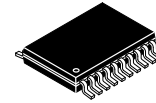


# 3.3 V/5 V ECL Quad Differential Driver/Receiver

## MC10EP17, MC100EP17



TSSOP-20  
DT SUFFIX  
CASE 948E

### Description

The MC10/100EP17 is a 4-bit differential line receiver based on the EP17 device. The > 3.0 GHz maximum frequency provided by the high frequency outputs makes the device ideal for buffering of very high speed oscillators.

The  $V_{BB}$  pin, an internally generated voltage supply, is available to this device only. For single-ended input conditions, the unused differential input is connected to  $V_{BB}$  as a switching reference voltage.  $V_{BB}$  may also rebias AC coupled inputs. When used, decouple  $V_{BB}$  and  $V_{CC}$  via a 0.01  $\mu$ F capacitor and limit current sourcing or sinking to 0.5 mA. When not used,  $V_{BB}$  should be left open.

The design incorporates two stages of gain, internal to the device, making it an excellent choice for use in high bandwidth amplifier applications.

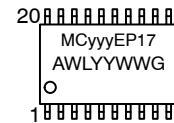
Inputs of unused gates can be left open and will not affect the operation of the rest of the device. All  $V_{CC}$  and  $V_{EE}$  pins must be externally connected to power supply to guarantee proper operation.

The 100 Series contains temperature compensation.

### Features

- 220 ps Typical Propagation Delay
- Maximum Frequency > 3.0 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 Output Will Default LOW with Inputs Open or at  $V_{EE}$
- $V_{BB}$  Output
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

### MARKING DIAGRAM\*



- yyy = 10 or 100
- A = Assembly Location
- WL = Wafer Lot
- YY = Year
- WW = Work Week
- G = Pb-Free Package

(Note: Microdot may be in either location)

\*For additional marking information, refer to Application Note [AND8002/D](#).

### ORDERING INFORMATION

| Device       | Package               | Shipping        |
|--------------|-----------------------|-----------------|
| MC100EP17DTG | TSSOP-20 WB (Pb-Free) | 75 Units / Tube |

### DISCONTINUED (Note 1)

|             |                       |                 |
|-------------|-----------------------|-----------------|
| MC10EP17DTG | TSSOP-20 WB (Pb-Free) | 75 Units / Tube |
|-------------|-----------------------|-----------------|

1. **DISCONTINUED:** This device is not recommended for new design. Please contact your **onsemi** representative for information. The most current information on this device may be available on [www.onsemi.com](http://www.onsemi.com).

# MC10EP17, MC100EP17

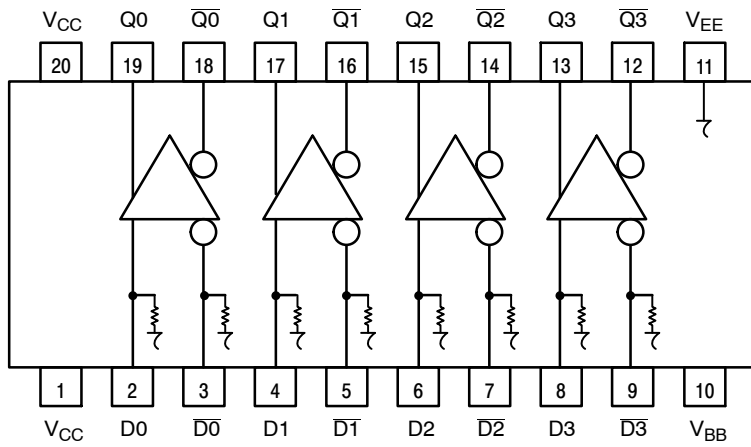


Figure 1. 20-Lead Pinout (Top View) and Logic Diagram

Table 1. PIN DESCRIPTION

| PIN                            | FUNCTION                      |
|--------------------------------|-------------------------------|
| D[0:3]*, $\overline{D}$ [0:3]* | ECL Differential Data Inputs  |
| Q[0:3], $\overline{Q}$ [0:3]   | ECL Differential Data Outputs |
| V <sub>BB</sub>                | Reference Voltage Output      |
| V <sub>CC</sub>                | Positive Supply               |
| V <sub>EE</sub>                | Negative Supply               |

\* Pins will default LOW when left open.

