

MC10H330

Quad Bus Driver/Receiver with 2-to-1 Output Multiplexers

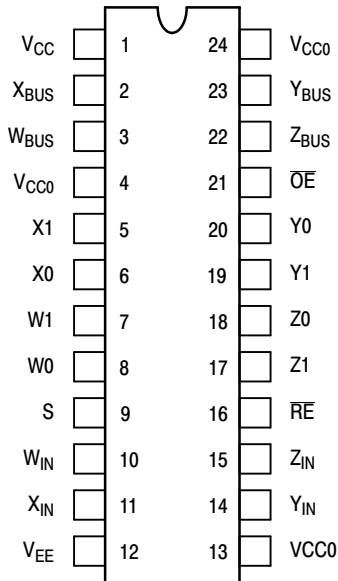
Description

The MC10H330 is a Quad Bus Driver/Receiver with two-to-one output multiplexers. These multiplexers have a common select and output enable. When disabled, ($\overline{OE} = \text{high}$) the bus outputs go to -2.0 V . Their output can be brought to a low state (V_{OL}) by applying a high level to the receiver enable ($\overline{RE} = \text{High}$). The parameters specified are with $25\ \Omega$ loading on the bus drivers and $50\ \Omega$ loads on the receivers.

Features

- Propagation Delay, 1.5 ns Typical Data-to-Output
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K™ Compatible
- Pb-Free Packages are Available*

DIP PIN ASSIGNMENT



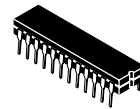
Pin assignment is for Dual-in-Line Package.
For PLCC pin assignment, see the Pin Conversion Tables on page 18 of the ON Semiconductor MECL Data Book (DL122/D).



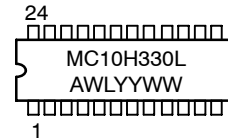
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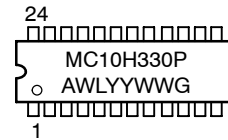
MARKING DIAGRAMS*



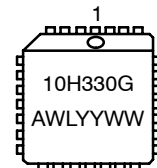
CDIP-24
L SUFFIX
CASE 758



PDIP-24
P SUFFIX
CASE 724



PLCC-28
P SUFFIX
CASE 776



- A = Assembly Location
- WL = Wafer Lot
- YY = Year
- WW = Work Week
- G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

MC10H330

Table 1. MAXIMUM RATINGS

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

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

Table 2. ELECTRICAL CHARACTERISTICS ($V_{EE} = -5.2 V \pm 5\%$) (Note 1)

| Symbol | Characteristic | 0° | | 25° | | 75° | | Unit |
|-----------|----------------------|-------|-------|-------|-------|-------|--------|---------|
| | | Min | Max | Min | Max | Min | Max | |
| I_E | Power Supply Current | - | 157 | - | 143 | - | 157 | mA |
| I_{inH} | Input Current High | | | | | | | μA |
| | Pins 5-8, 17-20 | - | 667 | - | 417 | - | 417 | |
| | Pins 16, 21 | - | 514 | - | 321 | - | 321 | |
| | Pin 9 | - | 475 | - | 297 | - | 297 | |
| I_{inL} | Input Current Low | 0.5 | - | 0.5 | - | 0.3 | - | μA |
| V_{OH} | High Output Voltage | -1.02 | -0.84 | -0.98 | -0.81 | -0.92 | -0.735 | Vdc |
| V_{OL} | Low Output Voltage | -1.95 | -1.63 | -1.95 | -1.63 | -1.95 | -1.60 | Vdc |
| V_{IH} | High Input Voltage | -1.17 | -0.84 | -1.13 | -0.81 | -1.07 | -0.735 | Vdc |
| V_{IL} | Low Input Voltage | -1.95 | -1.48 | -1.95 | -1.48 | -1.95 | -1.45 | Vdc |

1. 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 lfm is maintained. Receiver outputs are terminated through a 50 Ω resistor to -2.0 Vdc. Bus outputs are terminated through a 25 Ω resistor to -2.0 Vdc.

