

# AZ100ELT21

## Differential PECL to CMOS/TTL Translator

### FEATURES

- 3.5ns Typical Propagation Delay
- Differential PECL Inputs
- CMOS/TTL Outputs
- Flow Through Pinouts
- Operating Range of 3.0V to 5.5V
- Direct Replacement for ON Semiconductor MC100ELT21
- Use AZ100ELT21 for 10K Applications

### PACKAGE AVAILABILITY

| PACKAGE     | PART NO.      | MARKING     |
|-------------|---------------|-------------|
| SOIC 8      | AZ100ELT21D   | AZM100ELT21 |
| SOIC 8 T&R  | AZ100ELT21DR1 | AZM100ELT21 |
| SOIC 8 T&R  | AZ100ELT21DR2 | AZM100ELT21 |
| TSSOP 8     | AZ100ELT21T   | AZHLT21     |
| TSSOP 8 T&R | AZ100ELT21TR1 | AZHLT21     |
| TSSOP 8 T&R | AZ100ELT21TR2 | AZHLT21     |

### DESCRIPTION

The AZ100ELT21 is a differential PECL to CMOS/TTL translator. Because PECL (Positive ECL) levels are used, only  $V_{CC}$  and ground are required. The small outline 8-lead packaging and the single gate of the ELT21 makes it ideal for those applications where space, performance and low power are at a premium.

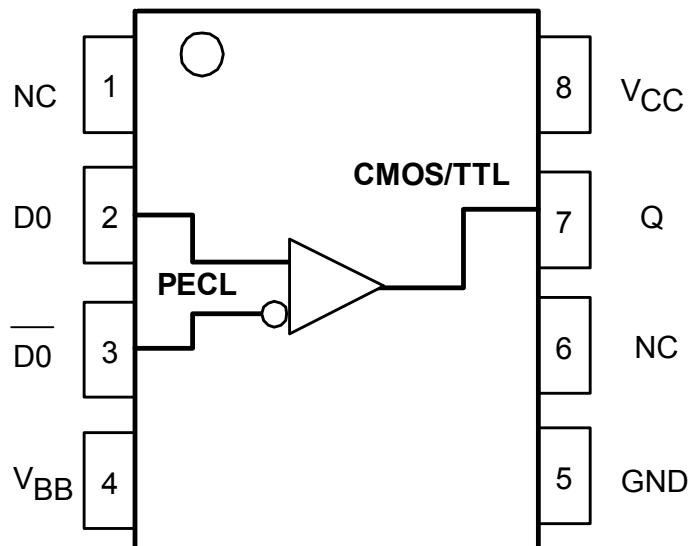
The ELT21 provides a  $V_{BB}$  output for single-ended use or a DC bias reference for AC coupling to the device. For single-ended input applications, the  $V_{BB}$  reference should be connected to one side of the  $D0/\bar{D}0$  differential input pair. The input signal is then fed to the other  $D0/\bar{D}0$  input. The  $V_{BB}$  pin should be used only as a bias for the ELT21 as its sink/source capability is limited. When used, the  $V_{BB}$  pin should be bypassed to ground via a  $0.01\mu F$  capacitor.

NOTE: Specification in ECL/PECL tables are valid when thermal equilibrium is established.

### LOGIC DIAGRAM AND PINOUT ASSIGNMENT

#### PIN DESCRIPTION

| PIN            | FUNCTION                 |
|----------------|--------------------------|
| Q              | CMOS/TTL Output          |
| $D0, \bar{D}0$ | Differential Inputs      |
| $V_{CC}$       | Positive Supply          |
| $V_{BB}$       | Reference Voltage Output |
| GND            | Ground                   |
| NC             | No Connect               |



# AZ100ELT21

**Absolute Maximum Ratings are those values beyond which device life may be impaired.**

| Symbol           | Character                                 | Value       | Unit |
|------------------|-------------------------------------------|-------------|------|
| V <sub>CC</sub>  | DC Supply Voltage (Referenced to GND)     | 7.0         | V    |
| T <sub>A</sub>   | Operating Temperature Range (In Free-Air) | -40 to +85  | °C   |
| T <sub>STG</sub> | Storage Temperature Range                 | -65 to +150 | °C   |

