

### HIGH-PERFORMANCE PRODUCTS

#### Description

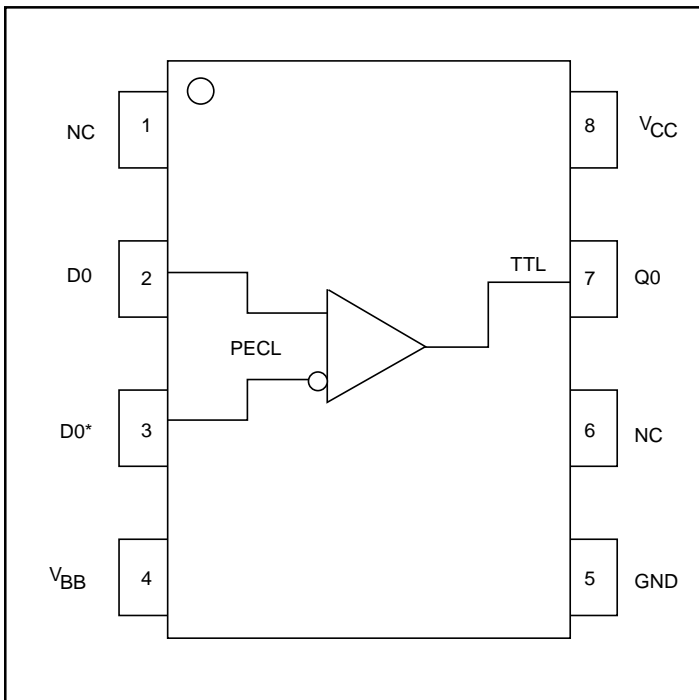
The SK10/100ELT21W is a single differential PECL to CMOS/TTL or LVPECL to LVCMOS/LVTTL Translator. Since PECL (Positive ECL) levels are used, only +V<sub>CC</sub> and ground are required. The small outline, 8 lead SOIC package, low skew, and the single gate design of the SK10/100ELT21W makes it ideal 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 V<sub>OH</sub> (V<sub>CC</sub> – 0.5V) levels. With extended supply voltage capability, the device is functionally compatible with MC10/100ELT21 (5V) and MC10/100LVELT21 (3.3V).

#### Features

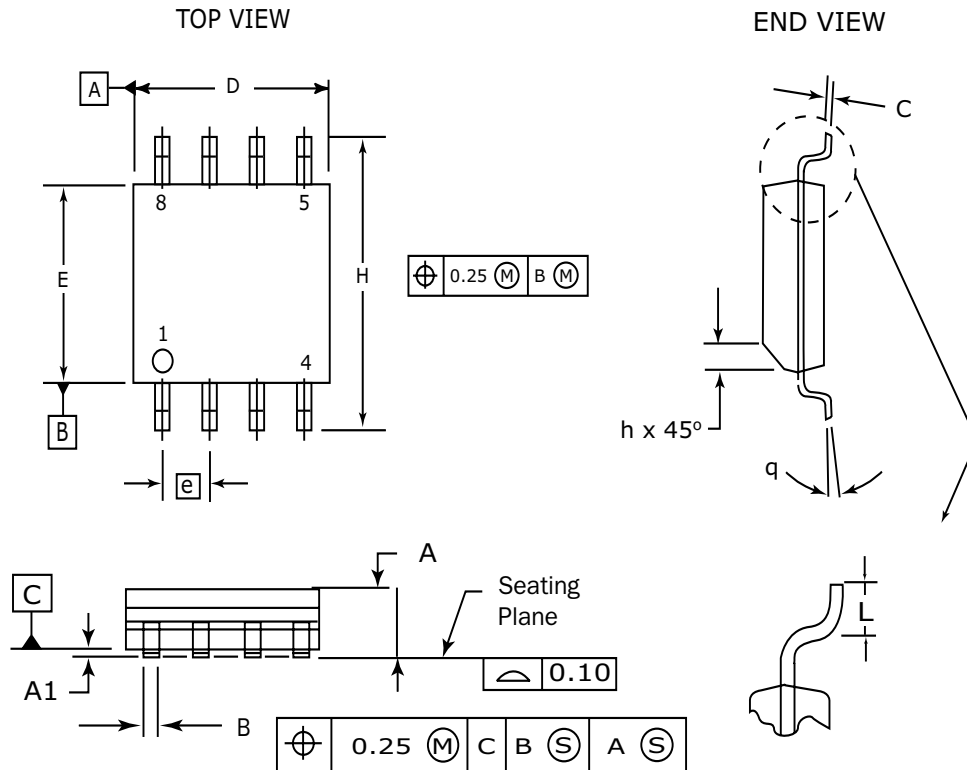
- Extended Supply Voltage Range (V<sub>CC</sub> = +3.0V to 5.5V)
- 2.4 ns Typical Propagation Delay
- Differential PECL Inputs
- True Complementary CMOS/TTL Output
- Flow Through Pinouts
- Functionally compatible with MC10/100ELT21 and MC10/100LVELT21
- 75K $\Omega$  Internal Input Pulldown Resistors
- 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
Q0	CMOS/TTL Output
DO, DO*	Differential PECL Inputs
V <sub>BB</sub>	Referenced Voltage Output
V <sub>CC</sub>	+V <sub>CC</sub> 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
$\theta$	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**
**SK10/100ELT21W TTL Output DC Electrical Characteristics**

