ARIZONA MICROTEK, INC.

AZ10EL11
AZ100EL11

ECL/PECL 1:2 Differential Fanout Buffer

FEATURES

- RoHS Compliant / Lead (Pb) Free Packages available
- 265ps Propagation Delay
- 5ps Skew Between Outputs
- High Bandwidth Output Transitions
- 75kΩ Internal Input Pulldown Resistors
- Direct Replacement for ON Semiconductor MC10EL11 & MC100EL11

PACKAGE AVAILABILITY

PACKAGE	PART NUMBER	MARKING	NOTES
SOIC 8	AZ10EL11D	AZM10 EL11	1,2
SOIC 8 RoHS Compliant / Lead (Pb) Free	AZ10EL11D+	AZM10+ EL11	1,2
SOIC 8	AZ100EL11D	AZM100 EL11	1,2
TSSOP 8	AZ10EL11T	AZT EL11	1,2
TSSOP 8	AZ100LVEL11T	AZH EL11	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 format: "Y" or "YY" for year followed by "WW" for week on underside of part.

DESCRIPTION

The AZ10/100EL11 is a differential 1:2 fanout gate. The device is functionally similar to the E111 device but with higher performance capabilities. Having within-device skews and output transition times significantly improved over the E111, the EL11 is ideally suited for those applications that require the ultimate in AC performance.

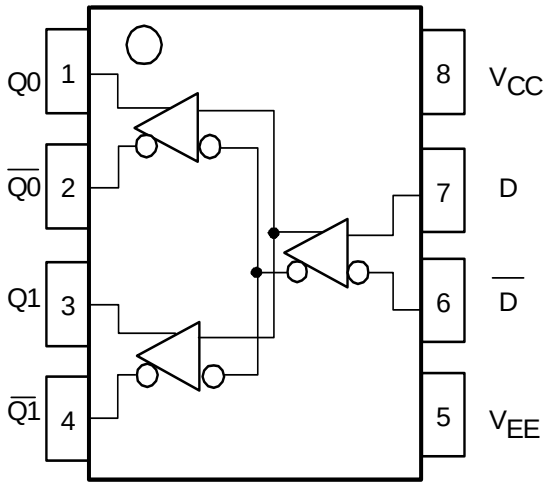
The differential inputs of the EL11 employ clamping circuitry to maintain stability under open input conditions. If the inputs are left open (pulled to V_{EE}) the Q outputs will go LOW.

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

PIN DESCRIPTION

PIN	FUNCTION
D, $\overline{D}$	Data Inputs
Q0, $\overline{Q0}$, Q1, $\overline{Q1}$	Data Outputs
V_{CC}	Positive Supply
V_{EE}	Negative Supply

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



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			150			150			150			150	µA
I_{IL}	Input LOW Current	0.5			0.5			0.5			0.5			µA
I_{EE}	Power Supply Current		26	31		26	31		26	31		26	31	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			150			150			150			150	µA
I_{IL}	Input LOW Current	0.5			0.5			0.5			0.5			µA
I_{EE}	Power Supply Current		26	31		26	31		26	31		26	31	mA

1. For supply voltages other that 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			150			150			150			150	µA
I_{IL}	Input LOW Current	0.5			0.5			0.5			0.5			µA
I_{EE}	Power Supply Current		26	31		26	31		26	31		30	36	mA

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

100K 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]	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			150			150			150			150	µA
I_{IL}	Input LOW Current	0.5			0.5			0.5			0.5			µA
I_{EE}	Power Supply Current		26	31		26	31		26	31		30	36	mA

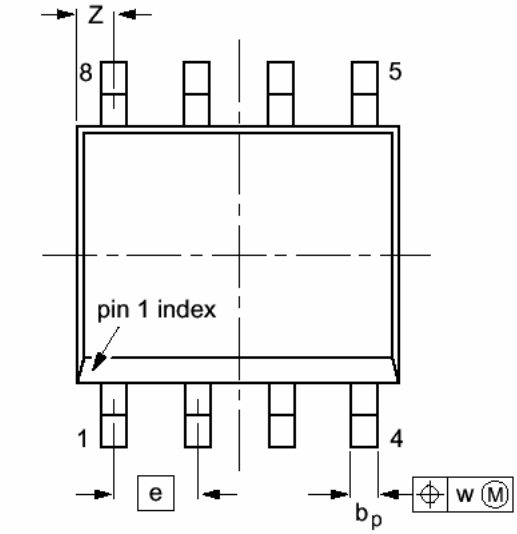
1. For supply voltages other that 5.0V, use the ECL table values and ADD supply voltage value.
2. Each output is terminated through a 50Ω resistor to V_{CC} – 2V.

