



# 3.3V 4:1 DIFFERENTIAL MULTIPLEXER

SY100EL57L

## FEATURES

- 3.3V power supply
- 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

## DESCRIPTION

The SY100EL57L is a full differential 4:1 multiplexer. 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 EL57L 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

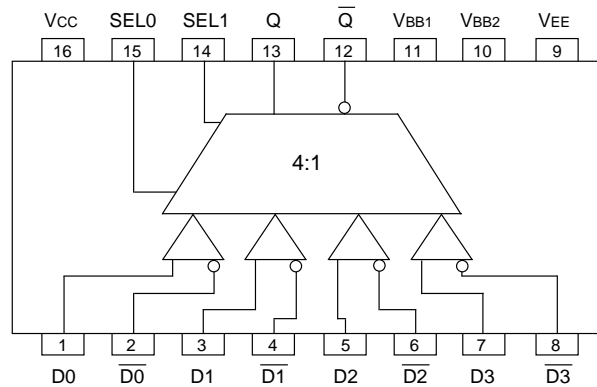
**PACKAGE/ORDERING INFORMATION**

**Ordering Information<sup>(1)</sup>**

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EL57LZC	Z16-2	Commercial	SY100EL57LZC	Sn-Pb
SY100EL57LZCTR <sup>(2)</sup>	Z16-2	Commercial	SY100EL57LZC	Sn-Pb
SY100EL57LZI	Z16-2	Industrial	SY100EL57LZI	Sn-Pb
SY100EL57LZITR <sup>(2)</sup>	Z16-2	Industrial	SY100EL57LZI	Sn-Pb
SY100EL57LZG <sup>(3)</sup>	Z16-2	Industrial	SY100EL57LZG with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL57LZGTR <sup>(2, 3)</sup>	Z16-2	Industrial	SY100EL57LZG with Pb-Free bar-line indicator	Pb-Free NiPdAu

**Notes:**

1. Contact factory for die availability. Dice are guaranteed at T<sub>A</sub> = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.



**16-Pin Narrow SOIC (Z16-2)**

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

Symbol	Rating	Value	Unit
VEE	Power Supply (V <sub>CC</sub> = 0V)	-7.0 to 0	V
V <sub>IN</sub>	Input Voltage (V <sub>CC</sub> = 0V)	0 to -4.3	V
I <sub>OUT</sub>	Output Current - Continuous - Surge	50 100	mA
T <sub>LEAD</sub>	Lead Temperature (soldering, 20sec.)	+260	°C
T <sub>A</sub>	Operating Temperature Range	-40 to +85	°C
VEE	Operating Range <sup>(1,2)</sup>	-4.0 to -3.0	V

**Notes:**

- Absolute maximum ratings, beyond which, device life may be impaired, unless otherwise specified on an individual data sheet.
- Parametric values specified at: Power Supply Range 100EL57L Series: -3.0V to -3.8V.

**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:**

- Outputs are terminated through a 50Ω resistor to -2.0V except where otherwise specified on the individual data sheets.

**DC ELECTRICAL CHARACTERISTICS**V<sub>EE</sub> = V<sub>EE</sub> (Min) - V<sub>EE</sub> (Max); V<sub>CC</sub> = GND

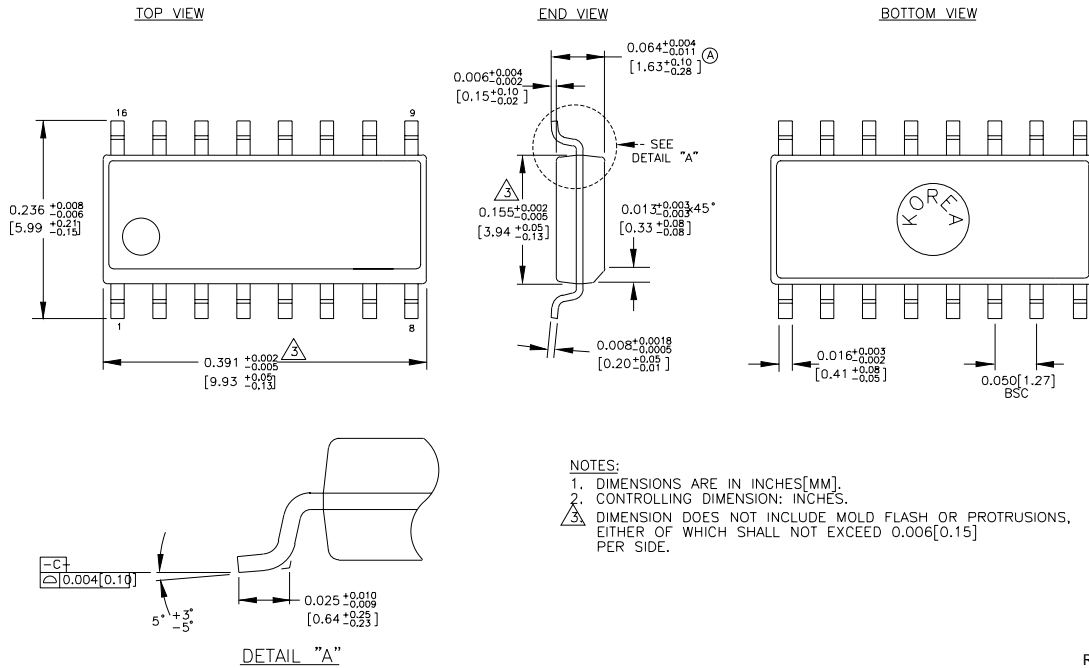
Symbol	Parameter	T <sub>A</sub> = -40°C			T <sub>A</sub> = 0°C			T <sub>A</sub> = +25°C			T <sub>A</sub> = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
I <sub>EE</sub>	Power Supply Current	—	-15	-24	—	-15	-24	—	-15	-24	—	-15	-27	mA
V <sub>BB</sub>	Output Reference Voltage	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	V
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>PD</sub>	Propagation Delay DATA to Q/Q̄	350	—	550	350	—	550	360	—	560	380	—	580	ps
	SEL to Q/Q̄	350	—	600	350	—	600	350	—	610	380	—	630	
t <sub>skew</sub>	Input Skew DATA to Q	—	—	50	—	—	50	—	—	50	—	—	50	ps
V <sub>PP</sub>	Minmum 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	—	575	125	—	520	125	—	520	125	—	520	ps

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



Rev. 02

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