## CMOS/TTL DC CHARACTERISTICS (V<sub>CC</sub> = +3.0V to +5.5V)

| Symbol          | Characteristic               | Min                   | Typ | Max  | Unit | Condition                |
|-----------------|------------------------------|-----------------------|-----|------|------|--------------------------|
| V <sub>OH</sub> | Output HIGH Voltage          | V <sub>CC</sub> - 0.5 |     |      | V    | I <sub>OH</sub> = -24 mA |
| V <sub>OL</sub> | Output LOW Voltage           |                       |     | 0.5  | V    | I <sub>OL</sub> = 24 mA  |
| I <sub>CC</sub> | Power Supply Current         |                       | 9.0 | 15   | mA   | 0°C to 85°C              |
| I <sub>CC</sub> | Power Supply Current         |                       | 9.0 | 17.6 | mA   | -40°C to 85°C            |
| I <sub>OS</sub> | Output Short Circuit Current |                       | 100 |      | mA   |                          |

## 100K LVPECL DC Characteristics (V<sub>CC</sub> = +3.3V)

| Symbol           | Characteristic                   | -40°C |     |                 | 0°C  |     |                 | 25°C |     |                 | 85°C |     |                 | Unit |
|------------------|----------------------------------|-------|-----|-----------------|------|-----|-----------------|------|-----|-----------------|------|-----|-----------------|------|
|                  |                                  | Min   | Typ | Max             | Min  | Typ | Max             | Min  | Typ | Max             | Min  | Typ | Max             |      |
| V <sub>IH</sub>  | Input HIGH Voltage               | 2135  |     | 2420            | 2135 |     | 2420            | 2135 |     | 2420            | 2135 |     | 2420            | mV   |
| V <sub>IL</sub>  | Input LOW Voltage                | 1490  |     | 1825            | 1490 |     | 1825            | 1490 |     | 1825            | 1490 |     | 1825            | mV   |
| V <sub>BB</sub>  | Reference Voltage                | 1920  |     | 2090            | 1920 |     | 2090            | 1920 |     | 2090            | 1920 |     | 2090            | mV   |
| V <sub>PP</sub>  | Minimum Input Swing <sup>1</sup> | 200   |     |                 | 200  |     |                 | 200  |     |                 | 200  |     |                 | mV   |
| V <sub>CMR</sub> | Common Mode Range                | 1.2   |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | V    |
| I <sub>IL</sub>  | Input LOW Current                | 0.5   |     |                 | 0.5  |     |                 | 0.5  |     |                 | 0.5  |     |                 | μA   |
| I <sub>IH</sub>  | Input HIGH Current               |       |     | 150             |      |     |                 |      |     | 150             |      |     |                 | μA   |

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

## 100K PECL DC Characteristics (V<sub>CC</sub> = +5.0V)

| Symbol           | Characteristic                   | -40°C |     |                 | 0°C  |     |                 | 25°C |     |                 | 85°C |     |                 | Unit |
|------------------|----------------------------------|-------|-----|-----------------|------|-----|-----------------|------|-----|-----------------|------|-----|-----------------|------|
|                  |                                  | Min   | Typ | Max             | Min  | Typ | Max             | Min  | Typ | Max             | Min  | Typ | Max             |      |
| V <sub>IH</sub>  | Input HIGH Voltage               | 3835  |     | 4120            | 3835 |     | 4120            | 3835 |     | 4120            | 3835 |     | 4120            | mV   |
| V <sub>IL</sub>  | Input LOW Voltage                | 3190  |     | 3525            | 3190 |     | 3525            | 3190 |     | 3525            | 3190 |     | 3525            | mV   |
| V <sub>BB</sub>  | Reference Voltage                | 3620  |     | 3790            | 3620 |     | 3790            | 3620 |     | 3790            | 3620 |     | 3790            | mV   |
| V <sub>PP</sub>  | Minimum Input Swing <sup>1</sup> | 200   |     |                 | 200  |     |                 | 200  |     |                 | 200  |     |                 | mV   |
| V <sub>CMR</sub> | Common Mode Range                | 1.2   |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | 1.2  |     | V <sub>CC</sub> | V    |
| I <sub>IL</sub>  | Input LOW Current                | 0.5   |     |                 | 0.5  |     |                 | 0.5  |     |                 | 0.5  |     |                 | μA   |
| I <sub>IH</sub>  | Input HIGH Current               |       |     | 150             |      |     |                 |      |     | 150             |      |     |                 | μA   |

