

## Dual TTL-to-Differential PECL Translator

### Features

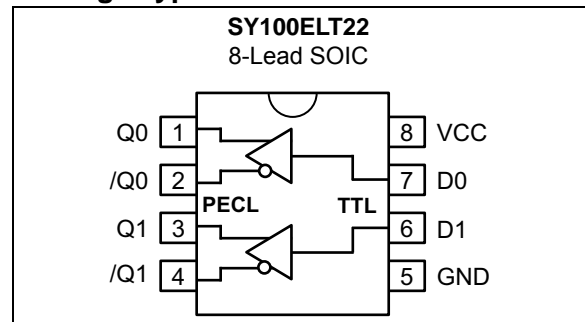
- 300 ps Typical Propagation Delay
- <100 ps Output-to-Output Skew
- Differential PECL Outputs
- PNP TTL Inputs for Minimal Loading
- Flow-Through Pinouts
- Available in 8-Lead SOIC Package

### General Description

The SY100ELT22 is a dual TTL-to-differential PECL translator. Because positive ECL (PECL) levels are used, only +5V and ground is required. The small outline 8-lead SOIC package and the low-skew, dual-gate design of the SY100ELT22 makes it ideal for applications that require the translation of a clock and a data signal.

The SY100ELT22 is compatible with positive ECL 100K logic levels.

### Package Type



# SY100ELT22

## 1.0 ELECTRICAL CHARACTERISTICS

### Absolute Maximum Ratings †

Power Supply Voltage ( $V_{CC}$ )	-0.5V to +7.0V
TTL Input Voltage ( $V_I$ )	-0.5V to $V_{CC}$
PECL Output Current, Continuous ( $I_{OUT}$ )	50 mA
PECL Output Current, Surge ( $I_{OUT}$ )	100 mA

† **Notice:** Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those or any other conditions above those indicated in the operational sections of this specification is not intended. Exposure to maximum rating conditions for extended periods may affect device reliability.

**TABLE 1-1: DC ELECTRICAL CHARACTERISTICS**

**Electrical Characteristics:**  $V_{CC} = 4.2V$  to  $5.5V$ ;  $T_A = -40^{\circ}C$  to  $+85^{\circ}C$ , unless noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Power Supply Current	$I_{CC}$	—	—	30	mA	—

**TABLE 1-2: TTL DC ELECTRICAL CHARACTERISTICS**

**Electrical Characteristics:**  $V_{CC} = 4.2V$  to  $5.5V$ ;  $T_A = -40^{\circ}C$  to  $+85^{\circ}C$ , unless noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Input High Voltage	$V_{IH}$	2.0	—	—	V	—
Input Low Voltage	$V_{IL}$	—	—	0.8	V	—
Input High Current	$I_{IH}$	—	—	20	$\mu A$	$V_{IN} = 2.7V$
		—	—	100		$V_{IN} = V_{CC}$
Input Low Current	$I_{IL}$	—	—	-0.2	mA	$V_{IN} = 0.5V$
Input Clamp Voltage	$V_{IK}$	—	—	-1.2	V	$I_{IN} = -18 mA$

**TABLE 1-3: PECL DC ELECTRICAL CHARACTERISTICS**

**Electrical Characteristics:**  $V_{CC} = 4.2V$  to  $5.5V$ ;  $T_A = -40^{\circ}C$  to  $+85^{\circ}C$ , unless noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output High Voltage	$V_{OH}$	3915	—	4120	mV	$T_A = -40^{\circ}C$ ; Values for $V_{CC} = 5V$ ; Level specifications will vary 1:1 with $V_{CC}$ .
		3975	—	4120		$T_A = 0^{\circ}C$ to $+85^{\circ}C$ ; Values for $V_{CC} = 5V$ ; Level specifications will vary 1:1 with $V_{CC}$ .
Output Low Voltage	$V_{OL}$	3170	—	3445	mV	$T_A = -40^{\circ}C$ ; Values for $V_{CC} = 5V$ ; Level specifications will vary 1:1 with $V_{CC}$ .
		3190	—	3380		$T_A = 0^{\circ}C$ to $+85^{\circ}C$ ; Values for $V_{CC} = 5V$ ; Level specifications will vary 1:1 with $V_{CC}$ .

