

Dual TTL-to-Differential PECL Translator

Features

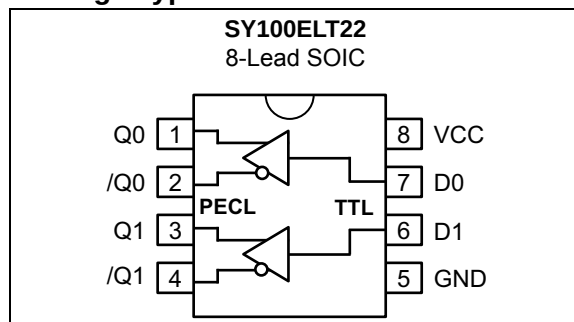
- 300 ps Typical Propagation Delay
- <100 ps Output-to-Output Skew
- Differential PECL Outputs
- PNP TTL Inputs for Minimal Loading
- Flow-Through Pinouts
- Available in 8-Lead SOIC Package

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	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	$I_{IN} = -18\text{ mA}$

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 CHARACTERISTICSElectrical 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	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.**Note 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	$^{\circ}C$	—
Storage Temperature Range	T_S	-65	—	+150	$^{\circ}C$	—
Lead Temperature	T_{LEAD}	—	—	+260	$^{\circ}C$	Soldering, 20s

SY100ELT22

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

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.

