ARIZONA MICROTEK, INC.

AZ10EL57
AZ100EL57

ECL/PECL 4:1 Differential Multiplexer

FEATURES

- 75kΩ Internal Input Pulldown Resistors
- 2:1 Operation When SEL1 Not Connected
- Multiple V_{BB} Outputs Allow Single-ended Operation
- Direct Replacement for ON Semiconductor MC10EL57 & MC100EL57

PACKAGE AVAILABILITY

PACKAGE	PART NO.	MARKING
SOIC 16	AZ10EL57D	AZM10EL57
SOIC 16 T&R	AZ10EL57DR1	AZM10EL57
SOIC 16 T&R	AZ10EL57DR2	AZM10EL57
SOIC 16	AZ100EL57D	AZM100EL57
SOIC 16 T&R	AZ100EL57DR1	AZM100EL57
SOIC 16 T&R	AZ100EL57DR2	AZM100EL57

DESCRIPTION

The AZ10/100EL57 is a fully differential 4:1 multiplexer. By leaving the SEL1 line open (pulled LOW via the input pulldown resistor) the device can also be used as a differential 2:1 multiplexer with the SEL0 input selecting between D0 and D1. The fully differential architecture of the EL57 makes it ideal for use in low skew applications such as clock distribution.

SEL1 is the most significant select line. The binary number applied to the select inputs will select the same numbered data input (i.e., 00 selects D0, 01 selects D1, etc.).

The EL57 provides two V_{BB} outputs for single-ended use or a DC bias reference for AC coupling to the device. For single-ended input applications, the V_{BB} reference should be connected to one side of the Dn/$\overline{D}$n differential input pair. The input signal is then fed to the other Dn/$\overline{D}$n input. The V_{BB} pins should be used only as a bias for the EL57 as its current sink/source capability is limited. When used, the V_{BB} pins should be bypassed to ground via a 0.01μF capacitor.

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

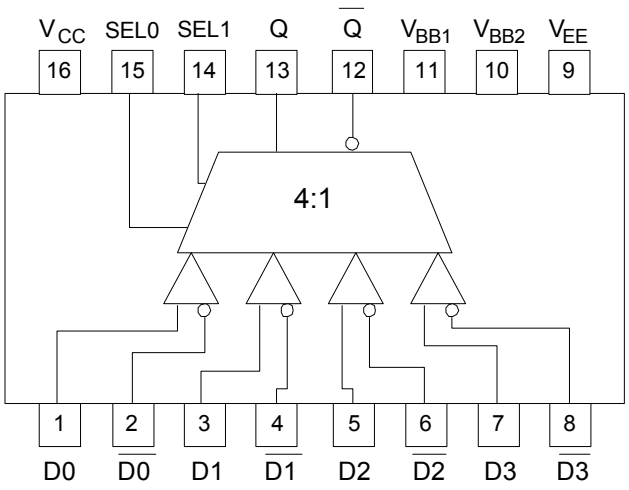
FUNCTION TABLE

SEL1	SEL0	Q
L	L	D0
L	H	D1
H	L	D2
H	H	D3

PIN DESCRIPTION

PIN	FUNCTION
D0, $\overline{D0}$ – D3, $\overline{D3}$	Data Input Pairs
SEL0, SEL1	Mux Select Inputs
V_{BB1}, V_{BB2}	Reference Outputs
Q, $\overline{Q}$	Data Outputs
V_{CC}	Positive Supply
V_{EE}	Negative Supply

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
V_{BB}	Reference Voltage	-1430		-1300	-1380		-1270	-1350		-1250	-1310		-1190	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			24			24			24			24	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
V_{BB}	Reference Voltage[1]	3570		3700	3620		3730	3650		3750	3690		3810	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			24			24			24			24	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
V_{BB}	Reference Voltage	-1380		-1260	-1380		-1260	-1380		-1260	-1380		-1260	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			24			24			24			27	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
V_{BB}	Reference Voltage[1]	3620		3740	3620		3740	3620		3740	3620		3740	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			24			24			24			27	mA

