

AZ10EL07 AZ100EL07

ECL/PECL 2-Input XOR/XNOR

FEATURES

- 260ps Propagation Delay
- High Bandwidth Output Transitions
- 75kΩ Internal Input Pulldown Resistors
- Direct Replacement for ON Semiconductor MC10EL07 & MC100EL07

PACKAGE AVAILABILITY

| PACKAGE | PART NUMBER | MARKING | NOTES |
|---------|-------------|------------|-------|
| SOIC 8 | AZ10EL07D | AZM10EL07 | 1,2 |
| SOIC 8 | AZ100EL07D | AZM100EL07 | 1,2 |
| TSSOP 8 | AZ10EL07T | AZTEL07 | 1,2 |
| TSSOP 8 | AZ100EL07T | AZHEL07 | 1,2 |

- 1 Add R1 at end of part number for 7 inch (1K parts), R2 for 13 inch (2.5K parts) Tape & Reel.
- 2 Date Code "YWW" on underside of part.

DESCRIPTION

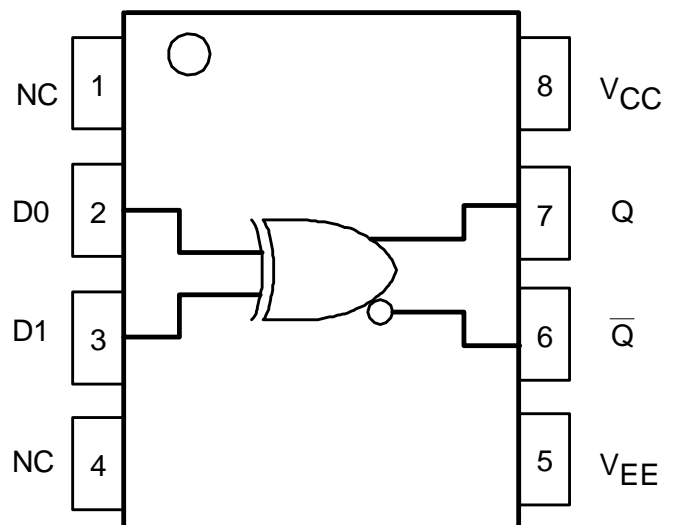
The AZ10/100EL07 is a 2-input XOR/XNOR gate. The device is functionally equivalent to the E107 device with higher performance capabilities. With propagation delays and output transition times significantly faster than the E107, the EL07 is ideally suited for those applications that require the ultimate in AC performance.

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

PIN DESCRIPTION

| PIN | FUNCTION |
|-----------------|-----------------|
| D0, D1 | Data Inputs |
| Q, \bar{Q} | Data Outputs |
| V _{CC} | Positive Supply |
| V _{EE} | Negative Supply |
| NC | No Connect |

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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

| Symbol | Characteristic | Rating | Unit |
|------------------|---|-------------|------|
| V _{CC} | PECL Power Supply (V _{EE} = 0V) | 0 to +8.0 | Vdc |
| V _I | PECL Input Voltage (V _{EE} = 0V) | 0 to +6.0 | Vdc |
| V _{EE} | ECL Power Supply (V _{CC} = 0V) | -8.0 to 0 | Vdc |
| V _I | ECL Input Voltage (V _{CC} = 0V) | -6.0 to 0 | Vdc |
| I _{OUT} | Output Current --- Continuous --- Surge | 50 100 | mA |
| T _A | Operating Temperature Range | -40 to +85 | °C |
| T _{STG} | Storage Temperature Range | -65 to +150 | °C |

10K ECL DC Characteristics (V_{EE} = -4.75V to -5.5V, V_{CC} = GND)

| Symbol | Characteristic | -40°C | | | 0°C | | | 25°C | | | 85°C | | | Unit |
|-----------------|----------------------------------|-------|-----|-------|-------|-----|-------|-------|-----|-------|-------|-----|-------|------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| V _{OH} | Output HIGH Voltage ¹ | -1080 | | -890 | -1020 | | -840 | -980 | | -810 | -910 | | -720 | mV |
| V _{OL} | Output LOW Voltage ¹ | -1950 | | -1650 | -1950 | | -1630 | -1950 | | -1630 | -1950 | | -1595 | mV |
| V _{IH} | Input HIGH Voltage | -1230 | | -890 | -1170 | | -840 | -1130 | | -810 | -1060 | | -720 | mV |
| V _{IL} | Input LOW Voltage | -1950 | | -1500 | -1950 | | -1480 | -1950 | | -1480 | -1950 | | -1445 | mV |
| I _{IH} | Input HIGH Current D0 D1 | | | 250 | | | 250 | | | 250 | | | 250 | μA |
| | | | | 150 | | | 150 | | | 150 | | | 150 | |
| I _{IL} | Input LOW Current | 0.5 | | | 0.5 | | | | | 0.5 | | | | μA |
| I _{EE} | Power Supply Current | | 14 | 17 | | 14 | 17 | | 14 | 17 | | 14 | 17 | mA |

