

# MC10EP11, MC100EP11

## 3.3V / 5V ECL 1:2 Differential Fanout Buffer

The MC10/100EP11 is a differential 1:2 fanout buffer. The device is pin and functionally equivalent to the LVEL11 device. With AC performance much faster than the LVEL11 device, the EP11 is ideal for applications requiring the fastest AC performance available.

The 100 Series contains temperature compensation.

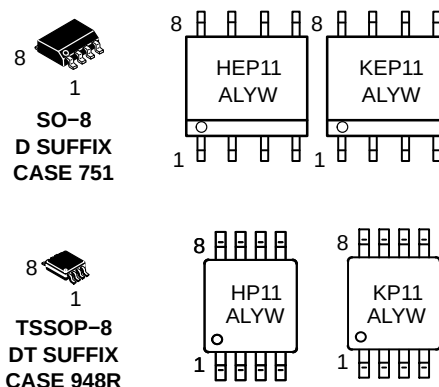
- 220 ps Typical Propagation Delay
- Maximum Clock Frequency > 3 GHz Typical
- PECL Mode Operating Range:  $V_{CC} = 3.0\text{ V}$  to  $5.5\text{ V}$  with  $V_{EE} = 0\text{ V}$
- NECL Mode Operating Range:  $V_{CC} = 0\text{ V}$  with  $V_{EE} = -3.0\text{ V}$  to  $-5.5\text{ V}$
- Open Input Default State
- Safety Clamp on Inputs
- Q Outputs Will Default LOW with Inputs Open or at  $V_{EE}$



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### MARKING DIAGRAMS\*



H = MC10                      L = Wafer Lot  
K = MC100                    Y = Year  
A = Assembly Location      W = Work Week

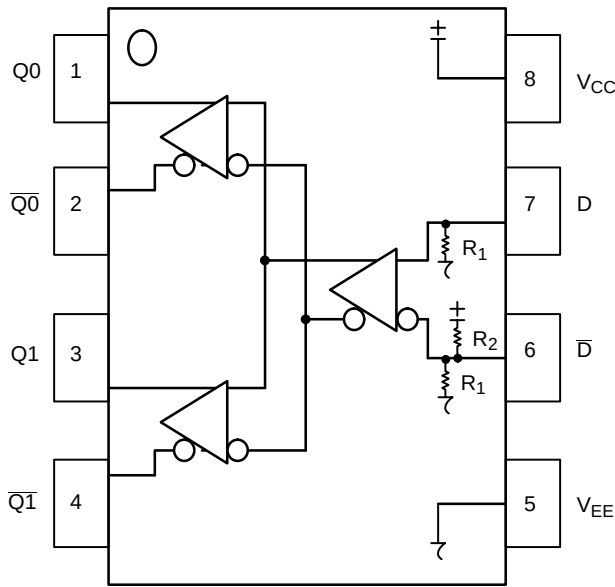
\*For additional information, see Application Note  
AND8002/D

### ORDERING INFORMATION

| Device        | Package | Shipping <sup>†</sup> |
|---------------|---------|-----------------------|
| MC10EP11D     | SO-8    | 98 Units/Rail         |
| MC10EP11DR2   | SO-8    | 2500 Tape & Reel      |
| MC100EP11D    | SO-8    | 98 Units/Rail         |
| MC100EP11DR2  | SO-8    | 2500 Tape & Reel      |
| MC10EP11DT    | TSSOP-8 | 100 Units/Rail        |
| MC10EP11DTR2  | TSSOP-8 | 2500 Tape & Reel      |
| MC100EP11DT   | TSSOP-8 | 100 Units/Rail        |
| MC100EP11DTR2 | TSSOP-8 | 2500 Tape & Reel      |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# MC10EP11, MC100EP11



## PIN DESCRIPTION

| PIN                              | FUNCTION         |
|----------------------------------|------------------|
| D*, $\bar{D}$ **                 | ECL Data Inputs  |
| Q0, $\bar{Q}$ 0, Q1, $\bar{Q}$ 1 | ECL Data Outputs |
| V <sub>CC</sub>                  | Positive Supply  |
| V <sub>EE</sub>                  | Negative Supply  |

\* Pins will default LOW when left open.