**TABLE 1-4: AC ELECTRICAL CHARACTERISTICS**

Electrical Characteristics:  $V_{CC} = 4.2V$  to  $5.5V$ ;  $T_A = -40^{\circ}C$  to  $+85^{\circ}C$ , unless noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Propagation Delay to Output D, ENECL/ENTTL	$t_{PD}$	100	—	600	ps	$50\Omega$ to $V_{CC} - 2.0V$
Output Rise/Fall Time, 20% to 80%	$t_r/t_f$	200	—	500	ps	$50\Omega$ to $V_{CC} - 2.0V$
Part-to-Part Skew, (Note 1)	$t_{skpp}$	—	—	500	ps	$50\Omega$ to $V_{CC} - 2.0V$
Within-Device Skew, (Note 1, Note 2)	$t_{skew}$	—	—	100	ps	$50\Omega$ to $V_{CC} - 2.0V$

**Note 1:** Guaranteed, but not tested.

**Note 2:** Same transition at common  $V_{CC}$  levels.

## TEMPERATURE SPECIFICATIONS

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
<b>Temperature Ranges</b>						
Operating Temperature Range	$T_A$	-40	—	+85	$^{\circ}C$	—
Storage Temperature Range	$T_S$	-65	—	+150	$^{\circ}C$	—
Lead Temperature	$T_{LEAD}$	—	—	+260	$^{\circ}C$	Soldering, 20s

# SY100ELT22

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## 2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in [Table 2-1](#).

**TABLE 2-1: SY100ELT22 PIN FUNCTION TABLE**

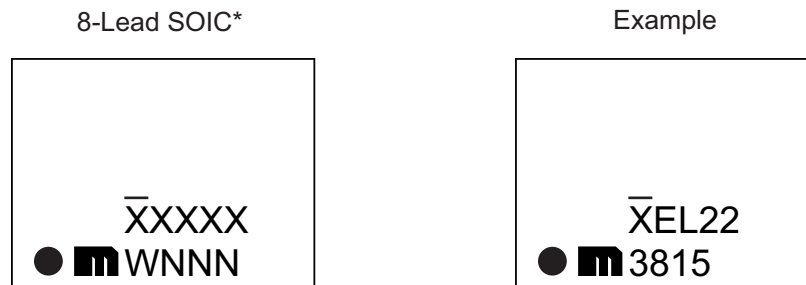
Pin Number	Pin Name	Description
1, 2	Q0, /Q0	Differential PECL Output 0
3, 4	Q1, /Q1	Differential PECL Output 1
5	GND	Ground
6	D1	TTL Input 1
7	D0	TTL Input 0
8	VCC	+5.0V Supply

