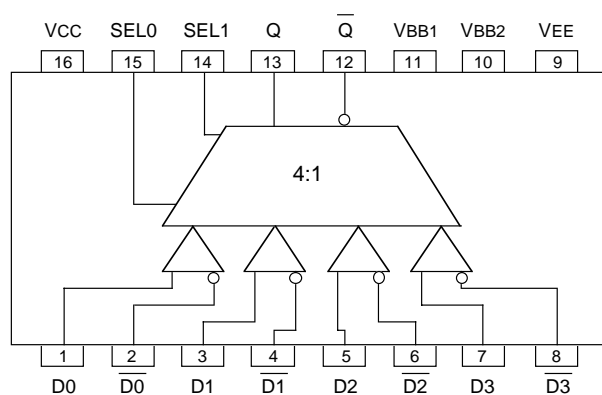


## FEATURES

- Useful as either 4:1 or 2:1 multiplexer
- VBB output for single-ended operation
- 75K $\Omega$  internal input pulldown resistors
- Available in 150 mil 16-pin SOIC package

## PIN CONFIGURATION/BLOCK DIAGRAM



SOIC  
TOP VIEW

## DESCRIPTION

The SY10/100EL57 are fully differential 4:1 multiplexers. By leaving the SEL1 line open (pulled LOW via the input pulldown resistors) the device can also be used as a differential 2:1 multiplexer with 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.

The 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).

Multiple VBB outputs are provided for single-ended or AC coupled interfaces. In these scenarios, the VBB output should be connected to the data bar inputs and bypassed via a 0.01 $\mu$ F capacitor to ground. Note that the VBB output can source/sink up to 0.5mA of current without upsetting the voltage level.

## TRUTH TABLE

SEL1	SEL0	DATA OUT
L	L	D0
L	H	D1
H	L	D2
H	H	D3

## PIN NAMES

Pin	Function
D0-3	Differential Data Inputs
SEL0, 1	Mux Select Inputs
VBB1, 2	Reference Outputs
Q	Data Outputs

**ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>**

Symbol	Rating	Value	Unit
V <sub>EE</sub>	Power Supply (V <sub>CC</sub> = 0V)	-8.0 to 0	V
V <sub>I</sub>	Input Voltage (V <sub>CC</sub> = 0V)	0 to -6.0	V
I <sub>OUT</sub>	Output Current - Continuous - Surge	50 100	mA
T <sub>A</sub>	Operating Temperature Range	-40 to +85	°C
V <sub>EE</sub>	Operating Range <sup>(1), (2)</sup>	-5.7 to -4.2	V

**NOTES:**

1. ABSOLUTE MAXIMUM RATINGS, beyond which, device life may be impaired, unless otherwise specified on an individual data sheet.
2. Parametric values specified at: 5 volt Power Supply Range 100EL57 Series: -4.2V to -5.5V.  
10EL57 Series -4.75V to -5.5V.

**10EL DC CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min) - V<sub>EE</sub> (Max); V<sub>CC</sub> = GND<sup>(1)</sup>

Symbol	Parameter	T <sub>A</sub> = -40°C		T <sub>A</sub> = 0°C		T <sub>A</sub> = +25°C		T <sub>A</sub> = +85°C		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
V <sub>OH</sub>	Output HIGH Voltage	-1080	-890	-1020	-840	-980	-810	-910	-720	mV
V <sub>OL</sub>	Output LOW Voltage	-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>IL</sub>	Input LOW Current	0.5	—	0.5	—	0.5	—	0.5	—	μA

**NOTE:**

1. 10EL circuits are designed to meet the DC specifications shown in the table after thermal equilibrium has been established. The circuit is in a test socket or mounted on a printed circuit board and transverse airflow greater than 500lfpm is maintained. Outputs are terminated through a 50Ω resistor to -2.0V except where otherwise specified on the individual data sheets.

**100EL DC CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min) - V<sub>EE</sub> (Max); V<sub>CC</sub> = GND<sup>(1)</sup>

Symbol	Parameter	T <sub>A</sub> = -40°C			T <sub>A</sub> = 0°C to 85°C			Unit	Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.		
V <sub>OH</sub>	Output HIGH Voltage	-1085	-1005	-880	-1025	-955	-880	mV	V <sub>IN</sub> = V <sub>IH</sub> (Max) or V <sub>IL</sub> (Min)
V <sub>OL</sub>	Output LOW Voltage	-1830	-1695	-1555	-1810	-1705	-1620	mV	V <sub>IN</sub> = V <sub>IH</sub> (Max) or V <sub>IL</sub> (Min)
V <sub>OHA</sub>	Output HIGH Voltage	-1095	—	—	-1035	—	—	mV	V <sub>IN</sub> = V <sub>IH</sub> (Min) or V <sub>IL</sub> (Max)
V <sub>OLA</sub>	Output LOW Voltage	—	—	-1555	—	—	-1610	mV	V <sub>IN</sub> = V <sub>IH</sub> (Min) or V <sub>IL</sub> (Max)
V <sub>IH</sub>	Input HIGH Voltage	-1165	—	-880	-1165	—	-880	mV	
V <sub>IL</sub>	Input LOW Voltage	-1810	—	-1475	-1810	—	-1475	mV	
I <sub>IL</sub>	Input LOW Current	0.5	—	—	0.5	—	—	μA	V <sub>IN</sub> = V <sub>IL</sub> (Max)

**NOTE:**

1. The same DC parameter values at V<sub>EE</sub> = -4.5V now apply across the full V<sub>EE</sub> range of -4.2V to -5.5V. Outputs are terminated through a 50Ω resistor to -2.0V except where otherwise specified on the individual data sheets.