\*\* Pins will default to high when left open.

Figure 1. 8-Lead Pinout (Top View) and Logic Diagram

## ATTRIBUTES

| Characteristics                                               | Value                                                     |
|---------------------------------------------------------------|-----------------------------------------------------------|
| Internal Input Pulldown Resistor                              | R <sub>1</sub> 75 kΩ                                      |
| Internal Input Pullup Resistor                                | R <sub>2</sub> 37.5 kΩ                                    |
| ESD Protection                                                | Human Body Model<br>Machine Model<br>Charged Device Model |
| Moisture Sensitivity, Indefinite Time Out of Drypack (Note 1) | Level 1                                                   |
| Flammability Rating                                           | Oxygen Index: 28 to 34                                    |
| Transistor Count                                              | 73                                                        |
| Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test        |                                                           |

1. For additional information, see Application Note AND8003/D.

## MAXIMUM RATINGS (Note 2)

| Symbol           | Parameter                                | Condition 1           | Condition 2                      | Rating      | Unit |
|------------------|------------------------------------------|-----------------------|----------------------------------|-------------|------|
| V <sub>CC</sub>  | PECL Mode Power Supply                   | V <sub>EE</sub> = 0 V |                                  | 6           | V    |
| V <sub>EE</sub>  | NECL Mode Power Supply                   | V <sub>CC</sub> = 0 V |                                  | -6          | V    |
| V <sub>I</sub>   | PECL Mode Input Voltage                  | V <sub>EE</sub> = 0 V | V <sub>I</sub> ≤ V <sub>CC</sub> | 6           | V    |
|                  | NECL Mode Input Voltage                  | V <sub>CC</sub> = 0 V | V <sub>I</sub> ≥ V <sub>EE</sub> | -6          | V    |
| I <sub>out</sub> | Output Current                           | Continuous            |                                  | 50          | mA   |
|                  |                                          | Surge                 |                                  | 100         | mA   |
| T <sub>A</sub>   | Operating Temperature Range              |                       |                                  | -40 to +85  | °C   |
| T <sub>stg</sub> | Storage Temperature Range                |                       |                                  | -65 to +150 | °C   |
| θ <sub>JA</sub>  | Thermal Resistance (Junction-to-Ambient) | 0 LFPM                | 8 SOIC                           | 190         | °C/W |
|                  |                                          | 500 LFPM              | 8 SOIC                           | 130         | °C/W |
| θ <sub>JC</sub>  | Thermal Resistance (Junction-to-Case)    | std bd                | 8 SOIC                           | 41 to 44    | °C/W |
| θ <sub>JA</sub>  | Thermal Resistance (Junction-to-Ambient) | 0 LFPM                | 8 TSSOP                          | 185         | °C/W |
|                  |                                          | 500 LFPM              | 8 TSSOP                          | 140         | °C/W |
| θ <sub>JC</sub>  | Thermal Resistance (Junction-to-Case)    | std bd                | 8 TSSOP                          | 41 to 44    | °C/W |
| T <sub>sol</sub> | Wave Solder                              | < 2 to 3 sec @ 248°C  |                                  | 265         | °C   |

2. Maximum Ratings are those values beyond which device damage may occur.

# MC10EP11, MC100EP11

## 10EP DC CHARACTERISTICS, PECL $V_{CC} = 3.3\text{ V}$ , $V_{EE} = 0\text{ V}$ (Note 3)

| Symbol      | Characteristic                                                             | -40°C                           |      |      | 25°C        |      |      | 85°C        |      |      | Unit          |
|-------------|----------------------------------------------------------------------------|---------------------------------|------|------|-------------|------|------|-------------|------|------|---------------|
|             |                                                                            | Min                             | Typ  | Max  | Min         | Typ  | Max  | Min         | Typ  | Max  |               |
| $I_{EE}$    | Negative Power Supply Current                                              | 20                              | 29   | 37   | 20          | 30   | 39   | 22          | 31   | 40   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 4)                                               | 2165                            | 2290 | 2415 | 2230        | 2355 | 2480 | 2290        | 2415 | 2540 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 4)                                                | 1365                            | 1490 | 1615 | 1430        | 1555 | 1680 | 1490        | 1615 | 1740 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                          | 2090                            |      | 2415 | 2155        |      | 2480 | 2215        |      | 2540 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                           | 1365                            |      | 1690 | 1430        |      | 1755 | 1490        |      | 1815 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 5) | 2.0                             |      | 3.3  | 2.0         |      | 3.3  | 2.0         |      | 3.3  | V             |
| $I_{IH}$    | Input HIGH Current                                                         |                                 |      | 150  |             |      | 150  |             |      | 150  | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                          | $\frac{D}{\bar{D}}$ 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfpm is maintained.

3. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.3 V to -2.2 V.

4. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

5.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

## 10EP DC CHARACTERISTICS, PECL $V_{CC} = 5.0\text{ V}$ , $V_{EE} = 0\text{ V}$ (Note 6)

| Symbol      | Characteristic                                                             | -40°C                           |      |      | 25°C        |      |      | 85°C        |      |      | Unit          |
|-------------|----------------------------------------------------------------------------|---------------------------------|------|------|-------------|------|------|-------------|------|------|---------------|
|             |                                                                            | Min                             | Typ  | Max  | Min         | Typ  | Max  | Min         | Typ  | Max  |               |
| $I_{EE}$    | Negative Power Supply Current                                              | 20                              | 29   | 37   | 20          | 30   | 39   | 22          | 31   | 40   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 7)                                               | 3865                            | 3990 | 4115 | 3930        | 4055 | 4180 | 3990        | 4115 | 4240 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 7)                                                | 3065                            | 3190 | 3315 | 3130        | 3255 | 3380 | 3190        | 3315 | 3440 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                          | 3790                            |      | 4115 | 3855        |      | 4180 | 3915        |      | 4240 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                           | 3065                            |      | 3390 | 3130        |      | 3455 | 3190        |      | 3515 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 8) | 2.0                             |      | 5.0  | 2.0         |      | 5.0  | 2.0         |      | 5.0  | V             |
| $I_{IH}$    | Input HIGH Current                                                         |                                 |      | 150  |             |      | 150  |             |      | 150  | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                          | $\frac{D}{\bar{D}}$ 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfpm is maintained.

6. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +2.0 V to -0.5 V.

7. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

8.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

## 10EP DC CHARACTERISTICS, NECL $V_{CC} = 0\text{ V}$ ; $V_{EE} = -5.5\text{ V}$ to $-3.0\text{ V}$ (Note 9)

| Symbol      | Characteristic                                                              | -40°C                           |       |       | 25°C         |       |       | 85°C         |       |       | Unit          |
|-------------|-----------------------------------------------------------------------------|---------------------------------|-------|-------|--------------|-------|-------|--------------|-------|-------|---------------|
|             |                                                                             | Min                             | Typ   | Max   | Min          | Typ   | Max   | Min          | Typ   | Max   |               |
| $I_{EE}$    | Negative Power Supply Current                                               | 20                              | 29    | 37    | 20           | 30    | 39    | 22           | 31    | 40    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 10)                                               | -1135                           | -1010 | -885  | -1070        | -945  | -820  | -1010        | -885  | -760  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 10)                                                | -1935                           | -1810 | -1685 | -1870        | -1745 | -1620 | -1810        | -1685 | -1560 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                           | -1210                           |       | -885  | -1145        |       | -820  | -1085        |       | -760  | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                            | -1935                           |       | -1610 | -1870        |       | -1545 | -1810        |       | -1485 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 11) | $V_{EE}+2.0$                    |       | 0.0   | $V_{EE}+2.0$ |       | 0.0   | $V_{EE}+2.0$ |       | 0.0   | V             |
| $I_{IH}$    | Input HIGH Current                                                          |                                 |       | 150   |              |       | 150   |              |       | 150   | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                           | $\frac{D}{\bar{D}}$ 0.5<br>-150 |       |       | 0.5<br>-150  |       |       | 0.5<br>-150  |       |       | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfpm is maintained.