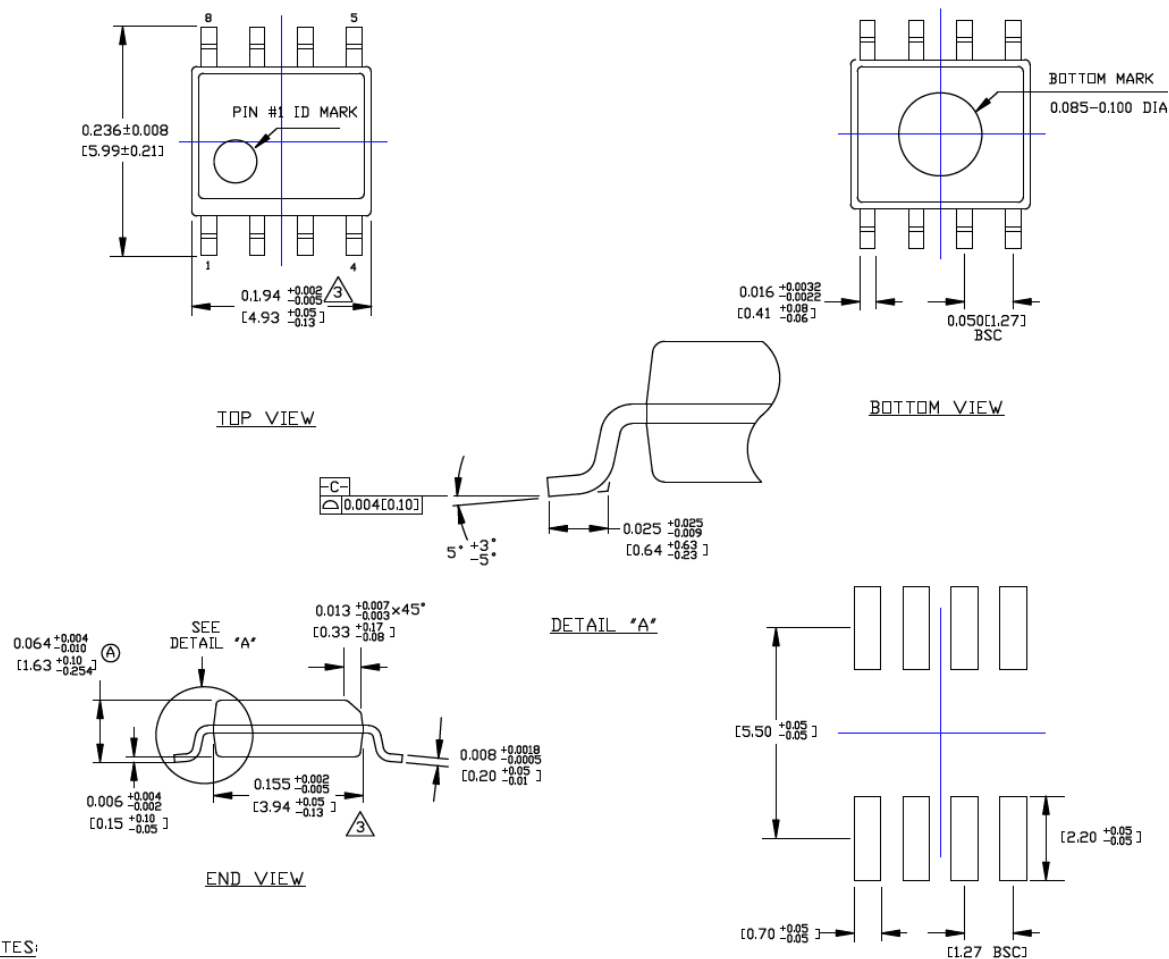
SY100ELT22

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.

SY100ELT22

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
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.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- 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."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Microchip received ISO/TS-16949:2009 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC® MCUs and dsPIC® DSCs, KEELOQ® code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949 ==

Trademarks

The Microchip name and logo, the Microchip logo, AnyRate, AVR, AVR logo, AVR Freaks, BeaconThings, BitCloud, CryptoMemory, CryptoRF, dsPIC, FlashFlex, flexPWR, Helder, JukeBlox, KEELOQ, KEELOQ logo, Klear, LANCheck, LINK MD, maxStylus, maxTouch, MediaLB, megaAVR, MOST, MOST logo, MPLAB, OptoLyzer, PIC, picoPower, PICSTART, PIC32 logo, Prochip Designer, QTouch, RightTouch, SAM-BA, SpyNIC, SST, SST Logo, SuperFlash, tinyAVR, UNI/O, and XMEGA are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

ClockWorks, The Embedded Control Solutions Company, EtherSynch, Hyper Speed Control, HyperLight Load, IntelliMOS, mTouch, Precision Edge, and Quiet-Wire are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Adjacent Key Suppression, AKS, Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, BodyCom, chipKIT, chipKIT logo, CodeGuard, CryptoAuthentication, CryptoCompanion, CryptoController, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, EtherGREEN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, JitterBlocker, KlearNet, KlearNet logo, Mindi, MiWi, motorBench, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICKit, PICtail, PureSilicon, QMatrix, RightTouch logo, REAL ICE, Ripple Blocker, SAM-ICE, Serial Quad I/O, SMART-I.S., SQI, SuperSwitcher, SuperSwitcher II, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademark of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2018, Microchip Technology Incorporated, All Rights Reserved.
ISBN: 978-1-5224-2880-0

Worldwide Sales and Service

AMERICAS

Corporate Office
 2355 West Chandler Blvd.
 Chandler, AZ 85224-6199
 Tel: 480-792-7200
 Fax: 480-792-7277
 Technical Support:
<http://www.microchip.com/support>
 Web Address:
www.microchip.com

Atlanta
 Duluth, GA
 Tel: 678-957-9614
 Fax: 678-957-1455

Austin, TX
 Tel: 512-257-3370

Boston
 Westborough, MA
 Tel: 774-760-0087
 Fax: 774-760-0088

Chicago
 Itasca, IL
 Tel: 630-285-0071
 Fax: 630-285-0075

Dallas
 Addison, TX
 Tel: 972-818-7423
 Fax: 972-818-2924

Detroit
 Novi, MI
 Tel: 248-848-4000

Houston, TX
 Tel: 281-894-5983

Indianapolis
 Noblesville, IN
 Tel: 317-773-8323
 Fax: 317-773-5453
 Tel: 317-536-2380

Los Angeles
 Mission Viejo, CA
 Tel: 949-462-9523
 Fax: 949-462-9608
 Tel: 951-273-7800

