

# SN5410, SN54LS10, SN54S10, SN7410, SN74LS10, SN74S10 TRIPLE 3-INPUT POSITIVE-NAND GATES

SDLS035A – DECEMBER 1983 – REVISED APRIL 2003

- Package Options Include Plastic "Small Outline" Packages, Ceramic Chip Carriers and Flat Packages, and Plastic and Ceramic DIPs
- Dependable Texas Instruments Quality and Reliability

## description

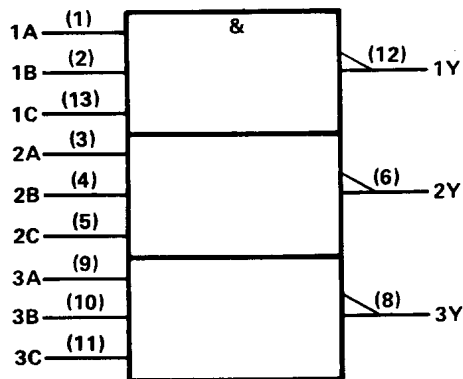
These devices contain three independent 3-input NAND gates.

The SN5410, SN54LS10, and SN54S10 are characterized for operation over the full military temperature range of  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ . The SN7410, SN74LS10, and SN74S10 are 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 | L      |
| L      | X | X | H      |
| X      | L | X | H      |
| X      | X | L | H      |

## logic symbol†



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

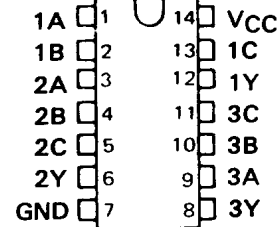
Pin numbers shown are for D, J, and N packages.

## positive logic

$$Y = \overline{A \cdot B \cdot C} \text{ or } Y = \overline{A} + \overline{B} + \overline{C}$$

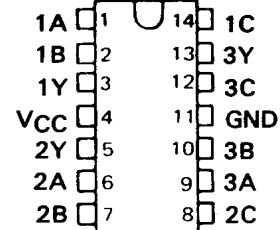
SN5410 . . . J PACKAGE  
SN54LS10, SN54S10 . . . J OR W PACKAGE  
SN7410 . . . N PACKAGE  
SN74LS10, SN74S10 . . . D OR N PACKAGE

(TOP VIEW)



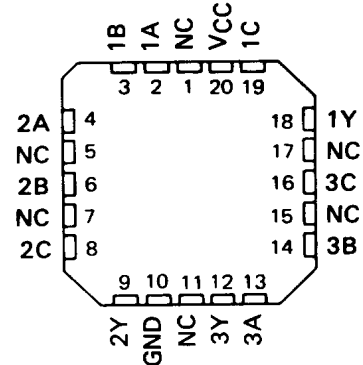
SN5410 . . . W PACKAGE

(TOP VIEW)



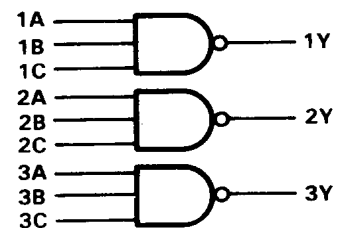
SN54LS10, SN54S10 . . . FK PACKAGE

(TOP VIEW)



NC - No internal connection

## logic diagram (positive logic)



**PACKAGING INFORMATION**

| Orderable Device | Status <sup>(1)</sup> | Package Type | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup> | Lead/Ball Finish | MSL Peak Temp <sup>(3)</sup>               |
|------------------|-----------------------|--------------|-----------------|------|-------------|-------------------------|------------------|--|
| JM38510/00103BCA | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| JM38510/00103BDA | OBSOLETE              | CFP          | W               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| JM38510/07005BCA | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/07005BDA | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/30005B2A | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/30005BCA | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/30005BDA | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/30005SCA | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| JM38510/30005SDA | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SN5410J          | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SN54LS10J        | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SN54S10J         | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SN7410N          | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC                             |
| SN7410N3         | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SN74LS10D        | ACTIVE                | SOIC         | D               | 14   | 50          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74LS10DR       | ACTIVE                | SOIC         | D               | 14   | 2500        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74LS10N        | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC                             |
| SN74LS10N3       | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SN74LS10NSR      | ACTIVE                | SO           | NS              | 14   | 2000        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74LS10NSRE4    | ACTIVE                | SO           | NS              | 14   | 2000        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74S10D         | ACTIVE                | SOIC         | D               | 14   | 50          | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74S10N         | ACTIVE                | PDIP         | N               | 14   | 25          | Pb-Free (RoHS)          | CU NIPDAU        | Level-NC-NC-NC                             |
| SN74S10N3        | OBSOLETE              | PDIP         | N               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SN74S10NSR       | ACTIVE                | SO           | NS              | 14   | 2000        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SN74S10NSRE4     | ACTIVE                | SO           | NS              | 14   | 2000        | Pb-Free (RoHS)          | CU NIPDAU        | Level-2-260C-1 YEAR/<br>Level-1-235C-UNLIM |
| SNJ5410J         | OBSOLETE              | CDIP         | J               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SNJ5410W         | OBSOLETE              | CFP          | W               | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SNJ5410WA        | OBSOLETE              | CFP          | WA              | 14   |             | TBD                     | Call TI          | Call TI                                    |
| SNJ54LS10FK      | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SNJ54LS10J       | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SNJ54LS10W       | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SNJ54S10FK       | ACTIVE                | LCCC         | FK              | 20   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SNJ54S10J        | ACTIVE                | CDIP         | J               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |
| SNJ54S10W        | ACTIVE                | CFP          | W               | 14   | 1           | TBD                     | Call TI          | Level-NC-NC-NC                             |

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(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS) or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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