9. Input and output parameters vary 1:1 with  $V_{CC}$ .

10. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

11.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

# MC10EP11, MC100EP11

## 100EP DC CHARACTERISTICS, PECL $V_{CC} = 3.3\text{ V}$ , $V_{EE} = 0\text{ V}$ (Note 12)

| Symbol      | Characteristic                                                              | -40°C  |             |      | 25°C        |      |      | 85°C        |      |      | Unit          |
|-------------|-----------------------------------------------------------------------------|--------|-------------|------|-------------|------|------|-------------|------|------|---------------|
|             |                                                                             | Min    | Typ         | Max  | Min         | Typ  | Max  | Min         | Typ  | Max  |               |
| $I_{EE}$    | Negative Power Supply Current                                               | 26     | 35          | 44   | 26          | 35   | 44   | 26          | 35   | 46   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 13)                                               | 2155   | 2280        | 2405 | 2155        | 2280 | 2405 | 2155        | 2280 | 2405 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 13)                                                | 1355   | 1480        | 1605 | 1355        | 1480 | 1605 | 1355        | 1480 | 1605 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                           | 2075   |             | 2420 | 2075        |      | 2420 | 2075        |      | 2420 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                            | 1355   |             | 1675 | 1355        |      | 1675 | 1355        |      | 1675 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 14) | 2.0    |             | 3.3  | 2.0         |      | 3.3  | 2.0         |      | 3.3  | V             |
| $I_{IH}$    | Input HIGH Current                                                          |        |             | 150  |             |      | 150  |             |      | 150  | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                           | D<br>D | 0.5<br>-150 |      | 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established.

The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfm is maintained.

12. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.3 V to -2.2 V.

13. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

14.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

## 100EP DC CHARACTERISTICS, PECL $V_{CC} = 5.0\text{ V}$ , $V_{EE} = 0\text{ V}$ (Note 15)

| Symbol      | Characteristic                                                              | -40°C  |             |      | 25°C        |      |      | 85°C        |      |      | Unit          |
|-------------|-----------------------------------------------------------------------------|--------|-------------|------|-------------|------|------|-------------|------|------|---------------|
|             |                                                                             | Min    | Typ         | Max  | Min         | Typ  | Max  | Min         | Typ  | Max  |               |
| $I_{EE}$    | Negative Power Supply Current                                               | 26     | 35          | 44   | 26          | 35   | 44   | 26          | 35   | 46   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 16)                                               | 3855   | 3980        | 4105 | 3855        | 3980 | 4105 | 3855        | 3980 | 4105 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 16)                                                | 3055   | 3180        | 3305 | 3055        | 3180 | 3305 | 3055        | 3180 | 3305 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                           | 3775   |             | 4120 | 3775        |      | 4120 | 3775        |      | 4120 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                            | 3055   |             | 3375 | 3055        |      | 3375 | 3055        |      | 3375 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 17) | 2.0    |             | 5.0  | 2.0         |      | 5.0  | 2.0         |      | 5.0  | V             |
| $I_{IH}$    | Input HIGH Current                                                          |        |             | 150  |             |      | 150  |             |      | 150  | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                           | D<br>D | 0.5<br>-150 |      | 0.5<br>-150 |      |      | 0.5<br>-150 |      |      | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established.

The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfm is maintained.

15. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +2.0 V to -0.5 V.

16. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

17.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

## 100EP DC CHARACTERISTICS, NECL $V_{CC} = 0\text{ V}$ ; $V_{EE} = -5.5\text{ V}$ to $-3.0\text{ V}$ (Note 18)

| Symbol      | Characteristic                                                              | -40°C        |             |       | 25°C         |       |       | 85°C         |       |       | Unit          |
|-------------|-----------------------------------------------------------------------------|--------------|-------------|-------|--------------|-------|-------|--------------|-------|-------|---------------|
|             |                                                                             | Min          | Typ         | Max   | Min          | Typ   | Max   | Min          | Typ   | Max   |               |
| $I_{EE}$    | Negative Power Supply Current                                               | 26           | 35          | 44    | 26           | 35    | 44    | 26           | 35    | 46    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 19)                                               | -1145        | -1020       | -895  | -1145        | -1020 | -895  | -1145        | -1020 | -895  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 19)                                                | -1945        | -1820       | -1695 | -1945        | -1820 | -1695 | -1945        | -1820 | -1695 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                           | -1225        |             | -880  | -1225        |       | -880  | -1225        |       | -880  | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                            | -1945        |             | -1625 | -1945        |       | -1625 | -1945        |       | -1625 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 19) | $V_{EE}+2.0$ |             | 0.0   | $V_{EE}+2.0$ |       | 0.0   | $V_{EE}+2.0$ |       | 0.0   | V             |
| $I_{IH}$    | Input HIGH Current                                                          |              |             | 150   |              |       | 150   |              |       | 150   | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                           | D<br>D       | 0.5<br>-150 |       | 0.5<br>-150  |       |       | 0.5<br>-150  |       |       | $\mu\text{A}$ |

