

SN54HC298, SN74HC298

Quadruple 2-Input Multiplexer With Storage

This quadruple two-input multiplexer with storage provides essentially the equivalent functional capabilities of two separate MSI functions ('HC157 and 'HC175) in a single 16-pin package.

When the Word-Select (WS) input is low, word one (A1, B1, C1, D1) is applied to the flip-flops. A high Word-Select input causes word two (A2, B2, C2, D2) to be selected. The selected word is clocked to the output terminals on the negative-going edge of the clock pulse.

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 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 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.

SN54HC298, SN74HC298 QUADRUPLE 2-INPUT MULTIPLEXER WITH STORAGE

D2804, MARCH 1984—REVISED JUNE 1989

- Selects One of Two 4-Bit Data Sources and Stores Data Synchronously with System Clock
- Dual Source for Operands and Constants in Arithmetic Processor; Can Release Processor Register Files for Acquiring New Data
- Implements Separate Registers Capable of Parallel Exchange of Contents, yet Retains External Load Capability
- Has Universal-Type Register for Implementing Various Shift Patterns
- Has Compound Left-Right Capability
- Package Options Include Ceramic Chip Carriers and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

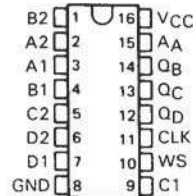
description

This quadruple two-input multiplexer with storage provides essentially the equivalent functional capabilities of two separate MSI functions ('HC157 and 'HC175) in a single 16-pin package.

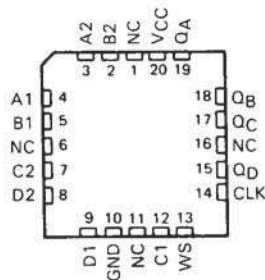
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The SN54HC298 is characterized for operation over the full military temperature range of -55°C to 125°C . The SN74HC298 is characterized for operation from -40°C to 85°C .

SN54HC298 . . . J PACKAGE
SN74HC298 . . . N PACKAGE
(TOP VIEW)

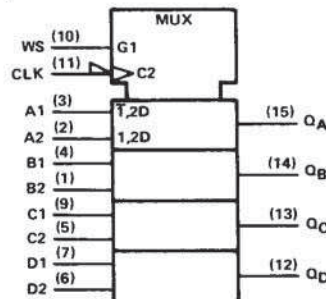


SN54HC298 . . . FK PACKAGE
(TOP VIEW)



NC No internal connection

logic symbol†



†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12. Pin numbers shown are for J and N packages.

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HCMOS Devices

PRODUCTION DATA documents contain information current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.



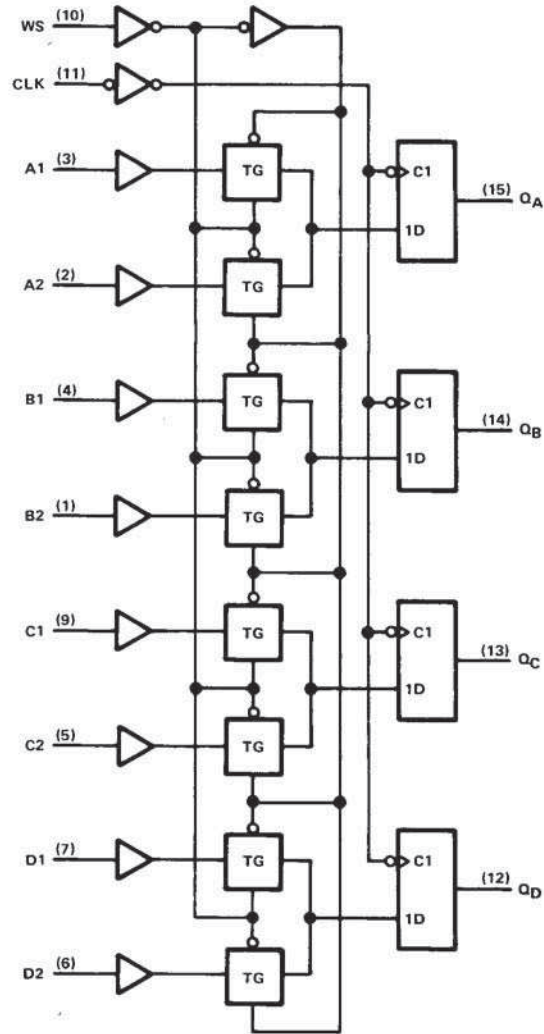
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logic diagram (positive logic)

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Pin numbers shown are for J and N packages.

