SK10/100ELT25W
Differential ECL to CMOS/TTL or LVECL to LVCMOS/LVTTL Translator

Description

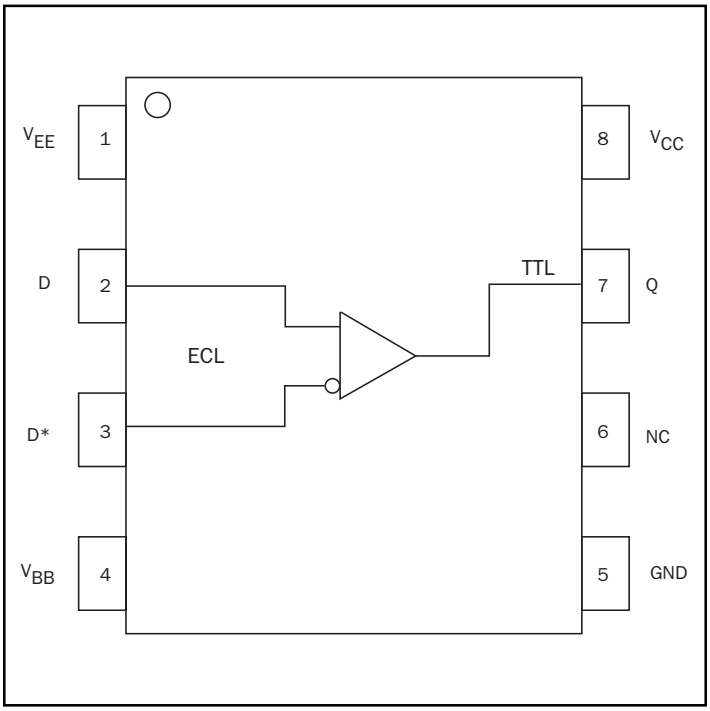
The SK10/100ELT25W is a differential ECL to CMOS/TTL or LVECL to LVCMOS/LVTTL Translator. Because ECL levels are used, a +5.5V / +3.0V, –5.5V / –3.0V, and ground supplies are required. The SK10/100ELT25W is functionally compatible with MC10/100ELT25.

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 µF 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



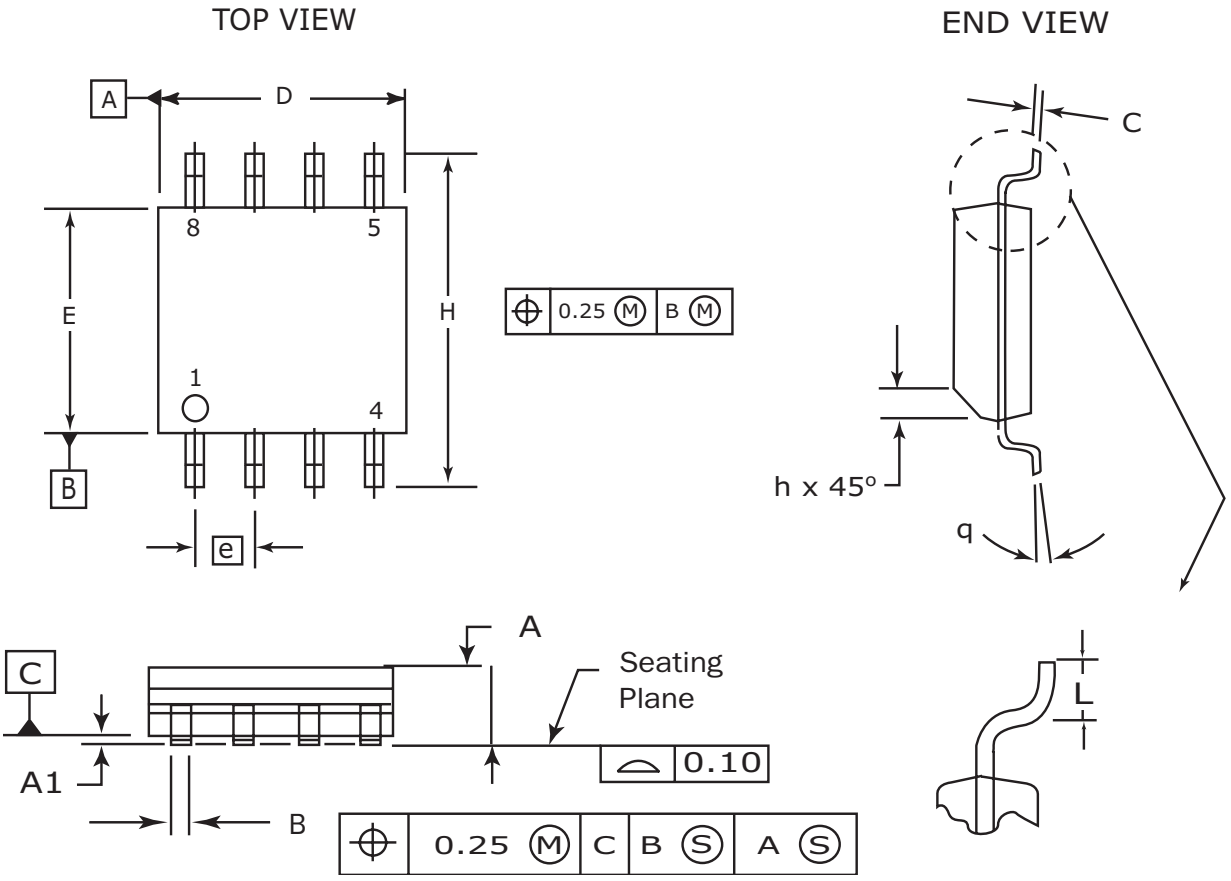
Features

- Extended Supply Voltage Range (VEE = –5.5V to –3.0V and VCC = +3.0V to +5.5V)
- High Bandwidth Output Transition
- 2.1 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°C to 85°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 no 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.