NOTE: EP circuits are designed to meet the DC specifications shown in the above table after thermal equilibrium has been established.

The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500 lfm is maintained.

18. Input and output parameters vary 1:1 with  $V_{CC}$ .

19. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .

20.  $V_{IHCMR}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMR}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMR}$  range is referenced to the most positive side of the differential input signal.

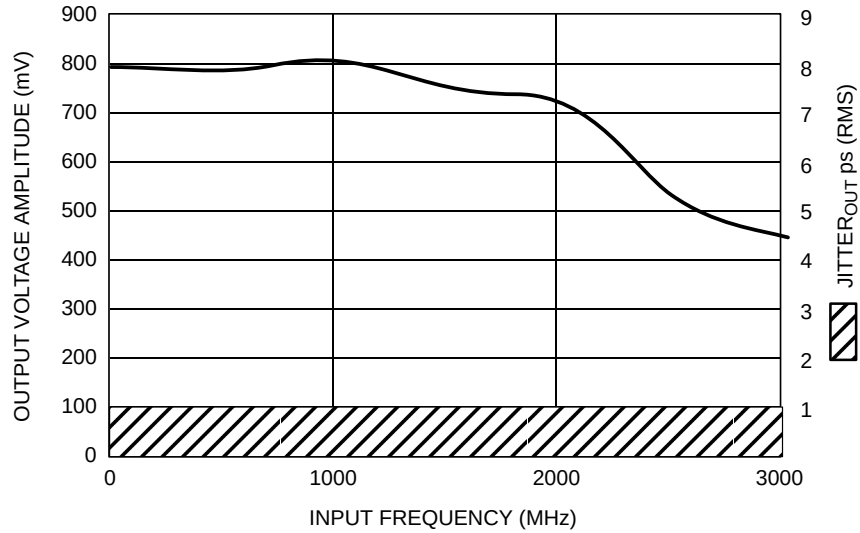
# MC10EP11, MC100EP11

**AC CHARACTERISTICS**  $V_{CC} = 0\text{ V}$ ;  $V_{EE} = -3.0\text{ V}$  to  $-5.5\text{ V}$  or  $V_{CC} = 3.0\text{ V}$  to  $5.5\text{ V}$ ;  $V_{EE} = 0\text{ V}$  (Note 21)

| Symbol                   | Characteristic                                                     | -40°C |     |           | 25°C |     |           | 85°C |     |           | Unit |
|--------------------------|--------------------------------------------------------------------|-------|-----|-----------|------|-----|-----------|------|-----|-----------|------|
|                          |                                                                    | Min   | Typ | Max       | Min  | Typ | Max       | Min  | Typ | Max       |      |
| $f_{\max}$               | Maximum Frequency<br>(See Figure 2)                                |       | > 3 |           |      | > 3 |           |      | > 3 |           | GHz  |
| $t_{PLH}$ ,<br>$t_{PHL}$ | Propagation Delay to<br>Output Differential<br>CLK to Q, $\bar{Q}$ | 140   | 200 | 250       | 160  | 220 | 270       | 180  | 240 | 300       | ps   |
| $t_{SKEW}$               | Within Device Skew Q0, Q1 (Note 22)<br>Device-to-Device Skew       |       | 10  | 15<br>110 |      | 15  | 20<br>110 |      | 20  | 25<br>120 | ps   |
| $t_{JITTER}$             | Random Clock Jitter (RMS)<br>(See Figure 2)                        |       | 0.2 | < 1       |      | 0.2 | < 1       |      | 0.2 | < 1       | ps   |
| $V_{INPP}$               | Input Voltage Swing Sensitivity<br>(Differential Configuration)    | 150   | 800 | 1200      | 150  | 800 | 1200      | 150  | 800 | 1200      | mV   |
| $t_r$<br>$t_f$           | Output Rise/Fall Times<br>(20% – 80%) @ 1.0 GHz<br>Q, $\bar{Q}$    | 70    | 120 | 170       | 80   | 130 | 180       | 90   | 150 | 200       | ps   |

