

# MC10EL51, MC100EL51

## 5V ECL Differential Clock D Flip-Flop

### Description

The MC10EL/100EL51 is a differential clock D flip-flop with reset. The device is functionally similar to the E151 device with higher performance capabilities. With propagation delays and output transition times significantly faster than the E151 the EL51 is ideally suited for those applications which require the ultimate in AC performance.

The reset input is an asynchronous, level triggered signal. Data enters the master portion of the flip-flop when the clock is LOW and is transferred to the slave, and thus the outputs, upon a positive transition of the clock. The differential clock inputs of the EL51 allow the device to be used as a negative edge triggered flip-flop.

The differential input employs clamp circuitry to maintain stability under open input (pulled down to  $V_{EE}$ ) conditions.

The 100 Series contains temperature compensation.

### Features

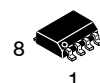
- 475 ps Propagation Delay
- 2.8 GHz Toggle Frequency
- ESD Protection: > 1 kV Human Body Model, > 100 V Machine Model
- PECL Mode Operating Range:  $V_{CC} = 4.2$  V to 5.7 V with  $V_{EE} = 0$  V
- NECL Mode Operating Range:  $V_{CC} = 0$  V with  $V_{EE} = -4.2$  V to  $-5.7$  V
- Internal Input Pulldown Resistors on D, R, and CLK
- Meets or Exceeds JEDEC Spec EIA/JESD78 IC Latchup Test
- Moisture Sensitivity Level 1  
For Additional Information, see Application Note AND8003/D
- Flammability Rating: UL 94 V-0 @ 0.125 in, Oxygen Index: 28 to 34
- Transistor Count = 73 devices
- Pb-Free Packages are Available



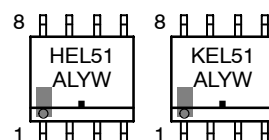
**ON Semiconductor®**

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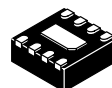
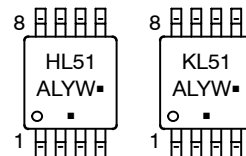
### MARKING DIAGRAMS\*



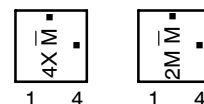
**SOIC-8  
D SUFFIX  
CASE 751**



**TSSOP-8  
DT SUFFIX  
CASE 948R**



**DFN8  
MN SUFFIX  
CASE 506AA**



|                       |                     |
|-----------------------|---------------------|
| H = MC10              | L = Wafer Lot       |
| K = MC100             | Y = Year            |
| 4X = MC10             | W = Work Week       |
| 2M = MC100            | M̄ = Date Code      |
| A = Assembly Location | ▪ = Pb-Free Package |

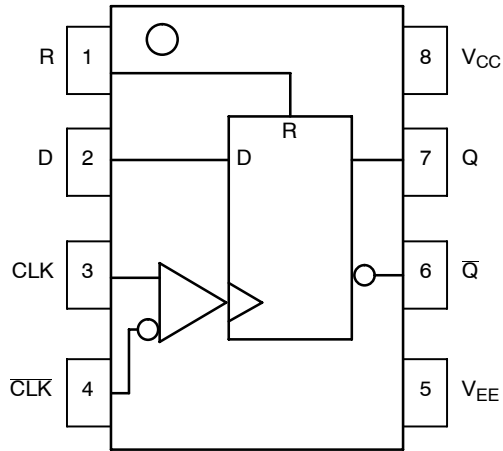
(Note: Microdot may be in either location)

\*For additional marking information, refer to Application Note AND8002/D.

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

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**Figure 1. Logic Diagram and Pinout Assignment**

**Table 1. TRUTH TABLE**

| D* | R* | CLK* | Q** |
|----|----|------|-----|
| L  | L  | Z    | L   |
| H  | L  | Z    | H   |
| X  | H  | X    | L   |

Z = LOW to HIGH Transition

\* Pin will default low when left open.

\*\*Pin will default low when inputs are left open.

