SK10/100ELT21W
Differential PECL to CMOS/TTL or LVPECL to LVCMOS/LVTTL Translator

HIGH-PERFORMANCE PRODUCTS

Description

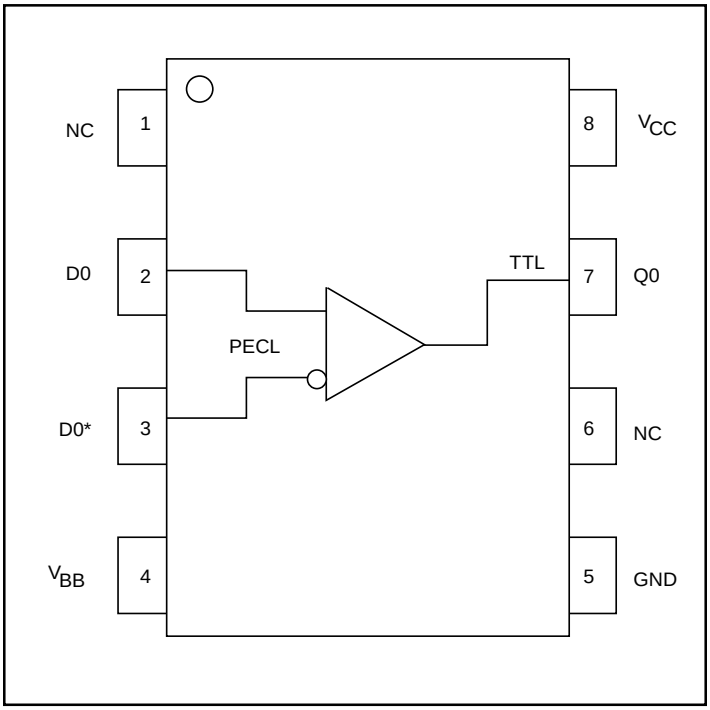
The SK10/100ELT21W is a single differential PECL to CMOS/TTL or LVPECL to LVCMOS/LVTTL Translator. Since PECL (Positive ECL) levels are used, only $+V_{CC}$ and ground are required. The small outline, 8 lead SOIC package, low skew, and the single gate design of the SK10/100ELT21W makes it ideal for applications which require the translation of a clock and a data signal.

Unlike the TTL totem pole outputs, the outputs of the ELT21W can be interfaced directly to CMOS inputs with better VOH (VCC – 0.5V) levels. With extended supply voltage capability, the device is functionally compatible with MC10/100ELT21 (5V) and MC10/100LVELT21 (3.3V).

Features

- Extended Supply Voltage Range (VCC = +3.0V to 5.5V)
- 2.4 ns Typical Propagation Delay
- Differential PECL Inputs
- True Complementary CMOS/TTL Output
- Flow Through Pinouts
- Functionally compatible with MC10/100ELT21 and MC10/100LVELT21
- 75KΩ Internal Input Pulldown Resistors
- Specified Over Industrial Temperature Range: –40°C to 85°C
- ESD Protection of >4000V
- Small Outline 8 Lead SOIC (150 mils) Package
- Flammability Rate: UL-94 code V-0
- Moisture Sensitivity: Level 1

