

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.

SN54F520, SN74F520 8-BIT IDENTITY COMPARATORS

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- Compares Two 8-Bit Words
- 20-kΩ Pullup Resistors on Q Inputs
- Package Options Include Plastic Small-Outline Packages, Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs

description

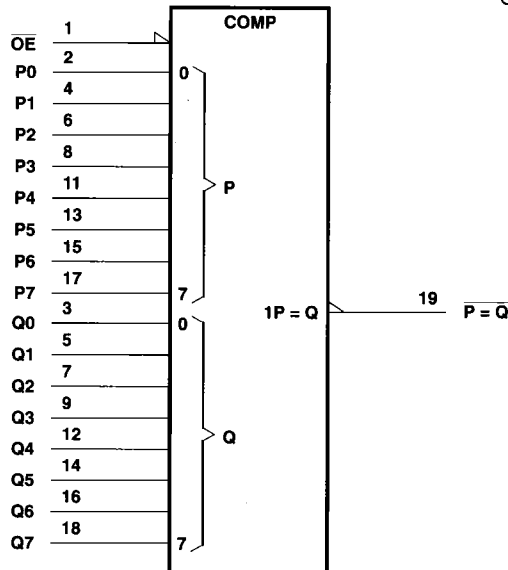
These identity comparators perform comparisons on two 8-bit binary or BCD words. They provide $P = \bar{Q}$ outputs. The 'F520 features 20-kΩ pullup termination resistors on the Q inputs for analog or switch data.

The SN54F520 is characterized for operation over the full military temperature range of -55°C to 125°C. The SN74F520 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

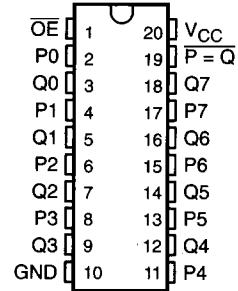
| INPUTS | | OUTPUT |
|--------|-----------------|---------------|
| P, Q | \overline{OE} | $P = \bar{Q}$ |
| P = Q | L | L |
| P ≠ Q | X | H |
| X | H | H |

logic symbol†

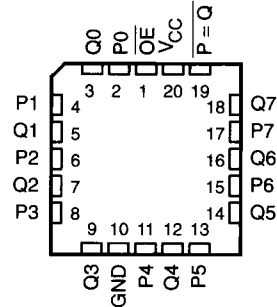


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

SN54F520 . . . J PACKAGE
SN74F520 . . . DW OR N PACKAGE
(TOP VIEW)



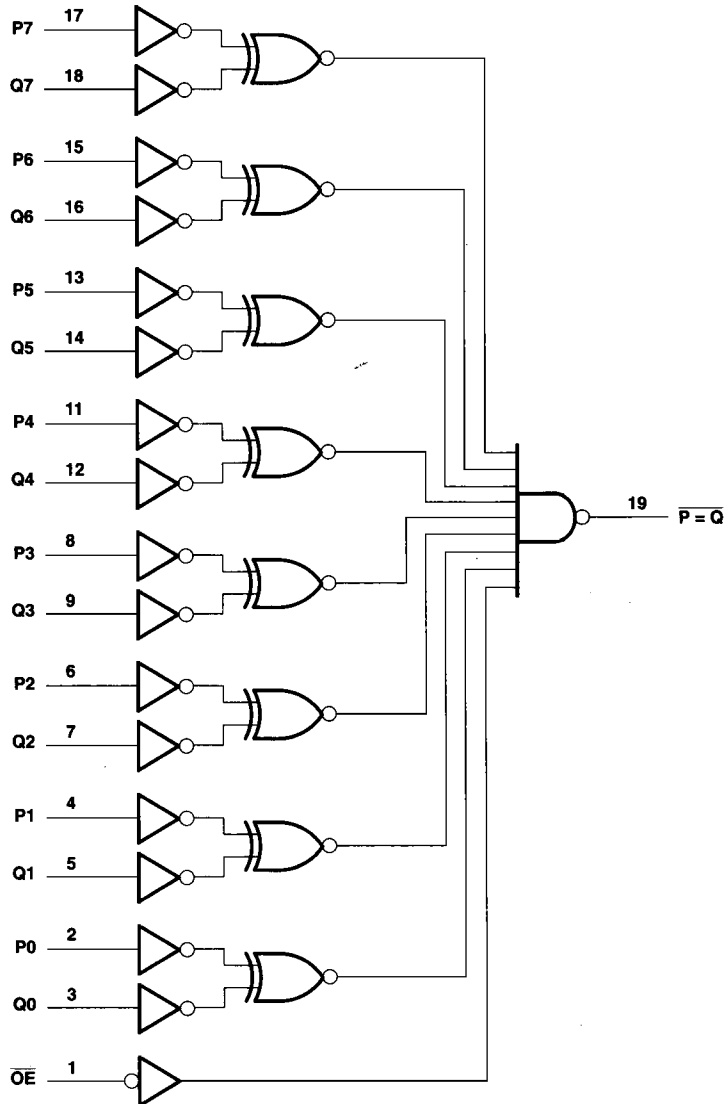
SN54F520 . . . FK PACKAGE
(TOP VIEW)



SN54F520, SN74F520 8-BIT IDENTITY COMPARATORS

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logic diagram (positive logic)



NOTE: 20-k Ω pullup resistors are on the Q inputs.