 (V<sub>CC</sub> = 3.0V to 5.5V; TA = -40 °C to +85 °C)

Symbol	Characteristic	Min	Typ	Max	Unit	Cond
V <sub>OH</sub>	Output HIGH Voltage	V <sub>CC</sub> - 0.5			V	I <sub>OH</sub> = -3 mA
V <sub>OL</sub>	Output LOW Voltage			0.5	V	I <sub>OL</sub> = 8 mA
I <sub>CC</sub>	Power Supply Current	16		32	mA	

**SK10ELT21W PECL Input DC Electrical Characteristics**

 (V<sub>CC</sub> = 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 <sub>IH</sub>	Input HIGH Voltage	3770 2070	4110 2410	3830 2130	4160 2460	3870 2170	4190 2490	3940 2240	4280 2580	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V
V <sub>IL</sub>	Input LOW Voltage	3050 1350	3500 1800	3050 1350	3520 1820	3050 1350	3520 1820	3050 1350	3555 1855	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V
V <sub>PP</sub>	Minimum Peak-to-Peak Input	200	1000	200	1000	200	1000	200	1000	mV	Note 1
I <sub>IN</sub>	Input Current (Diff)	-150	150	-150	150	-150	150	-150	150	µA	
V <sub>BB</sub>	Reference Output Voltage	3570 1870	3700 2000	3620 1920	3730 2030	3650 1950	3750 2050	3690 1990	3810 2110	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V

**SK100ELT21W PECL Input DC Electrical Characteristics**

 (V<sub>CC</sub> = 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 <sub>IH</sub>	Input HIGH Voltage	3835 2135	4120 2420	3835 2135	4120 2420	3835 2135	4120 2420	3835 2135	4120 2420	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V
V <sub>IL</sub>	Input LOW Voltage	3190 1490	3525 1825	3190 1490	3525 1825	3190 1490	3525 1825	3190 1490	3525 1825	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V
V <sub>PP</sub>	Minimum Peak-to-Peak Input	200	1000	200	1000	200	1000	200	1000	mV	Note 1
I <sub>IN</sub>	Input HIGH Current	-150	150	-150	150	-150	150	-150	150	µA	
V <sub>BB</sub>	Reference Output Voltage	3620 1920	3740 2040	3620 1920	3740 2040	3620 1920	3740 2040	3620 1920	3740 2040	mV mV	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V

**HIGH-PERFORMANCE PRODUCTS**
**AC Characteristics**
**SK10/100ELT21W AC Electrical Characteristics**
**(V<sub>CC</sub> = 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 <sub>max</sub>	Max Input Frequency <sup>3</sup>	180			180			180			180			MHz
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay <sup>3</sup>	1.8		5.0	1.8		5.0	1.8		5.0	1.8		5.0	ns
t <sub>r</sub> , t <sub>f</sub>	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 <sup>2</sup>	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:**

- 200 mV input guarantees full logic swing at the output.
- 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<sub>PP(min)</sub> and 1V. The lower end of the CMR range varies 1:1 with GND and is equal to GND + 1.2V.
- C<sub>L</sub> = 20 pF.
- 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

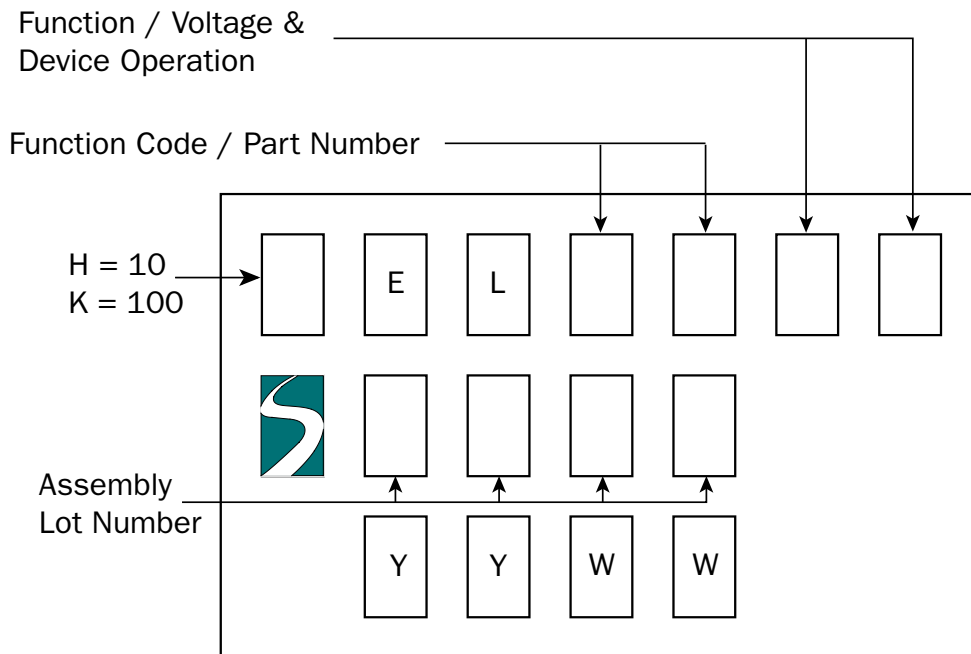
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**Ordering Information**

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

**Contact Information**

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