Raleigh, NC
 Tel: 919-844-7510

New York, NY
 Tel: 631-435-6000

San Jose, CA
 Tel: 408-735-9110
 Tel: 408-436-4270

Canada - Toronto
 Tel: 905-695-1980
 Fax: 905-695-2078

ASIA/PACIFIC

Australia - Sydney
 Tel: 61-2-9868-6733

China - Beijing
 Tel: 86-10-8569-7000

China - Chengdu
 Tel: 86-28-8665-5511

China - Chongqing
 Tel: 86-23-8980-9588

China - Dongguan
 Tel: 86-769-8702-9880

China - Guangzhou
 Tel: 86-20-8755-8029

China - Hangzhou
 Tel: 86-571-8792-8115

China - Hong Kong SAR
 Tel: 852-2943-5100

China - Nanjing
 Tel: 86-25-8473-2460

China - Qingdao
 Tel: 86-532-8502-7355

China - Shanghai
 Tel: 86-21-3326-8000

China - Shenyang
 Tel: 86-24-2334-2829

China - Shenzhen
 Tel: 86-755-8864-2200

China - Suzhou
 Tel: 86-186-6233-1526

China - Wuhan
 Tel: 86-27-5980-5300

China - Xian
 Tel: 86-29-8833-7252

China - Xiamen
 Tel: 86-592-2388138

China - Zhuhai
 Tel: 86-756-3210040

ASIA/PACIFIC

India - Bangalore
 Tel: 91-80-3090-4444

India - New Delhi
 Tel: 91-11-4160-8631

India - Pune
 Tel: 91-20-4121-0141

Japan - Osaka
 Tel: 81-6-6152-7160

Japan - Tokyo
 Tel: 81-3-6880-3770

Korea - Daegu
 Tel: 82-53-744-4301

Korea - Seoul
 Tel: 82-2-554-7200

Malaysia - Kuala Lumpur
 Tel: 60-3-7651-7906

Malaysia - Penang
 Tel: 60-4-227-8870

Philippines - Manila
 Tel: 63-2-634-9065

Singapore
 Tel: 65-6334-8870

Taiwan - Hsin Chu
 Tel: 886-3-577-8366

Taiwan - Kaohsiung
 Tel: 886-7-213-7830

Taiwan - Taipei
 Tel: 886-2-2508-8600

Thailand - Bangkok
 Tel: 66-2-694-1351

Vietnam - Ho Chi Minh
 Tel: 84-28-5448-2100

EUROPE

Austria - Wels
 Tel: 43-7242-2244-39
 Fax: 43-7242-2244-393

Denmark - Copenhagen
 Tel: 45-4450-2828
 Fax: 45-4485-2829

Finland - Espoo
 Tel: 358-9-4520-820

France - Paris
 Tel: 33-1-69-53-63-20
 Fax: 33-1-69-30-90-79

Germany - Garching
 Tel: 49-8931-9700

Germany - Haan
 Tel: 49-2129-3766400

Germany - Heilbronn
 Tel: 49-7131-67-3636

Germany - Karlsruhe
 Tel: 49-721-625370

Germany - Munich
 Tel: 49-89-627-144-0
 Fax: 49-89-627-144-44

Germany - Rosenheim
 Tel: 49-8031-354-560

Israel - Ra'anana
 Tel: 972-9-744-7705

Italy - Milan
 Tel: 39-0331-742611
 Fax: 39-0331-466781

Italy - Padova
 Tel: 39-049-7625286

Netherlands - Drunen
 Tel: 31-416-690399
 Fax: 31-416-690340

Norway - Trondheim
 Tel: 47-7289-7561

Poland - Warsaw
 Tel: 48-22-3325737

Romania - Bucharest
 Tel: 40-21-407-87-50

Spain - Madrid
 Tel: 34-91-708-08-90
 Fax: 34-91-708-08-91

Sweden - Gothenberg
 Tel: 46-31-704-60-40

Sweden - Stockholm
 Tel: 46-8-5090-4654

UK - Wokingham
 Tel: 44-118-921-5800
 Fax: 44-118-921-5820

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Microchip:](#)

[SY100ELT22LZG](#) [SY100ELT22ZG](#) [SY100ELT22ZG-TR](#) [SY100ELT22LZG-TR](#)