SY100ELT22

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

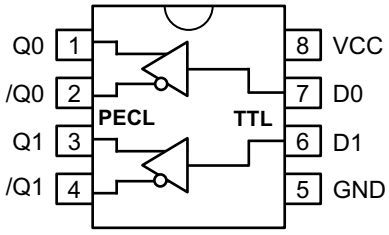
General Description

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
8-Lead SOIC



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°C to +85°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°C to +85°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	µA	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°C to +85°C, unless noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Output High Voltage	V_{OH}	3915	—	4120	mV	T_A = –40°C; Values for V_{CC} = 5V; Level specifications will vary 1:1 with V_{CC}.
		3975	—	4120		T_A = 0°C to +85°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°C; Values for V_{CC} = 5V; Level specifications will vary 1:1 with V_{CC}.
		3190	—	3380		T_A = 0°C to +85°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°C to +85°C, unless noted.

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

Note 1: Guaranteed, but not tested.

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

TEMPERATURE SPECIFICATIONS

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
Temperature Ranges						
Operating Temperature Range	T_A	–40	—	+85	°C	—
Storage Temperature Range	T_S	–65	—	+150	°C	—
Lead Temperature	T_{LEAD}	—	—	+260	°C	Soldering, 20s

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

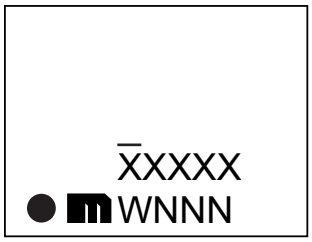
TABLE 2-2: TRUTH TABLE

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

3.0 PACKAGING INFORMATION

3.1 Package Marking Information

8-Lead SOIC*



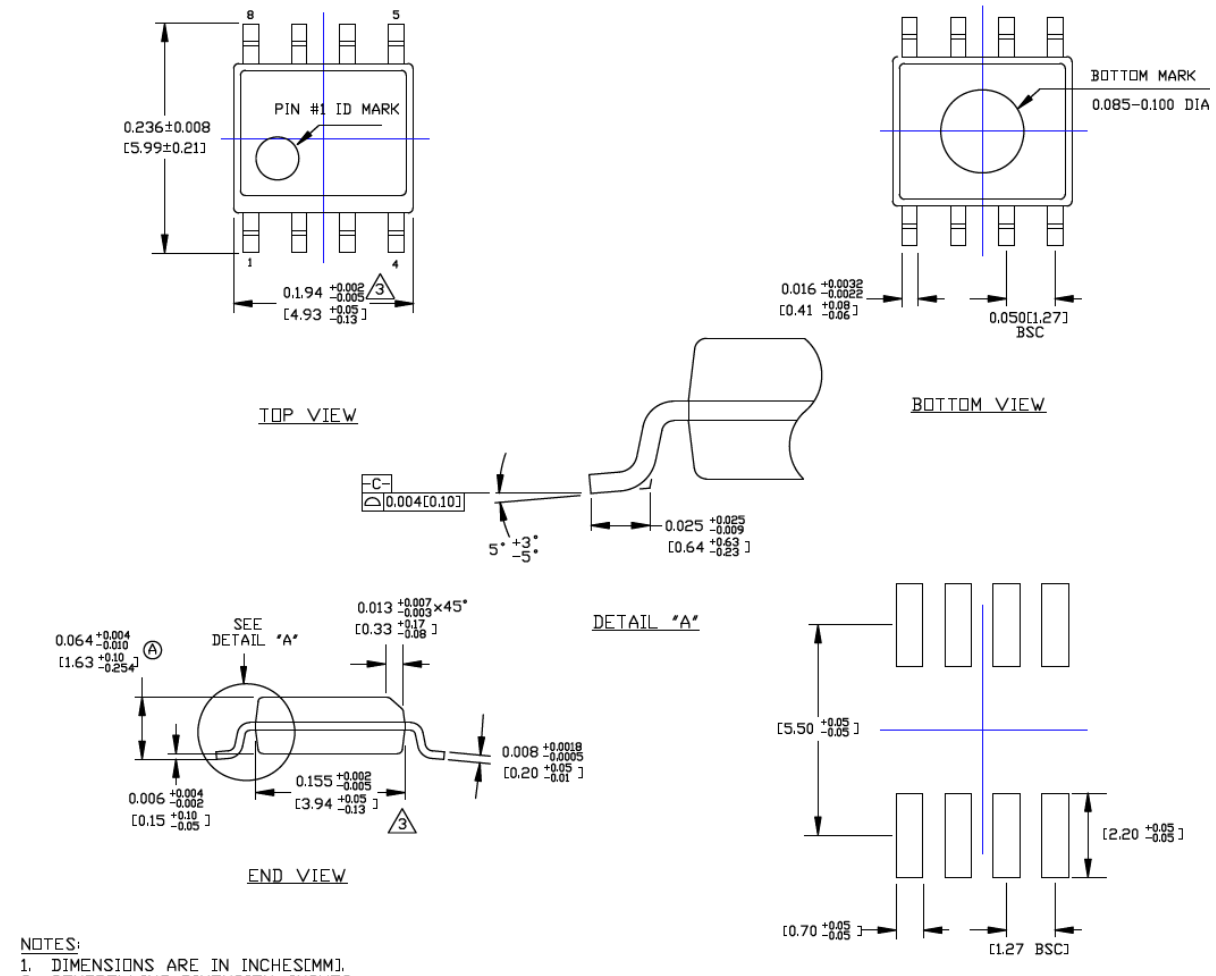
Example

Legend:	XX...X	Product code or customer-specific information
	Y	Year code (last digit of calendar year)
	YY	Year code (last 2 digits of calendar year)
	WW	Week code (week of January 1 is week ‘01’)
	NNN	Alphanumeric traceability code
	(e3)	Pb-free JEDEC® designator for Matte Tin (Sn)
	*	This package is Pb-free. The Pb-free JEDEC designator ((e3)) can be found on the outer packaging for this package.
	●, ▲, ▼	Pin one index is identified by a dot, delta up, or delta down (triangle mark).
Note:	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.	
	Underbar (_) and/or Overbar (¯) symbol may not be to scale.	

8-Lead SOIC Package Outline and Recommended Land Pattern

TITLE
8 LEAD SOICN PACKAGE OUTLINE & RECOMMENDED LAND PATTERN

DRAWING #	SOICN-8LD-PL-1	UNIT	INCH [MM]



NOTES:
1. DIMENSIONS ARE IN INCHES[MM].
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSION DOES NOT INCLUDE MOLD FLASH OR PROTRUSIONS, EITHER OF WHICH SHALL NOT EXCEED 0.010[0.25] PER SIDE.

Note: For the most current package drawings, please see the Microchip Packaging Specification located at http://www.microchip.com/packaging.

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.

NOTES:

PRODUCT IDENTIFICATION SYSTEM

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

Device	X	X	-XX
Part No.	Package	Operating Range	Media Type

Device:	SY100ELT22:	Dual TTL-to-Differential PECL Translator
Package:	Z =	8-Lead SOIC
Operating Range:	G =	Industrial
Media Type:	<blank>=	95/Tube
	TR =	1,000/Reel

Examples:

a) SY100ELT22ZG: SY100ELT22, 8-Lead SOIC, Industrial Operating Range, 95/Tube

b) SY100ELT22ZG-TR: SY100ELT22, 8-Lead SOIC, Industrial Operating Range, 1,000/Reel

Note 1: 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.

NOTES:

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
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- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

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ISBN: 978-1-5224-2880-0

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