

HIGH-PERFORMANCE PRODUCTS

Description

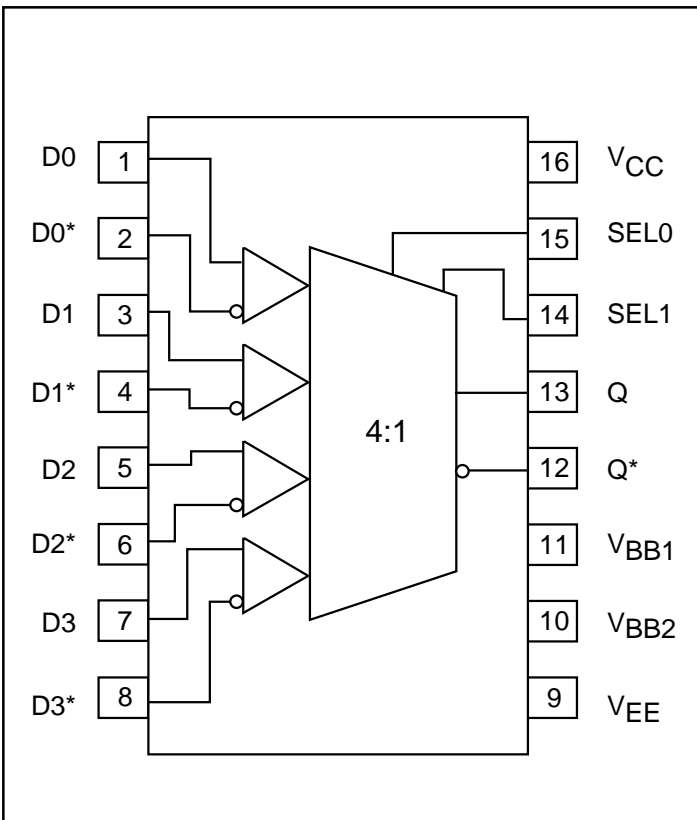
The SK10/100EL57 is a 4:1 Differential Multiplexer. It is fully compatible with MC10/100EL57. The SEL1 input, being the most significant select line, allows the device to operate as either a 2:1 or 4:1 multiplexer. If left open, it will be at a logic low due to the internal input pulldown resistor which, in turn, allows the device to be used as a 2:1 multiplexer.

Multiple V_{BB} outputs are provided for single-ended use or DC bias for AC coupling to the device. V_{BB} is an output pin and should be used as a bias for the SK10/100EL57W as its current source/sink capability is limited. Whenever used, the V_{BB} output pins should be bypassed to V_{CC} via 0.01 μF capacitors.

Features

- Extended Supply Voltage Range: ($V_{EE} = -5.5V$ to $-3.0V$, $V_{CC} = 0V$) or ($V_{CC} = +3.0V$ to $+5.5V$, $V_{EE} = 0V$)
- High Bandwidth Output Transition
- 420 ps typical Propagation Delay
- V_{BB} Output
- Internal Input Pulldown Resistors
- Useful as either a 4:1 or 2:1 Multiplexer
- New Differential Input Common Mode Range
- Fully Compatible with MC10/100EL57
- ESD Protection of $>4000V$
- Industrial Temperature Range: $-40^{\circ}C$ to $+85^{\circ}C$
- Available in 16 Pin SOIC Package (150 mil)