**Table 2. PIN DESCRIPTION**

| PIN                          | FUNCTION                                                                                                                                |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| R                            | ECL Reset Input                                                                                                                         |
| D                            | ECL Data Input                                                                                                                          |
| CLK, $\overline{\text{CLK}}$ | ECL Clock Inputs                                                                                                                        |
| Q, $\overline{\text{Q}}$     | ECL Data Outputs                                                                                                                        |
| V <sub>CC</sub>              | Positive Supply                                                                                                                         |
| V <sub>EE</sub>              | Negative Supply                                                                                                                         |
| EP                           | Exposed pad must be connected to a sufficient thermal conduit. Electrically connect to the most negative supply or leave floating open. |

**Table 3. MAXIMUM RATINGS**

| Symbol           | Parameter                                          | Condition 1                                    | Condition 2                                                          | Rating        | Unit         |
|------------------|----------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------|---------------|--------------|
| V <sub>CC</sub>  | PECL Mode Power Supply                             | V <sub>EE</sub> = 0 V                          |                                                                      | 8             | V            |
| V <sub>EE</sub>  | NECL Mode Power Supply                             | V <sub>CC</sub> = 0 V                          |                                                                      | -8            | V            |
| V <sub>I</sub>   | PECL Mode Input Voltage<br>NECL Mode Input Voltage | V <sub>EE</sub> = 0 V<br>V <sub>CC</sub> = 0 V | V <sub>I</sub> ≤ V <sub>CC</sub><br>V <sub>I</sub> ≥ V <sub>EE</sub> | 6<br>-6       | V<br>V       |
| I <sub>out</sub> | Output Current                                     | Continuous<br>Surge                            |                                                                      | 50<br>100     | mA<br>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<br>500 lfpm                             | 8 SOIC<br>8 SOIC                                                     | 190<br>130    | °C/W<br>°C/W |
| θ <sub>JC</sub>  | Thermal Resistance (Junction-to-Case)              | Standard Board                                 | 8 SOIC                                                               | 41 to 44      | °C/W         |
| θ <sub>JA</sub>  | Thermal Resistance (Junction-to-Ambient)           | 0 lfpm<br>500 lfpm                             | 8 TSSOP<br>8 TSSOP                                                   | 185<br>140    | °C/W<br>°C/W |
| θ <sub>JC</sub>  | Thermal Resistance (Junction-to-Case)              | Standard Board                                 | 8 TSSOP                                                              | 41 to 44 ± 5% | °C/W         |
| θ <sub>JA</sub>  | Thermal Resistance (Junction-to-Ambient)           | 0 lfpm<br>500 lfpm                             | DFN8<br>DFN8                                                         | 129<br>84     | °C/W<br>°C/W |
| T <sub>sol</sub> | Wave Solder                                        | Pb<br>Pb-Free                                  | <2 to 3 sec @ 248°C<br><2 to 3 sec @ 260°C                           | 265<br>265    | °C           |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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**Table 4. 10EL SERIES PECL DC CHARACTERISTICS**  $V_{CC} = 5.0\text{ V}$ ;  $V_{EE} = 0\text{ V}$  (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                                                       |       | 24   | 29   |      | 24   | 29   |      | 24   | 29   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 5)                                               | 3920  | 4010 | 4110 | 4020 | 4105 | 4190 | 4090 | 4185 | 4280 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 2)                                                | 3050  | 3200 | 3350 | 3050 | 3210 | 3370 | 3050 | 3227 | 3405 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                          | 3770  |      | 4110 | 3870 |      | 4190 | 3940 |      | 4280 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                           | 3050  |      | 3500 | 3050 |      | 3520 | 3050 |      | 3555 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 3) | 2.5   |      | 4.6  | 2.5  |      | 4.6  | 2.5  |      | 4.6  | V             |
| $I_{IH}$    | Input HIGH Current                                                         |       |      | 150  |      |      | 150  |      |      | 150  | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                          | 0.5   |      |      | 0.5  |      |      | 0.3  |      |      | $\mu\text{A}$ |

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. 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.

1. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.25 V / -0.5 V.
2. Outputs are terminated through a 50  $\Omega$  resistor 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. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{ppmin}$  and 1 V.

