

# MC10ELT25, MC100ELT25

## Differential ECL to TTL Translator

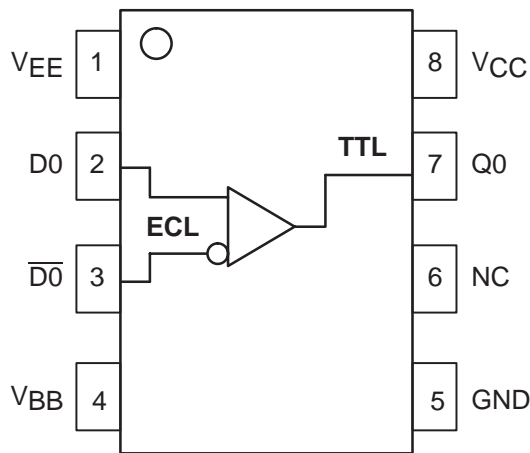
The MC10ELT/100ELT25 is a differential ECL to TTL translator. Because ECL levels are used a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where space, performance and low power are at a premium. Because the mature MOSAIC 1.5 process is used, low cost can be added to the list of features.

The  $V_{BB}$  output allows the ELT25 to also be used in a single-ended input mode. In this mode the  $V_{BB}$  output is tied to the  $\overline{IN}$  input for a non-inverting buffer or the IN input for an inverting buffer. If used the  $V_{BB}$  pin should be bypassed to ground via a 0.01 $\mu$ F capacitor.

The ELT25 is available in both ECL standards: the 10ELT is compatible with MECL 10H logic levels while the 100ELT is compatible with ECL 100K logic levels. For further information regarding modeling, refer to AN1596/D "ECLinPS Lite Translator ELT Family SPICE I/O Model Kit".

- 2.6ns Typical Propagation Delay
- Internal Input Resistors: Pulldown on D, Pulldown and Pullup on  $\overline{D}$
- Q Output will default LOW with inputs open or at  $V_{EE}$
- Differential ECL Inputs
- Small Outline SOIC Package
- 24mA TTL Outputs
- Flow Through Pinouts
- Moisture Sensitivity Level 1, Indefinite Time Out of Drypack.  
For Additional Information, See Application Note AND8003/D
- Flammability Rating: UL-94 code V-0 @ 1/8",  
Oxygen Index 28 to 34
- Transistor Count: 135 devices

### LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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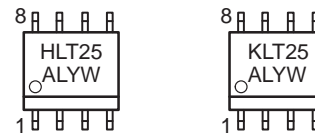
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**SO-8  
D SUFFIX  
CASE 751**

### MARKING DIAGRAM



H = MC10  
K = MC100  
A = Assembly Location

L = Wafer Lot  
Y = Year  
W = Work Week

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

### PIN DESCRIPTION

| PIN      | FUNCTION         |
|----------|------------------|
| D        | Diff ECL Inputs  |
| Q        | TTL Output       |
| $V_{CC}$ | Positive Supply  |
| $V_{EE}$ | Negative Supply  |
| $V_{BB}$ | Reference Output |
| GND      | Ground           |

### ORDERING INFORMATION

| Device        | Package | Shipping          |
|---------------|---------|-------------------|
| MC10ELT25D    | SO-8    | 98 Units / Rail   |
| MC10ELT25DR2  | SO-8    | 2500 Units / Reel |
| MC100ELT25D   | SO-8    | 98 Units / Rail   |
| MC100ELT25DR2 | SO-8    | 2500 Units / Reel |

# MC10ELT25, MC100ELT25

## MAXIMUM RATINGS\*

| Symbol           | Parameter   | Value                | Unit |
|------------------|---|----------------------|------|
| V <sub>CC</sub>  | DC Supply Voltage (Referenced to GND, V <sub>EE</sub> = -5.2)     | 7.0                  | V    |
| V <sub>EE</sub>  | DC Supply Voltage (Referenced to GND, V <sub>CC</sub> = 5.0)      | -8.0                 | V    |
| V <sub>IN</sub>  | Input Voltage   | 0 to V <sub>CC</sub> | V    |
| I <sub>OUT</sub> | Current Applied to Output in Low Output State<br>Continuous Surge | 50<br>100            | mA   |
| T <sub>A</sub>   | Operating Temperature Range (In Free-Air)                         | -40 to 85            | °C   |
| T <sub>STG</sub> | Storage Temperature Range   | -55 to +150          | °C   |
| θ <sub>JA</sub>  | Thermal Resistance (Junction-to-Ambient)<br>Still Air<br>500lfpm  | 190<br>130           | °C/W |
| θ <sub>JC</sub>  | Thermal Resistance (Junction-to-Case)                             | 41 to 44 ± 5%        | °C/W |
| T <sub>sol</sub> | Solder Temperature (<2 to 3 Seconds: 245°C desired)               | 265                  | °C   |

\* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

## TTL OUTPUT DC CHARACTERISTICS

(V<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T<sub>A</sub> = -40°C to 85°C)

| Symbol           | Characteristic               | Min  | Typ | Max | Unit | Condition                |
|------------------|------------------------------|------|-----|-----|------|--------------------------|
| V <sub>OH</sub>  | Output HIGH Voltage          | 2.4  |     |     | V    | I <sub>OH</sub> = -3.0mA |
| V <sub>OL</sub>  | Output LOW Voltage           |      |     | 0.5 | V    | I <sub>OL</sub> = 24mA   |
| I <sub>CCH</sub> | Power Supply Current         |      | 11  | 16  | mA   |                          |
| I <sub>CCL</sub> | Power Supply Current         |      | 13  | 18  | mA   |                          |
| I <sub>EE</sub>  | Power Supply Current         |      | 15  | 21  | mA   |                          |
| I <sub>OS</sub>  | Output Short Circuit Current | -150 |     | -60 | mA   |                          |

