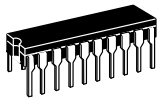
# Quad Bus Driver/Receiver with Transmit and Receiver Latches

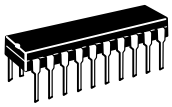
# MC10H334

The MC10H334 is a Quad Bus Driver/Receiver with transmit and receiver latches. When disabled, (OE = high) the bus outputs will fall to –2.0 V. Data to be transmitted or received is passed through its respective latch when the respective latch enable (DLE and RLE) is at a low level. Information is latched on the positive transition of DLE and RLE. The parameters specified are with 25 Ω loading on the bus drivers and 50 Ω loads on the receivers.

- Propagation Delay, 1.6 ns Typical Data–to–Output
- Improved Noise Margin 150 mV (Over Operating Voltage and Temperature Range)
- Voltage Compensated
- MECL 10K–Compatible



**L SUFFIX**
CERAMIC PACKAGE
CASE 732–03



**P SUFFIX**
PLASTIC PACKAGE
CASE 738–03

**FN SUFFIX**
PLCC
CASE 775–02

**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<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<br>°C |

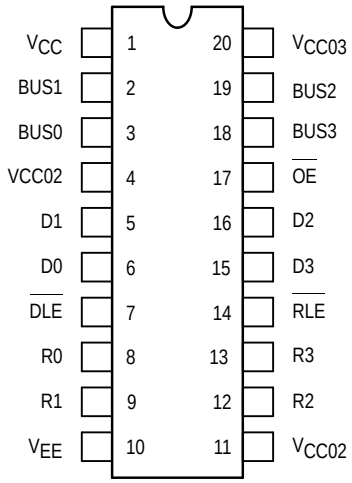
**ELECTRICAL CHARACTERISTICS** ($V_{EE}$ = –5.2 V ±5%) (See Note)

| | | 0° | | 25° | | 75° | | |
|---|---|---|---|---|---|---|---|---|
| Characteristic | Symbol | Min | Max | Min | Max | Min | Max | Unit |
| Power Supply Current | $I_E$ | — | 161 | — | 161 | — | 161 | mA |
| Input Current High<br>Pins 5,6,15,16<br>Pins 7,14<br>Pin 17 | $I_{inH}$ | <br>—<br>—<br>— | <br>397<br>460<br>520 | <br>—<br>—<br>— | <br>273<br>297<br>357 | <br>—<br>—<br>— | <br>273<br>297<br>357 | 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**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Propagation Delay<br>Data–to–Bus Output<br>DLE–to–Bus Output<br>OE–to–Bus Output<br>Bus–to–R0<br>RLE–to–R0<br>Data–to–Receiver R0 | $t_{pd}$ | <br>0.5<br>1.0<br>0.5<br>0.5<br>0.5<br>1.0 | <br>2.5<br>2.7<br>2.5<br>1.9<br>2.1<br>3.8 | <br>0.5<br>1.0<br>0.5<br>0.5<br>0.5<br>1.0 | <br>2.5<br>2.7<br>2.5<br>1.9<br>2.1<br>3.8 | <br>0.5<br>1.0<br>0.5<br>0.5<br>0.5<br>1.0 | <br>2.5<br>2.7<br>2.5<br>1.9<br>2.1<br>3.8 | ns |
| Rise Time | $t_r$ | 0.5 | 2.2 | 0.5 | 2.2 | 0.5 | 2.2 | ns |
| Fall Time | $t_f$ | 0.5 | 2.2 | 0.5 | 2.2 | 0.5 | 2.2 | ns |

**DIP & PLCC 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).

**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. Receiver outputs are terminated through a 50–ohm resistor to –2.0 volts dc. Bus outputs are terminated through a 25–ohm resistor to –2.0 volts dc.