**TABLE 2-2: TRUTH TABLE**

D	Q	$\bar{Q}$
High	High	Low
Low	Low	High
Open	High	Low

## 3.0 PACKAGING INFORMATION

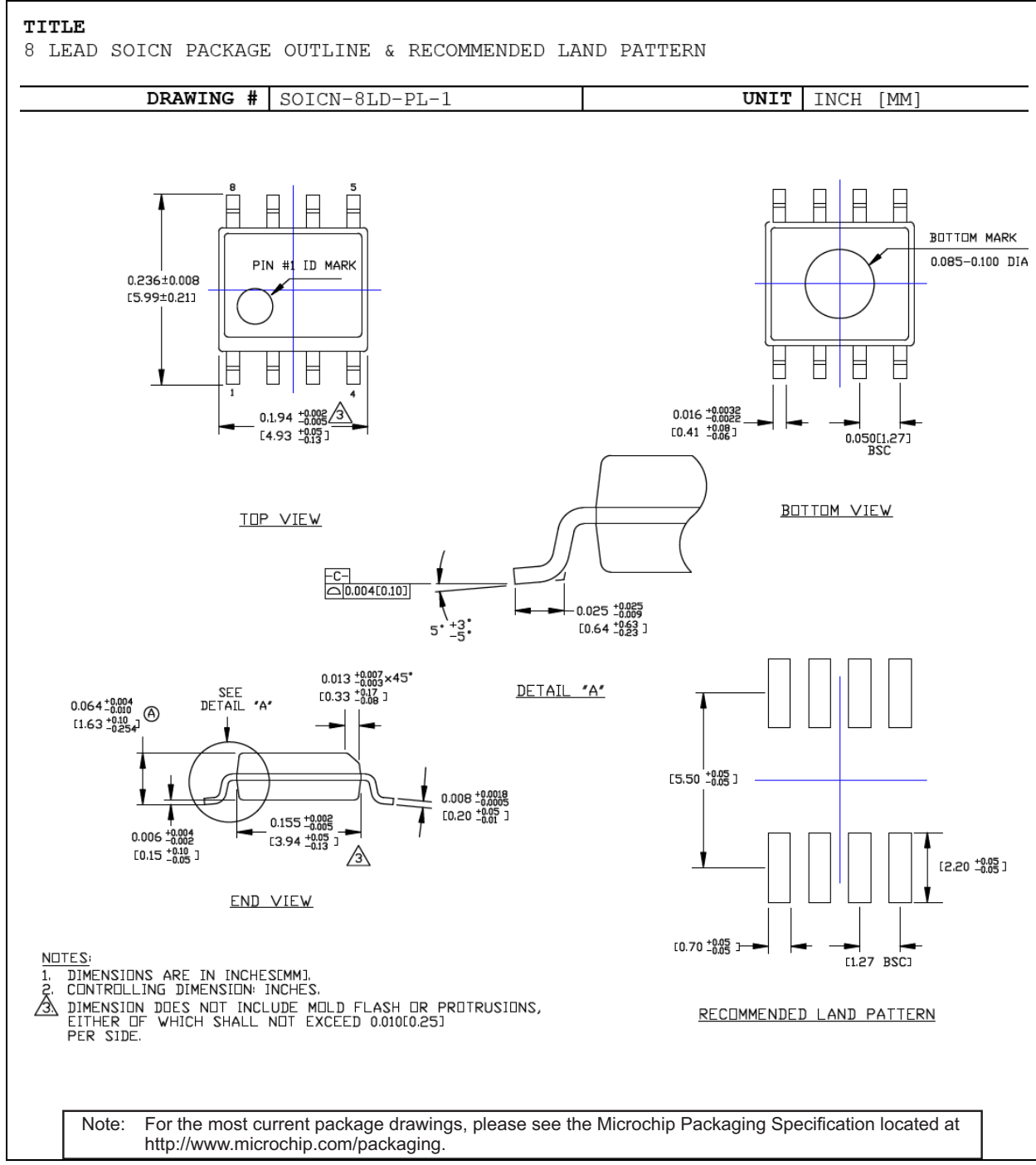
### 3.1 Package Marking Information



<p><b>Legend:</b></p> <p>XX...X    Product code or customer-specific information</p> <p>Y            Year code (last digit of calendar year)</p> <p>YY         Year code (last 2 digits of calendar year)</p> <p>WW        Week code (week of January 1 is week '01')</p> <p>NNN        Alphanumeric traceability code</p> <p>(e3)        Pb-free JEDEC® designator for Matte Tin (Sn)</p> <p>*            This package is Pb-free. The Pb-free JEDEC designator (e3) can be found on the outer packaging for this package.</p> <p>●, ▲, ▼    Pin one index is identified by a dot, delta up, or delta down (triangle mark).</p>	<p><b>Note:</b> In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.</p> <p>Underbar ( ¯ ) and/or Overbar ( ¯ ) symbol may not be to scale.</p>
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# SY100ELT22

## 8-Lead SOIC Package Outline and Recommended Land Pattern



## APPENDIX A: REVISION HISTORY

### Revision A (April 2018)

- Initial release of SY100ELT22 as Microchip data sheet DS20005996A.
- Removal of all instances of the SY10ELT22 part number. It has been discontinued.

# SY100ELT22

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NOTES:



## PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, contact your local Microchip representative or sales office.

Device	<u>X</u>	<u>X</u>	<u>-XX</u>
Part No.	Package	Operating Range	Media Type
<b>Device:</b>	SY100ELT22:	Dual TTL-to-Differential PECL Translator	
<b>Package:</b>	Z =	8-Lead SOIC	
<b>Operating Range:</b>	G =	Industrial	
<b>Media Type:</b>	<blank>=	95/Tube	
	TR =	1,000/Reel	

<b>Examples:</b>	
a) SY100ELT22ZG:	SY100ELT22, 8-Lead SOIC, Industrial Operating Range, 95/Tube
b) SY100ELT22ZG-TR:	SY100ELT22, 8-Lead SOIC, Industrial Operating Range, 1,000/Reel

<b>Note 1:</b>	
Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.	

# SY100ELT22

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NOTES:

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