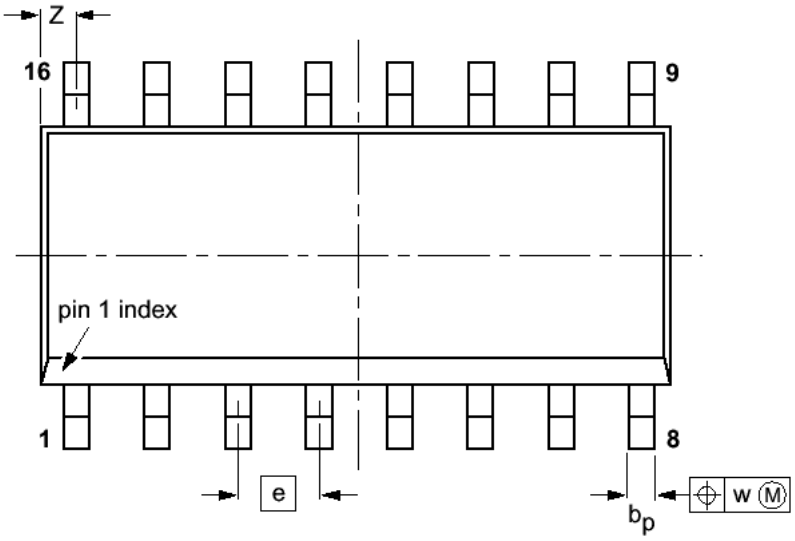
1. For supply voltages other that 5.0V, use the ECL table values and ADD supply voltage value.
2. Each output is terminated through a 50Ω resistor to V_{CC} – 2V.

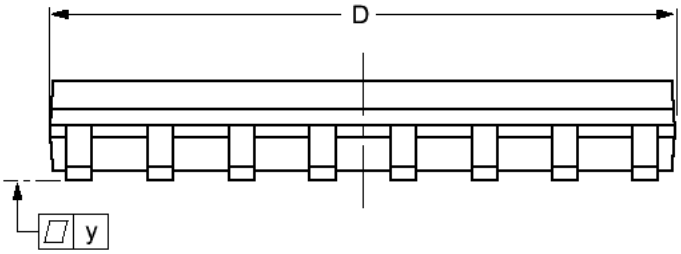
AC Characteristics (V_{EE} =10E(-4.75V to -5.5V), 100E(-4.2V to -5.5V); V_{CC} =GND or V_{EE} =GND; V_{CC} =10E(+4.75V to +5.5V), 100E(+4.2V to +5.5V))

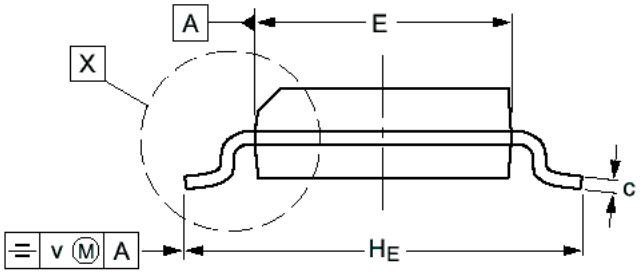
Symbol	Characteristic	-40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
t_{PLH} / t_{PHL}	Propagation Delay D to Q	350		550	350		550	360		560	380		580	ps
	SEL to Q	440		690	440		690	440		690	460		710	
t_{SKEW}	Input Skew D_N,D_M to Q			100			100			100			100	ps
V_{PP} (AC)	Minimum Input Swing[1]	150			150			150			150			mV
V_{CMR}	Common Mode Range[2]	V_{EE} + 2.5		V_{CC} - 0.4	V_{EE} + 2.5		V_{CC} - 0.4	V_{EE} + 2.5		V_{CC} - 0.4	V_{EE} + 2.5		V_{CC} - 0.4	V
t_r / t_f	Output Rise/Fall Times Q (20% - 80%)	125		375	125		375	125		375	125		375	ps

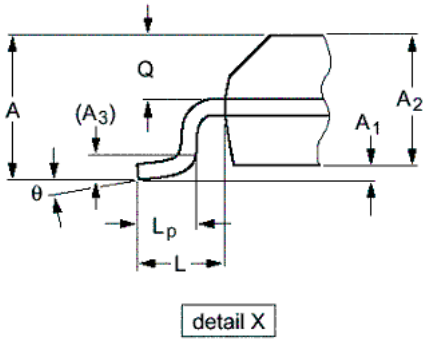
1. V_{PP} is the minimum peak-to-peak differential input swing for which AC parameters are guaranteed.
2. V_{CMR} is defined as the range within which the V_{IH} level may vary, with the device still meeting the propagation delay specification. The V_{IL} level must be such that the peak-to-peak voltage is less than 1.0V and greater than or equal to V_{PP}(min).

PACKAGE DIAGRAM
SOIC 16









DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A		1.75		0.069
A_1	0.10	0.25	0.004	0.010
A_2	1.40	1.55	0.055	0.061
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	9.8	10.0	0.38	0.39
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
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.