

HIGH-PERFORMANCE PRODUCTS

Description

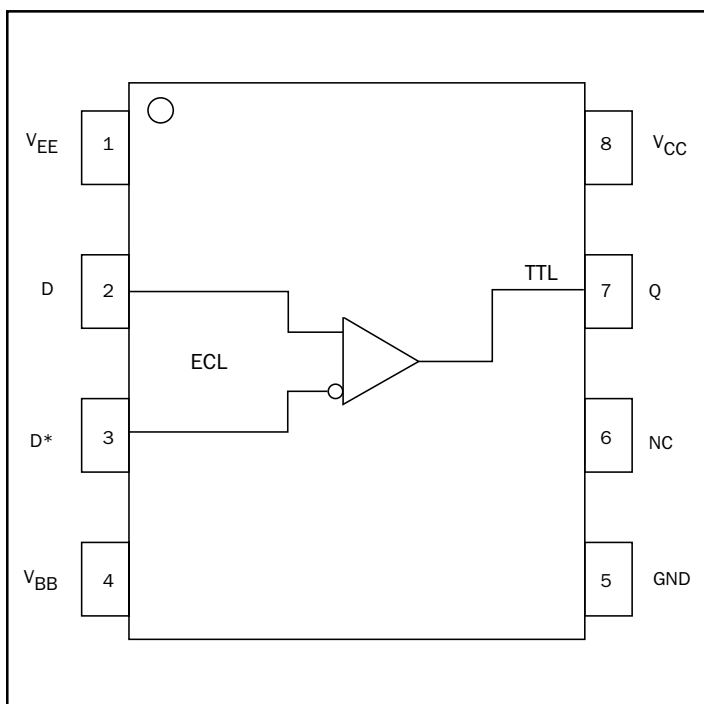
The SK10/100ELT25W is a differential ECL to CMOS/TTL or LVECL to LVCMOS/LVTTL Translator. Because ECL levels are used, a +5.5V / +3.0V, -5.5V / -3.0V, and ground supplies are required. The SK10/100ELT25W is functionally compatible with MC10/100ELT25.

The small outline 8 pin SOIC package and the single gate of the SK10/100ELT25W make this device ideal for those applications where space, performance, and low power are extremely important.

The V_{BB} output allows the ELT25W to also be used in either single-ended or AC coupled mode. The V_{BB} output should be used only as a bias for the ELT25W as its current sink/source capability is limited. When used, V_{BB} should be bypassed to ground via a 0.01 μ F capacitor.

Under open input conditions, the pull down resistor on D, and pulldown and pullup resistors on D* will force the Q output to a TTL low.

