

# AZ10EL07 AZ100EL07

## ECL/PECL 2-Input XOR/XNOR

### FEATURES

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

### PACKAGE AVAILABILITY

PACKAGE	PART NO.	MARKING
SOIC 8	AZ10EL07D	AZM10EL07
SOIC 8 T&R	AZ10EL07DR1	AZM10EL07
SOIC 8 T&R	AZ10EL07DR2	AZM10EL07
SOIC 8	AZ100EL07D	AZM100EL07
SOIC 8 T&R	AZ100EL07DR1	AZM100EL07
SOIC 8 T&R	AZ100EL07DR2	AZM100EL07
TSSOP 8	AZ10EL07T	AZTEL07
TSSOP 8 T&R	AZ10EL07TR1	AZTEL07
TSSOP 8 T&R	AZ10EL07TR2	AZTEL07
TSSOP 8	AZ100EL07T	AZHTEL07
TSSOP 8 T&R	AZ100EL07TR1	AZHTEL07
TSSOP 8 T&R	AZ100EL07TR2	AZHTEL07

### DESCRIPTION

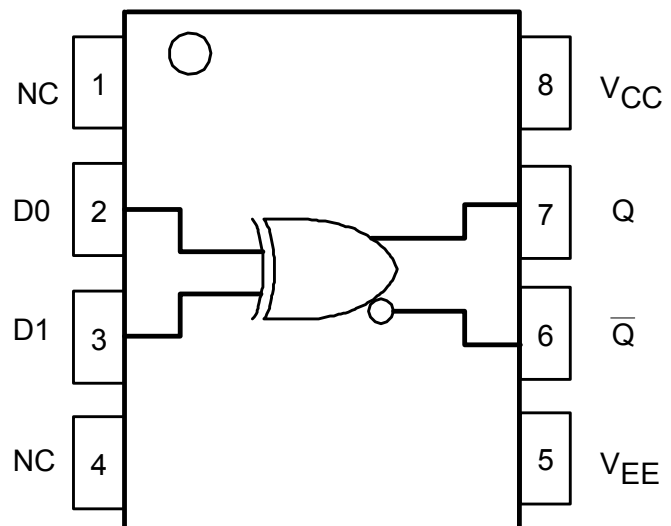
The AZ10/100EL07 is a 2-input XOR/XNOR gate. The device is functionally equivalent to the E107 device with higher performance capabilities. With propagation delays and output transition times significantly faster than the E107, the EL07 is ideally suited for those applications that require the ultimate 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 <sub>CC</sub>	Positive Supply
V <sub>EE</sub>	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 <sub>CC</sub>	PECL Power Supply (V <sub>EE</sub> = 0V)	0 to +8.0	Vdc
V <sub>I</sub>	PECL Input Voltage (V <sub>EE</sub> = 0V)	0 to +6.0	Vdc
V <sub>EE</sub>	ECL Power Supply (V <sub>CC</sub> = 0V)	-8.0 to 0	Vdc
V <sub>I</sub>	ECL Input Voltage (V <sub>CC</sub> = 0V)	-6.0 to 0	Vdc
I <sub>OUT</sub>	Output Current --- Continuous --- Surge	50 100	mA
T <sub>A</sub>	Operating Temperature Range	-40 to +85	°C
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	°C

**10K ECL DC Characteristics (V<sub>EE</sub> = -4.75V to -5.5V, V<sub>CC</sub> = 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 <sub>OH</sub>	Output HIGH Voltage <sup>1</sup>	-1080		-890	-1020		-840	-980		-810	-910		-720	mV
V <sub>OL</sub>	Output LOW Voltage <sup>1</sup>	-1950		-1650	-1950		-1630	-1950		-1630	-1950		-1595	mV
V <sub>IH</sub>	Input HIGH Voltage	-1230		-890	-1170		-840	-1130		-810	-1060		-720	mV
V <sub>IL</sub>	Input LOW Voltage	-1950		-1500	-1950		-1480	-1950		-1480	-1950		-1445	mV
I <sub>IH</sub>	Input HIGH Current D0 D1			250			250			250			250	μA
				150			150			150			150	
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.5			0.5			μA
I <sub>EE</sub>	Power Supply Current		14	17		14	17		14	17		14	17	mA

- Each output is terminated through a 50Ω resistor to V<sub>CC</sub> - 2V.