**Table 5. 10EL SERIES NECL DC CHARACTERISTICS**  $V_{CC} = 0\text{ V}$ ;  $V_{EE} = -5.0\text{ V}$  (Note 4)

| Symbol      | Characteristic                                                             | -40°C |       |       | 25°C  |       |       | 85°C  |       |       | Unit          |
|-------------|----------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
|             |                                                                            | Min   | Typ   | Max   | Min   | Typ   | Max   | Min   | Typ   | Max   |               |
| $I_{EE}$    | Power Supply Current                                                       |       | 24    | 29    |       | 24    | 29    |       | 24    | 29    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 5)                                               | -1080 | -990  | -890  | -980  | -895  | -810  | -910  | -815  | -720  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 5)                                                | -1950 | -1800 | -1650 | -1950 | -1790 | -1630 | -1950 | -1773 | -1595 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                          | -1230 |       | -890  | -1130 |       | -810  | -1060 |       | -720  | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                           | -1950 |       | -1500 | -1950 |       | -1480 | -1950 |       | -1445 | mV            |
| $V_{IHCMR}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 6) | -2.5  |       | -0.4  | -2.5  |       | -0.4  | -2.5  |       | -0.4  | V             |
| $I_{IH}$    | Input HIGH Current                                                         |       |       | 150   |       |       | 150   |       |       | 150   | $\mu\text{A}$ |
| $I_{IL}$    | Input LOW Current                                                          | 0.5   |       |       | 0.5   |       |       | 0.3   |       |       | $\mu\text{A}$ |

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. 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.

4. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.25 V / -0.5 V.
5. Outputs are terminated through a 50  $\Omega$  resistor to  $V_{CC} - 2.0\text{ V}$ .
6.  $V_{IHCMR}$  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. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{ppmin}$  and 1 V.

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**Table 6. 100EL SERIES PECL DC CHARACTERISTICS**  $V_{CC} = 5.0\text{ V}$ ;  $V_{EE} = 0\text{ V}$  (Note 7)

| Symbol      | Characteristic                                                             | -40°C |      |      | 25°C |      |      | 85°C |      |      | Unit          |
|-------------|----------------------------------------------------------------------------|-------|------|------|------|------|------|------|------|------|---------------|
|             |                                                                            | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |               |
| $I_{EE}$    | Power Supply Current                                                       |       | 24   | 29   |      | 24   | 29   |      | 30   | 36   | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 8)                                               | 3915  | 3995 | 4120 | 3975 | 4045 | 4120 | 3975 | 4050 | 4120 | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 8)                                                | 3170  | 3305 | 3445 | 3190 | 3295 | 3380 | 3190 | 3295 | 3380 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                          | 3835  |      | 4120 | 3835 |      | 4120 | 3835 |      | 4120 | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                           | 3190  |      | 3525 | 3190 |      | 3525 | 3190 |      | 3525 | mV            |
| $V_{IHCMP}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 9) | 2.5   |      | 4.6  | 2.5  |      | 4.6  | 2.5  |      | 4.6  | 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. 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.

7. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.8 V / -0.5 V.

8. Outputs are terminated through a 50  $\Omega$  resistor to  $V_{CC} - 2.0\text{ V}$ .

9.  $V_{IHCMP}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMP}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMP}$  range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{ppmin}$  and 1 V.

**Table 7. 100EL SERIES NECL DC CHARACTERISTICS**  $V_{CC} = 0\text{ V}$ ;  $V_{EE} = -5.0\text{ V}$  (Note 10)

| Symbol      | Characteristic                                                              | -40°C |       |       | 25°C  |       |       | 85°C  |       |       | Unit          |
|-------------|-----------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
|             |                                                                             | Min   | Typ   | Max   | Min   | Typ   | Max   | Min   | Typ   | Max   |               |
| $I_{EE}$    | Power Supply Current                                                        |       | 24    | 29    |       | 24    | 29    |       | 30    | 36    | mA            |
| $V_{OH}$    | Output HIGH Voltage (Note 11)                                               | -1085 | -1005 | -880  | -1025 | -955  | -880  | -1025 | -955  | -880  | mV            |
| $V_{OL}$    | Output LOW Voltage (Note 11)                                                | -1830 | -1695 | -1555 | -1810 | -1705 | -1620 | -1810 | -1705 | -1620 | mV            |
| $V_{IH}$    | Input HIGH Voltage (Single-Ended)                                           | -1165 |       | -880  | -1165 |       | -880  | -1165 |       | -880  | mV            |
| $V_{IL}$    | Input LOW Voltage (Single-Ended)                                            | -1810 |       | -1475 | -1810 |       | -1475 | -1810 |       | -1475 | mV            |
| $V_{IHCMP}$ | Input HIGH Voltage Common Mode Range (Differential Configuration) (Note 12) | -2.5  |       | -0.4  | -2.5  |       | -0.4  | -2.5  |       | -0.4  | 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. 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.