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QUADRUPLE 2-INPUT MULTIPLEXER WITH STORAGE

absolute maximum ratings over operating free-air temperature range†

| | |
|---|----------------|
| Supply voltage, V_{CC} | -0.5 V to 7 V |
| Input clamp current, I_{IK} ($V_I < 0$ or $V_I > V_{CC}$) | ± 20 mA |
| Output clamp current, I_{OK} ($V_O < 0$ or $V_O > V_{CC}$) | ± 20 mA |
| Continuous output current, I_O ($V_O = 0$ to V_{CC}) | ± 25 mA |
| Continuous current through V_{CC} or GND pins | ± 50 mA |
| Lead temperature 1,6 mm (1/16 in) from case for 60 s: FK or J package | 300°C |
| Lead temperature 1,6 mm (1/16 in) from case for 10 s: N package | 260°C |
| Storage temperature range | -65°C to 150°C |

†Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

recommended operating conditions

| | | SN54HC298 | | | SN74HC298 | | | UNIT |
|----------|--|------------------|----------|------|-----------|----------|-----|------|
| | | MIN | NOM | MAX | MIN | NOM | MAX | |
| V_{CC} | Supply voltage | 2 | 5 | 6 | 2 | 5 | 6 | V |
| V_{IH} | High-level input voltage | $V_{CC} = 2$ V | 1.5 | | 1.5 | | | V |
| | | $V_{CC} = 4.5$ V | 3.15 | | 3.15 | | | |
| | | $V_{CC} = 6$ V | 4.2 | | 4.2 | | | |
| V_{IL} | Low-level input voltage | $V_{CC} = 2$ V | 0 | 0.3 | 0 | 0.3 | V | |
| | | $V_{CC} = 4.5$ V | 0 | 0.9 | 0 | 0.9 | | |
| | | $V_{CC} = 6$ V | 0 | 1.2 | 0 | 1.2 | | |
| V_I | Input voltage | 0 | V_{CC} | | 0 | V_{CC} | | V |
| V_O | Output voltage | 0 | V_{CC} | | 0 | V_{CC} | | V |
| t_t | Input transition (rise and fall) times | $V_{CC} = 2$ V | 0 | 1000 | 0 | 1000 | ns | |
| | | $V_{CC} = 4.5$ V | 0 | 500 | 0 | 500 | | |
| | | $V_{CC} = 6$ V | 0 | 400 | 0 | 400 | | |
| T_A | Operating free-air temperature | -55 | 125 | | -40 | 85 | | °C |

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

| PARAMETER | TEST CONDITIONS | V_{CC} | $T_A = 25^\circ\text{C}$ | | SN54HC298 | | SN74HC298 | | UNIT |
|-----------|---|----------|--------------------------|-----------|------------|------------|---------------|-----|------|
| | | | MIN | TYP | MAX | MIN | MAX | MIN | |
| V_{OH} | $V_I = V_{IH}$ or V_{IL} , $I_{OH} = -20 \mu\text{A}$ | 2 V | 1.9 | 1.998 | 1.9 | 1.9 | V | | |
| | | 4.5 V | 4.4 | 4.499 | 4.4 | 4.4 | | | |
| | | 6 V | 5.9 | 5.999 | 5.9 | 5.9 | | | |
| | 4.5 V | 3.98 | 4.30 | 3.7 | 3.84 | | | | |
| | 6 V | 5.48 | 5.80 | 5.2 | 5.34 | | | | |
| V_{OL} | $V_I = V_{IH}$ or V_{IL} , $I_{OL} = 20 \mu\text{A}$ | 2 V | 0.002 | 0.1 | 0.1 | 0.1 | V | | |
| | | 4.5 V | 0.001 | 0.1 | 0.1 | 0.1 | | | |
| | | 6 V | 0.001 | 0.1 | 0.1 | 0.1 | | | |
| | 4.5 V | 0.17 | 0.26 | 0.4 | 0.33 | | | | |
| | 6 V | 0.15 | 0.26 | 0.4 | 0.33 | | | | |
| I_I | $V_I = V_{CC}$ or 0 | 6 V | ± 0.1 | ± 100 | ± 1000 | ± 1000 | nA | | |
| I_{CC} | $V_I = V_{CC}$ or 0, $I_O = 0$ | 6 V | 8 | | 160 | 80 | μA | | |
| C_i | | 2 to 6 V | 3 | 10 | 10 | 10 | pF | | |