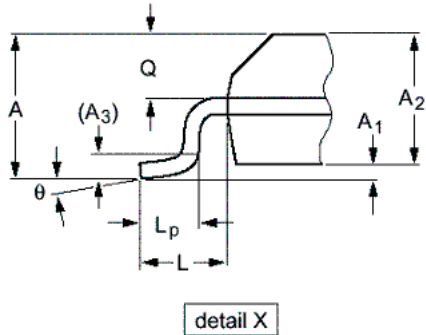
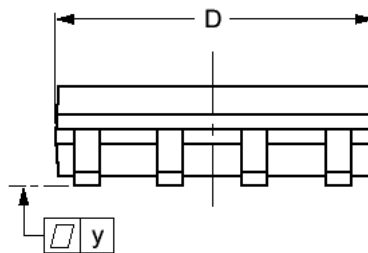
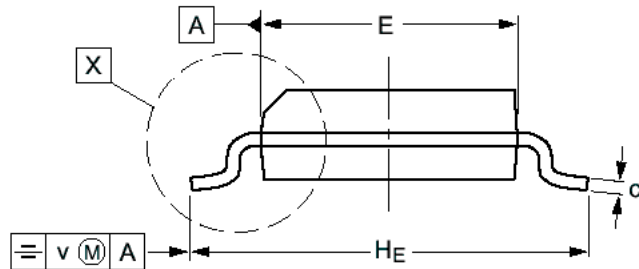
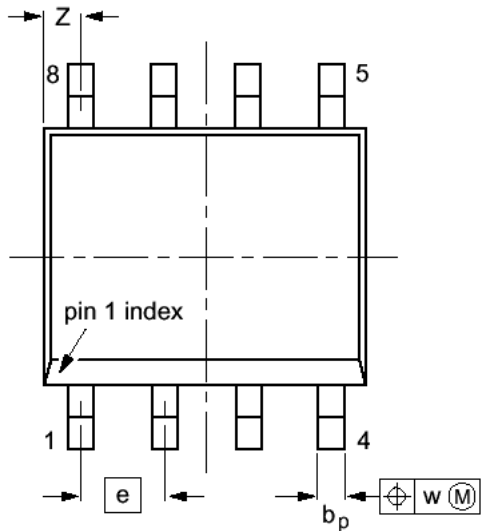
1. 200mV input guarantees full logic swing at the output.

## AC Characteristics (V<sub>CC</sub> = +3.0V to +5.5V)

| Symbol                              | Characteristic                                                                                               | -40°C      |     |            | 0°C        |     |            | 25°C       |     |            | 85°C       |     |            | Unit |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------|------------|-----|------------|------------|-----|------------|------------|-----|------------|------------|-----|------------|------|
|                                     |                                                                                                              | Min        | Typ | Max        | Min        | Typ | Max        | Min        | Typ | Max        | Min        | Typ | Max        |      |
| t <sub>PLH</sub> / t <sub>PHL</sub> | Propagation Delay to Output <sup>1</sup><br>V <sub>CC</sub> = 4.5V to 5.5V<br>V <sub>CC</sub> = 3.0V to 3.6V | 2.0<br>3.5 |     | 5.5<br>7.0 | 2.0<br>3.5 |     | 5.5<br>7.0 | 2.0<br>3.5 |     | 5.5<br>7.0 | 2.0<br>3.5 |     | 5.5<br>7.0 | ns   |