10. Input and output parameters vary 1:1 with  $V_{CC}$ .  $V_{EE}$  can vary +0.8 V / -0.5 V.

11. Outputs are terminated through a 50  $\Omega$  resistor to  $V_{CC} - 2.0\text{ V}$ .

12.  $V_{IHCMP}$  min varies 1:1 with  $V_{EE}$ ,  $V_{IHCMP}$  max varies 1:1 with  $V_{CC}$ . The  $V_{IHCMP}$  range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between  $V_{ppmin}$  and 1 V.

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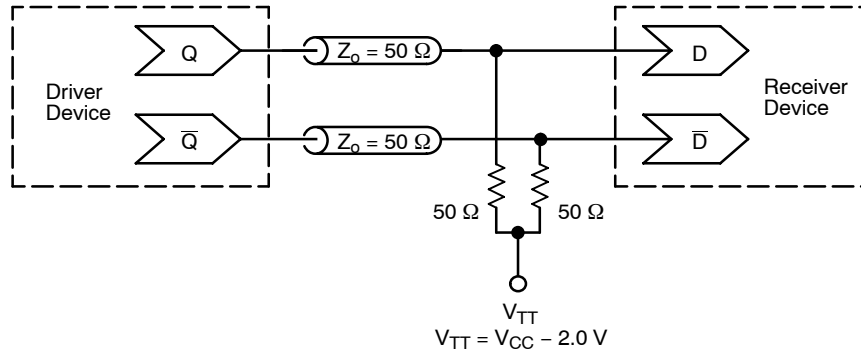
**Table 8. AC CHARACTERISTICS**  $V_{CC}= 5.0\text{ V}$ ;  $V_{EE}= 0.0\text{ V}$  or  $V_{CC}= 0.0\text{ V}$ ;  $V_{EE}= -5.0\text{ V}$  (Note 13)

| Symbol                 | Characteristic                             | -40°C      |            |            | 25°C       |            |            | 85°C       |            |            | Unit |
|------------------------|--------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
|                        |                                            | Min        | Typ        | Max        | Min        | Typ        | Max        | Min        | Typ        | Max        |      |
| $f_{\max}$             | Maximum Toggle Frequency                   | 1.8        | 2.8        |            | 2.2        | 2.8        |            | 2.2        | 2.8        |            | GHz  |
| $t_{PLH}$<br>$t_{PHL}$ | Propagation Delay<br>to Output<br>CLK<br>R | 325<br>305 | 465<br>455 | 605<br>605 | 385<br>355 | 475<br>465 | 565<br>565 | 440<br>410 | 530<br>510 | 620<br>620 | ps   |
| $t_S$                  | Setup Time                                 | 150        | 0          |            | 150        | 0          |            | 150        | 0          |            | ps   |
| $t_H$                  | Hold Time                                  | 250        | 100        |            | 250        | 100        |            | 250        | 100        |            | ps   |
| $t_{RR}$               | Reset Recovery                             | 400        | 200        |            | 400        | 200        |            | 400        | 200        |            | ps   |
| $t_{PW}$               | Minimum Pulse Width<br>CLK, Reset          | 400        |            |            | 400        |            |            | 400        |            |            | ps   |
| $V_{PP}$               | Input Swing (Note 14)                      | 150        |            | 1000       | 150        |            | 1000       | 150        |            | 1000       | mV   |
| $t_{JITTER}$           | Cycle-to-Cycle Jitter                      |            | TBD        |            |            | TBD        |            |            | TBD        |            | ps   |
| $t_r$<br>$t_f$         | Output Rise/Fall Times Q<br>(20% – 80%)    | 100        | 225        | 350        | 100        | 225        | 350        | 100        | 225        | 350        | ps   |

13. 10 Series:  $V_{EE}$  can vary +0.25 V / -0.5 V.

100 Series:  $V_{EE}$  can vary +0.8 V / -0.5 V.

14.  $V_{PP(min)}$  is minimum input swing for which AC parameters guaranteed. The device has a DC gain of  $\approx 40$ .



**Figure 2. Typical Termination for Output Driver and Device Evaluation**  
(See Application Note AND8020/D – Termination of ECL Logic Devices.)