**DC ELECTRICAL CHARACTERISTICS**

VEE = VEE (Min) - VEE (Max); VCC = GND

Symbol	Parameter	TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			Unit	
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
IEE	Power Supply	10EL	—	15	24	—	15	24	—	15	24	—	15	24	mA
	Current	100EL	—	15	24	—	15	24	—	15	24	—	15	27	
VBB	Output Reference	10EL	-1.43	—	-1.30	-1.38	—	-1.27	-1.35	—	-1.25	-1.31	—	-1.19	V
	Voltage	100EL	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	
IIH	Input HIGH Current		—	—	150	—	—	150	—	—	150	—	—	150	μA

**AC ELECTRICAL CHARACTERISTICS**

VEE = VEE (Min) - VEE (Max); VCC = GND

Symbol	Parameter	TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
tPLH	Propagation Delay	350	—	550	350	—	550	360	—	560	380	—	580	ps
tPHL	DATA to Q/Q		—	690	440	—	690	440	—	690	460	—	710	
tskew	Input Skew DATA to Q	—	—	50	—	—	50	—	—	50	—	—	50	ps
VPP	Minum Input Swing	150	—	—	150	—	—	150	—	—	150	—	—	mV
VCMR	Common Mode Range	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	V
tr	Output Rise/Fall Times Q	125	—	375	125	—	375	125	—	375	125	—	375	ps
tf	(20% - 80%)	—	—	—	—	—	—	—	—	—	—	—	—	

**PRODUCT ORDERING CODE**

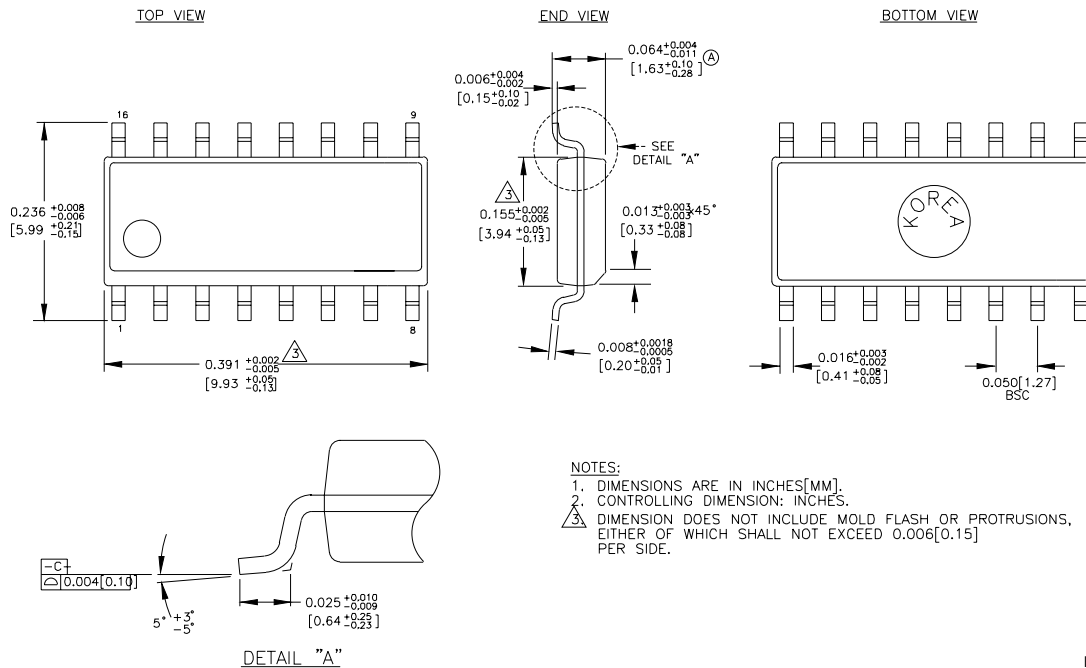
Ordering Code	Package Type	Operating Range	Marking Code
SY10EL57ZC	Z16-2	Commercial	HEL57
SY10EL57ZCTR*	Z16-2	Commercial	HEL57
SY100EL57ZC	Z16-2	Commercial	XEL57
SY100EL57ZCTR*	Z16-2	Commercial	XEL57

\*Tape and Reel

**Note 1.** Recommended for new designs.

Ordering Code	Package Type	Operating Range	Marking Code
SY10EL57ZI <sup>(1)</sup>	Z16-2	Industrial	HEL57
SY10EL57ZITR <sup>(1)</sup>	Z16-2	Industrial	HEL57
SY100EL57ZI <sup>(1)</sup>	Z16-2	Industrial	XEL57
SY100EL57ZITR <sup>(1)</sup>	Z16-2	Industrial	XEL57

\*Tape and Reel

**16 LEAD SOIC .150" WIDE (Z16-2)**

Rev. 02

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