

# Quad TTL-to-ECL Translator with ECL Strobe

The MC10H424 is a Quad TTL-to-ECL translator with an ECL strobe. Power supply requirements are ground, +5.0 volts, and -5.2 volts.

- Propagation Delay, 1.5 ns Typical
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K — Compatible

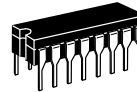
## MAXIMUM RATINGS

| Characteristic                                   | Symbol    | Rating                     | Unit |
|--|-----------|----------------------------|------|
| Power Supply ( $V_{CC} = 5.0\text{ V}$ )         | $V_{EE}$  | -8.0 to 0                  | Vdc  |
| Power Supply ( $V_{EE} = -5.2\text{ V}$ )        | $V_{CC}$  | 0 to +7.0                  | Vdc  |
| Input Voltage (ECL)                              | $V_I$     | 0 to $V_{EE}$              | Vdc  |
| Input Voltage (TTL)                              | $V_I$     | 0 to $V_{CC}$              | Vdc  |
| Output Current — Continuous<br>— Surge           | $I_{out}$ | 50<br>100                  | mA   |
| Operating Temperature Range                      | $T_A$     | 0 to +75                   | °C   |
| Storage Temperature Range — Plastic<br>— Ceramic | $T_{stg}$ | -55 to +150<br>-55 to +165 | °C   |

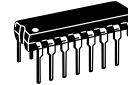
## ELECTRICAL CHARACTERISTICS ( $V_{EE} = -5.2\text{ V} \pm 5\%$ , $V_{CC} = 5.0\text{ V} \pm 5.0\%$ )

| Characteristic                      | Symbol       | 0°    |       | 25°   |       | 75°   |        | Unit            |
|-------------------------------------|--------------|-------|-------|-------|-------|-------|--------|-----------------|
|                                     |              | Min   | Max   | Min   | Max   | Min   | Max    |                 |
| Negative Power Supply Drain Current | $I_E$        | —     | 72    | —     | 66    | —     | 72     | mAdc            |
| Positive Power Supply Drain Current | $I_{CCH}$    | —     | 16    | —     | 16    | —     | 18     | mAdc            |
|                                     | $I_{CCL}$    | —     | 25    | —     | 25    | —     | 25     | mAdc            |
| Reverse Current Pin 5,7,10,11       | $I_R$        | —     | 50    | —     | 50    | —     | 50     | $\mu\text{Adc}$ |
| Forward Current Pin 5,7,10,11       | $I_F$        | —     | -3.2  | —     | -3.2  | —     | -3.2   | mAdc            |
| Input HIGH Current Pin 6            | $I_{inH}$    | —     | 450   | —     | 310   | —     | 310    | $\mu\text{Adc}$ |
| Input LOW Current Pin 6             | $I_{inL}$    | 0.5   | —     | 0.5   | —     | 0.3   | —      | $\mu\text{Adc}$ |
| Input Breakdown Voltage             | $V_{(BR)in}$ | 5.5   | —     | 5.5   | —     | 5.5   | —      | Vdc             |
| Input Clamp Voltage                 | $V_I$        | —     | -1.5  | —     | -1.5  | —     | -1.5   | Vdc             |
| 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 Pin 5,7,10,11    | $V_{IH}$     | 2.0   | —     | 2.0   | —     | +2.0  | —      | Vdc             |
| Low Input Voltage Pin 5,7,10,11     | $V_{IL}$     | —     | 0.8   | —     | 0.8   | —     | 0.8    | Vdc             |
| High Input Voltage Pin 6            | $V_{IH}$     | -1.17 | -0.84 | -1.13 | -0.81 | -1.07 | -0.735 | Vdc             |
| Low Input Voltage Pin 6             | $V_{IL}$     | -1.95 | -1.48 | -1.95 | -1.48 | -1.95 | -1.45  | Vdc             |