21. Measured using a 750 mV source, 50% duty cycle clock source. All loading with  $50\ \Omega$  to  $V_{CC} - 2.0\text{ V}$ .

22. Skew is measured between outputs under identical transitions. Duty cycle skew is defined only for differential operation when the delays are measured from the cross point of the inputs to the cross point of the outputs.



**Figure 2. Output Voltage Amplitude ( $V_{OUTPP}$ ) RMS Jitter vs. Input Clock Frequency at Ambient Temperature**

## MC10EP11, MC100EP11

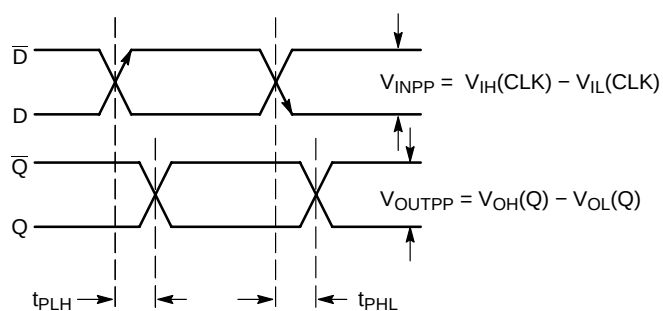


Figure 3. AC Reference Measurement

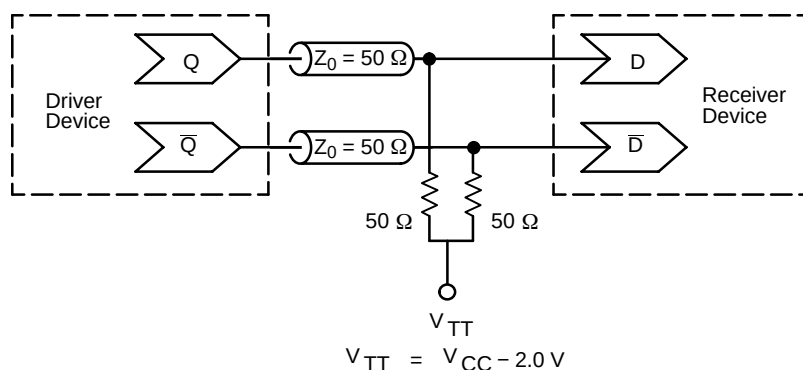


Figure 4. Typical Termination for Output Driver and Device Evaluation  
(See Application Note AND8020 – Termination of ECL Logic Devices.)

### Resource Reference of Application Notes

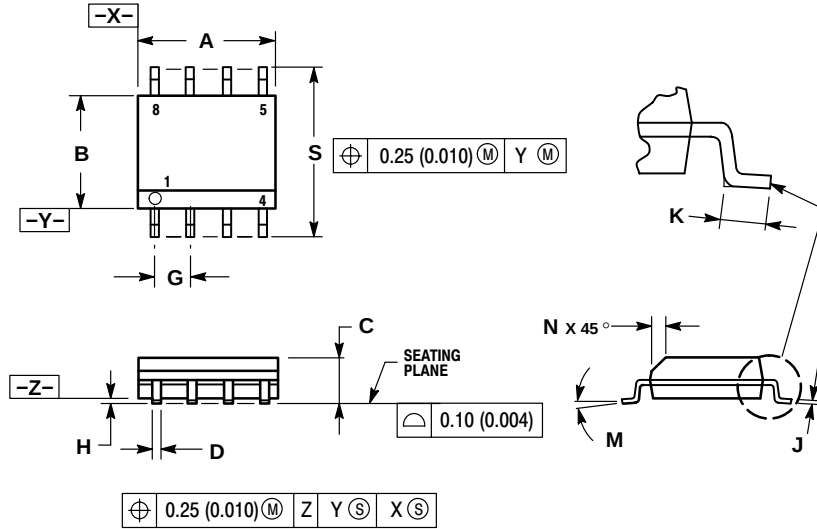
- AN1404** – ECLinPS Circuit Performance at Non-Standard  $V_{IH}$  Levels
- AN1405** – ECL Clock Distribution Techniques
- AN1406** – Designing with PECL (ECL at +5.0 V)
- AN1504** – Metastability and the ECLinPS Family
- AN1568** – Interfacing Between LVDS and ECL
- AN1650** – Using Wire-OR Ties in ECLinPS Designs
- AN1672** – The ECL Translator Guide
- AND8001** – Odd Number Counters Design
- AND8002** – Marking and Date Codes
- AND8009** – ECLinPS Plus Spice I/O Model Kit
- AND8020** – Termination of ECL Logic Devices