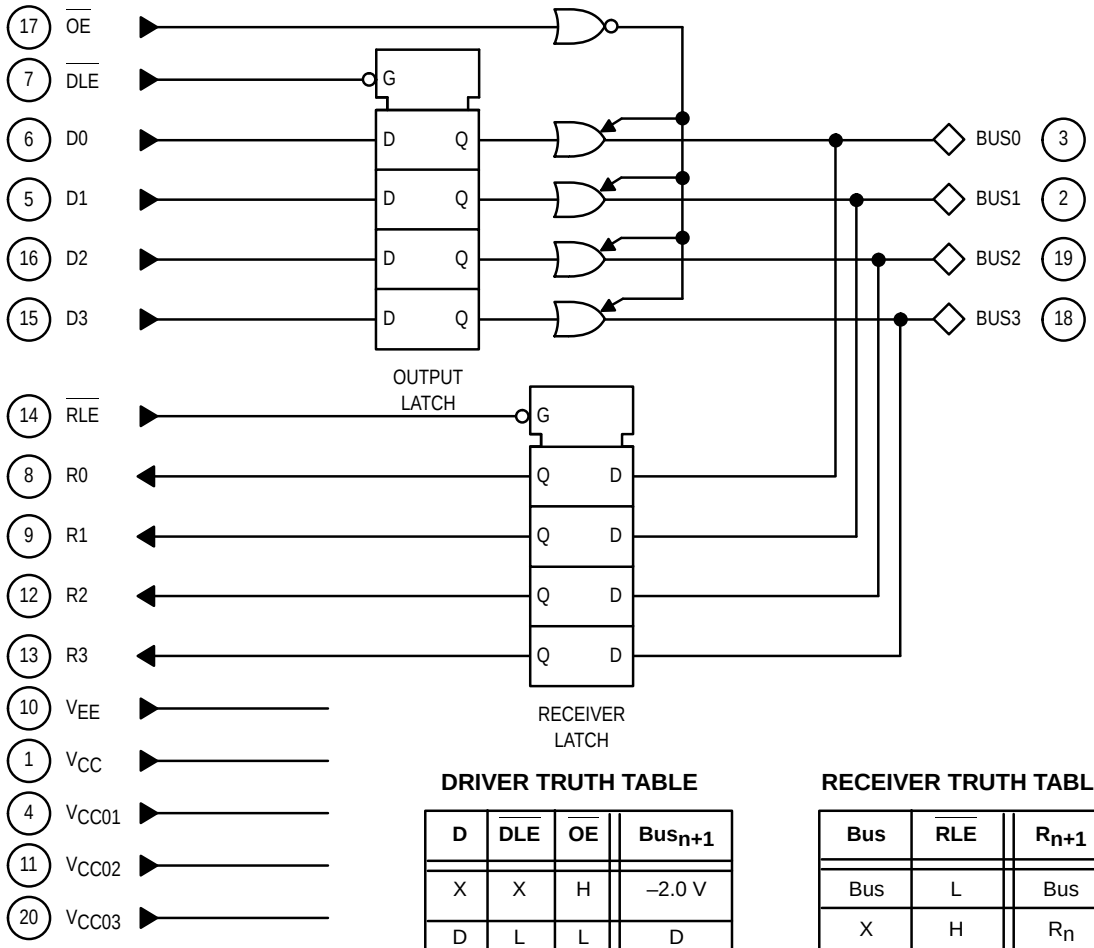






MOTOROLA

**LOGIC DIAGRAM**




**DRIVER TRUTH TABLE**

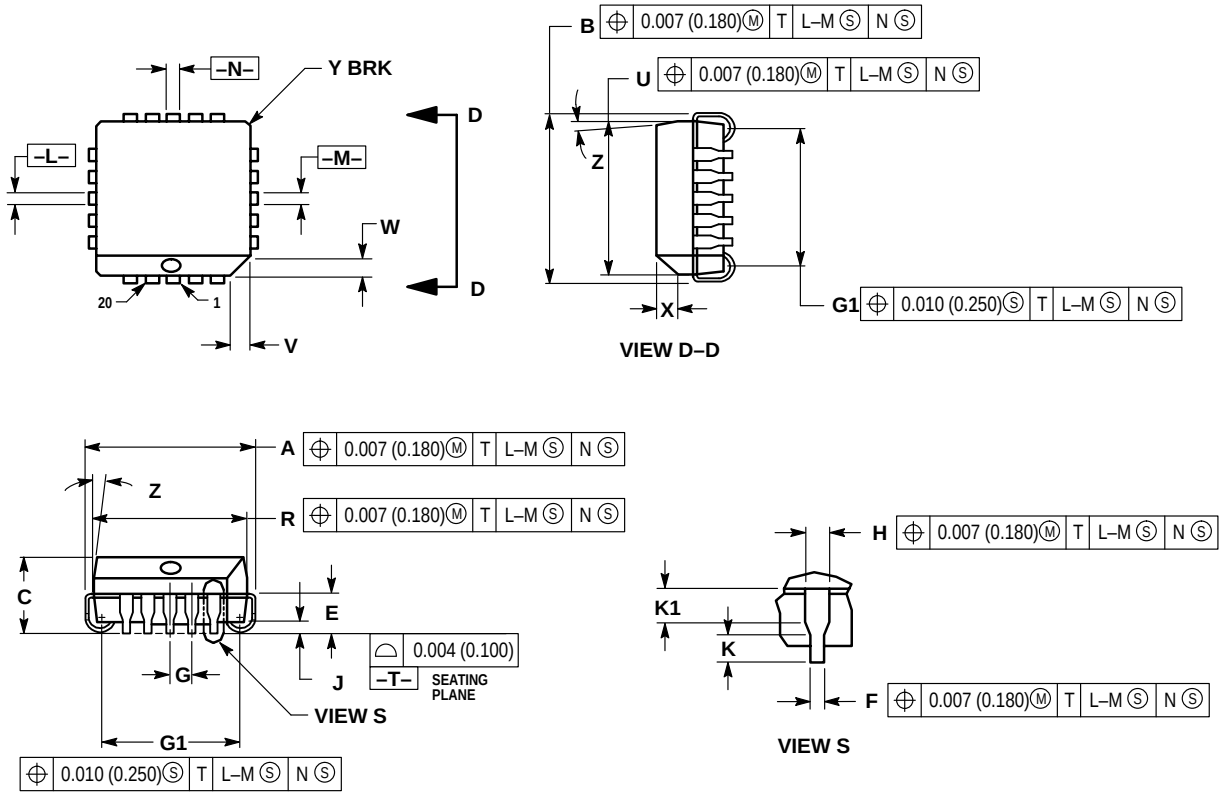
| D | $\overline{DLE}$ | $\overline{OE}$ | $Bus_{n+1}$ |
|---|---|---|---|
| X | X | H | –2.0 V |
| D | L | L | D |
| X | H | L | $Bus_n$ |

**RECEIVER TRUTH TABLE**

| Bus | $\overline{RLE}$ | $R_{n+1}$ |
|---|---|---|
| Bus | L | Bus |
| X | H | $R_n$ |

