

AZ10LVEL11

AZ100LVEL11

ECL/PECL 1:2 Differential Fanout Buffer

FEATURES

- 265ps Propagation Delay
- 5ps Skew Between Outputs
- High Bandwidth Output Transitions
- Internal Input Pulldown Resistors
- Operating Range of 3.0V to 5.5V
- Direct Replacement for ON Semi MC100LVEL11, MC10EL11 & MC100EL11
- Transistor Count = 51

PACKAGE AVAILABILITY

PACKAGE	PART NUMBER	MARKING	NOTES
SOIC 8	AZ10LVEL11D	AZM10 LVEL11	1,2
SOIC 8	AZ100LVEL11D	AZM100 LVEL11	1,2
SOIC 8 RoHS Compliant / Lead (Pb) Free	AZ10LVEL11D+	AZM10+ LVEL11	1,2
SOIC 8 RoHS Compliant / Lead (Pb) Free	AZ100LVEL11D+	AZM100+ LVEL11	1,2
TSSOP 8	AZ10LVEL11T	AZT LV11	1,2
TSSOP 8	AZ100LVEL11T	AZH LV11	1,2
TSSOP 8 RoHS Compliant / Lead (Pb) Free	AZ100LVEL11T+	AZH+ LV11	1,2

DESCRIPTION

- 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" or "YYWW" on underside of part.

The AZ10/100LVEL11 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 AZ10/100LVEL11 is ideally suited for those applications that require the ultimate in AC performance.

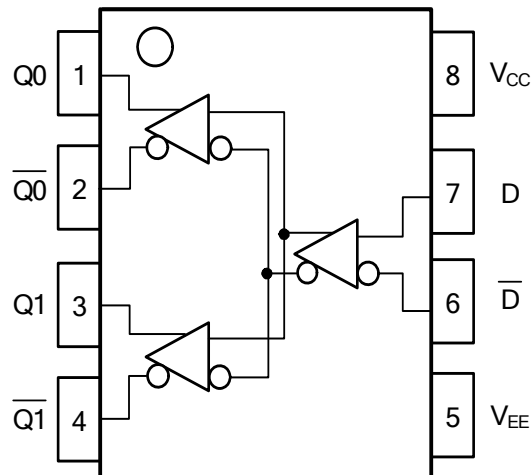
The differential inputs of the AZ10/100LVEL11 employ clamping circuitry to maintain stability under open input conditions. If the inputs are left open, the Q outputs will go LOW.

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

LOGIC DIAGRAM AND PINOUT ASSIGNMENT

PIN DESCRIPTION

PIN	FUNCTION
D, $\bar{D}$	Data Inputs
Q0, $\bar{Q}0$, Q1, $\bar{Q}1$	Data Outputs
V _{CC}	Positive Supply
V _{EE}	Negative Supply



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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 ($V_{EE} = -3.0V$ 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_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		23	31		24	31		25	31		26	31	mA

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

10K LVPECL DC Characteristics ($V_{EE} = GND$, $V_{CC} = +3.3V$)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output HIGH Voltage ^{1,2}	2220		2410	2280		2460	2320		2490	2390		2580	mV
V_{OL}	Output LOW Voltage ^{1,2}	1350		1650	1350		1670	1350		1670	1350		1705	mV
V_{IH}	Input HIGH Voltage ¹	2070		2410	2130		2460	2170		2490	2240		2580	mV
V_{IL}	Input LOW Voltage ¹	1350		1800	1350		1820	1350		1820	1350		1855	mV
I_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		23	31		24	31		25	31		26	31	mA

- For supply voltages other than 3.3V, use the ECL table values and ADD supply voltage value.
- 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_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		23	31		24	31		25	31		26	31	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 $V_{CC} - 2V$.

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100K ECL DC Characteristics ($V_{EE} = -3.0V$ 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_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		22	31		23	31		24	31		28	34	mA

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

100K LVPECL DC Characteristics ($V_{EE} = GND$, $V_{CC} = +3.3V$)

Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
V_{OH}	Output HIGH Voltage ^{1,2}	2215	2295	2420	2275	2345	2420	2275	2345	2420	2275	2345	2420	mV
V_{OL}	Output LOW Voltage ^{1,2}	1470	1605	1745	1490	1595	1680	1490	1595	1680	1490	1595	1680	mV
V_{IH}	Input HIGH Voltage ¹	2135		2420	2135		2420	2135		2420	2135		2420	mV
V_{IL}	Input LOW Voltage ¹	1490		1825	1490		1825	1490		1825	1490		1825	mV
I_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		22	31		23	31		24	31		28	34	mA

- For supply voltages other than 3.3V, use the ECL table values and ADD supply voltage value.
- 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_{IL}	Input LOW Current	-150			-150			-150			-150			μA
I_{IH}	Input HIGH Current			150			150			150			150	μA
I_{EE}	Power Supply Current		22	31		23	31		24	31		28	34	mA

