

Quad 2-Input NOR Gate

The MC10H102 is a quad 2-input NOR gate. The MC10H102 provides one gate with OR/NOR outputs. This MECL 10H part is a functional/pinout duplication of the standard MECL 10K family part, with 100% improvement in propagation delay, and no increases in power— supply current.

- Propagation Delay, 1.0 ns Typical
- Power Dissipation 25 mW/Gate (same as MECL 10K)
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K-Compatible

MAXIMUM RATINGS

| Characteristic | Symbol | Rating | Unit |
|---|-----------|----------------------------|----------|
| Power Supply ($V_{CC} = 0$) | V_{EE} | -8.0 to 0 | Vdc |
| Input Voltage ($V_{CC} = 0$) | V_I | 0 to V_{EE} | Vdc |
| Output Current— Continuous — Surge | I_{out} | 50 100 | mA |
| Operating Temperature Range | T_A | 0 to +75 | °C |
| Storage Temperature Range— Plastic — Ceramic | T_{stg} | -55 to +150 -55 to +165 | °C °C |

ELECTRICAL CHARACTERISTICS ($V_{EE} = -5.2 V \pm 5\%$) (See Note)

| Characteristic | Symbol | 0° | | 25° | | 75° | | Unit |
|----------------------|-----------|-------|-------|-------|-------|-------|--------|------|
| | | Min | Max | Min | Max | Min | Max | |
| Power Supply Current | I_E | — | 29 | — | 26 | — | 29 | mA |
| Input Current High | I_{inH} | — | 425 | — | 265 | — | 265 | μA |
| Input Current Low | I_{inL} | 0.5 | — | 0.5 | — | 0.3 | — | μA |
| High Output Voltage | V_{OH} | -1.02 | -0.84 | -0.98 | -0.81 | -0.92 | -0.735 | Vdc |
| Low Output Voltage | V_{OL} | -1.95 | -1.63 | -1.95 | -1.63 | -1.95 | -1.60 | Vdc |
| High Input Voltage | V_{IH} | -1.17 | -0.84 | -1.13 | -0.81 | -1.07 | -0.735 | Vdc |
| Low Input Voltage | V_{IL} | -1.95 | -1.48 | -1.95 | -1.48 | -1.95 | -1.45 | Vdc |

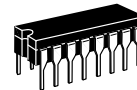
AC PARAMETERS

| Parameter | Symbol | 0.4 | 1.25 | 0.4 | 1.25 | 0.4 | 1.4 | ns |
|-------------------|----------|-----|------|-----|------|------|-----|----|
| Propagation Delay | t_{pd} | 0.4 | 1.25 | 0.4 | 1.25 | 0.4 | 1.4 | ns |
| Rise Time | t_r | 0.5 | 1.5 | 0.5 | 1.6 | 0.55 | 1.7 | ns |
| Fall Time | t_f | 0.5 | 1.5 | 0.5 | 1.6 | 0.55 | 1.7 | ns |

NOTE:

Each MECL 10H series circuit has been designed to meet the dc specifications shown in the test table, after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse air flow greater than 500 linear fpm is maintained. Outputs are terminated through a 50-ohm resistor to -2.0 volts.