1. C<sub>L</sub>=20pF

**PACKAGE DIAGRAM  
SOIC 8**

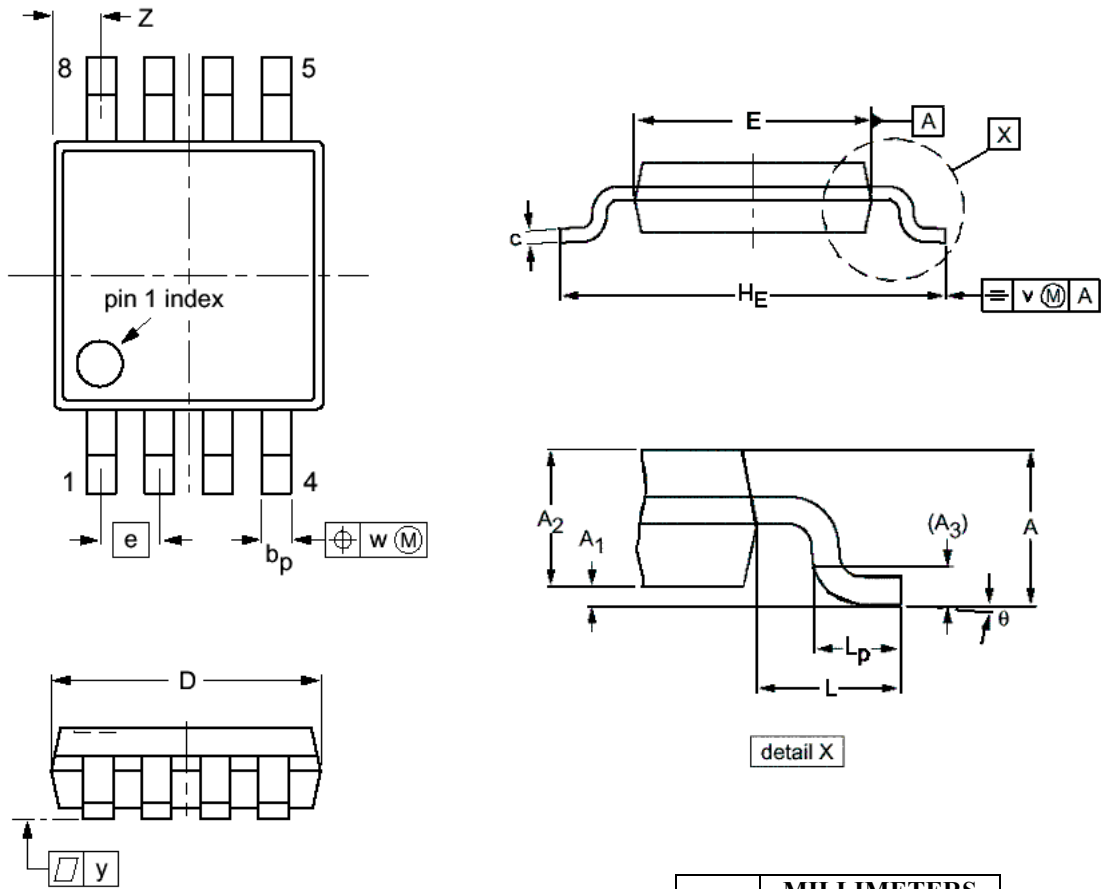


| DIM            | MILLIMETERS |      | INCHES |        |
|----------------|-------------|------|--------|--------|
|                | MIN         | MAX  | MIN    | MAX    |
| A              | 1.35        | 1.75 | 0.053  | 0.069  |
| A <sub>1</sub> | 0.10        | 0.25 | 0.004  | 0.010  |
| A <sub>2</sub> | 1.28        | 1.57 | 0.050  | 0.062  |
| A <sub>3</sub> | 0.25        |      | 0.01   |        |
| b <sub>p</sub> | 0.36        | 0.49 | 0.014  | 0.019  |
| c              | 0.19        | 0.25 | 0.0075 | 0.0100 |
| D              | 4.80        | 5.00 | 0.19   | 0.20   |
| E              | 3.80        | 4.00 | 0.15   | 0.16   |
| e              | 1.27        |      | 0.050  |        |
| H <sub>E</sub> | 5.80        | 6.20 | 0.228  | 0.244  |
| L              | 1.05        |      | 0.041  |        |
| L <sub>p</sub> | 0.40        | 1.27 | 0.016  | 0.050  |
| Q              | 0.60        | 0.70 | 0.024  | 0.028  |
| v              | 0.25        |      | 0.01   |        |
| w              | 0.25        |      | 0.01   |        |
| y              | 0.10        |      | 0.004  |        |
| Z              | 0.30        | 0.70 | 0.012  | 0.028  |
| θ              | 0°          | 8°   | 0°     | 8°     |

NOTES:

1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

**PACKAGE DIAGRAM  
TSSOP 8**



- NOTES:
1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
  2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
  3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

| DIM            | MILLIMETERS |      |
|----------------|-------------|------|
|                | MIN         | MAX  |
| A              |             | 1.10 |
| A <sub>1</sub> | 0.05        | 0.15 |
| A <sub>2</sub> | 0.75        | 0.95 |
| A <sub>3</sub> | 0.25        |      |
| b <sub>p</sub> | 0.22        | 0.40 |
| c              | 0.13        | 0.23 |
| D              | 2.90        | 3.10 |
| E              | 2.90        | 3.10 |
| e              | 0.65        |      |
| H <sub>E</sub> | 4.75        | 5.05 |
| L              | 0.95        |      |
| L <sub>p</sub> | 0.40        | 0.70 |
| v              | 0.10        |      |
| w              | 0.08        |      |
| y              | 0.10        |      |
| Z              | 0.38        | 0.64 |
| θ              | 0°          | 6°   |

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