1. Each output is terminated through a 50Ω resistor to V_{CC} - 2V.

10K PECL DC Characteristics (V_{EE} = GND, V_{CC} = +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 _{OH} | Output HIGH Voltage ^{1,2} | 3920 | | 4110 | 3980 | | 4160 | 4020 | | 4190 | 4090 | | 4280 | mV |
| V _{OL} | Output LOW Voltage ^{1,2} | 3050 | | 3350 | 3050 | | 3370 | 3050 | | 3370 | 3050 | | 3405 | mV |
| V _{IH} | Input HIGH Voltage ¹ | 3770 | | 4110 | 3830 | | 4160 | 3870 | | 4190 | 3940 | | 4280 | mV |
| V _{IL} | Input LOW Voltage ¹ | 3050 | | 3500 | 3050 | | 3520 | 3050 | | 3520 | 3050 | | 3555 | mV |
| I _{IH} | Input HIGH Current D0 D1 | | | 250 | | | 250 | | | 250 | | | 250 | μA |
| | | | | 150 | | | 150 | | | 150 | | | 150 | |
| I _{IL} | Input LOW Current | 0.5 | | | 0.5 | | | | | 0.5 | | | | μA |
| I _{EE} | Power Supply Current | | 14 | 17 | | 14 | 17 | | 14 | 17 | | 14 | 17 | mA |

1. For supply voltages other than 5.0V, use the ECL table values and ADD supply voltage value.

2. Each output is terminated through a 50Ω resistor to V_{CC} - 2V.

100K ECL DC Characteristics (V_{EE} = -4.2V to -5.5V, V_{CC} = GND)

| Symbol | Characteristic | -40°C | | | 0°C | | | 25°C | | | 85°C | | | Unit |
|-----------------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| V _{OH} | Output HIGH Voltage ¹ | -1085 | -1005 | -880 | -1025 | -955 | -880 | -1025 | -955 | -880 | -1025 | -955 | -880 | mV |
| V _{OL} | Output LOW Voltage ¹ | -1830 | -1695 | -1555 | -1810 | -1705 | -1620 | -1810 | -1705 | -1620 | -1810 | -1705 | -1620 | mV |
| V _{IH} | Input HIGH Voltage | -1165 | | -880 | -1165 | | -880 | -1165 | | -880 | -1165 | | -880 | mV |
| V _{IL} | Input LOW Voltage | -1810 | | -1475 | -1810 | | -1475 | -1810 | | -1475 | -1810 | | -1475 | mV |
| I _{IH} | Input HIGH Current D0 D1 | | | 250 | | | 250 | | | 250 | | | 250 | μA |
| | | | | 150 | | | 150 | | | 150 | | | 150 | |
| I _{IL} | Input LOW Current | 0.5 | | | 0.5 | | | | | 0.5 | | | | μA |
| I _{EE} | Power Supply Current | | 14 | 17 | | 14 | 17 | | 14 | 17 | | 16 | 20 | mA |

1. Each output is terminated through a 50Ω resistor to V_{CC} - 2V.

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100K PECL DC Characteristics ($V_{EE} = \text{GND}$, $V_{CC} = +5.0\text{V}$)

| Symbol | Characteristic | -40°C | | | 0°C | | | 25°C | | | 85°C | | | Unit |
|----------|------------------------------------|-------|------|------------|------|------|------------|------|------|------------|------|------|------------|------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| V_{OH} | Output HIGH Voltage ^{1,2} | 3915 | 3995 | 4120 | 3975 | 4045 | 4120 | 3975 | 4045 | 4120 | 3975 | 4045 | 4120 | mV |
| V_{OL} | Output LOW Voltage ^{1,2} | 3170 | 3305 | 3445 | 3190 | 3295 | 3380 | 3190 | 3295 | 3380 | 3190 | 3295 | 3380 | mV |
| V_{IH} | Input HIGH Voltage ¹ | 3835 | | 4120 | 3835 | | 4120 | 3835 | | 4120 | 3835 | | 4120 | mV |
| V_{IL} | Input LOW Voltage ¹ | 3190 | | 3525 | 3190 | | 3525 | 3190 | | 3525 | 3190 | | 3525 | mV |
| I_{IH} | Input HIGH Current | | | | | | | | | | | | | |
| | D0 D1 | | | 250 150 | | | 250 150 | | | 250 150 | | | 250 150 | μA |
| I_{IL} | Input LOW Current | 0.5 | | | 0.5 | | | 0.5 | | | 0.5 | | | μA |
| I_{EE} | Power Supply Current | | 14 | 17 | | 14 | 17 | | 14 | 17 | | 16 | 20 | mA |

