

**FEATURES**

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

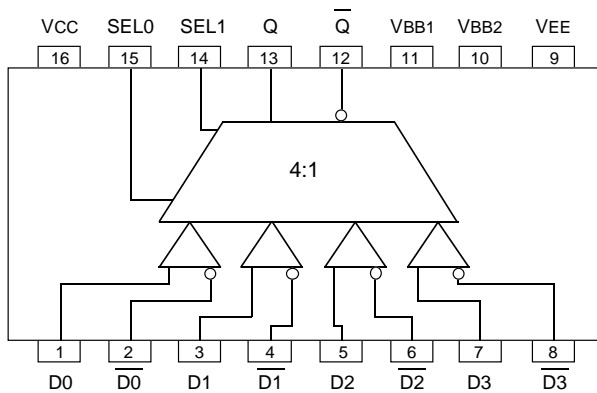
**DESCRIPTION**

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 0.01μF capacitor to ground. Note that the VBB output can source/sink up to 0.5mA of current without upsetting the voltage level.

**PIN CONFIGURATION/BLOCK DIAGRAM**



**SOIC  
TOP VIEW**

**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
VEE	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
VEE	Operating Range <sup>(1), (2)</sup>	-5.7 to -4.2	V

**NOTES:**

- ABSOLUTE MAXIMUM RATINGS, beyond which, device life may be impaired, unless otherwise specified on an individual data sheet.
- 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:**

- 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:**

- 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	—	15	24	—	15	24	—	15	24	—	15	24	mA
	Current	—	15	24	—	15	24	—	15	24	—	15	27	
VBB	Output Reference	-1.43	—	-1.30	-1.38	—	-1.27	-1.35	—	-1.25	-1.31	—	-1.19	V
	Voltage	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	
I <sub>IH</sub>	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	μA

**AC ELECTRICAL CHARACTERISTICS**

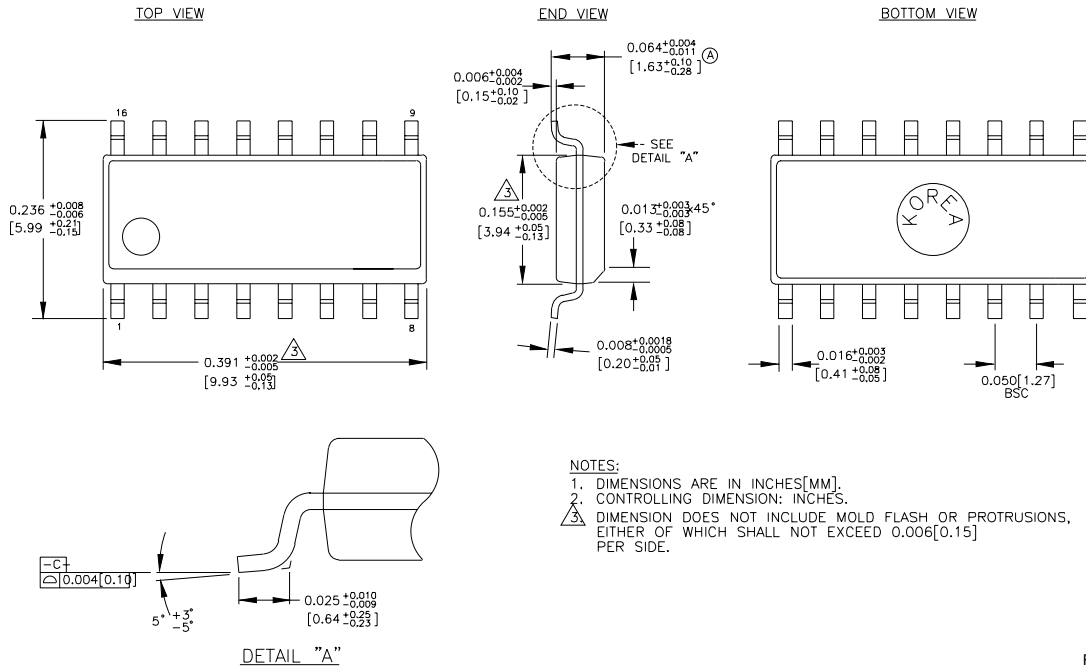
VEE = VEE (Min) - VEE (Max); VCC = GND

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.	
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay DATA to Q/Q SEL to Q/Q	350 440	— —	550 690	350 440	— —	550 690	360 440	— —	560 690	380 460	— —	580 710	ps
t <sub>skew</sub>	Input Skew DATA to Q	—	—	50	—	—	50	—	—	50	—	—	50	ps
V <sub>PP</sub>	Minimum Input Swing DATA	150	—	—	150	—	—	150	—	—	150	—	—	mV
V <sub>CMR</sub>	Common Mode Range DATA	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	V
t <sub>r</sub> t <sub>f</sub>	Output Rise/Fall Times Q (20% - 80%)	125	—	375	125	—	375	125	—	375	125	—	375	ps

**PRODUCT ORDERING CODE**

Ordering Code	Package Type	Operating Range
SY10EL57ZC	Z16-2	Commercial
SY10EL57ZCTR	Z16-2	Commercial
SY100EL57ZC	Z16-2	Commercial
SY100EL57ZCTR	Z16-2	Commercial

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



Rev. 02

**MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA**

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