For an updated list of Application Notes, please see our website at <http://onsemi.com>.

# MC10EP11, MC100EP11

## PACKAGE DIMENSIONS

### SO-8 D SUFFIX PLASTIC SOIC PACKAGE CASE 751-07 ISSUE AA

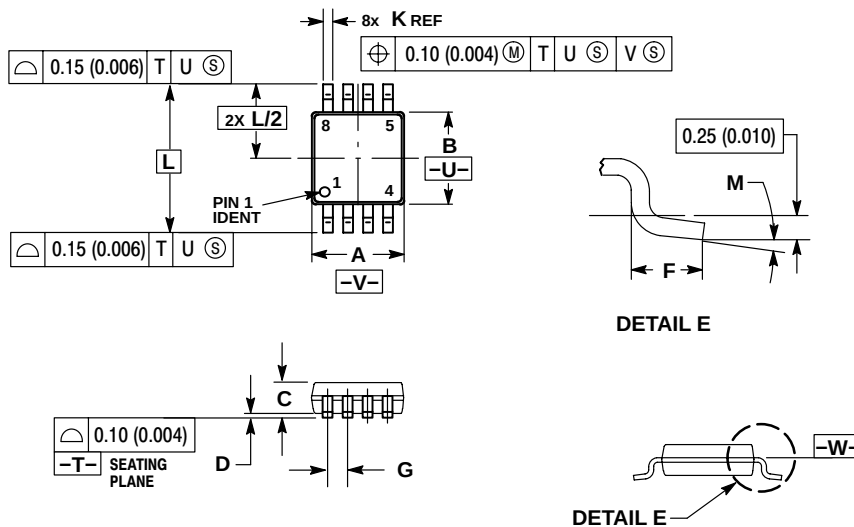


#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 4.80        | 5.00 | 0.189     | 0.197 |
| B   | 3.80        | 4.00 | 0.150     | 0.157 |
| C   | 1.35        | 1.75 | 0.053     | 0.069 |
| D   | 0.33        | 0.51 | 0.013     | 0.020 |
| G   | 1.27 BSC    |      | 0.050 BSC |       |
| H   | 0.10        | 0.25 | 0.004     | 0.010 |
| J   | 0.19        | 0.25 | 0.007     | 0.010 |
| K   | 0.40        | 1.27 | 0.016     | 0.050 |
| M   | 0°          | 8°   | 0°        | 8°    |
| N   | 0.25        | 0.50 | 0.010     | 0.020 |
| S   | 5.80        | 6.20 | 0.228     | 0.244 |

### TSSOP-8 DT SUFFIX PLASTIC TSSOP PACKAGE CASE 948R-02 ISSUE A



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.25 (0.010) PER SIDE.
5. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
6. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 2.90        | 3.10 | 0.114     | 0.122 |
| B   | 2.90        | 3.10 | 0.114     | 0.122 |
| C   | 0.80        | 1.10 | 0.031     | 0.043 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.40        | 0.70 | 0.016     | 0.028 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| K   | 0.25        | 0.40 | 0.010     | 0.016 |
| L   | 4.90 BSC    |      | 0.193 BSC |       |
| M   | 0°          | 6°   | 0°        | 6°    |

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