

## **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.

# 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

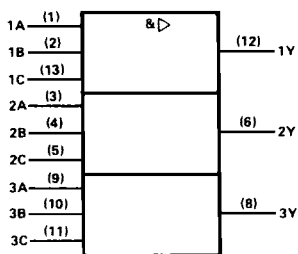
These devices contain three independent 3-input AND buffers. They perform the Boolean functions  $Y = A \cdot B \cdot C$  or  $Y = \overline{A} + \overline{B} + \overline{C}$  in positive logic.

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      |

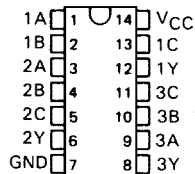
## logic symbol†



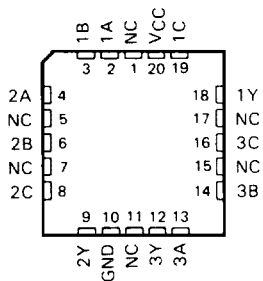
†This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

Pin numbers shown are for D, J, and N packages.

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

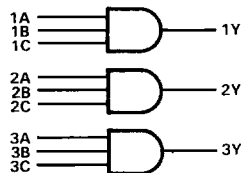


SN54ALS1011A . . . FK PACKAGE  
(TOP VIEW)



NC—No internal connection

## logic diagram (positive logic)



2

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) | $V_{CC} = 4.5 V \text{ to } 5.5 V,$<br>$C_L = 50 pF,$<br>$R_L = 500 \Omega,$<br>$T_A = \text{MIN to MAX}$ |     |              |     | 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.