

PART NUMBER

54LS54BDA-ROCS

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 re-creations are done with the approval of the Original Component Manufacturer. (OCM)

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

Quality Overview

- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-38535
 - 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 OCM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.



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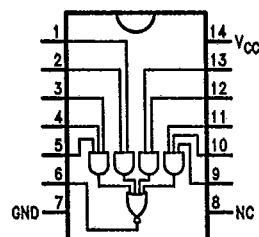
54LS54/DM74LS54 4-WIDE, 2-Input AND-OR-INVERT Gate

General Description

This device contains a combination of four, two input AND gates whose outputs are connected to a four input NOR Gate.

Connection Diagram

Dual-In-Line Package



TL/F/10173-1

Order Number 54LS54DMQB, 54LS54FMQB, DM74LS54M or DM74LS54N
See NS Package Number J14A, M14A, N14A or W14B

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Absolute Maximum Ratings (Note)

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

| | |
|--------------------------------------|-----------------|
| Supply Voltage | 7V |
| Input Voltage | 7V |
| Operating Free Air Temperature Range | |
| 54LS | −55°C to +125°C |
| DM74LS | 0°C to +70°C |
| Storage Temperature Range | −65°C to +150°C |

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Note: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

| Symbol | Parameter | 54LS54 | | | DM74LS54 | | | Units |
|-----------------|--------------------------------|--------|-----|------|----------|-----|------|-------|
| | | Min | Nom | Max | Min | Nom | Max | |
| V _{CC} | Supply Voltage | 4.5 | 5 | 5.5 | 4.75 | 5 | 5.25 | 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 Voltage | | | −0.4 | | | −0.4 | mA |
| I _{OL} | Low Level Output Current | | | 4 | | | 8 | mA |
| T _A | Free Air Operating Temperature | −55 | | 125 | 0 | | 70 | °C |

Electrical Characteristics over recommended operating free air temperature range (unless otherwise noted)

| Symbol | Parameter | Conditions | | Min | Typ (Note 1) | Max | Units |
|------------------|-----------------------------------|--|----------------|-----|-----------------|------|-------|
| V _I | Input Clamp Voltage | V _{CC} = Min, I _I = −18 mA | | | | −1.5 | V |
| V _{OH} | High Level Output Voltage | V _{CC} = Min, I _{OH} = Max, V _{IL} = Max | 54LS DM74LS | 2.5 | | | V |
| | | | | 2.7 | | | |
| V _{OL} | Low Level Output Voltage | V _{CC} = Min, I _{OL} = Max, V _{IH} = Min | 54LS | | | 0.4 | V |
| | | | DM74LS | | | 0.5 | |
| | | I _{OL} = 4 mA, V _{CC} = Min | DM74LS | | | 0.4 | |
| I _I | Input Current @ Max Input Voltage | V _{CC} = Max, V _I = 10V | | | | 0.1 | mA |
| I _{IH} | High Level Input Current | V _{CC} = Max, V _I = 2.7V | | | | 20 | μA |
| I _{IL} | Low Level Input Current | V _{CC} = Max, V _I = 0.4V | | | | −0.4 | mA |
| I _{OS} | Short Circuit Output Current | V _{CC} = Max (Note 2) | 54LS DM74LS | −20 | | −100 | mA |
| I _{COH} | Supply Current with Outputs High | V _{CC} = Max V _{IN} = GND | | −20 | | −100 | |
| I _{CCL} | Supply Current with Outputs Low | V _{CC} = Max V _{IN} = Open | | | | 1.6 | mA |
| | | | | | | 2.0 | mA |

Switching Characteristics at V_{CC} = 5V and T_A = 25°C (See Section 1 for Test Waveforms and Output Load)

| Symbol | Parameter | C _L = 15 pF, R _L = 2 kΩ | | Units |
|------------------|---|---|-----|-------|
| | | Min | Max | |
| t _{PLH} | Propagation Delay Time Low to High Level Output | | 15 | ns |
| t _{PHL} | Propagation Delay Time High to Low Level Output | | 15 | ns |

Note 1: All typicals are at V_{CC} = 5V, T_A = 25°C.

Note 2: Not more than one output should be shorted at a time, and the duration should not exceed one second.