## OUTLINE DIMENSIONS

**FN SUFFIX**
PLASTIC PLCC PACKAGE
CASE 775–02
ISSUE C

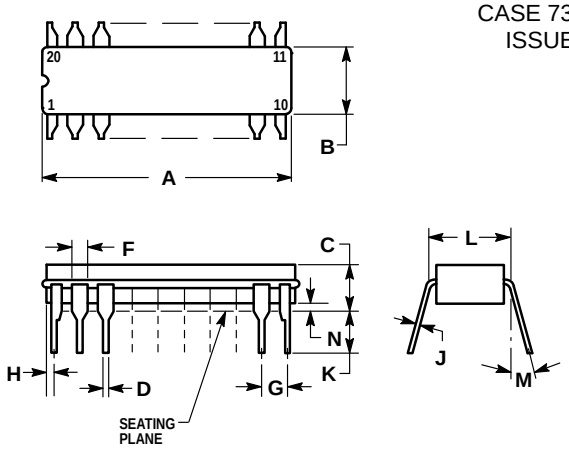



NOTES:
1. DATUMS –L–, –M–, AND –N– DETERMINED WHERE TOP OF LEAD SHOULDER EXITS PLASTIC BODY AT MOLD PARTING LINE.
2. DIMENSION G1, TRUE POSITION TO BE MEASURED AT DATUM –T–, SEATING PLANE.
3. DIMENSIONS R AND U DO NOT INCLUDE MOLD FLASH. ALLOWABLE MOLD FLASH IS 0.010 (0.250) PER SIDE.
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
5. CONTROLLING DIMENSION: INCH.
6. 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.
7. 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).

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | 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

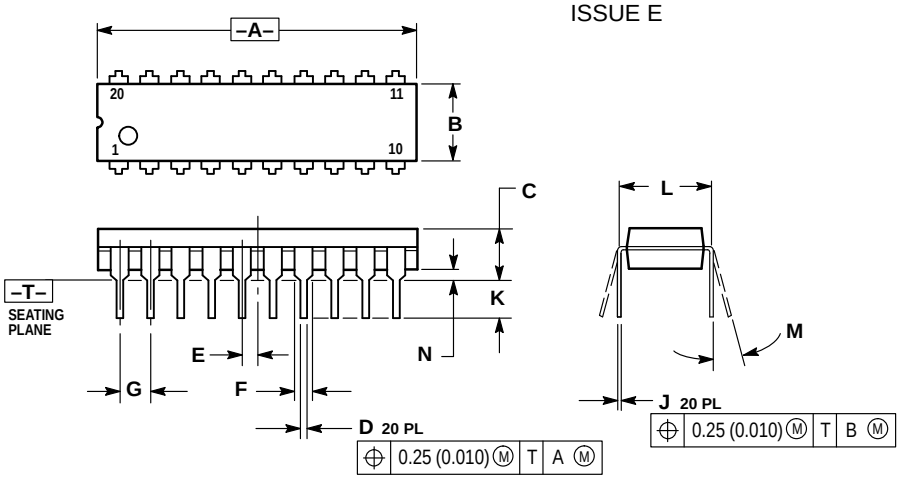
**L SUFFIX**
CERAMIC DIP PACKAGE
CASE 732–03
ISSUE E




NOTES:
1. LEADS WITHIN 0.010 DIAMETER, TRUE POSITION AT SEATING PLANE, AT MAXIMUM MATERIAL CONDITION.
2. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
3. DIMENSIONS A AND B INCLUDE MENISCUS.

| | INCHES | |
|---|---|---|
| DIM | MIN | MAX |
| A | 0.940 | 0.990 |
| B | 0.260 | 0.295 |
| C | 0.150 | 0.200 |
| D | 0.015 | 0.022 |
| F | 0.055 | 0.065 |
| G | 0.100 BSC | |
| H | 0.020 | 0.050 |
| J | 0.008 | 0.012 |
| K | 0.125 | 0.160 |
| L | 0.300 BSC | |
| M | 0° | 15° |
| N | 0.010 | 0.040 |

**P SUFFIX**
PLASTIC DIP PACKAGE
CASE 738–03
ISSUE E




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 B DOES NOT INCLUDE MOLD FLASH.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 1.010 | 1.070 | 25.66 | 27.17 |
| B | 0.240 | 0.260 | 6.10 | 6.60 |
| C | 0.150 | 0.180 | 3.81 | 4.57 |
| D | 0.015 | 0.022 | 0.39 | 0.55 |
| E | 0.050 BSC | | 1.27 BSC | |
| F | 0.050 | 0.070 | 1.27 | 1.77 |
| G | 0.100 BSC | | 2.54 BSC | |
| J | 0.008 | 0.015 | 0.21 | 0.38 |
| 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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