Functional Block Diagram



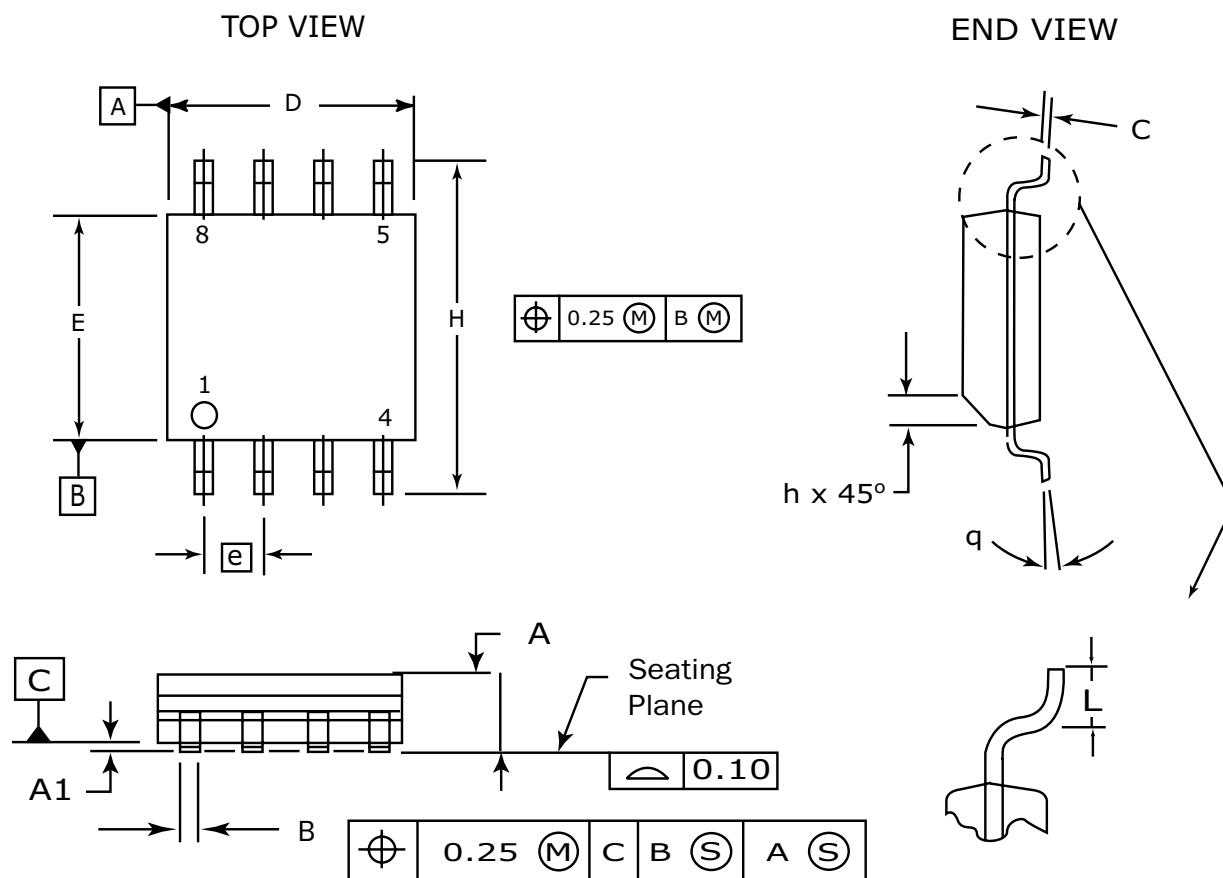
Features

- Extended Supply Voltage Range ($V_{EE} = -5.5V$ to $-3.0V$ and $V_{CC} = +3.0V$ to $+5.5V$)
- High Bandwidth Output Transition
- 2.6 ns Typical Propagation Delay
- V_{BB} Output
- Internal Input Resistors: Pulldown on D, Pulldown and Pullup on D*
- Q Output will Default Low with Inputs Open or at V_{EE}
- New Differential Input Common Mode Range
- Functionally Compatible with MC10/100ELT25
- ESD Protection of >4000V
- Industrial Temperature Range: $-40^{\circ}C$ to $85^{\circ}C$
- Available in 8 pin SOIC (150 mils) Package
- Flammability Rate: UL-94 code V-0
- Moisture Sensitivity: Level 1

PIN Names

Pin	Function
D, D*	Differential ECL Inputs
Q	TTL Output
V_{CC}	Positive Supply
V_{EE}	Negative Supply
V_{BB}	Reference Output Voltage
GND	Ground

8 Lead SOIC Package



DIM	MILLIMETERS	
	MIN	MAX
A	1.35	1.75
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	5.00
E	3.80	4.00
e	1.27 BSC	
H	5.80	6.20
h	0.25	0.50
L	0.40	1.27
θ	0°	8°

NOTES:

1. Dimensions are in millimeters.
2. Dimensions D and E do not include mold protrusion.
3. Maximum mold protrusion 0.15 per side.
4. Dimension B does not include Dambar protrusion. Allowable Dambar protrusion shall be 0.127 total in excess of the B dimension at maximum material condition.

HIGH-PERFORMANCE PRODUCTS
DC Characteristics
SK10/100ELT25W TTL Output DC Electrical Characteristics
 $(V_{CC} = +3.0V \text{ to } +5.5V; V_{EE} = -3.0V \text{ to } -5.5V; T_A = -40^{\circ}C \text{ to } 85^{\circ}C)$ (Note 4)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	$V_{CC} - 0.5$			V	$I_{OH} = -3 \text{ mA}$
V_{OL}	Output LOW Voltage			0.5	V	$I_{OL} = 8 \text{ mA}$
I_{CC}	Power Supply Current	20		37	mA	

