

FEATURES

- 2.5ns typical propagation delay
- Low power
- Differential PECL inputs
- 24mA TTL outputs
- Flow-through pinouts
- Available in 8-pin SOIC package



Precision Edge®

DESCRIPTION

The SY10/100ELT21 are single differential PECL-to-TTL translators. Because PECL (Positive ECL) levels are used, only +5V and ground are required. The small outline 8-lead SOIC package and low skew single gate design make the ELT21 ideal for applications that require the translation of a clock or data signal where minimal space, low power, and low cost are critical.

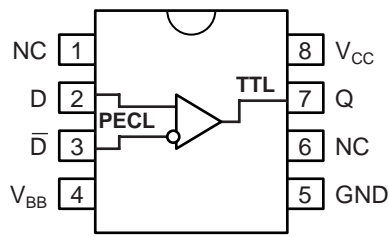
The V_{BB} output allow differential single-ended, or AC-coupled interface to the device. If used, the V_{BB} output should be bypassed to V_{CC} with a $0.01\mu\text{F}$ capacitor.

The ELT21 is available in both ECL standards: the 10ELT is compatible with positive ECL 10H logic levels, while the 100ELT is compatible with positive ECL 100K logic levels.

PIN NAMES

| Pin | Function |
|----------|--------------------------|
| Q | TTL Output |
| D, /D | Differential PECL Inputs |
| V_{CC} | +5.0V Supply |
| V_{BB} | Reference Output |
| GND | Ground |

PACKAGE/ORDERING INFORMATION



8-Pin SOIC (Z8-1)

Ordering Information⁽¹⁾

| Part Number | Package Type | Operating Range | Package Marking | Lead Finish |
|--|--------------|-----------------|---------------------------------------|----------------|
| SY10ELT21ZC | Z8-1 | Commercial | HEL21 | Sn-Pb |
| SY10ELT21ZCTR ⁽²⁾ | Z8-1 | Commercial | HEL21 | Sn-Pb |
| SY100ELT21ZC | Z8-1 | Commercial | XEL21 | Sn-Pb |
| SY100ELT21ZCTR ⁽²⁾ | Z8-1 | Commercial | XEL21 | Sn-Pb |
| SY10ELT21ZI | Z8-1 | Industrial | HEL21 | Sn-Pb |
| SY10ELT21ZITR ⁽²⁾ | Z8-1 | Industrial | HEL21 | Sn-Pb |
| SY100ELT21ZI | Z8-1 | Industrial | XEL21 | Sn-Pb |
| SY100ELT21ZITR ⁽²⁾ | Z8-1 | Industrial | XEL21 | Sn-Pb |
| SY10ELT21ZG ⁽³⁾ | Z8-1 | Industrial | HEL21 with Pb-Free bar-line indicator | Pb-Free NiPdAu |
| SY10ELT21ZGTR ^(2, 3) | Z8-1 | Industrial | HEL21 with Pb-Free bar-line indicator | Pb-Free NiPdAu |
| SY100ELT21ZG ⁽³⁾ | Z8-1 | Industrial | XEL21 with Pb-Free bar-line indicator | Pb-Free NiPdAu |
| SY100ELT21ZG ^(TR) ^(2, 3) | Z8-1 | Industrial | XEL21 with Pb-Free bar-line indicator | Pb-Free NiPdAu |

Notes:

1. Contact factory for die availability. Dice are guaranteed at T_A = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

| Symbol | Parameter | Value | Unit |
|--------------------|---|---------------------------------|------|
| V _{CC} | Power Supply Voltage | -0.5 to +7.0 | V |
| V _I | PECL Input Voltage | 0V to V _{CC} +0.5 | V |
| V _O | Voltage Applied to Output at HIGH State | -0.5 to +5.5 | V |
| I _O | Current Applied to Output at LOW State | Twice the Rated I _{OL} | mA |
| T _{LEAD} | Lead Temperature (soldering, 20sec.) | +260 | °C |
| T _{store} | Storage Temperature | -65 to +150 | °C |
| T _A | Operating Temperature | -40 to +85 | °C |

TRUTH TABLE

| D | /D | Q |
|------|------|---|
| L | H | L |
| H | L | H |
| Open | Open | L |

NOTE:

1. Permanent device damage may occur if ABSOLUTE MAXIMUM RATINGS are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to ABSOLUTE MAXIMUM RATING conditions for extended periods may affect device reliability.

TTL DC ELECTRICAL CHARACTERISTICS

V_{CC} = 4.75V to 5.25V

| Symbol | Parameter | TA = -40°C | | TA = 0°C | | TA = +25°C | | | TA = +85°C | | Unit | Condition |
|-----------------|------------------------------|------------|------|------------|------|------------|------|------|------------|------|------|---|
| | | Min. | Max. | Min. | Max. | Min. | Typ. | Max. | Min. | Max. | | |
| I _{OS} | Output Short Circuit Current | -80 | -200 | -80 | -200 | -80 | — | -200 | -80 | -200 | mA | V _{OUT} = 0V |
| I _{CC} | Power Supply Current | — | 20 | — | 20 | — | 14 | 20 | — | 20 | mA | — |
| V _{OH} | Output HIGH Voltage | 2.5 2.0 | — | 2.5 2.0 | — | 2.5 2.0 | — | — | 2.5 2.0 | — | V | I _{OH} = -3.0mA I _{OH} = -15mA |
| V _{OL} | Output LOW Voltage | — | 0.5 | — | 0.5 | — | — | 0.5 | — | 0.5 | V | I _{OL} = 24mA |