Table 2. ATTRIBUTES

| Characteristics   | Value                       |
|---|-----------------------------|
| Internal Input Pulldown Resistor  | 75 kΩ                       |
| Internal Input Pullup Resistor  | N/A                         |
| ESD Protection<br>Human Body Model<br>Machine Model<br>Charged Device Model | > 2 kV<br>> 100 V<br>> 2 kV |
| Moisture Sensitivity, Indefinite Time Out of Drypack (Note 1)               | Pb-Free Pkg                 |
| TSSOP-20 WB   | Level 3                     |
| Flammability Rating<br>Oxygen Index: 28 to 34                               | UL 94 V-0 @ 0.125 in        |
| Transistor Count  | 259 Devices                 |
| Meets or exceeds JEDEC Spec EIA/JESD78 IC Latchup Test                      |                             |

1. For additional information, see Application Note [AND8003/D](#).

# MC10EP17, MC100EP17

**Table 3. MAXIMUM RATINGS**

| Symbol        | Parameter  | Condition 1                                    | Condition 2                            | Rating      | Unit                        |
|---------------|--|--|--|-------------|-----------------------------|
| $V_{CC}$      | PECL Mode Power Supply                             | $V_{EE} = 0\text{ V}$                          |  | 6           | V                           |
| $V_{EE}$      | NECL Mode Power Supply                             | $V_{CC} = 0\text{ V}$                          |  | -6          | V                           |
| $V_I$         | PECL Mode Input Voltage<br>NECL Mode Input Voltage | $V_{EE} = 0\text{ V}$<br>$V_{CC} = 0\text{ V}$ | $V_I \leq V_{CC}$<br>$V_I \geq V_{EE}$ | 6<br>-6     | V                           |
| $I_{out}$     | Output Current                                     | Continuous<br>Surge                            |  | 50<br>100   | mA                          |
| $I_{BB}$      | $V_{BB}$ Sink/Source                               |  |  | $\pm 0.5$   | mA                          |
| $T_A$         | Operating Temperature Range                        |  |  | -40 to +85  | $^{\circ}\text{C}$          |
| $T_{stg}$     | Storage Temperature Range                          |  |  | -65 to +150 | $^{\circ}\text{C}$          |
| $\theta_{JA}$ | Thermal Resistance (Junction-to-Ambient)           | 0 lfpm<br>500 lfpm                             | TSSOP-20 WB                            | 140<br>100  | $^{\circ}\text{C}/\text{W}$ |
| $\theta_{JC}$ | Thermal Resistance (Junction-to-Case)              | Standard Board                                 | TSSOP-20 WB                            | 23 to 41    | $^{\circ}\text{C}/\text{W}$ |
| $T_{sol}$     | Wave Solder (Pb-Free)                              |  |  | 265         | $^{\circ}\text{C}$          |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

**Table 4. 10EP DC CHARACTERISTICS, PECL ( $V_{CC} = 3.3\text{ V}$ ,  $V_{EE} = 0\text{ V}$  (Note 1))**

| Symbol      | Characteristic   | -40 $^{\circ}\text{C}$ |      |      | 25 $^{\circ}\text{C}$ |      |      | 85 $^{\circ}\text{C}$ |      |      | Unit          |
|-------------|--|------------------------|------|------|-----------------------|------|------|-----------------------|------|------|---------------|
|             |  | Min                    | Typ  | Max  | Min                   | Typ  | Max  | Min                   | Typ  | Max  |               |
| $I_{EE}$    | Power Supply Current   | 42                     | 50   | 65   | 44                    | 52   | 66   | 46                    | 54   | 68   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | 2165                   | 2290 | 2415 | 2230                  | 2355 | 2480 | 2290                  | 2415 | 2540 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | 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)                             | 365                    |      | 1690 | 1430                  |      | 1755 | 1490                  |      | 1815 | mV            |
| $V_{BB}$    | Output Voltage Reference                                     | 1790                   | 1890 | 1990 | 1855                  | 1955 | 2055 | 1915                  | 2015 | 2115 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | 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  | 0.5                    |      |      | 0.5                   |      |      | 0.5                   |      |      | $\mu\text{A}$ |