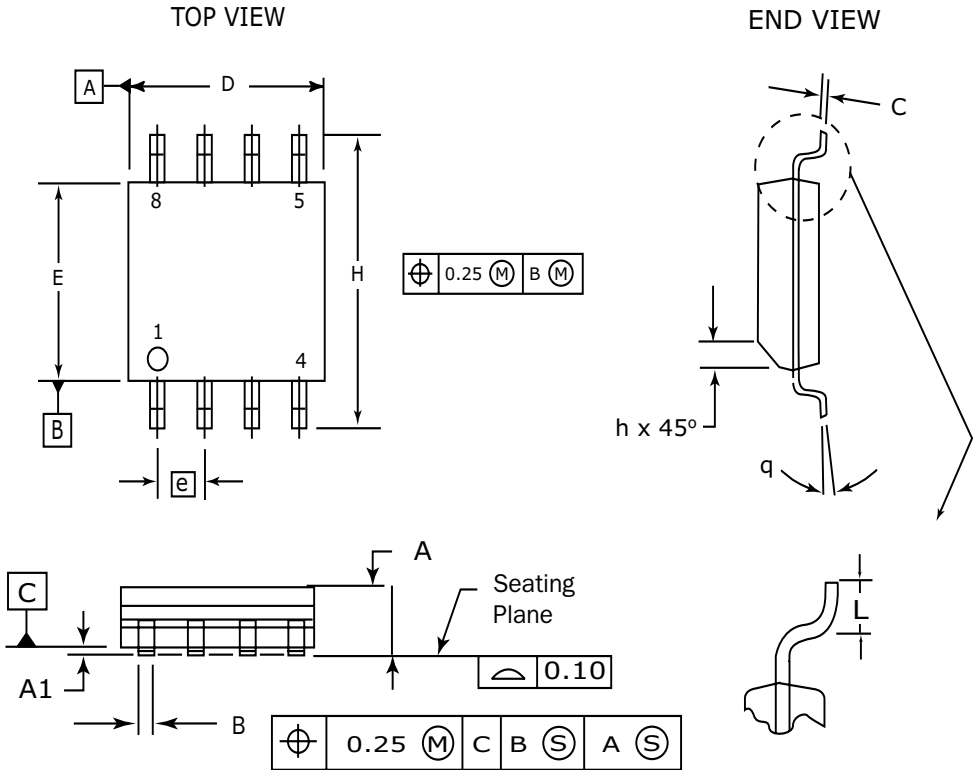
Functional Block Diagram



PIN Names

Pin	Function
QO	CMOS/TTL Output
D0, D0*	Differential PECL Inputs
VBB	Referenced Voltage Output
V_{CC}	$+V_{CC}$ Supply
GND	Ground
NC	No Connect

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

SK10/100ELT21W TTL Output DC Electrical Characteristics
(V_{CC} = 3.0V to 5.5V; TA = -40 °C to +85 °C)

Symbol	Characteristic	Min	Typ	Max	Unit	Cond
V_{OH}	Output HIGH Voltage	VCC - 0.5			V	I_{OH} = -3 mA
V_{OL}	Output LOW Voltage			0.5	V	I_{OL} = 8 mA
I_{CC}	Power Supply Current	16		32	mA	

SK10ELT21W PECL Input DC Electrical Characteristics
(V_{CC} = 3.0V to 5.5V)

Symbol	Characteristic	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Cond
		Min	Max	Min	Max	Min	Max	Min	Max		
V_{IH}	Input HIGH Voltage	3770 2070	4110 2410	3830 2130	4160 2460	3870 2170	4190 2490	3940 2240	4280 2580	mV mV	VCC = 5.0V VCC = 3.3V
V_{IL}	Input LOW Voltage	3050 1350	3500 1800	3050 1350	3520 1820	3050 1350	3520 1820	3050 1350	3555 1855	mV mV	VCC = 5.0V VCC = 3.3V
V_{PP}	Minimum Peak-to-Peak Input	200	1000	200	1000	200	1000	200	1000	mV	Note 1
I_{IN}	Input Current (Diff)	-150	150	-150	150	-150	150	-150	150	µA	
V_{BB}	Reference Output Voltage	3570 1870	3700 2000	3620 1920	3730 2030	3650 1950	3750 2050	3690 1990	3810 2110	mV mV	VCC = 5.0V VCC = 3.3V

SK100ELT21W PECL Input DC Electrical Characteristics
(V_{CC} = 3.0V to 5.5V)

Symbol	Characteristics	TA = - 40°C		TA = 0°C		TA = + 25°C		TA = + 85°C		Unit	Cond
		Min	Max	Min	Max	Min	Max	Min	Max		
V_{IH}	Input HIGH Voltage	3835 2135	4120 2420	3835 2135	4120 2420	3835 2135	4120 2420	3835 2135	4120 2420	mV mV	VCC = 5.0V VCC = 3.3V
V_{IL}	Input LOW Voltage	3190 1490	3525 1825	3190 1490	3525 1825	3190 1490	3525 1825	3190 1490	3525 1825	mV mV	VCC = 5.0V VCC = 3.3V
V_{PP}	Minimum Peak-to-Peak Input	200	1000	200	1000	200	1000	200	1000	mV	Note 1
I_{IN}	Input HIGH Current	- 150	150	- 150	150	- 150	150	- 150	150	µA	
V_{BB}	Reference Output Voltage	3620 1920	3740 2040	3620 1920	3740 2040	3620 1920	3740 2040	3620 1920	3740 2040	mV mV	VCC = 5.0V VCC = 3.3V