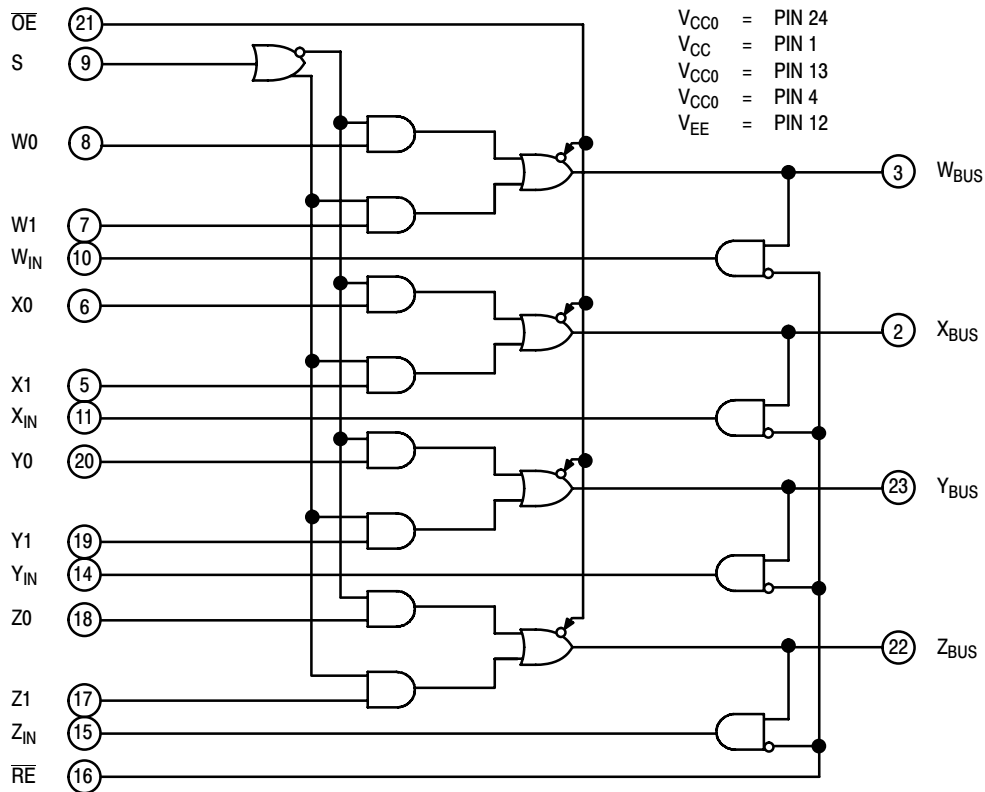
Table 3. AC PARAMETERS

| Symbol | Characteristic | 0° | | 25° | | 75° | | Unit |
|----------|--------------------------------|-----|-----|-----|-----|-----|-----|------|
| | | Min | Max | Min | Max | Min | Max | |
| t_{pd} | Propagation Delay | | | | | | | ns |
| | Select-to-Input | 1.8 | 5.3 | 1.8 | 5.3 | 1.8 | 5.3 | |
| | Data-to-Bus Output | 0.5 | 2.0 | 0.5 | 2.0 | 0.5 | 2.0 | |
| | Select-to-Bus | | | | | | | |
| | Output | 1.0 | 3.2 | 1.0 | 3.2 | 1.0 | 3.2 | |
| | \overline{OE} -to-Bus Output | 0.8 | 2.2 | 0.8 | 2.2 | 0.8 | 2.2 | |
| | Bus-to-Input | 0.8 | 2.1 | 0.8 | 2.1 | 0.8 | 2.4 | |
| | \overline{RE} -to-Input | 0.5 | 2.2 | 0.5 | 2.2 | 0.5 | 2.2 | |
| | Data-to-Receiver | | | | | | | |
| | Input | 1.3 | 4.0 | 1.3 | 4.0 | 1.3 | 4.0 | |
| t_r | Rise Time | 0.5 | 2.0 | 0.5 | 2.0 | 0.5 | 2.0 | ns |
| t_f | Fall Time | 0.5 | 2.0 | 0.5 | 2.0 | 0.5 | 2.0 | ns |

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

MC10H330

LOGIC DIAGRAM



MULTIPLEXER TRUTH TABLE

| OE | S | W _{Bus} | X _{Bus} | Y _{Bus} | Z _{Bus} |
|----|---|------------------|------------------|------------------|------------------|
| H | X | -2.0 V | -2.0 V | -2.0 V | -2.0 V |
| L | L | W ₀ | X ₀ | Y ₀ | Z ₀ |
| L | H | W ₁ | X ₁ | Y ₁ | Z ₁ |

RECEIVER TRUTH TABLE

| RE | W _{in} | X _{in} | Y _{in} | Z _{in} |
|----|------------------|------------------|------------------|------------------|
| H | L | L | L | L |
| L | W _{Bus} | X _{Bus} | Y _{Bus} | Z _{Bus} |