# MC10H424



**L SUFFIX**  
CERAMIC PACKAGE  
CASE 620-10

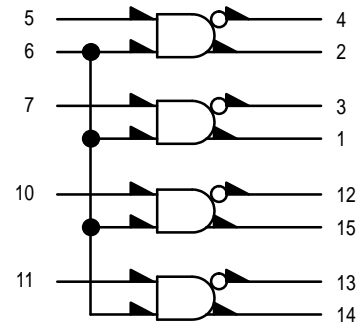


**P SUFFIX**  
PLASTIC PACKAGE  
CASE 648-08



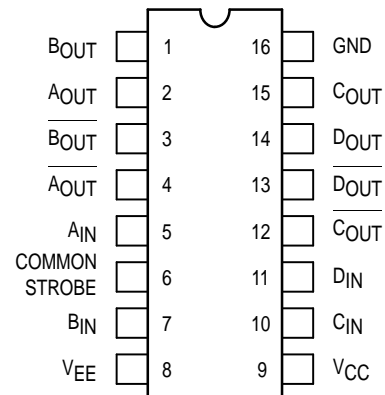
**FN SUFFIX**  
PLCC  
CASE 775-02

## LOGIC DIAGRAM



GND = PIN 16  
 $V_{CC}$  (+5.0 VDC) = PIN 9  
 $V_{EE}$  (-5.2 VDC) = 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).



# MC10H424

## AC PARAMETERS

|                        |          |     |     |     |     |     |     |    |
|------------------------|----------|-----|-----|-----|-----|-----|-----|----|
| Propaga-<br>tion Delay | $t_{pd}$ |     |     |     |     |     |     | ns |
| Data                   |          | 0.5 | 2.2 | 0.5 | 2.3 | 0.5 | 2.4 |    |
| Strobe                 |          | 0.5 | 2.2 | 0.5 | 2.3 | 0.5 | 2.4 |    |
| Rise Time              | $t_r$    | 0.5 | 2.0 | 0.5 | 2.0 | 0.5 | 2.2 | ns |
| Fall Time              | $t_f$    | 0.5 | 2.0 | 0.5 | 2.0 | 0.5 | 2.2 | 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 lfpm is maintained. Outputs are terminated through a 50-ohm resistor to -2.1 volts.

## APPLICATIONS INFORMATION

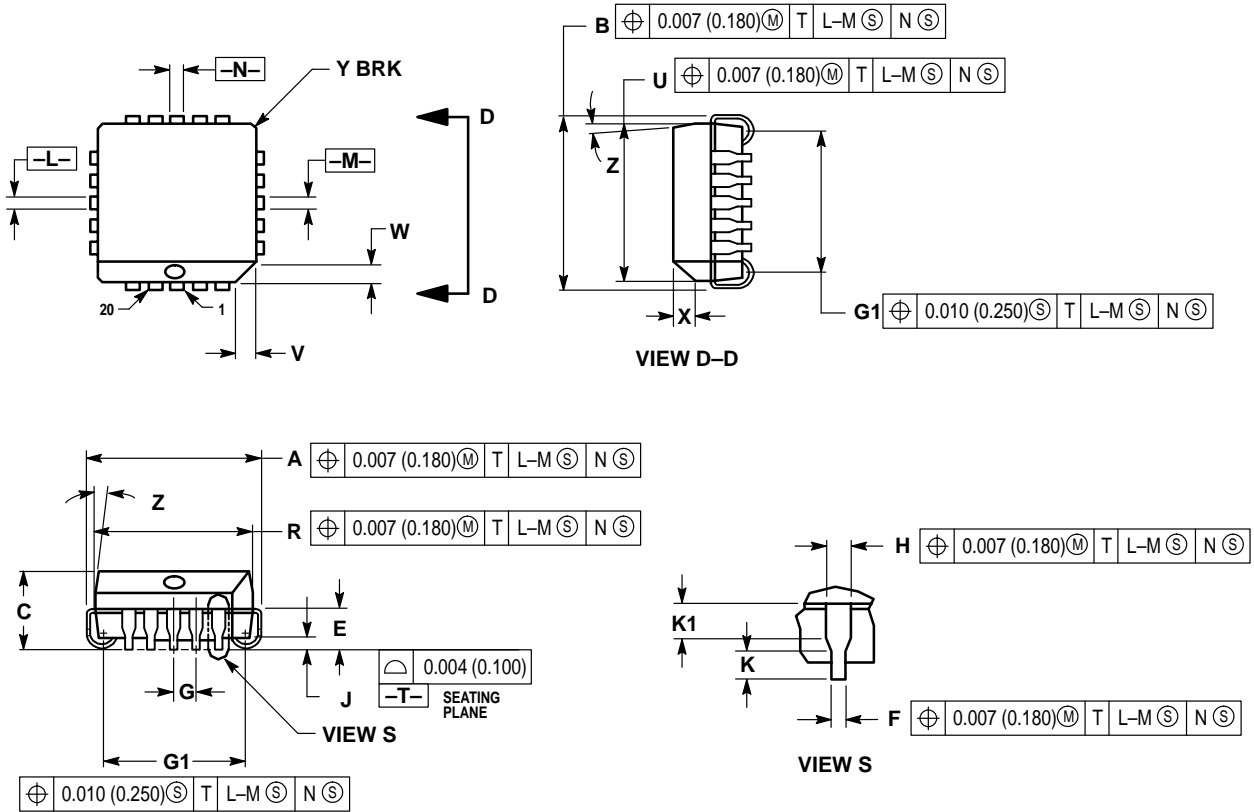
The MC10H424 has TTL-compatible inputs, an ECL strobe and MECL complementary open-emitter outputs that allow use as an inverting/non-inverting translator or as a differential line driver. When the common strobe input is at the low-logic level, it forces all true outputs to a MECL low-logic state and