AC Characteristics

SK10/100ELT21W AC Electrical Characteristics

(V_{CC} = 3.0V to 5.5V)

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	
F_{max}	Max Input Frequency [3]	180			180			180			180			MHz
t_{PLH} t_{PHL}	Propagation Delay [3]	1.8		5.0	1.8		5.0	1.8		5.0	1.8		5.0	ns
t_r, t_f	Output Rise/Fall Time (1.0V to 2.0V)	0.35	1.1	1.75	0.35	1.1	1.75	0.35	1.1	1.75	0.35	1.1	1.75	ns
VCMR	Common Mode Range [2]	GND + 1.2		VCC - 0.7	GND + 1.2		VCC - 0.7	GND + 1.2		VCC - 0.7	GND + 1.2		VCC - 0.7	V

Notes:

1. 200 mV input guarantees full logic swing at the output.
2. 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 GND and is equal to GND + 1.2V.
3. C_L = 20 pF.
4. For part ordering description, see HPP Part Ordering Information Data Sheet.

Application Notes

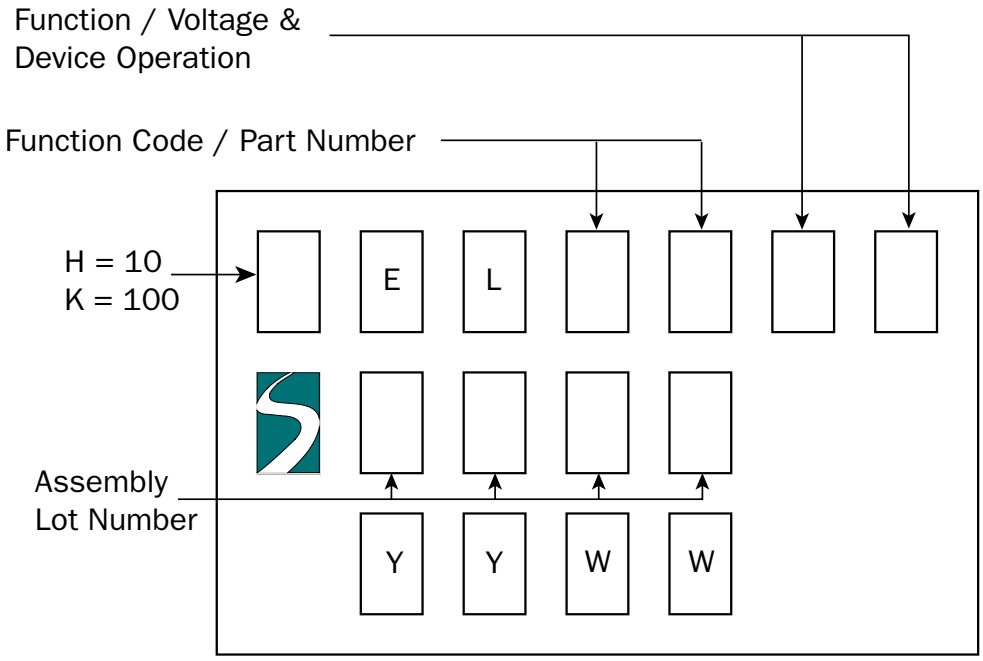
AN1003 - Termination Techniques for ECL / LVECL / PECL / LVPECL Devices
AN1002 - Interfacing between ECL and TTL
AN1006 - Designing with 10K and 100K ECL / PECL Devices

Ordering Information

Ordering Code	Package ID
SK10ELT21WD	8-SOIC
SK10ELT21WDT	8-SOIC
SK100ELT21WD	8-SOIC
SK100ELT21WDT	8-SOIC
SK10ELT21WU	Die
SK100ELT21WU	Die

Marking Information

8 PIN SOIC PACKAGE



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

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