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 lfpm.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.3 V to -2.2 V.
2. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

# MC10EP17, MC100EP17

**Table 5. 10EP DC CHARACTERISTICS, PECL** ( $V_{CC} = 5.0\text{ V}$ ,  $V_{EE} = 0\text{ V}$  (Note 1))

| Symbol      | Characteristic   | -40°C |      |      | 25°C |      |      | 85°C |      |      | Unit          |
|-------------|--|-------|------|------|------|------|------|------|------|------|---------------|
|             |  | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |               |
| $I_{EE}$    | Power Supply Current   | 42    | 50   | 65   | 44   | 52   | 66   | 46   | 54   | 68   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | 3865  | 3990 | 4115 | 3930 | 4055 | 4180 | 3990 | 4115 | 4240 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | 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            |
| $V_{BB}$    | Output Voltage Reference                                     | 3490  | 3590 | 3690 | 3555 | 3655 | 3755 | 3615 | 3715 | 3815 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | 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  | 0.5   |      |      | 0.5  |      |      | 0.5  |      |      | $\mu\text{A}$ |

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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +2.0 V to -0.5 V.
2. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

**Table 6. 10EP DC CHARACTERISTICS, NECL** ( $V_{CC} = 0\text{ V}$ ;  $V_{EE} = -5.5\text{ V}$  to  $-3.0\text{ V}$  (Note 1))

| Symbol      | Characteristic   | -40°C          |       |       | 25°C           |       |       | 85°C           |       |       | Unit          |
|-------------|--|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|---------------|
|             |  | Min            | Typ   | Max   | Min            | Typ   | Max   | Min            | Typ   | Max   |               |
| $I_{EE}$    | Power Supply Current   | 42             | 50    | 65    | 44             | 52    | 66    | 46             | 54    | 68    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | -1135          | -1010 | -885  | -1070          | -945  | -820  | -1010          | -885  | -760  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | -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            |
| $V_{BB}$    | Output Voltage Reference                                     | -1510          | -1410 | -1310 | -1445          | -1345 | -1245 | -1385          | -1285 | -1185 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | $V_{EE} + 2.0$ |       | 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  | 0.5            |       |       | 0.5            |       |       | 0.5            |       |       | $\mu\text{A}$ |

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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .
2. All loading with 50  $\Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

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**Table 7. 100EP DC CHARACTERISTICS, PECL** ( $V_{CC} = 3.3\text{ V}$ ,  $V_{EE} = 0\text{ V}$  (Note 1))

| Symbol      | Characteristic   | -40°C |      |      | 25°C |      |      | 85°C |      |      | Unit          |
|-------------|--|-------|------|------|------|------|------|------|------|------|---------------|
|             |  | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |               |
| $I_{EE}$    | Power Supply Current   | 47    | 55   | 63   | 50   | 58   | 66   | 54   | 62   | 70   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | 2155  | 2280 | 2405 | 2155 | 2280 | 2405 | 2155 | 2280 | 2405 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | 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            |
| $V_{BB}$    | Output Voltage Reference                                     | 1775  | 1875 | 1975 | 1775 | 1875 | 1975 | 1775 | 1875 | 1975 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | 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  | 0.5   |      |      | 0.5  |      |      | 0.5  |      |      | $\mu\text{A}$ |

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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.3 V to -2.2 V.
2. All loading with  $50\ \Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

**Table 8. 100EP DC CHARACTERISTICS, PECL** ( $V_{CC} = 5.0\text{ V}$ ,  $V_{EE} = 0\text{ V}$  (Note 1))

| Symbol      | Characteristic   | -40°C |      |      | 25°C |      |      | 85°C |      |      | Unit          |
|-------------|--|-------|------|------|------|------|------|------|------|------|---------------|
|             |  | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |               |
| $I_{EE}$    | Power Supply Current   | 47    | 55   | 63   | 50   | 58   | 66   | 54   | 62   | 70   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | 3855  | 3980 | 4105 | 3855 | 3980 | 4105 | 3855 | 3980 | 4105 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | 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            |
| $V_{BB}$    | Output Voltage Reference                                     | 3475  | 3575 | 3675 | 3475 | 3575 | 3675 | 3475 | 3575 | 3675 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | 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  | 0.5   |      |      | 0.5  |      |      | 0.5  |      |      | $\mu\text{A}$ |