**10K PECL DC Characteristics (V<sub>EE</sub> = GND, 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>OH</sub>	Output HIGH Voltage <sup>1,2</sup>	3920		4110	3980		4160	4020		4190	4090		4280	mV
V <sub>OL</sub>	Output LOW Voltage <sup>1,2</sup>	3050		3350	3050		3370	3050		3370	3050		3405	mV
V <sub>IH</sub>	Input HIGH Voltage <sup>1</sup>	3770		4110	3830		4160	3870		4190	3940		4280	mV
V <sub>IL</sub>	Input LOW Voltage <sup>1</sup>	3050		3500	3050		3520	3050		3520	3050		3555	mV
I <sub>IH</sub>	Input HIGH Current D0 D1			250			250			250			250	μA
				150			150			150			150	
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.5			0.5			μA
I <sub>EE</sub>	Power Supply Current		14	17		14	17		14	17		14	17	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<sub>CC</sub> - 2V.

**100K ECL DC Characteristics (V<sub>EE</sub> = -4.2V to -5.5V, V<sub>CC</sub> = 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 <sub>OH</sub>	Output HIGH Voltage <sup>1</sup>	-1085	-1005	-880	-1025	-955	-880	-1025	-955	-880	-1025	-955	-880	mV
V <sub>OL</sub>	Output LOW Voltage <sup>1</sup>	-1830	-1695	-1555	-1810	-1705	-1620	-1810	-1705	-1620	-1810	-1705	-1620	mV
V <sub>IH</sub>	Input HIGH Voltage	-1165		-880	-1165		-880	-1165		-880	-1165		-880	mV
V <sub>IL</sub>	Input LOW Voltage	-1810		-1475	-1810		-1475	-1810		-1475	-1810		-1475	mV
I <sub>IH</sub>	Input HIGH Current D0 D1			250			250			250			250	μA
				150			150			150			150	
I <sub>IL</sub>	Input LOW Current	0.5			0.5			0.5			0.5			μA
I <sub>EE</sub>	Power Supply Current		14	17		14	17		14	17		16	20	mA

- Each output is terminated through a 50Ω resistor to V<sub>CC</sub> - 2V.

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

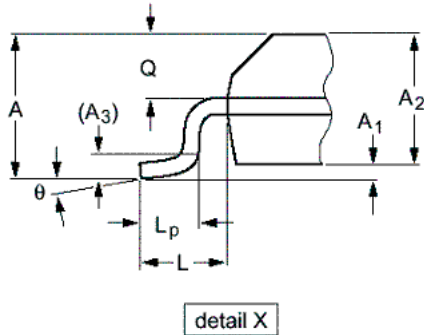
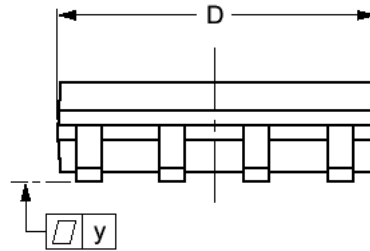
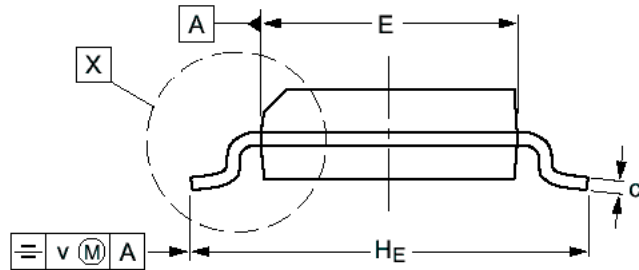
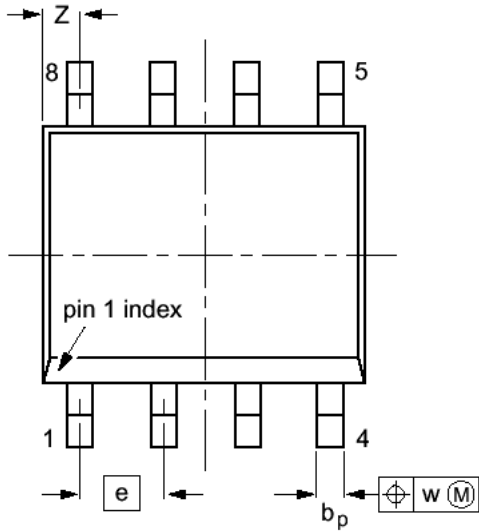
Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
$V_{OH}$	Output HIGH Voltage <sup>1,2</sup>	3915	3995	4120	3975	4045	4120	3975	4045	4120	3975	4045	4120	mV
$V_{OL}$	Output LOW Voltage <sup>1,2</sup>	3170	3305	3445	3190	3295	3380	3190	3295	3380	3190	3295	3380	mV
$V_{IH}$	Input HIGH Voltage <sup>1</sup>	3835		4120	3835		4120	3835		4120	3835		4120	mV
$V_{IL}$	Input LOW Voltage <sup>1</sup>	3190		3525	3190		3525	3190		3525	3190		3525	mV
$I_{IH}$	Input HIGH Current D0 D1			250			250			250			250	$\mu\text{A}$
				150			150			150			150	
$I_{IL}$	Input LOW Current	0.5			0.5			0.5			0.5			$\mu\text{A}$
$I_{EE}$	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