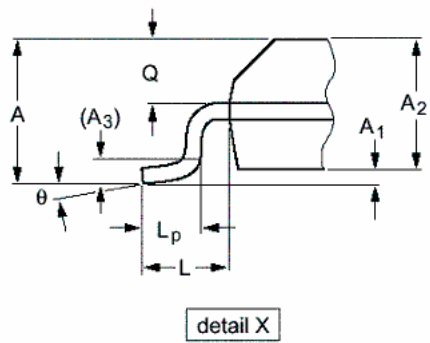
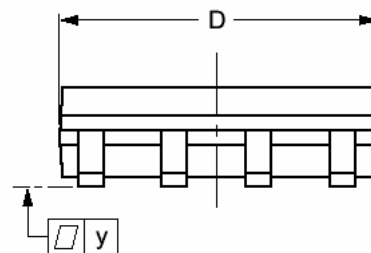
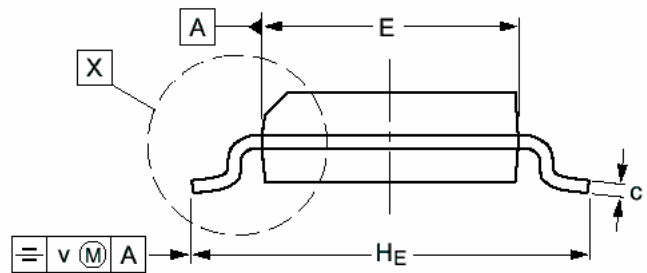
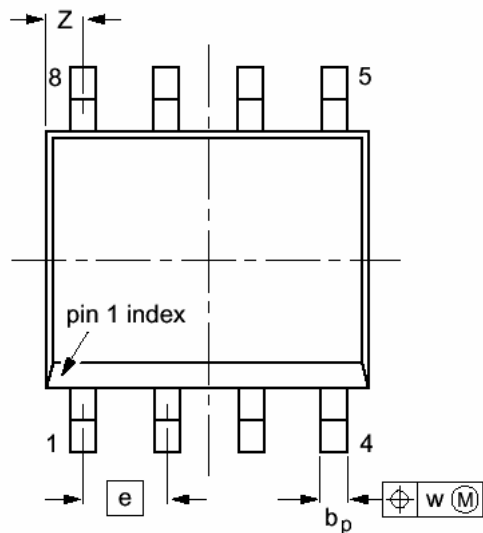
- For supply voltages other than 5.0V, use the ECL table values and ADD supply voltage value.
- Each output is terminated through a 50Ω resistor to $V_{CC} - 2\text{V}$.

AC Characteristics ($V_{EE} = 10\text{E}(-4.75\text{V to } -5.5\text{V})$, $100\text{E}(-4.2\text{V to } -5.5\text{V})$; $V_{CC} = \text{GND}$ or $V_{EE} = \text{GND}$, $V_{CC} = 10\text{E}(+4.75\text{V to } +5.5\text{V})$, $100\text{E}(+4.2\text{V to } +5.5\text{V})$)

| Symbol | Characteristic | -40°C | | | 0°C | | | 25°C | | | 85°C | | | Unit |
|---------------------|-----------------------------|-------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|-----|------|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | |
| t_{PLH} / t_{PHL} | Propagation Delay to Output | 90 | 250 | 435 | 140 | 250 | 385 | 150 | 260 | 395 | 170 | 280 | 415 | ps |
| t_r / t_f | Rise/Fall Time 20 – 80% | 100 | | 350 | 100 | | 350 | 100 | | 350 | 100 | | 350 | ps |