# MC10EL51, MC100EL51

## ORDERING INFORMATION

| Device         | Package              | Shipping <sup>†</sup> |
|----------------|----------------------|-----------------------|
| MC10EL51D      | SOIC-8               | 98 Units / Rail       |
| MC10EL51DG     | SOIC-8<br>(Pb-Free)  | 98 Units / Rail       |
| MC10EL51DR2    | SOIC-8               | 2500 / Tape & Reel    |
| MC10EL51DR2G   | SOIC-8<br>(Pb-Free)  | 2500 / Tape & Reel    |
| MC10EL51DT     | TSSOP-8              | 100 Units / Rail      |
| MC10EL51DTG    | TSSOP-8<br>(Pb-Free) | 100 Units / Rail      |
| MC10EL51DTR2   | TSSOP-8              | 2500 / Tape & Reel    |
| MC10EL51DTR2G  | TSSOP-8<br>(Pb-Free) | 2500 / Tape & Reel    |
| MC10EL51MNR4   | DFN8                 | 1000 / Tape & Reel    |
| MC10EL51MNR4G  | DFN8<br>(Pb-Free)    | 1000 / Tape & Reel    |
| MC100EL51D     | SOIC-8               | 98 Units / Rail       |
| MC100EL51DG    | SOIC-8<br>(Pb-Free)  | 98 Units / Rail       |
| MC100EL51DR2   | SOIC-8               | 2500 / Tape & Reel    |
| MC100EL51DR2G  | SOIC-8<br>(Pb-Free)  | 2500 / Tape & Reel    |
| MC100EL51DT    | TSSOP-8              | 100 Units / Rail      |
| MC100EL51DTG   | TSSOP-8<br>(Pb-Free) | 100 Units / Rail      |
| MC100EL51DTR2  | TSSOP-8              | 2500 / Tape & Reel    |
| MC100EL51DTR2G | TSSOP-8<br>(Pb-Free) | 2500 / Tape & Reel    |
| MC100EL51MNR4  | DFN8                 | 1000 / Tape & Reel    |
| MC100EL51MNR4G | DFN8<br>(Pb-Free)    | 1000 / 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.

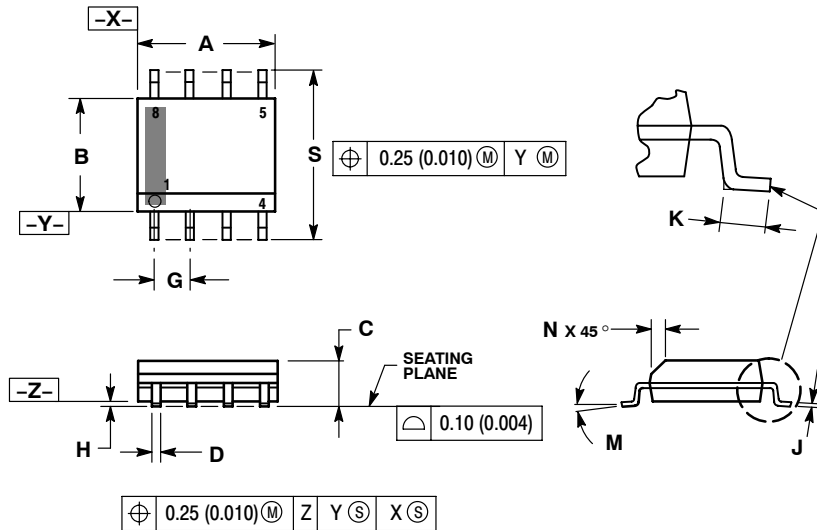
## Resource Reference of Application Notes