MC10H102



L SUFFIX
CERAMIC PACKAGE
CASE 620-10

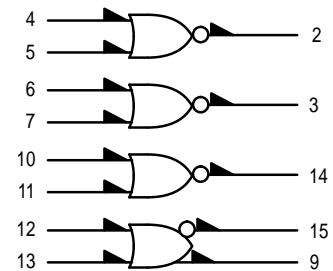


P SUFFIX
PLASTIC PACKAGE
CASE 648-08



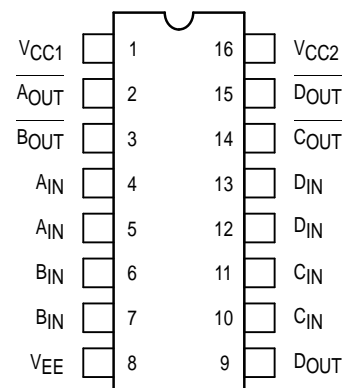
FN SUFFIX
PLCC
CASE 775-02

LOGIC DIAGRAM



$V_{CC1} = \text{PIN } 1$
 $V_{CC2} = \text{PIN } 16$
 $V_{EE} = \text{PIN } 8$

DIP PIN ASSIGNMENT

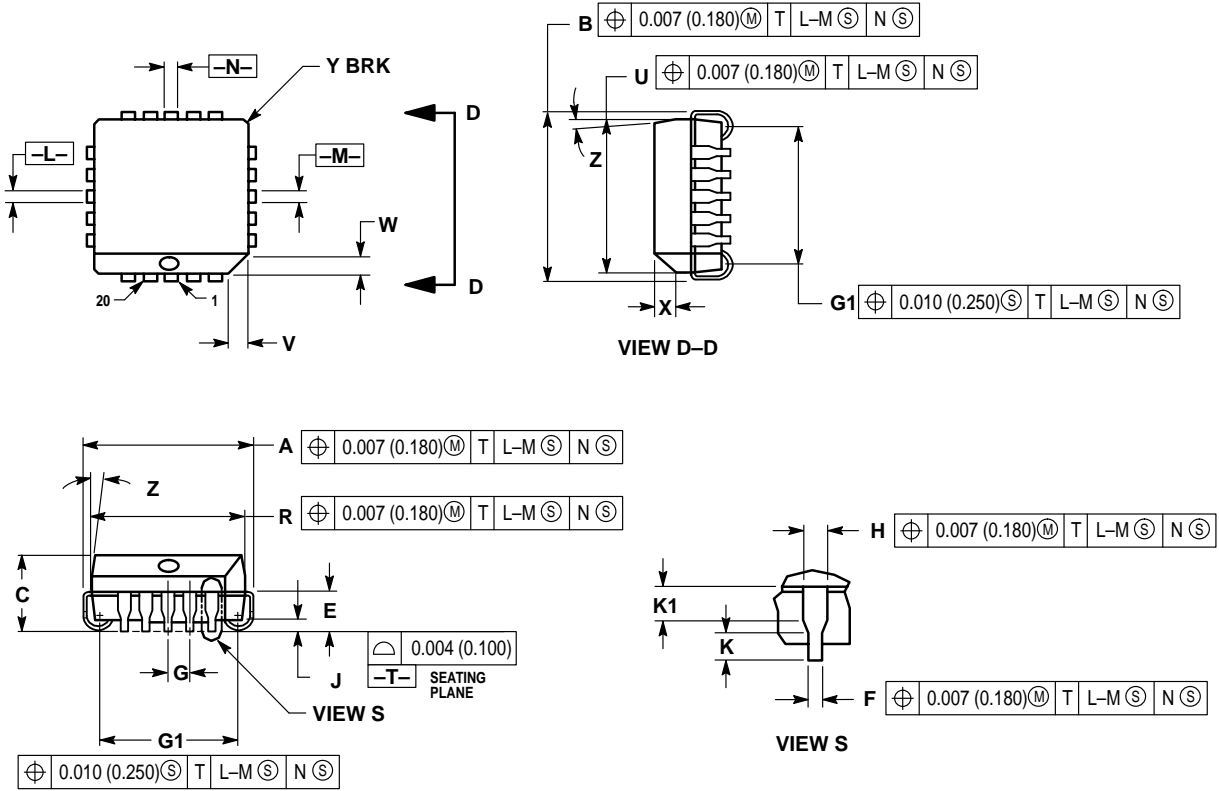


Pin assignment is for Dual-in-Line Package.
For PLCC pin assignment, see the Pin Conversion
Tables on page 6-11 of the Motorola MECL Data
Book (DL122/D).