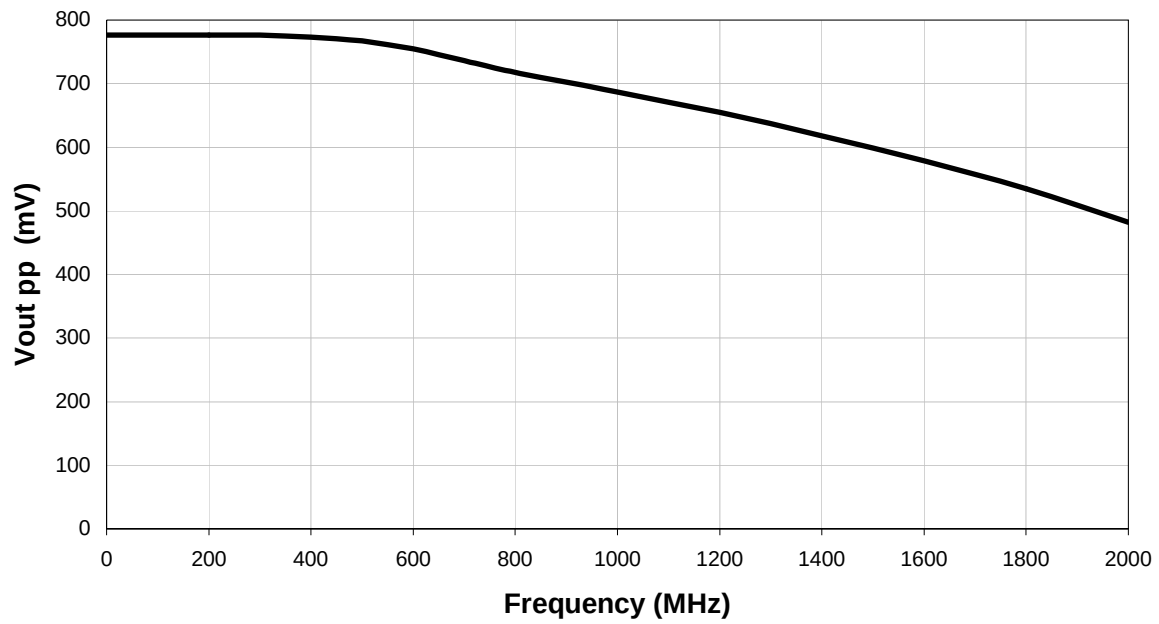
- For supply voltages other than 5.0V, use the ECL table values and ADD supply voltage value.
- Each output is terminated through a 50Ω resistor to $V_{CC} - 2V$.

AC Characteristics ($V_{EE} = -3.0V$ to $-5.5V$, $V_{CC} = GND$ or $V_{EE} = GND$, $V_{CC} = +3.0V$ to $+5.5V$)

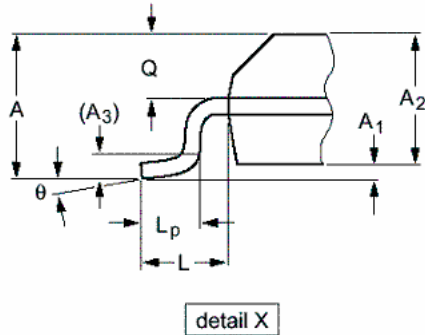
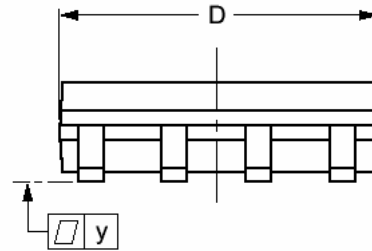
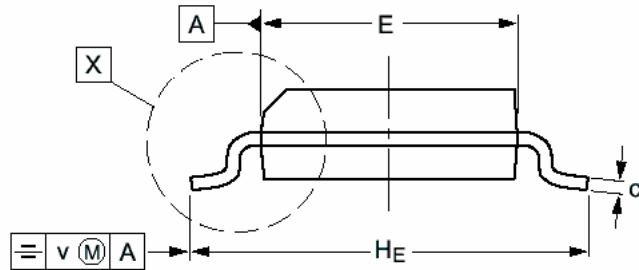
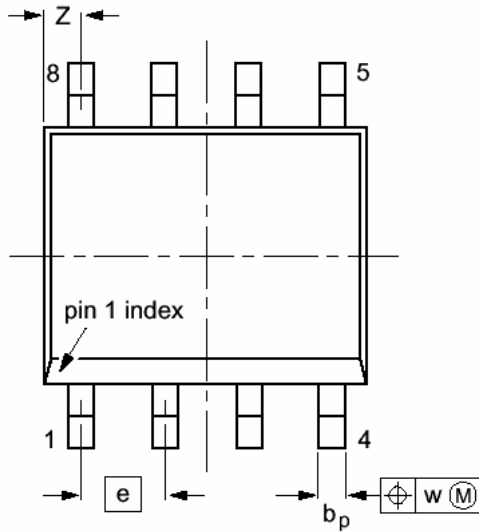
Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t_{PLH} / t_{PHL}	Propagation Delay to Output	135	260	335	185	260	335	190	265	340	215	310	365	ps
t_{SKEW}	Within-Device Skew ¹ Duty Cycle Skew ²		5 5			5 5	20 20		5 5	20 20		5 5	20 20	ps
$V_{PP} (AC)$	Minimum Input Swing ³	150			150			150			150			mV
V_{CMR}	Common Mode Range ⁴	$V_{EE} + 1.2$		$V_{CC} - 0.2$	$V_{EE} + 1.2$		$V_{CC} - 0.2$	$V_{EE} + 1.2$		$V_{CC} - 0.2$	$V_{EE} + 1.2$		$V_{CC} - 0.2$	V
t_r / t_f	Rise/Fall Time 20 – 80%	100		260	100		260	100		260	100		260	ps