all inverting outputs to a MECL high-logic state.

An advantage of this device is that TTL-level information can be transmitted differentially, via balanced twisted pair lines, to MECL equipment, where the signal can be received by the MC10H115 or MC10H116 differential line receivers.

OUTLINE DIMENSIONS

FN SUFFIX  
 PLASTIC PLCC PACKAGE  
 CASE 775-02  
 ISSUE C

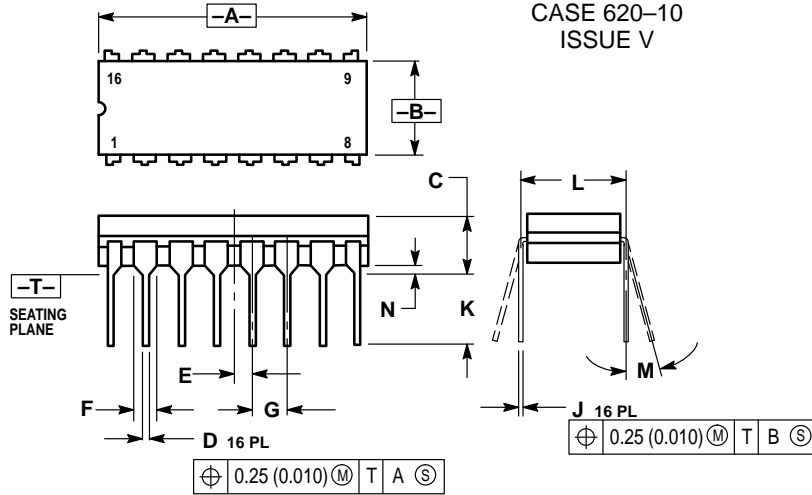


- NOTES:
- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
  - DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
  - DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
  - DIMENSIONING 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

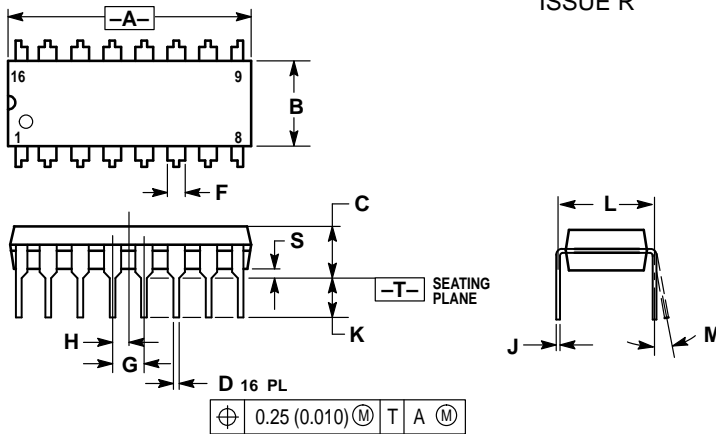
**L SUFFIX**  
**CERAMIC DIP PACKAGE**  
 CASE 620-10  
 ISSUE V



- 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°   | 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°   | 0°          | 10°   |
| S   | 0.020     | 0.040 | 0.51        | 1.01  |

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