OUTLINE DIMENSIONS

FN SUFFIX
 PLASTIC PLCC PACKAGE
 CASE 775-02
 ISSUE C

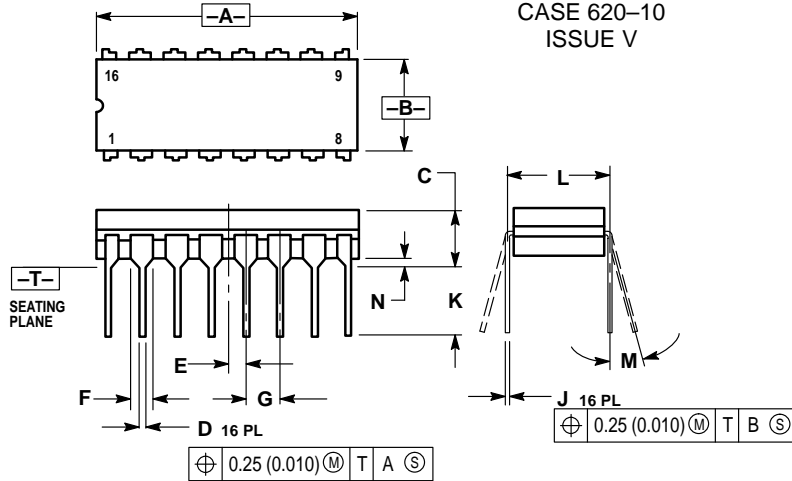


- NOTES:
- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
 - DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
 - DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
 - DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.
 - THE PACKAGE TOP MAY BE SMALLER THAN THE PACKAGE BOTTOM BY UP TO 0.012 (0.300). DIMENSIONS R AND U ARE DETERMINED AT THE OUTERMOST EXTREMES OF THE PLASTIC BODY EXCLUSIVE OF MOLD FLASH, TIE BAR BURRS, GATE BURRS AND INTERLEAD FLASH, BUT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.
 - DIMENSION H DOES NOT INCLUDE DAMBAR PROTRUSION OR INTRUSION. THE DAMBAR PROTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE GREATER THAN 0.037 (0.940). THE DAMBAR INTRUSION(S) SHALL NOT CAUSE THE H DIMENSION TO BE SMALLER THAN 0.025 (0.635).

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.385 | 0.395 | 9.78 | 10.03 |
| B | 0.385 | 0.395 | 9.78 | 10.03 |
| C | 0.165 | 0.180 | 4.20 | 4.57 |
| E | 0.090 | 0.110 | 2.29 | 2.79 |
| F | 0.013 | 0.019 | 0.33 | 0.48 |
| G | 0.050 BSC | | 1.27 BSC | |
| H | 0.026 | 0.032 | 0.66 | 0.81 |
| J | 0.020 | — | 0.51 | — |
| K | 0.025 | — | 0.64 | — |
| R | 0.350 | 0.356 | 8.89 | 9.04 |
| U | 0.350 | 0.356 | 8.89 | 9.04 |
| V | 0.042 | 0.048 | 1.07 | 1.21 |
| W | 0.042 | 0.048 | 1.07 | 1.21 |
| X | 0.042 | 0.056 | 1.07 | 1.42 |
| Y | — | 0.020 | — | 0.50 |
| Z | 2° 10° | | 2° 10° | |
| G1 | 0.310 | 0.330 | 7.88 | 8.38 |
| K1 | 0.040 | — | 1.02 | — |

OUTLINE DIMENSIONS

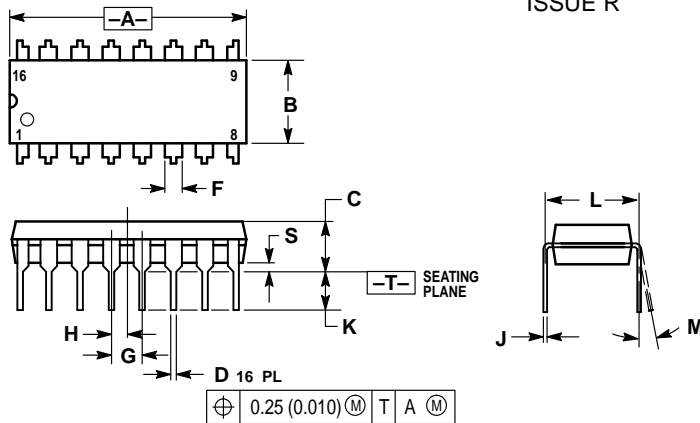
L SUFFIX
CERAMIC DIP PACKAGE
CASE 620-10
ISSUE V



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.750 | 0.785 | 19.05 | 19.93 |
| B | 0.240 | 0.295 | 6.10 | 7.49 |
| C | — | 0.200 | — | 5.08 |
| D | 0.015 | 0.020 | 0.39 | 0.50 |
| E | 0.050 BSC | | 1.27 BSC | |
| F | 0.055 | 0.065 | 1.40 | 1.65 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.008 | 0.015 | 0.21 | 0.38 |
| K | 0.125 | 0.170 | 3.18 | 4.31 |
| L | 0.300 BSC | | 7.62 BSC | |
| M | 0° | | 15° | |
| N | 0.020 | 0.040 | 0.51 | 1.01 |

P SUFFIX
PLASTIC DIP PACKAGE
CASE 648-08
ISSUE R



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
 5. ROUNDED CORNERS OPTIONAL.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.740 | 0.770 | 18.80 | 19.55 |
| B | 0.250 | 0.270 | 6.35 | 6.85 |
| C | 0.145 | 0.175 | 3.69 | 4.44 |
| D | 0.015 | 0.021 | 0.39 | 0.53 |
| F | 0.040 | 0.70 | 1.02 | 1.77 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.050 BSC | | 1.27 BSC | |
| J | 0.008 | 0.015 | 0.21 | 0.38 |
| K | 0.110 | 0.130 | 2.80 | 3.30 |
| L | 0.295 | 0.305 | 7.50 | 7.74 |
| M | 0° | | 10° | |
| S | 0.020 | 0.040 | 0.51 | 1.01 |

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