

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

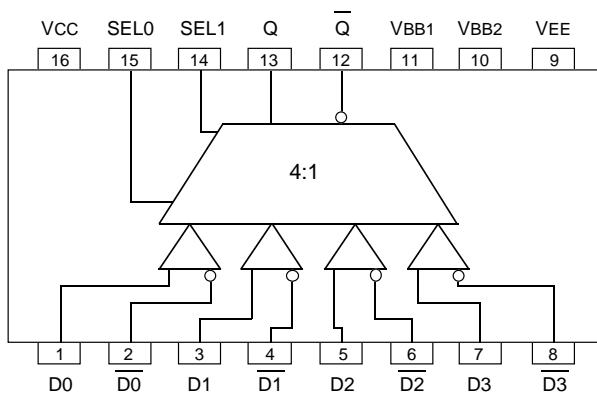
DESCRIPTION

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⁽¹⁾

| Symbol | Rating | Value | Unit |
|------------------|---|--------------|------|
| VEE | 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 |
| VEE | Operating Range ^{(1), (2)} | -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 CHARACTERISTICSV_{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:

- 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 CHARACTERISTICSV_{EE} = V_{EE} (Min) - V_{EE} (Max); V_{CC} = GND⁽¹⁾

| Symbol | Parameter | T _A = -40°C | | | T _A = 0°C to 85°C | | | 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:

- 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

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 | |
| I _{IH} | Input HIGH Current | | — | — | 150 | — | — | 150 | — | — | 150 | — | — | 150 | μA |

AC ELECTRICAL CHARACTERISTICS

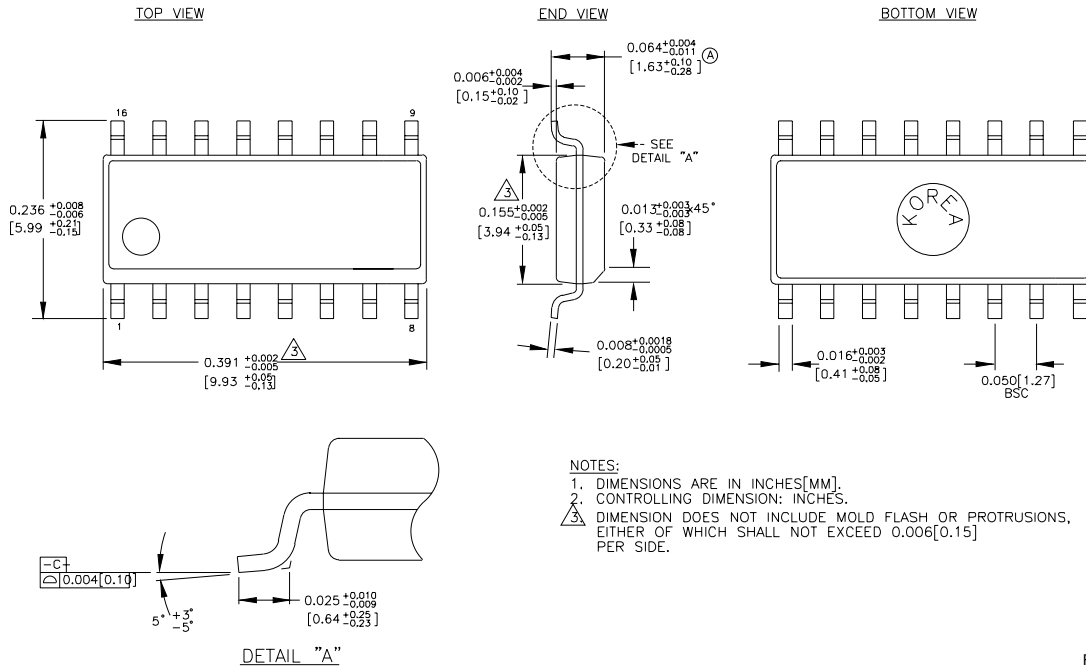
VEE = VEE (Min) - VEE (Max); VCC = GND

| 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 _{PLH} t _{PHL} | 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 _{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 |
| t _r t _f | 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

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