DC Characteristics

SK10/100ELT25W TTL Output DC Electrical Characteristics

(V_{CC} = +3.0V to +5.5V; V_{EE} = -3.0V to -5.5V; T_A = –40°C to 85°C) *(Note 4)*

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V_{OH}	Output HIGH Voltage	V_{CC} - 0.5			V	I_{OH} = - 3 mA
V_{OL}	Output LOW Voltage			0.5	V	I_{OL} = 8 mA
I_{CC}	Power Supply Current	10		37	mA	

SK10/100ELT25W ECL Input DC Electrical Characteristics

(V_{CC} = +3.0V to +5.5V; V_{EE} = -3.0V to -5.5V) *(Note 4)*

		TA = - 40°C		TA = 0°C		TA = + 25°C		TA = + 85°C		
Symbol	Characteristic	Min	Max	Min	Max	Min	Max	Min	Max	Unit
V_{BB}	Input Reference Voltage [5] 10ELT 100ELT	 -1430 -1430	 -1300 -1260	 -1380 -1430	 -1270 -1260	 -1350 -1430	 -1250 -1260	 -1310 -1430	 -1190 -1260	 mV mV
I_{EE}	Negative Power Supply Current 10EL 100EL	 0 -3	 -10 -16	 0 -3	 -10 -16	 0 -3	 -10 -16	 0 -3	 -10 -16	 mA 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 to +5.5V; V_{EE} = -3.0V to -5.5V) *(Note 4)*

		TA = - 40°C			TA = 0°C			TA = + 25°C			TA = + 85°C			
Symbol	Characteristic	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Unit
f_{max}	Maximum Toggle Frequency	180			180			180			180			MHz
t_{PLH} t_{PHL}	Propagation Delay (C_L = 20 pF)	1.5	2.5	3.5	1.2	2.1	3.0	1.2	2.1	3.0	1.2	2.1	3.0	ns
V_{PP}	Minimum Input Swing	200		1000	200		1000	200		1000	200		1000	mV
V_{CMR}	Common Mode Range[1]	VEE + 2.2		GND	VEE + 2.2		GND	VEE + 2.2		GND	VEE + 2.2		GND	V
t_r , t_f	Output Rise/Fall Time (1V to 2V)	500	925	1350	500	925	1350	500	925	1350	500	925	1350	ps

AC Characteristics *(continued)*

Notes:

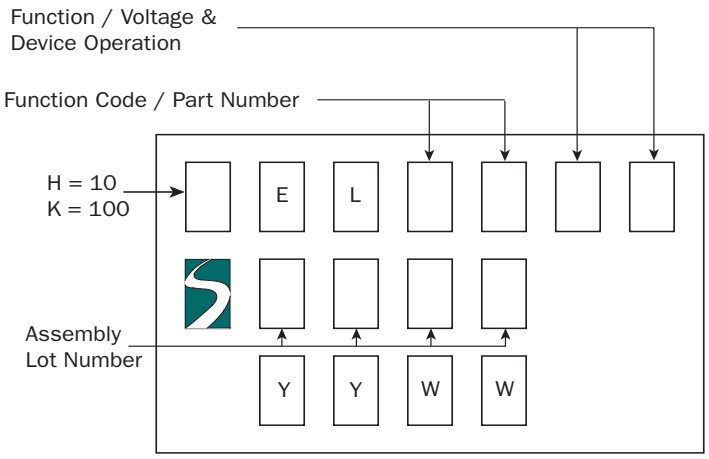
1. CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the high level falls within the specified range and the peak-to-peak voltage lies between $VPP_{(min)}$ and 1V. The lower end of the CMR range varies 1:1 with VEE and is equal to VEE + 2.2V.
2. For part ordering description, see TMD 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
SK10ELT25WD	8-SOIC
SK10ELT25WDT	8-SOIC
SK100ELT25WD	8-SOIC
SK100ELT25WDT	8-SOIC
SK10ELT25WU	Die
SK100ELT25WU	Die

Marking Information

8 PIN SOIC PACKAGE



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

Application Notes

AN1002 - Interfacing Between ECL / LVECL / PECL / LVPECL - to - TTL / LVTTL / CMOS / LVCMOS
AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices
AN1006 - Designing with 10K and 100K ECL / PECL Devices

Contact Information

Semtech Corporation
Test and Measurement Division
10021 Willow Creek Rd., San Diego, CA 92131
Phone: (858) 695-1808 FAX: (858) 695-2633