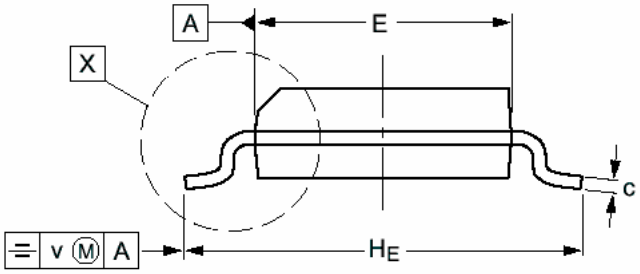
AC Characteristics (V_{EE} =10E(-4.75V to -5.5V), 100E(-4.2V to -5.5V); V_{CC} =GND or V_{EE} =GND; V_{CC} =10E(+4.75V to +5.5V), 100E(+4.2V to +5.5V))

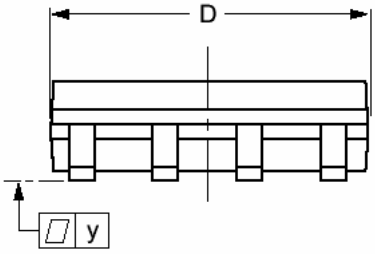
Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t_{PLH} / t_{PHL}	Propagation Delay to Output	135	260	385	185	260	335	190	265	340	215	290	365	ps
t_{SKEW}	Within-Device Skew[1] Duty Cycle Skew[2]		5 5			5 5	20 20		5 5	20 20		5 5	20 20	ps
V_{PP} (AC)	Minimum Input Swing[3]	150			150			150			150			mV
V_{CMR}	Common Mode Range[4]	V_{CC} - 2.0		V_{CC} - 0.4	V_{CC} - 2.0		V_{CC} - 0.4	V_{CC} - 2.0		V_{CC} - 0.4	V_{CC} - 2.0		V_{CC} - 0.4	V
t_r / t_f	Rise/Fall Time 20 – 80%	100		350	100		350	100		350	100		350	ps

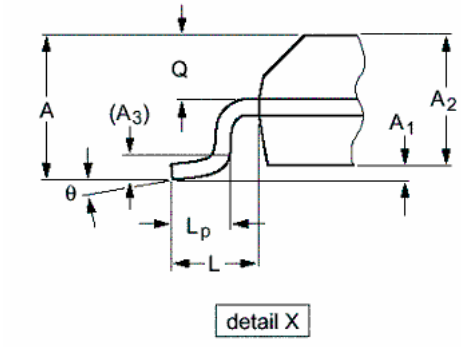
1. Within-device skew defined as identical transitions on similar paths through a device.
2. Duty cycle skew is the difference between a t_{PLH} and t_{PHL} propagation delay through a device.
3. V_{PP} is the minimum peak-to-peak differential input swing for which AC parameters are guaranteed. The device has a DC voltage gain of ≈ 40.
4. The V_{CMR} range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V_{PP}(min) and 1V.

PACKAGE DIAGRAM
SOIC 8





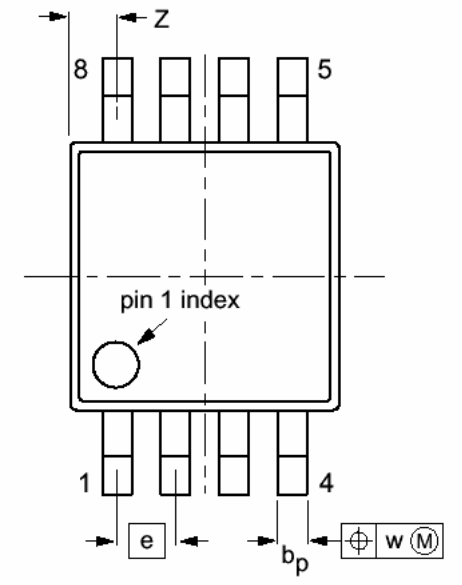


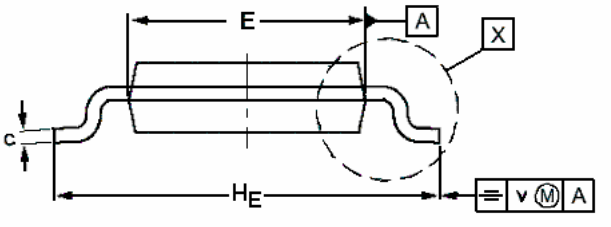


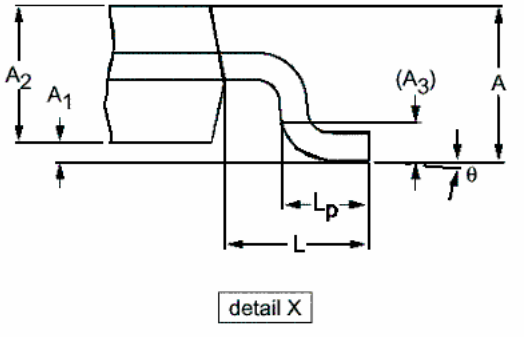
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A		1.75		0.069
A_1	0.10	0.25	0.004	0.010
A_2	1.25	1.45	0.049	0.057
A_3	0.25		0.01	
b_p	0.36	0.49	0.014	0.019
c	0.19	0.25	0.0075	0.0100
D	4.8	5.0	0.19	0.20
E	3.8	4.0	0.15	0.16
e	1.27		0.050	
H_E	5.80	6.20	0.228	0.244
L	1.05		0.041	
L_p	0.40	1.00	0.016	0.039
Q	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^O	8^O	0^O	8^O

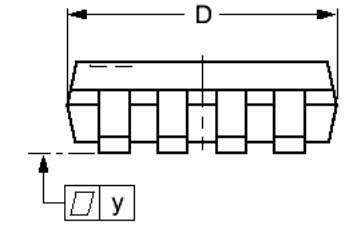
NOTES:
1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

PACKAGE DIAGRAM
TSSOP 8









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^O	6^O

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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