Functional Block Diagram

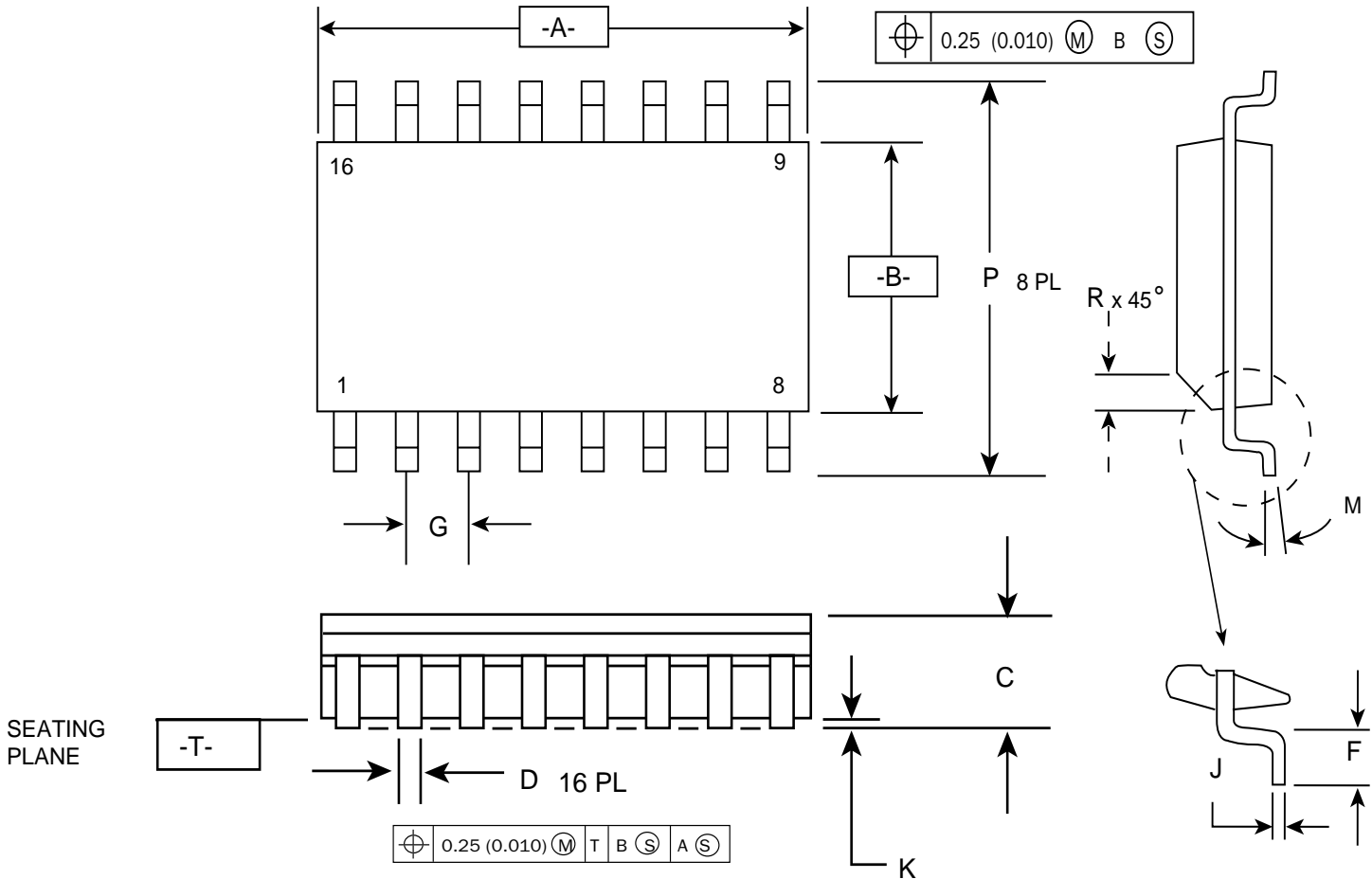


Pin Names

Pin	Function
Dn - Dn*	Differential Data Inputs
SEL0, SEL1	MUX Select Inputs
Q, Q*	Differential Data Output
V_{BB}	Output Reference Voltage

SEL1	SEL0	Data Out
L	L	D0
L	H	D1
H	L	D2
H	H	D3

Truth Table

16 Pin SOIC Package


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.80	10.00	0.386	0.393
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

NOTES:

1. Dimensions and tolerances per ANSI Y14.5M, 1982.
2. Controlling dimension: millimeter.
3. Dimensions A and B do not include mold protrusion.
4. Maximum mold protrusion 0.150 (0.006) per side.
5. Dimension D does not include Dambar protrusion. Allowable Dambar protrusion shall be 0.13 (0.005) total in excess of d dimension at maximum material condition.

