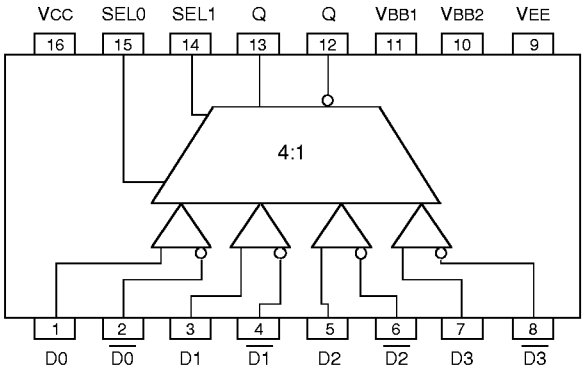
FEATURES

- **Useful as either 4:1 or 2:1 multiplexer**
- **V_{BB} output for single-ended operation**
- **75KΩ internal input pulldown resistors**
- **ESD protection of 2000V**
- **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 V_{BB} outputs are provided for single-ended or AC coupled interfaces. In these scenarios, the V_{BB} output should be connected to the data bar inputs and bypassed via a 0.01µF capacitor to ground. Note that the V_{BB} 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
V_{BB}1, 2	Reference Outputs
Q	Data Outputs

Rev.: E Amendment: /0
Issue Date: August, 1998

ABSOLUTE MAXIMUM RATINGS[1]

Symbol	Rating	Value	Unit
V_{EE}	Power Supply (V_{CC} = 0V)	–8.0 to 0	V
V_I	Input Voltage (V_{CC} = 0V)	0 to -6.0	V
I_{OUT}	Output Current - Continuous - Surge	 50 100	mA
T_A	Operating Temperature Range	-40 to +85	°C
V_{EE}	Operating Range[1], [2]	-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_{EE} = V_{EE} (Min) - V_{EE} (Max); V_{CC} = GND[1]

Symbol	Parameter	T_A = -40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
V_{OH}	Output HIGH Voltage	-1080	-890	-1020	-840	-980	-810	-910	-720	mV
V_{OL}	Output LOW Voltage	-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	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_{EE} = V_{EE} (Min) - V_{EE} (Max); V_{CC} = GND[1]

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

NOTE:

1. The same DC parameter values at V_{EE} = -4.5V now apply across the full V_{EE} 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

V_{EE} = V_{EE} (Min) - V_{EE} (Max); V_{CC} = GND

Symbol	Parameter		T_A = -40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
			Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{EE}	Power Supply Current	10EL	—	15	24	—	15	24	—	15	24	—	15	24	mA
		100EL	—	15	24	—	15	24	—	15	24	—	15	27	
V_{BB}	Output Reference Voltage	10EL	-1.43	—	-1.30	-1.38	—	-1.27	-1.35	—	-1.25	-1.31	—	-1.19	V
		100EL	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	
I_{IH}	Input HIGH Current		—		150			150			150			150	µA

AC ELECTRICAL CHARACTERISTICS

V_{EE} = V_{EE} (Min) - V_{EE} (Max); V_{CC} = GND

Symbol	Parameter	T_A = -40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PLH} t_{PHL}	Propagation Delay													ps
	DATA to $Q/\overline{Q}$	350	—	550	350	—	550	360	—	560	380	—	580	
	SEL to $Q/\overline{Q}$	440	—	690	440	—	690	440	—	690	460	—	710	
t_{skew}	Input Skew DATA to Q	—	—	50	—	—	50	—	—	50	—	—	50	ps
V_{PP}	Minmum Input Swing DATA	150	—	—	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range DATA	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	-2.0	—	-0.4	V
tr tf	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 PLASTIC SOIC .150" WIDE (Z16-2)