**PACKAGE DIAGRAM  
SOIC 8**



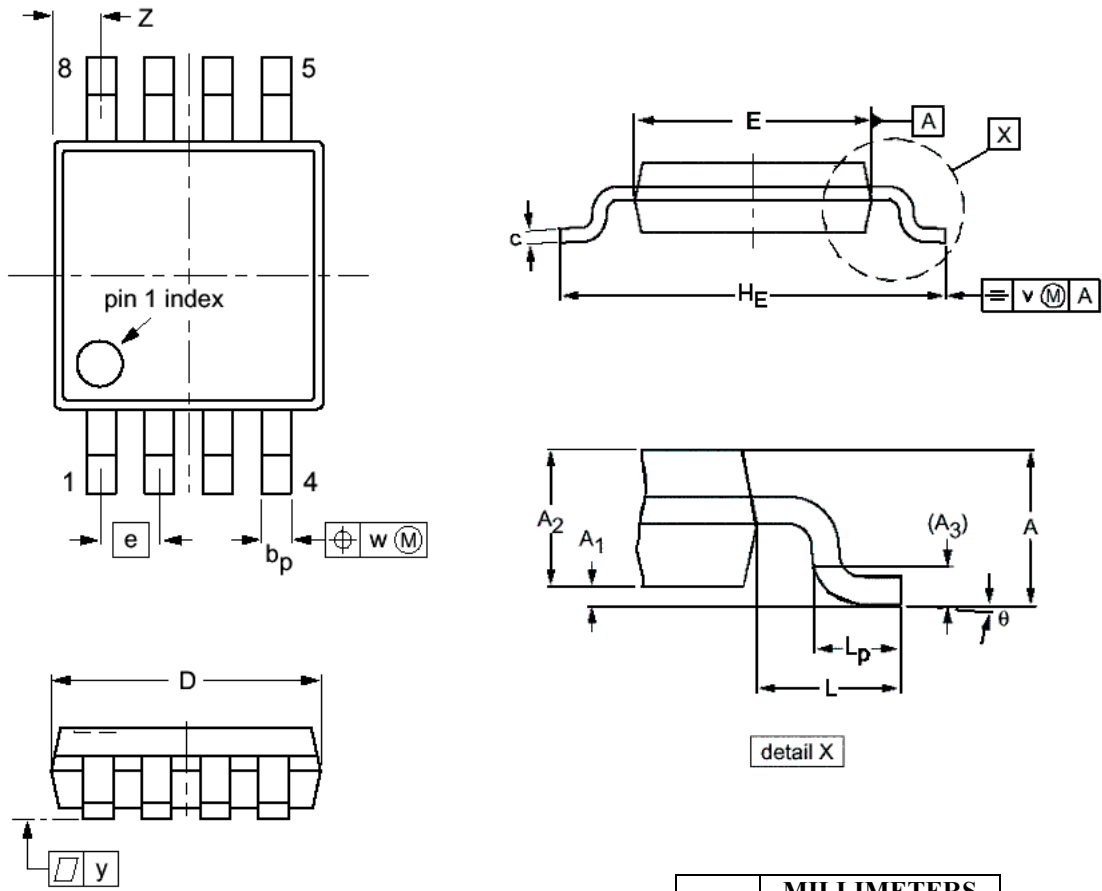
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A		1.75		0.069
A <sub>1</sub>	0.10	0.25	0.004	0.010
A <sub>2</sub>	1.25	1.45	0.049	0.057
A <sub>3</sub>	0.25		0.01	
b <sub>p</sub>	0.36	0.49	0.014	0.019
c	0.19	0.25	0.0075	0.0100
D	4.8	5.0	0.19	0.20
E	3.8	4.0	0.15	0.16
e	1.27		0.050	
H <sub>E</sub>	5.80	6.20	0.228	0.244
L	1.05		0.041	
L <sub>p</sub>	0.40	1.00	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 <sub>1</sub>	0.05	0.15
A <sub>2</sub>	0.80	0.95
A <sub>3</sub>	0.25	
b <sub>p</sub>	0.25	0.45
c	0.15	0.28
D	2.90	3.10
E	2.90	3.10
e	0.65	
H <sub>E</sub>	4.70	5.10
L	0.94	
L <sub>p</sub>	0.40	0.70
v	0.10	
w	0.10	
y	0.10	
Z	0.35	0.70
$\theta$	0°	6°

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