- Within-device skew defined as identical transitions on similar paths through a device.
- Duty cycle skew is the difference between a t_{PLH} and t_{PHL} propagation delay through a device.
- V_{PP} is the minimum peak-to-peak differential input swing for which AC parameters guaranteed. The device has a DC gain of ≈ 40 .
- 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.

Fig. 1 Typical Output Swing Versus Frequency for AZ100LVEL11



**PACKAGE DIAGRAM
SOIC 8**

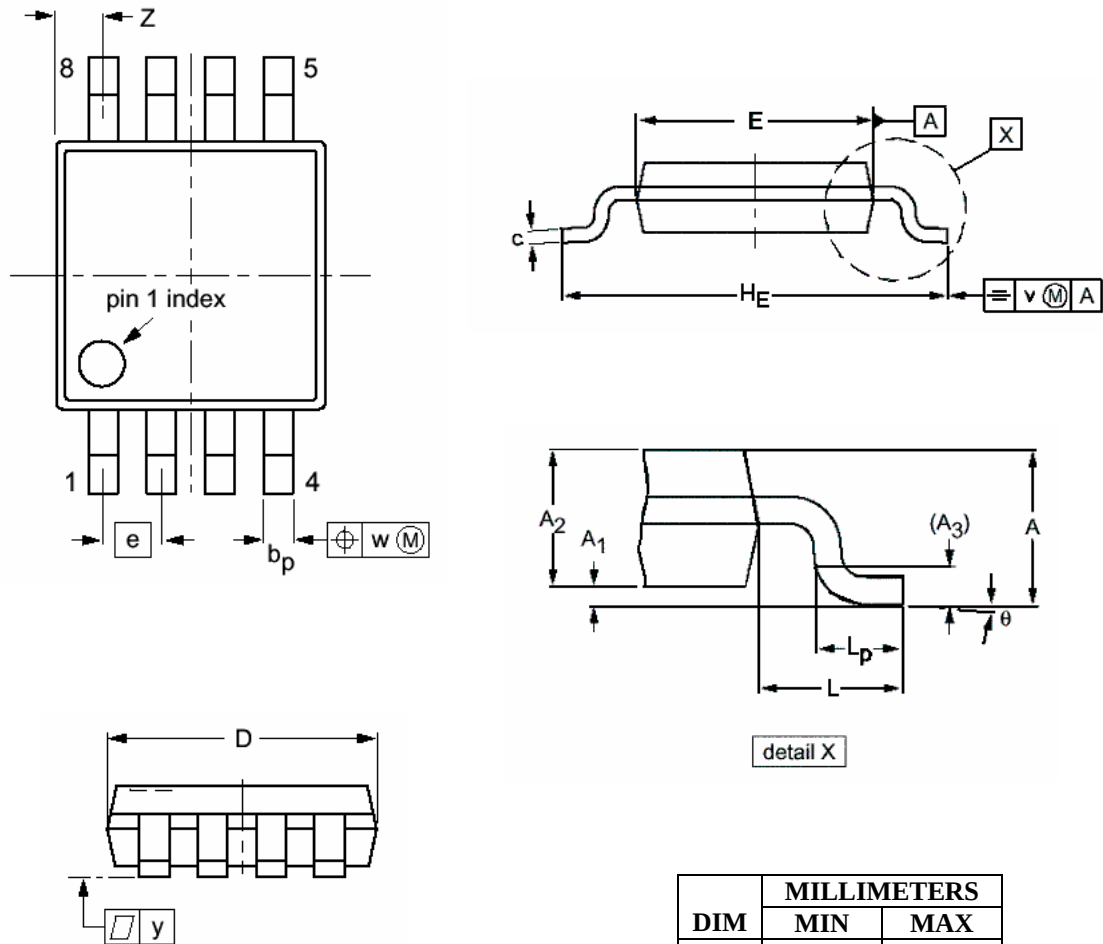


NOTES:

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		INCHES	
	MIN	MAX	MIN	MAX
A		1.75		0.069
A₁	0.10	0.25	0.004	0.010
A₂	1.25	1.45	0.049	0.057
A₃	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°

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
A₁	0.05	0.15
A₂	0.80	0.95
A₃	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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