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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +2.0 V to -0.5 V.
2. All loading with  $50\ \Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

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**Table 9. 100EP DC CHARACTERISTICS, NECL** ( $V_{CC} = 0\text{ V}$ ;  $V_{EE} = -5.5\text{ V}$  to  $-3.0\text{ V}$  (Note 1))

| Symbol      | Characteristic   | -40°C          |       |       | 25°C           |       |       | 85°C           |       |       | Unit          |
|-------------|--|----------------|-------|-------|----------------|-------|-------|----------------|-------|-------|---------------|
|             |  | Min            | Typ   | Max   | Min            | Typ   | Max   | Min            | Typ   | Max   |               |
| $I_{EE}$    | Power Supply Current   | 47             | 55    | 63    | 50             | 58    | 66    | 54             | 62    | 70    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 2)                                 | -1145          | -1020 | -895  | -1145          | -1020 | -895  | -1145          | -1020 | -895  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                  | -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            |
| $V_{BB}$    | Output Voltage Reference                                     | -1525          | -1425 | -1325 | -1525          | -1425 | -1325 | -1525          | -1425 | -1325 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential) (Note 3) | $V_{EE} + 2.0$ |       | 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  | 0.5            |       |       | 0.5            |       |       | 0.5            |       |       | $\mu\text{A}$ |

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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .
2. All loading with  $50\ \Omega$  to  $V_{CC} - 2.0\text{ V}$ .
3.  $V_{IHCMR}$  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.

**Table 10. 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 1))

| Symbol                   | Characteristic   | -40°C      |   |                                 | 25°C       |   |                                 | 85°C       |   |                                 | Unit |
|--------------------------|--|------------|---|---------------------------------|------------|---|---------------------------------|------------|---|---------------------------------|------|
|                          |  | Min        | Typ                                       | Max                             | Min        | Typ                                       | Max                             | Min        | Typ                                       | Max                             |      |
| $f_{max}$                | Maximum Frequency (Figure 2)   |            | > 3                                       |                                 |            | > 3                                       |                                 |            | > 3                                       |                                 | GHz  |
| $t_{PLH}$ ,<br>$t_{PHL}$ | Propagation Delay to Output Differential<br>10 Series<br>100 Series  | 125<br>150 | 200<br>220                                | 275<br>300                      | 150<br>180 | 220<br>250                                | 300<br>320                      | 200<br>200 | 260<br>290                                | 350<br>360                      | ps   |
| $t_{JITTER}$             | CLOCK Random Jitter (RMS)<br>@ $\leq 1.0\text{ GHz}$<br>@ $\leq 1.5\text{ GHz}$<br>@ $\leq 2.0\text{ GHz}$<br>@ $\leq 2.5\text{ GHz}$<br>@ $\leq 3.0\text{ GHz}$ |            | 0.132<br>0.143<br>0.148<br>0.129<br>0.129 | 0.2<br>0.3<br>0.3<br>0.3<br>0.3 |            | 0.147<br>0.159<br>0.146<br>0.131<br>0.142 | 0.2<br>0.3<br>0.3<br>0.3<br>0.3 |            | 0.154<br>0.156<br>0.169<br>0.147<br>0.168 | 0.3<br>0.3<br>0.3<br>0.3<br>0.3 | ps   |
| $V_{PP}$                 | Input Voltage Swing<br>(Differential Configuration)  | 150        | 800                                       | 1200                            | 150        | 800                                       | 1200                            | 150        | 800                                       | 1200                            | mV   |
| $t_r$<br>$t_f$           | Output Rise/Fall Times<br>$Q_r$ , (20% – 80%)  | 100        | 160                                       | 220                             | 100        | 170                                       | 230                             | 120        | 190                                       | 250                             | ps   |

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.