- 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

# MC10EL51, MC100EL51

## PACKAGE DIMENSIONS

SOIC-8 NB  
CASE 751-07  
ISSUE AH

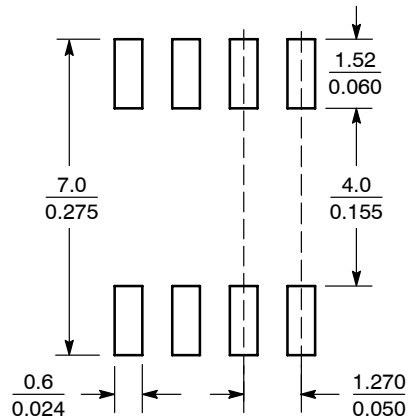


### NOTES:

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 |

### SOLDERING FOOTPRINT\*



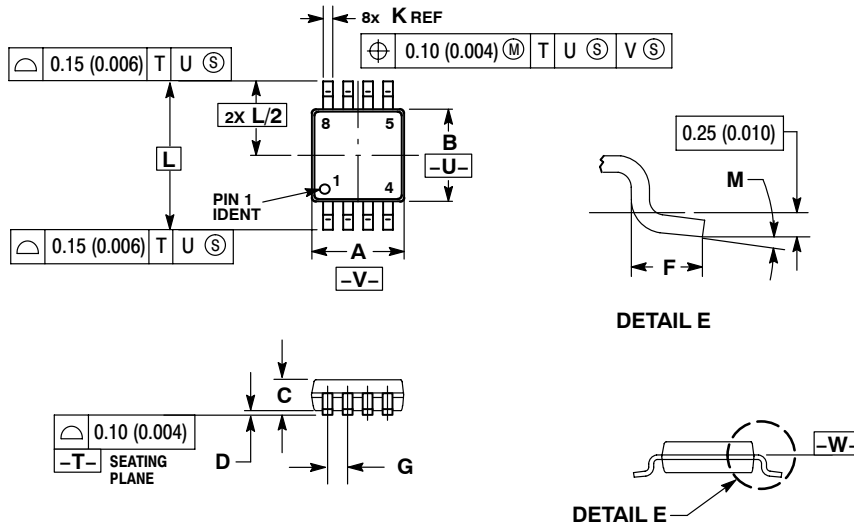
SCALE 6:1  $\left( \frac{\text{mm}}{\text{inches}} \right)$

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

# MC10EL51, MC100EL51

## PACKAGE DIMENSIONS

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



### NOTES:

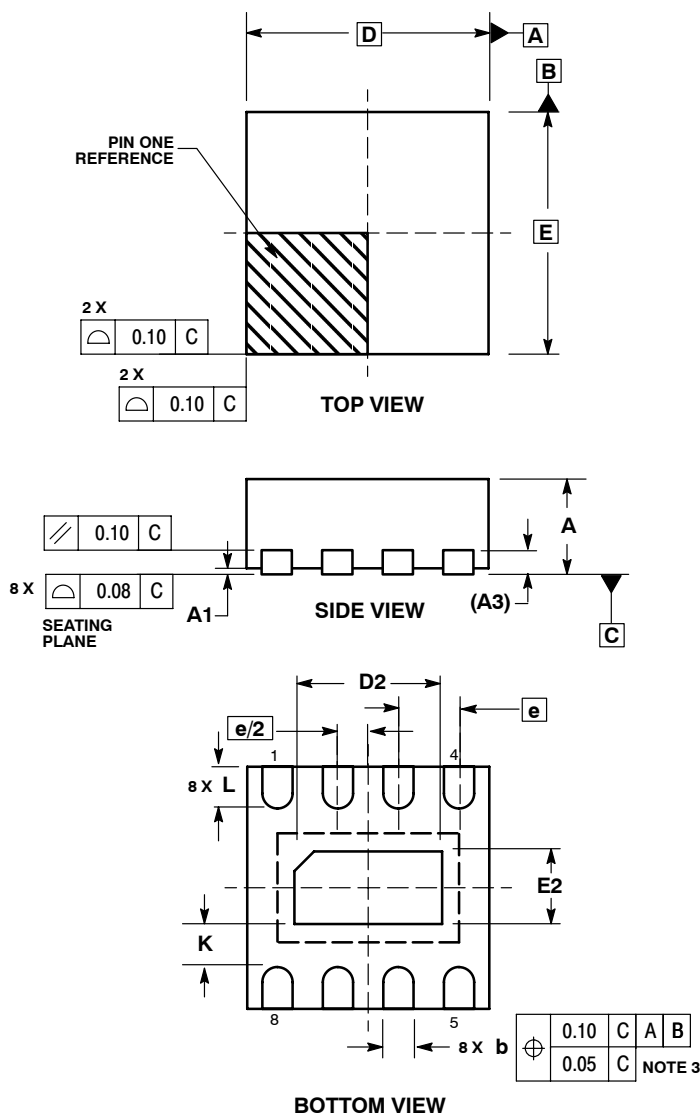
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH. PROTRUSIONS OR GATE BURRS. MOLD FLASH OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.
4. DIMENSION B DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD 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°    |

# MC10EL51, MC100EL51

## PACKAGE DIMENSIONS

DFN8  
CASE 506AA-01  
ISSUE D



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994 .
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 MM FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 0.80        | 1.00 |
| A1  | 0.00        | 0.05 |
| A3  | 0.20 REF    |      |
| b   | 0.20        | 0.30 |
| D   | 2.00 BSC    |      |
| D2  | 1.10        | 1.30 |
| E   | 2.00 BSC    |      |
| E2  | 0.70        | 0.90 |
| e   | 0.50 BSC    |      |
| K   | 0.20        | ---  |
| L   | 0.25        | 0.35 |

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