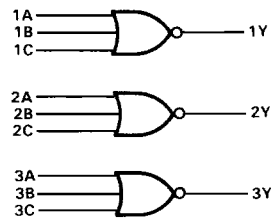


SN54ALS27, SN54AS27 . . . FK PACKAGE
(TOP VIEW)



NC—No internal connection

logic diagram (positive logic)



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ALS and AS Circuits

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			0.7			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}	$V_{CC} = 4.5$ V, $I_I = -18$ mA			-1.5			-1.5	V
V_{OH}	$V_{CC} = 4.5$ V to 5.5 V, $I_{OH} = -0.4$ mA	$V_{CC}-2$			$V_{CC}-2$			V
V_{OL}	$V_{CC} = 4.5$ V, $I_{OL} = 4$ mA	0.25	0.4		0.25	0.4		V
	$V_{CC} = 4.5$ 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_{O}^\ddagger	$V_{CC} = 5.5$ V, $V_O = 2.25$ V	-30		-112	-30		-112	mA
I_{CCH}	$V_{CC} = 5.5$ V, $V_I = 0$ V		0.97	1.8		0.97	1.8	mA
I_{CCL}	$V_{CC} = 5.5$ V, $V_I = 4.5$ V		2	4		2	4	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 to 5.5 V, $C_L = 50$ pF, $R_L = 500$ Ω, $T_A = \text{MIN to MAX}$				UNIT
			SN54ALS27		SN74ALS27		
			MIN	MAX	MIN	MAX	
t_{PLH}	Any	Y	4	26	4	15	ns
t_{PHL}	Any	Y	1	11	3	9	ns

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

SN54AS27, SN74AS27 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: SN54AS27	-55 °C to 125 °C
SN74AS27	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54AS27			SN74AS27			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
I_{OH}	High-level output current				-2			mA
I_{OL}	Low-level output current				20			mA
T_A	Operating free-air temperature	-55			125			°C

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

PARAMETER	TEST CONDITIONS	SN54AS27		SN74AS27		UNIT
		MIN	TYP†	MAX	MIN	
V_{IK}	$V_{CC} = 4.5 \text{ V}$, $I_I = -18 \text{ mA}$			-1.2		V
V_{OH}	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $I_{OH} = -2 \text{ mA}$	$V_{CC}-2$		$V_{CC}-2$		V
V_{OL}	$V_{CC} = 4.5 \text{ V}$, $I_{OL} = 20 \text{ mA}$	0.35		0.5		V
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}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0.4 \text{ V}$			-0.5		mA
$I_{O\ddagger}$	$V_{CC} = 5.5 \text{ V}$, $V_O = 2.25 \text{ V}$	-30		-112		mA
I_{CCH}	$V_{CC} = 5.5 \text{ V}$, $V_I = 0 \text{ V}$	4		6.4		mA
I_{CCL}	$V_{CC} = 5.5 \text{ V}$, $V_I = 4.5 \text{ V}$	10.6		17.1		mA

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

‡ 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)	$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}$, $C_L = 50 \text{ pF}$, $R_L = 500 \text{ } \Omega$, $T_A = \text{MIN to MAX}$				UNIT
			SN54AS27		SN74AS27		
			MIN	MAX	MIN	MAX	
t_{PLH}	Any	Y	1	6.5	1	5.5	ns
t_{PHL}	Any	Y	1	5	1	4.5	ns

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

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ALS and AS Circuits