SK10/100ELT25W ECL Input DC Electrical Characteristics
 $(V_{CC} = +3.0V \text{ to } +5.5V; V_{EE} = -3.0V \text{ to } -5.5V)$ (Note 4)

		$T_A = -40^{\circ}C$		$T_A = 0^{\circ}C$		$T_A = +25^{\circ}C$		$T_A = +85^{\circ}C$		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Min	Max	Unit
V_{BB}	Input Reference Voltage ⁵ 10ELT 100ELT	-1430	-1300	-1380	-1270	-1350	-1250	-1310	-1190	mV
		-1430	-1260	-1430	-1260	-1430	-1260	-1430	-1260	mV
I_{EE}	Negative Power Supply Current	5	16	5	16	5	16	5	16	mA
I_{IN}	Input Current D, D* (Diff)	-150	150	-150	150	-150	150	-150	150	μA

AC Characteristics
SK10/100ELT25W AC Electrical Characteristics
 $(V_{CC} = +3.0V \text{ to } +5.5V; V_{EE} = -3.0V \text{ to } -5.5V)$ (Note 4)

Symbol	Characteristic	$T_A = -40^{\circ}C$			$T_A = 0^{\circ}C$			$T_A = +25^{\circ}C$			$T_A = +85^{\circ}C$			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
f_{max}	Maximum Toggle Frequency	180			180			180			180			MHz
t_{PLH} t_{PHL}	Propagation Delay ($C_L = 20 \text{ pF}$)	2.3		4.3	2.2		3.6	2.0		3.5	1.8		3.2	ns
V_{PP}	Minimum Input Swing	200		1000	200		1000	200		1000	200		1000	mV
V_{CMR}	Common Mode Range ¹	$V_{EE} + 2.2$		GND	$V_{EE} + 2.2$		GND	$V_{EE} + 2.2$		GND	$V_{EE} + 2.2$		GND	V
t_r, t_f	Output Rise/Fall Times (1V to 2V)	305		1423	305		1423	305		1423	305		1423	ps

HIGH-PERFORMANCE PRODUCTS

AC Characteristics *(continued)*

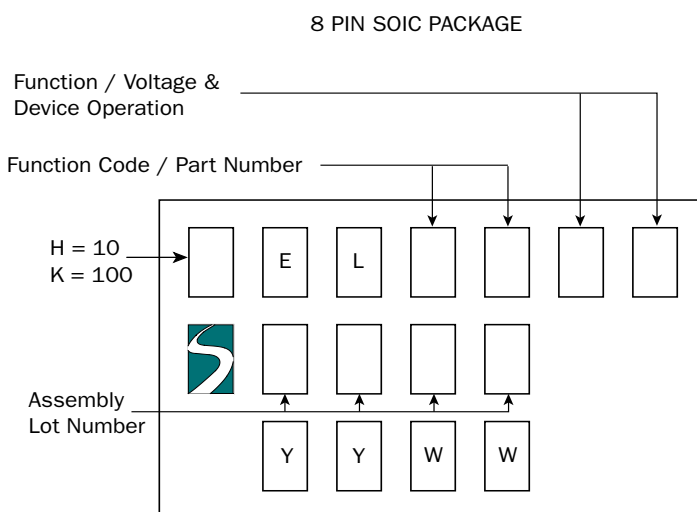
Notes:

1. 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 $VEE + 2.2V$.
2. For part ordering description, see HPP Part Ordering Information Data Sheet.
3. Power supply sequencing is in the following order: VEE, VCC, then GND.
4. Test condition for VBB output: not loaded or VBB output left floating.

Ordering Information

Ordering Code	Package ID	Temperature Range
SK10ELT25WD	8-SOIC	Industrial
SK10ELT25WDT	8-SOIC	Industrial
SK100ELT25WD	8-SOIC	Industrial
SK100ELT25WDT	8-SOIC	Industrial
SK10ELT25WU	Die	
SK100ELT25WU	Die	

Marking Information



YY: Last two digits of the Year
WW: Working Week

Contact Information

Division Headquarters
10021 Willow Creek Road
San Diego, CA 92131
Phone: (858) 695-1808
FAX: (858) 695-2633

Semtech Corporation High-Performance Products Division

Marketing Group
1111 Comstock Street
Santa Clara, CA 95054
Phone: (408) 566-8776
FAX: (408) 727-8994