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

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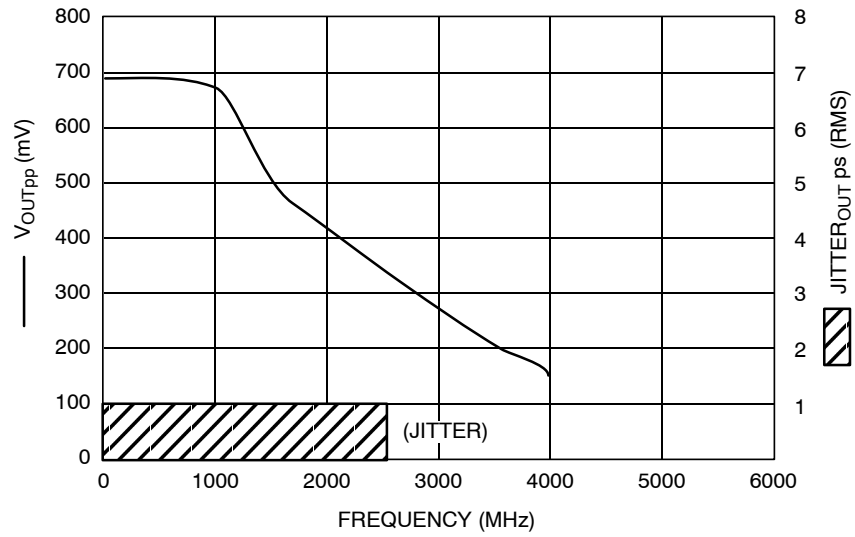


Figure 2.  $F_{max}/Jitter$

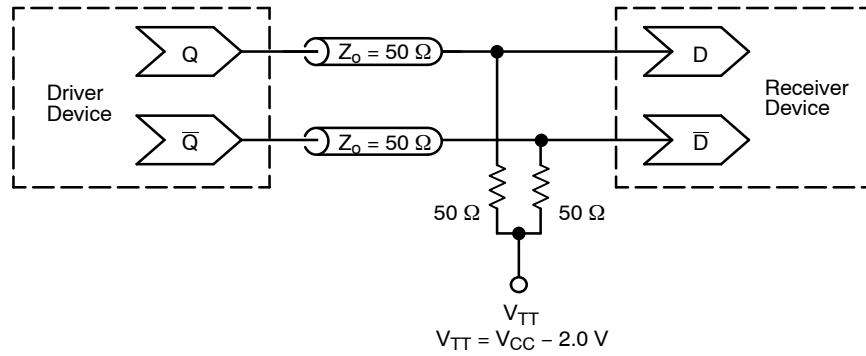


Figure 3. Typical Termination for Output Driver and Device Evaluation  
(See Application Note [AND8020/D](#) - Termination of ECL Logic Devices.)

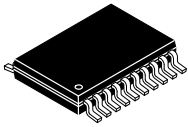
## MC10EP17, MC100EP17

### Resource Reference of Application Notes

- AN1405/D** – ECL Clock Distribution Techniques
- AN1406/D** – Designing with PECL (ECL at +5.0 V)
- AN1503/D** – ECLinPS™ I/O SPiCE Modeling Kit
- AN1504/D** – Metastability and the ECLinPS Family
- AN1568/D** – Interfacing Between LVDS and ECL
- AN1672/D** – The ECL Translator Guide
- AND8001/D** – Odd Number Counters Design
- AND8002/D** – Marking and Date Codes
- AND8020/D** – Termination of ECL Logic Devices
- AND8066/D** – Interfacing with ECLinPS
- AND8090/D** – AC Characteristics of ECL Devices