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timing requirements over recommended operating free-air temperature range (unless otherwise noted)

| | | V _{CC} | T _A = 25°C | | SN54HC298 | | SN74HC298 | | UNIT |
|--------------------|---------------------------------|-----------------|-----------------------|-----|-----------|-----|-----------|-----|------|
| | | | MIN | MAX | MIN | MAX | MIN | MAX | |
| f _{clock} | Clock frequency | 2 V | | 6.5 | | 4.3 | | 5.5 | MHz |
| | | 4.5 V | | 33 | | 22 | | 27 | |
| | | 6 V | | 38 | | 25 | | 31 | |
| t _w | Pulse duration, CLK high or low | 2 V | 75 | | 115 | | 95 | | ns |
| | | 4.5 V | 15 | | 23 | | 19 | | |
| | | 6 V | 13 | | 20 | | 16 | | |
| t _{su} | Data before CLK↓ | 2 V | 80 | | 125 | | 105 | | ns |
| | | 4.5 V | 16 | | 25 | | 21 | | |
| | | 6 V | 14 | | 21 | | 18 | | |
| | WS before CLK↓ | 2 V | 80 | | 125 | | 105 | | |
| | | 4.5 V | 16 | | 25 | | 21 | | |
| | | 6 V | 14 | | 21 | | 18 | | |
| t _h | Data after CLK↓ | 2 V | 0 | | 0 | | 0 | | ns |
| | | 4.5 V | 0 | | 0 | | 0 | | |
| | | 6 V | 0 | | 0 | | 0 | | |
| | WS after CLK↓ | 2 V | 0 | | 0 | | 0 | | |
| | | 4.5 V | 0 | | 0 | | 0 | | |
| | | 6 V | 0 | | 0 | | 0 | | |

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 50 pF (see Note 1)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} | T _A = 25°C | | | SN54HC298 | | SN74HC298 | | UNIT |
|------------------|--------------|-------------|-----------------|-----------------------|-----|-----|-----------|-----|-----------|-----|------|
| | | | | MIN | TYP | MAX | MIN | MAX | MIN | MAX | |
| f _{max} | | | 2 V | 6.5 | | | 4.3 | | 5.5 | | MHz |
| | | | 4.5 V | 33 | | | 22 | | 27 | | |
| | | | 6 V | 38 | | | 25 | | 31 | | |
| t _{pd} | CLK | Any | 2 V | 46 | 125 | | 190 | | 155 | | ns |
| | | | 4.5 V | 15 | 25 | | 38 | | 31 | | |
| | | | 6 V | 12 | 21 | | 32 | | 26 | | |
| t _t | | Any | 2 V | 38 | 75 | | 110 | | 95 | | ns |
| | | | 4.5 V | 8 | 15 | | 22 | | 19 | | |
| | | | 6 V | 6 | 13 | | 19 | | 16 | | |

| | | | |
|-----------------|---|--------------------------------|-----------|
| C _{pd} | Power dissipation capacitance per multiplexer | No load, T _A = 25°C | 33 pF typ |
|-----------------|---|--------------------------------|-----------|

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