PECL DC ELECTRICAL CHARACTERISTICS

V_{CC} = 4.75V to 5.25V

| Symbol | Parameter | TA = -40°C | | TA = 0°C | | TA = +25°C | | | TA = +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 _{IH} | Input HIGH Voltage ⁽²⁾ | 10ELT 100ELT | 3770 4110 3835 4120 | 3830 4160 3835 4120 | 3770 4190 3835 4120 | 3940 4280 3835 4120 | — | — | — | — | mV | |
| V _{IL} | Input LOW Voltage ⁽²⁾ | 10ELT 100ELT | 3050 3500 3190 3525 | 3050 3520 3190 3525 | 3050 3520 3190 3525 | 3050 3555 3190 3525 | — | — | — | — | mV | |
| V _{BB} | Reference Output ⁽²⁾ | 10ELT 100ELT | 3570 3700 3620 3740 | 3620 3730 3620 3740 | 3650 3750 3620 3740 | 3690 3810 3620 3740 | — | — | — | — | mV | |

NOTE:

2. These values are for V_{CC} = 5.0V. Level Specifications will vary 1:1 V_{CC}.

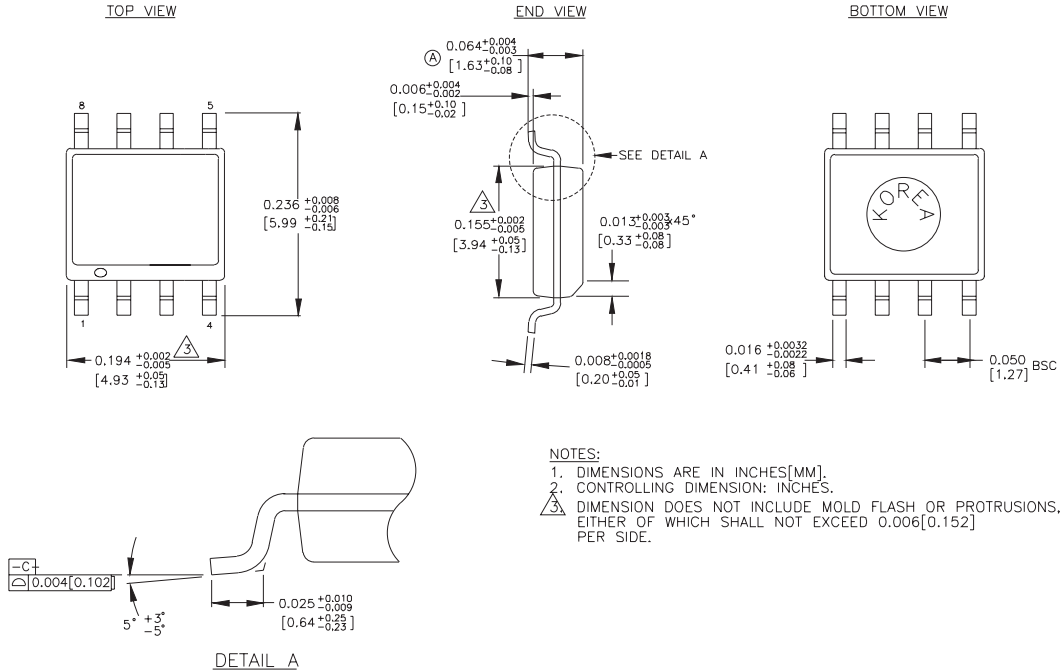
AC ELECTRICAL CHARACTERISTICS $V_{CC} = 4.75V$ to $5.25V$

| Symbol | Parameter | TA = -40°C | | TA = 0°C | | TA = +25°C | | | TA = +85°C | | Unit | Condition |
|------------------------|---|------------|----------|----------|----------|------------|------|----------|------------|----------|------|--------------|
| | | Min. | Max. | Min. | Max. | Min. | Typ. | Max. | Min. | Max. | | |
| t_{PLH} t_{PHL} | Propagation Delay D to Output Q | 2.0 | 3.0 | 2.0 | 3.0 | 2.0 | — | 3.0 | 2.0 | 3.0 | ns | $C_L = 50pF$ |
| t_{skpp} | Part-to-Part Skew ^(1, 2) | — | 0.5 | — | 0.5 | — | — | 0.5 | — | 0.5 | ns | $C_L = 50pF$ |
| f_{MAX} | Maximum Input Frequency (2, 3, 4) | 160 | — | 160 | — | 160 | — | — | 160 | — | MHz | $C_L = 50pF$ |
| V_{CMR} | Common Mode Range | 2.4 | V_{CC} | 2.4 | V_{CC} | 2.4 | — | V_{CC} | 2.4 | V_{CC} | V | |
| V_{PP} | Minimum Peak-to-Peak Input ⁽⁵⁾ | 200 | — | 200 | — | 200 | — | — | 200 | — | mV | |
| t_r t_f | Output Rise/Fall Time (1.0V to 2.0V) | — | 1.5 | — | 1.5 | — | — | 1.5 | — | 1.5 | ns | $C_L = 50pF$ |

NOTES:

1. Part-to-Part Skew considering HIGH-to-HIGH transitions at common V_{CC} levels.
2. These parameters are guaranteed, but not tested.
3. Frequency at which output levels will meet a 0.8V to 2.0V minimum swing.
4. The f_{MAX} value is specified as the minimum guaranteed maximum frequency. Actual operational maximum frequency may be greater.
5. 200mV input guarantees full logic at output.

8 LEAD SOIC .150" WIDE (Z8-1)



Rev. 03

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