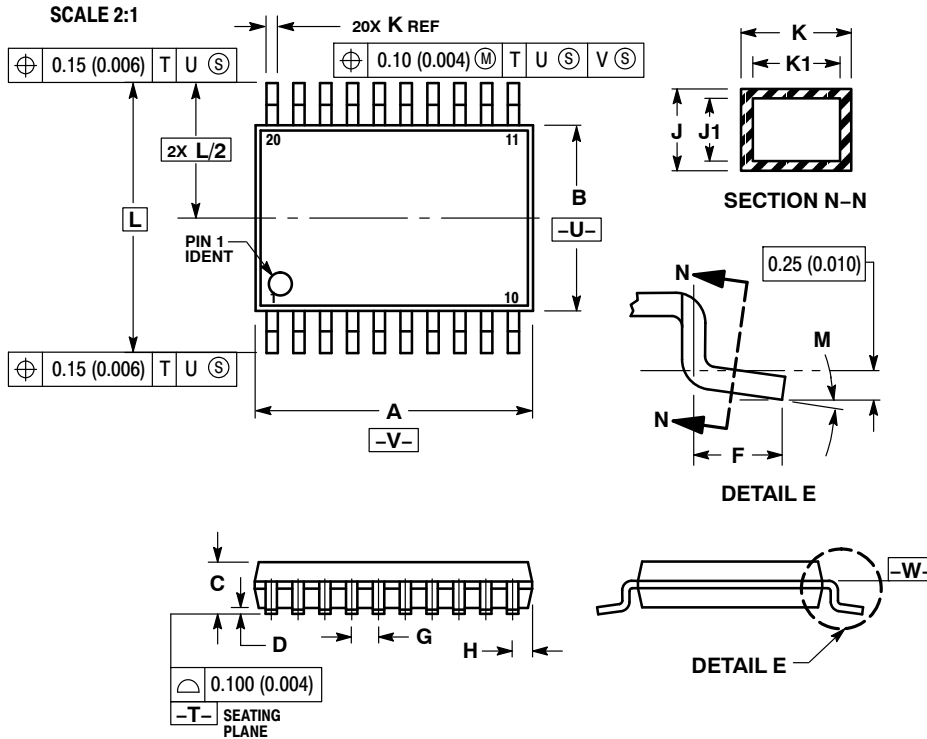
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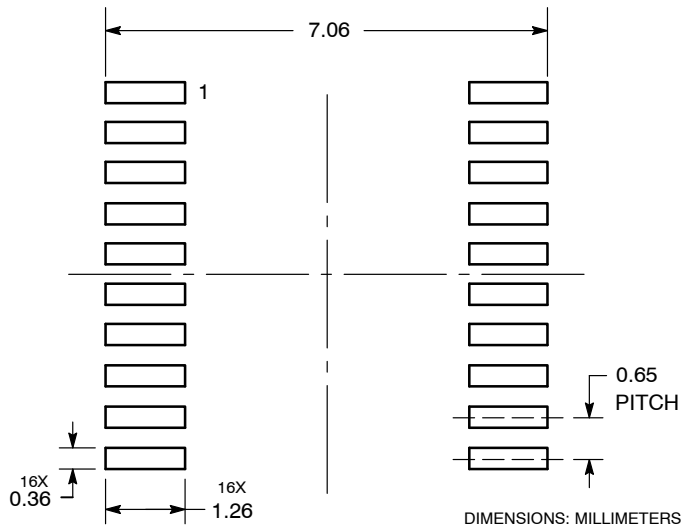


NOTES:

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. DIMENSION K DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.08 (0.003) TOTAL IN EXCESS OF THE K DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. TERMINAL NUMBERS ARE SHOWN FOR REFERENCE ONLY.
7. DIMENSION A AND B ARE TO BE DETERMINED AT DATUM PLANE -W-.

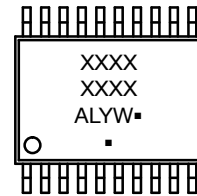
| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX   |
| A   | 6.40        | 6.60 | 0.252     | 0.260 |
| B   | 4.30        | 4.50 | 0.169     | 0.177 |
| C   | ---         | 1.20 | ---       | 0.047 |
| D   | 0.05        | 0.15 | 0.002     | 0.006 |
| F   | 0.50        | 0.75 | 0.020     | 0.030 |
| G   | 0.65 BSC    |      | 0.026 BSC |       |
| H   | 0.27        | 0.37 | 0.011     | 0.015 |
| J   | 0.09        | 0.20 | 0.004     | 0.008 |
| J1  | 0.09        | 0.16 | 0.004     | 0.006 |
| K   | 0.19        | 0.30 | 0.007     | 0.012 |
| K1  | 0.19        | 0.25 | 0.007     | 0.010 |
| L   | 6.40 BSC    |      | 0.252 BSC |       |
| M   | 0°          | 8°   | 0°        | 8°    |

RECOMMENDED  
SOLDERING FOOTPRINT\*



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

GENERIC  
MARKING DIAGRAM\*



- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

|                  |             |  |
|------------------|-------------|--|
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