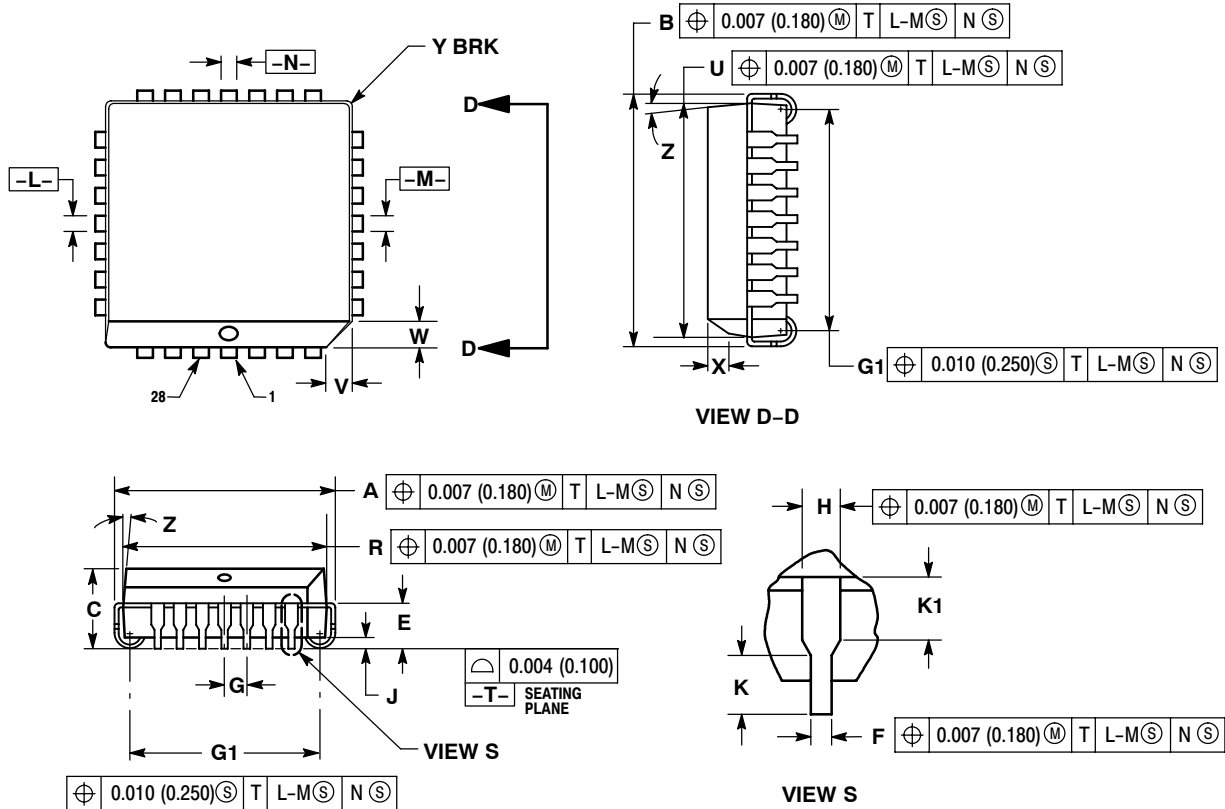
ORDERING INFORMATION

| Device | Package | Shipping [†] |
|---------------|----------------------|-----------------------|
| MC10H330FN | PLCC-28 | 37 Units / Rail |
| MC10H330FNG | PLCC-28 (Pb-Free) | 37 Units / Rail |
| MC10H330FNR2 | PLCC-28 | 500 / Tape & Reel |
| MC10H330FNR2G | PLCC-28 (Pb-Free) | 500 / Tape & Reel |
| MC10H330L | CDIP-24 | 15 Unit / Rail |
| MC10H330P | PDIP-24 | 15 Unit / Rail |
| MC10H330PG | PDIP-24 (Pb-Free) | 15 Unit / Rail |

MC10H330

PACKAGE DIMENSIONS

PLCC-28
FN SUFFIX
PLASTIC PLCC PACKAGE
CASE 776-02
ISSUE D



NOTES:

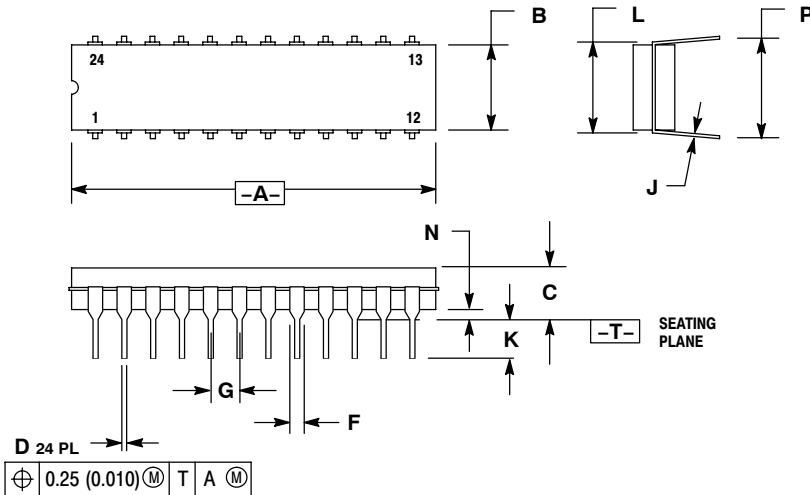
- DATUMS -L-, -M-, AND -N- DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
- DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM -T-, SEATING PLANE.
- DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
- DIMENSIONING AND TOLERANCING 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 | 0.485 | 0.495 | 12.32 | 12.57 |
| B | 0.485 | 0.495 | 12.32 | 12.57 |
| 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 | 0.450 | 0.456 | 11.43 | 11.58 |
| U | 0.450 | 0.456 | 11.43 | 11.58 |
| 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 | 0.410 | 0.430 | 10.42 | 10.92 |
| K1 | 0.040 | --- | 1.02 | --- |

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PACKAGE DIMENSIONS

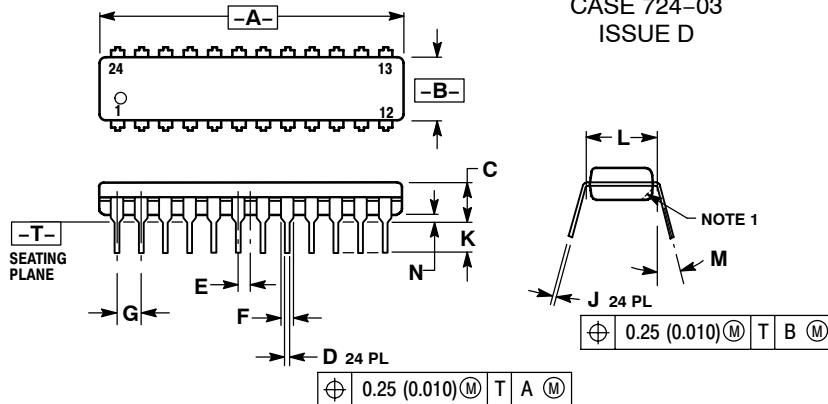
CDIP-24 L SUFFIX CERAMIC DIP PACKAGE CASE 758-02 ISSUE A



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.240 | 1.285 | 31.50 | 32.64 |
| B | 0.285 | 0.305 | 7.24 | 7.75 |
| C | 0.160 | 0.200 | 4.07 | 5.08 |
| D | 0.015 | 0.021 | 0.38 | 0.53 |
| F | 0.045 | 0.062 | 1.14 | 1.57 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.008 | 0.013 | 0.20 | 0.33 |
| K | 0.100 | 0.165 | 2.54 | 4.19 |
| L | 0.300 | 0.310 | 7.62 | 7.87 |
| N | 0.020 | 0.050 | 0.51 | 1.27 |
| P | 0.360 | 0.400 | 9.14 | 10.16 |

PDIP-24 P SUFFIX PLASTIC DIP PACKAGE CASE 724-03 ISSUE D



- NOTES:
1. CHAMFERED CONTOUR OPTIONAL.
 2. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 4. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.230 | 1.265 | 31.25 | 32.13 |
| B | 0.250 | 0.270 | 6.35 | 6.85 |
| C | 0.145 | 0.175 | 3.69 | 4.44 |
| D | 0.015 | 0.020 | 0.38 | 0.51 |
| E | 0.050 BSC | | 1.27 BSC | |
| F | 0.040 | 0.060 | 1.02 | 1.52 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.007 | 0.012 | 0.18 | 0.30 |
| K | 0.110 | 0.140 | 2.80 | 3.55 |
| L | 0.300 BSC | | 7.62 BSC | |
| M | 0° | 15° | 0° | 15° |
| N | 0.020 | 0.040 | 0.51 | 1.01 |

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