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**PACKAGE DIAGRAM
SOIC 8**



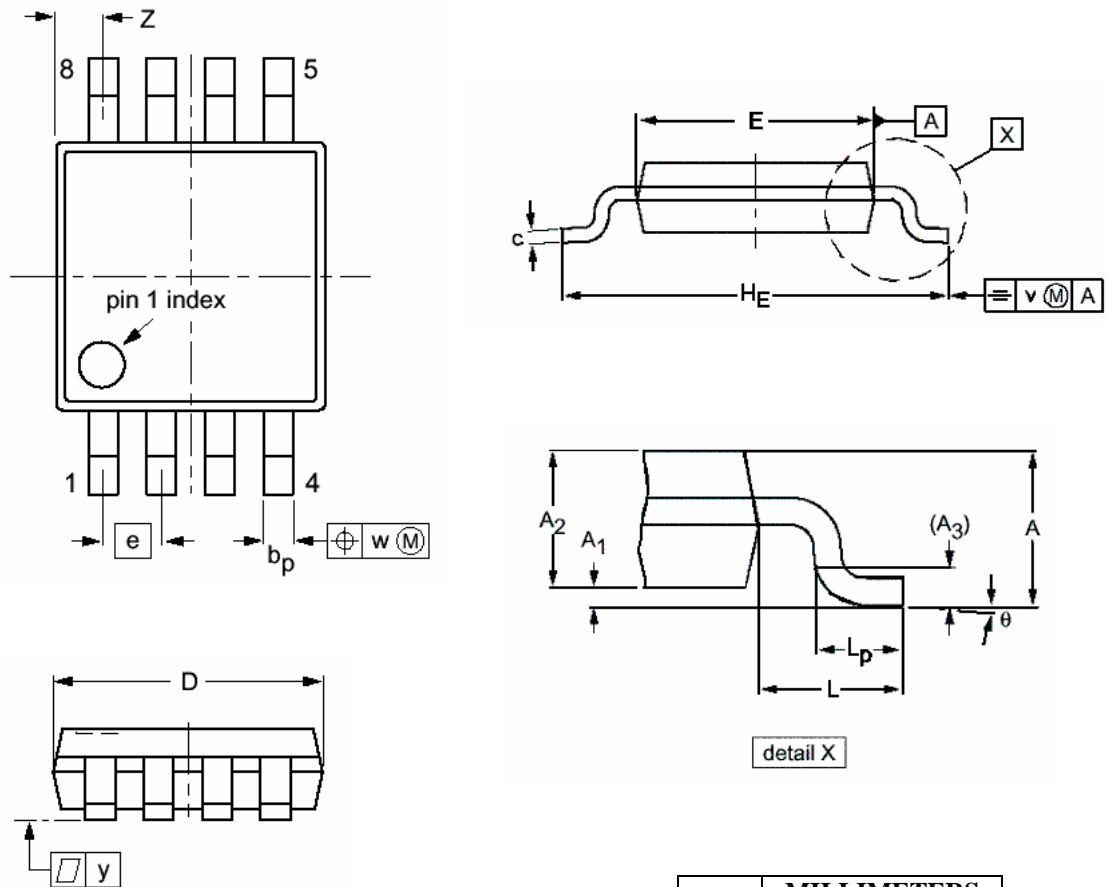
| DIM | MILLIMETERS | | INCHES | |
|----------------|-------------|------|--------|--------|
| | MIN | MAX | MIN | MAX |
| A | | 1.75 | 0.069 | |
| A ₁ | 0.10 | 0.25 | 0.004 | 0.010 |
| A ₂ | 1.25 | 1.45 | 0.049 | 0.057 |
| A ₃ | 0.25 | | 0.01 | |
| b _p | 0.36 | 0.49 | 0.014 | 0.019 |
| c | 0.19 | 0.25 | 0.0075 | 0.0100 |
| D | 4.8 | 5.0 | 0.19 | 0.20 |
| E | 3.8 | 4.0 | 0.15 | 0.16 |
| e | 1.27 | | 0.050 | |
| H _E | 5.80 | 6.20 | 0.228 | 0.244 |
| L | 1.05 | | 0.041 | |
| L _p | 0.40 | 1.00 | 0.016 | 0.039 |
| 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.

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**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 ₁ | 0.05 | 0.15 |
| A ₂ | 0.80 | 0.95 |
| A ₃ | 0.25 | |
| b _p | 0.25 | 0.45 |
| c | 0.15 | 0.28 |
| D | 2.90 | 3.10 |
| E | 2.90 | 3.10 |
| e | 0.65 | |
| H _E | 4.70 | 5.10 |
| L | 0.94 | |
| L _p | 0.40 | 0.70 |
| v | 0.10 | |
| w | 0.10 | |
| y | 0.10 | |
| Z | 0.35 | 0.70 |
| θ | 0° | 6° |

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