

Differential ECL to TTL Translator

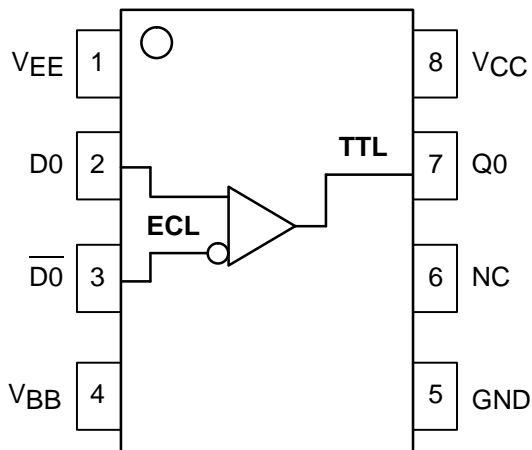
The MC10ELT/100ELT25 is a differential ECL to TTL translator. Because ECL levels are used a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where space, performance and low power are at a premium.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

- 2.6ns Typical Propagation Delay
- Differential ECL Inputs
- Small Outline SOIC Package
- 24mA TTL Outputs
- Flow Through Pinouts

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



MC10ELT25 MC100ELT25



D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05

PIN DESCRIPTION

| PIN | FUNCTION |
|-----|------------------|
| D | Diff ECL Inputs |
| Q | TTL Output |
| VCC | Positive Supply |
| VEE | Negative Supply |
| VBB | Reference Output |
| GND | Ground |



MC10ELT25 MC100ELT25

MAXIMUM RATINGS*

| Symbol | Parameter | Value | Unit |
|------------------|---|----------------------|------|
| V _{CC} | DC Supply Voltage (Referenced to GND, V _{EE} = -5.2) | 7.0 | V |
| V _{EE} | DC Supply Voltage (Referenced to GND, V _{CC} = 5.0) | -8.0 | V |
| V _{IN} | Input Voltage | 0 to V _{CC} | V |
| I _{OUT} | Current Applied to Output in Low Output State Continuous Surge | 50 100 | mA |
| T _A | Operating Temperature Range (In Free-Air) | -40 to 85 | °C |
| T _{STG} | Storage Temperature Range | -55 to +150 | °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_{CC} = 4.5V to 5.5V; V_{EE} = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T_A = -40°C to 85°C)

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

ECL INPUT DC CHARACTERISTICS (V_{CC} = 4.5V to 5.5V; V_{EE} = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T_A = -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 | | |
| I _{IH} | Input HIGH Current | | 150 | | 150 | | | 150 | | 150 | μA | |
| I _{IL} | Input LOW Current | 0.5 | | 0.5 | | 0.5 | | | 0.5 | | μA | |
| V _{CMR} | Common Mode Range | V _{EE} + 2.2 | V _{CC} | V _{EE} + 2.2 | V _{CC} | V _{EE} + 2.2 | | V _{CC} | V _{EE} + 2.2 | V _{CC} | V | |
| V _{PP} | Minimum Peak-to-Peak Input ¹ | 200 | | 200 | | 200 | | | 200 | | mV | |
| V _{IH} | Input HIGH Voltage 10ELT 100ELT | -1230 -1165 | -890 -880 | -1170 -1165 | -840 -880 | -1130 -1165 | | -810 -880 | -1060 -1165 | -720 -880 | V | |
| V _{IL} | Input LOW Voltage 10ELT 100ELT | -1950 -1810 | -1500 -1475 | -1950 -1810 | -1480 -1475 | -1950 -1810 | | -1480 -1475 | -1950 -1810 | -1445 -1475 | V | |
| V _{BB} | Reference Output 10ELT 100ELT | -1.43 -1.38 | -1.30 -1.26 | -1.38 -1.38 | -1.27 -1.26 | -1.35 -1.38 | | -1.25 -1.26 | -1.31 -1.38 | -1.19 -1.26 | V | |

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

AC CHARACTERISTICS (V_{CC} = 4.5V to 5.5V; V_{EE} = -4.2V to -5.5V 100ELT, -4.94V to -5.5V 10ELT; T_A = -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 _{PLH} | Propagation Delay | 1.7 | 3.6 | 1.7 | 3.6 | 1.7 | | 3.6 | 1.7 | 3.6 | ns | C _L = 20pF |
| t _{PHL} | Propagation Delay | 2.6 | 4.1 | 2.6 | 4.1 | 2.6 | | 4.1 | 2.6 | 4.1 | ns | C _L = 20pF |

OUTLINE DIMENSIONS

D SUFFIX
PLASTIC SOIC PACKAGE
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 |

Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 20912; Phoenix, Arizona 85036. 1-800-441-2447 or 602-303-5454

JAPAN: Nippon Motorola Ltd.; Tatsumi-SPD-JLDC, 6F Seibu-Butsuryu-Center, 3-14-2 Tatsumi Koto-Ku, Tokyo 135, Japan. 03-81-3521-8315

MFAX: RMFAX0@email.sps.mot.com - TOUCHTONE 602-244-6609
INTERNET: http://Design-NET.com

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852-26629298