HIGH-PERFORMANCE PRODUCTS
DC Characteristics

SK10/100EL57W DC Electrical Characteristics (Notes 1, 2, 7)

 ($V_{CC} - V_{EE} = +3.0V$ to $+5.5V$; V_{OUT} loaded 50Ω to $V_{CC} - 2.0V$)

Symbol	Characteristic	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	
I_{IN}	Input Current (Diff) (SE)	-200		200 200	-200		200 200	-200		200 200	-200		200 200	μA μA
I_{EE}	Power Supply Current 10EL 100EL		18 19	25 26		18 19	25 26		18 19	25 26		18 19	25 26	mA mA
V_{BB}	Output Reference Voltage ⁶ 10EL 100EL	-1.43 -1.43		-1.30 -1.25	-1.38 -1.43		-1.27 -1.25	-1.35 -1.43		-1.25 -1.25	-1.31 -1.43		-1.19 -1.25	V V

AC Characteristics

SK10/100EL57W AC Electrical Characteristics (Notes 1, 2)

 ($V_{CC} - V_{EE} = +3.0V$ to $+5.5V$; V_{OUT} loaded 50Ω to $V_{CC} - 2.0V$)

Symbol	Characteristic	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}	Input to Output Delay ³ Q, Q* (DIFF)	320	390	460	330	400	470	340	420	500	370	440	510	ps
t_{PLH} t_{PHL}	SEL1, SEL0 to Q, Q* ³ Propagation Delay	400	490	580	430	510	590	450	525	600	460	545	650	ps
t_{skew}	Input Skew Dn, Dn* to Q, Q*		35	70		35	70		35	70		35	70	ps
t_r, t_f	Output Rise/Fall Times (20% to 80%) Q, Q*	200	250	300	205	255	305	210	260	310	220	275	330	ps
V_{PP}	Minimum Input Swing ⁴	250		1000	250		1000	250		1000	250		1000	mV
V_{CMR}	Common Mode Range ⁵	$V_{EE} + 1.5$		V_{CC}	$V_{EE} + 1.5$		V_{CC}	$V_{EE} + 1.5$		V_{CC}	$V_{EE} + 1.5$		V_{CC}	V

HIGH-PERFORMANCE PRODUCTS**AC Information (continued)**

Notes:

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 500 lfpm is maintained. Outputs are terminated through a 50Ω resistor to VCC-2.0V.
2. 100K circuits are designed to meet the DC specification shown in the table where transverse airflow greater than 500 lfpm is maintained.
3. Duty cycle skew is the difference between T_{PLH} and T_{PHL} propagation delay through a device.
4. Minimum input swing for which AC parameters guaranteed.
5. CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the high level falls within the specified range and the peak-to-peak voltage lies between $V_{PP(\min)}$ and 1V. The lower end of the CMR range varies 1:1 with VEE and is equal to VEE + 1.5V.
6. Voltages referenced to VCC = 0V.
7. For standard ECL DC specifications, refer to the ECL Logic Family Standard DC Specifications Data Sheet.
8. For part ordering description, see HPP Part Ordering Information Data Sheet.

Ordering Information

Ordering Code	Package ID
SK10EL57WD	16-SOIC
SK10EL57WDT	16-SOIC
SK100EL57WD	16-SOIC
SK100EL57WDT	16-SOIC
SK10EL57WU	Die
SK100EL57WU	Die

Application Notes

AN1002 - Interfacing Between ECL / LVECL / PECL / LVPECL - to - TTL / LVTTTL / CMOS / LVCMOS

AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices

AN1004 - Interfacing Between LVDS and ECL / LVECL / PECL / LVPECL

AN1005 - Using ECL / LVECL Devices as PECL / LVPECL

AN1006 - Designing with 10K and 100K ECL / PECL Devices

AN1008 - Interfacing with CML

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