## ECL INPUT DC CHARACTERISTICS

(V<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T<sub>A</sub> = -40°C to 85°C)

| Symbol           | Characteristic                          | -40°C                 |                 | 0°C                   |                 | 25°C                  |                |                 | 85°C                  |                 | Unit           |    |
|------------------|---|-----------------------|-----------------|-----------------------|-----------------|-----------------------|----------------|-----------------|-----------------------|-----------------|----------------|----|
|                  |   | Min                   | Max             | Min                   | Max             | Min                   | Typ            | Max             | Min                   | Max             |                |    |
| I <sub>IH</sub>  | Input HIGH Current                      |                       | 150             |                       | 150             |                       |                | 150             |                       | 150             | μA             |    |
| I <sub>IL</sub>  | Input LOW Current                       | 0.5                   |                 | 0.5                   |                 | 0.5                   |                |                 | 0.5                   |                 | μA             |    |
| V <sub>CMR</sub> | Common Mode Range                       | V <sub>EE</sub> + 2.2 | V <sub>CC</sub> | V <sub>EE</sub> + 2.2 | V <sub>CC</sub> | V <sub>EE</sub> + 2.2 |                | V <sub>CC</sub> | V <sub>EE</sub> + 2.2 | V <sub>CC</sub> | V              |    |
| V <sub>PP</sub>  | Minimum Peak-to-Peak Input <sup>1</sup> | 200                   |                 | 200                   |                 | 200                   |                |                 | 200                   |                 | mV             |    |
| V <sub>IH</sub>  | Input HIGH Voltage                      | 10ELT<br>100ELT       | -1230<br>-1165  | -890<br>-880          | -1170<br>-1165  | -840<br>-880          | -1130<br>-1165 |                 | -810<br>-880          | -1060<br>-1165  | -720<br>-880   | mV |
| V <sub>IL</sub>  | Input LOW Voltage                       | 10ELT<br>100ELT       | -1950<br>-1810  | -1500<br>-1475        | -1950<br>-1810  | -1480<br>-1475        | -1950<br>-1810 |                 | -1480<br>-1475        | -1950<br>-1810  | -1445<br>-1475 | mV |
| V <sub>BB</sub>  | Reference Output                        | 10ELT<br>100ELT       | -1.43<br>-1.38  | -1.30<br>-1.26        | -1.38<br>-1.38  | -1.27<br>-1.26        | -1.35<br>-1.38 |                 | -1.25<br>-1.26        | -1.31<br>-1.38  | -1.19<br>-1.26 | V  |

1. 200mV input guarantees full logic swing at the output.

## AC CHARACTERISTICS

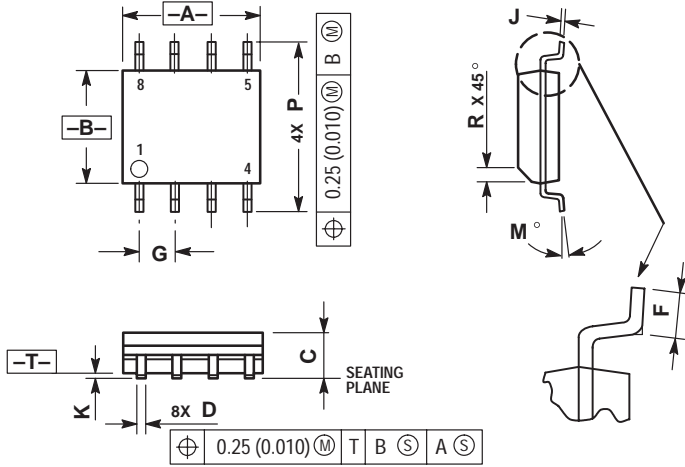
(V<sub>CC</sub> = 4.5V to 5.5V; V<sub>EE</sub> = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T<sub>A</sub> = -40°C to 85°C)

| Symbol           | Characteristic    | -40°C |     | 0°C |     | 25°C |     |     | 85°C |     | Unit | Condition             |
|------------------|-------------------|-------|-----|-----|-----|------|-----|-----|------|-----|------|-----------------------|
|                  |                   | Min   | Max | Min | Max | Min  | Typ | Max | Min  | Max |      |                       |
| t <sub>PLH</sub> | Propagation Delay | 1.7   | 3.6 | 1.7 | 3.6 | 1.7  |     | 3.6 | 1.7  | 3.6 | ns   | C <sub>L</sub> = 20pF |
| t <sub>PHL</sub> | Propagation Delay | 2.6   | 4.1 | 2.6 | 4.1 | 2.6  |     | 4.1 | 2.6  | 4.1 | ns   | C <sub>L</sub> = 20pF |

# MC10ELT25, MC100ELT25

## PACKAGE DIMENSIONS

SO-8  
D SUFFIX  
CASE 751-05  
ISSUE P



NOTES:

1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
3. DIMENSIONS ARE IN MILLIMETER.
4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | 4.80        | 5.00 |
| B   | 3.80        | 4.00 |
| C   | 1.35        | 1.75 |
| D   | 0.35        | 0.49 |
| F   | 0.40        | 1.25 |
| G   | 1.27 BSC    |      |
| J   | 0.18        | 0.25 |
| K   | 0.10        | 0.25 |
| M   | 0°          | 7°   |
| P   | 5.80        | 6.20 |
| R   | 0.25        | 0.50 |

# MC10ELT25, MC100ELT25

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