SN54F520, SN74F520 8-BIT IDENTITY COMPARATORS

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absolute maximum ratings over operating free-air temperature range (unless otherwise noted)[†]

| | |
|---|--------------------|
| Supply voltage range, V_{CC} | –0.5 V to 7 V |
| Input voltage range, V_I (see Note 1) | –1.2 V to 7 V |
| Input current range | –30 mA to 5 mA |
| Voltage range applied to any output in the high state | –0.5 V to V_{CC} |
| Current into any output in the low state | 40 mA |
| Operating free-air temperature range: SN54F520 | –55°C to 125°C |
| SN74F520 | 0°C to 70°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.

NOTE 1: The input voltage ratings may be exceeded provided the input current ratings are observed.

recommended operating conditions

| | | SN54F520 | | | SN74F520 | | | 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_{IK} | Input clamp current | | | | –18 | | | mA | | |
| I_{OH} | High-level output current | | | | –1 | | | mA | | |
| I_{OL} | Low-level output current | | | | 20 | | | 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 | SN54F520 | | | SN74F520 | | | UNIT | |
|---------------|-------------------------------------|------------------------------|------------------|------|----------|------------------|------|---------|----|
| | | MIN | TYP [‡] | MAX | MIN | TYP [‡] | MAX | | |
| V_{IK} | $V_{CC} = 4.5$ V, $I_I = -18$ mA | –1.2 | | | –1.2 | | | V | |
| V_{OH} | $V_{CC} = 4.5$ V, $I_{OH} = -1$ mA | 2.5 | 3.4 | | 2.5 | 3.4 | | V | |
| | $V_{CC} = 4.75$ V, $I_{OH} = -1$ mA | | | | 2.7 | | | | |
| V_{OL} | $V_{CC} = 4.5$ V, $I_{OL} = 20$ mA | 0.3 | | | 0.5 | | | V | |
| I_I | $V_{CC} = 5.5$ V | \overline{OE} and P inputs | $V_I = 7$ V | | 0.1 | | 0.1 | mA | |
| | | Q inputs | $V_I = 5.5$ V | | 0.1 | | 0.1 | | |
| I_{IH} | $V_{CC} = 5.5$ V, | \overline{OE} and P inputs | $V_I = 2.7$ V | | 20 | | 20 | μ A | |
| | | Q inputs | | | –0.3 | | –0.3 | | |
| I_{IL} | $V_{CC} = 5.5$ V, | \overline{OE} and P inputs | $V_I = 0.5$ V | | –0.6 | | –0.6 | mA | |
| | | Q inputs | | | –1 | | –1 | | |
| I_{OS}^{\S} | $V_{CC} = 5.5$ V, $V_O = 0$ | –60 | | –150 | | –60 | | –150 | mA |
| I_{CC} | $V_{CC} = 5.5$ V, See Note 2 | 21 | | 32 | | 21 | | 32 | mA |

[‡] All typical values are at $V_{CC} = 5$ V, $T_A = 25^\circ\text{C}$.

^{\S} Not more than one output should be shorted at a time, and the duration of the short circuit should not exceed one second.

NOTE 2: I_{CC} is measured with all inputs at 4.5 V.



SN54F520, SN74F520

8-BIT IDENTITY COMPARATORS

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switching characteristics (see Note 3)

| PARAMETER | FROM (INPUT) | TO (OUTPUT) | V _{CC} = 5 V, C _L = 50 pF, R _L = 500 Ω, T _A = 25°C | | | V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R _L = 500 Ω, T _A = MIN to MAX† | | | UNIT | |
|------------------|-----------------|-------------------------------|---|-----|-----|---|------|----------|------|-----|
| | | | 'F520 | | | SN54F520 | | SN74F520 | | |
| | | | MIN | TYP | MAX | MIN | MAX | MIN | | MAX |
| t _{PLH} | P or Q | $\overline{P} = \overline{Q}$ | 3.9 | 5.7 | 7.7 | 3.7 | 10.2 | 3.7 | 8.7 | ns |
| t _{PHL} | | | 4.7 | 7 | 9.3 | 4.4 | 11.3 | 4.4 | 10.3 | |
| t _{PLH} | \overline{OE} | $\overline{P} = \overline{Q}$ | 3.5 | 4.6 | 5.8 | 3.4 | 7 | 3.4 | 6.4 | ns |
| t _{PHL} | | | 5.2 | 7.5 | 9.5 | 4.9 | 11.2 | 4.9 | 10.4 | |

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

NOTE 3: Load circuits and waveforms are shown in Section 1.