SY100ELT23L

3.3V Dual Differential LVPECL-to-LVTTL Translator

Features

- 3.3V Power Supply
- 2.0 ns Typical Propagation Delay
- <300 ps Typical Within-Device Skew
- Differential LVPECL Inputs
- 24 mA LVTTL Outputs
- Flow-Through Pinouts
- Available in 8-Lead SOIC Package

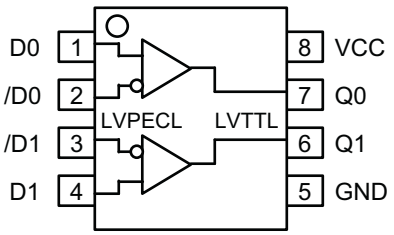
General Description

The SY100ELT23L is a dual differential LVPECL-to-LVTTL translator with +3.3V power supply. Because LVPECL (low voltage positive ECL) levels are used, only +3.3V and ground are required. The small outline 8-lead SOIC package and low skew, dual gate design make the ELT23L ideal for applications that require the translation of a clock or data signal.

The ELT23L is compatible with positive ECL 100K logic levels.

Package Type

SY100ELT23L
8-Lead SOIC
(Top View)



1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings †

Power Supply Voltage (V_{CC}) ..... –0.5V to +3.8V
PECL Input Voltage (V_{IN}) ..... 0V to V_{CC}+0.5V
Voltage Applied to Output at High State (V_{OUT}) ..... –0.5V to V_{CC}
Current Applied to Output at Low State (I_{OUT}) ..... Twice the Rated I_{OL} in mA

† Notice: Permanent device damage can occur if absolute maximum ratings are exceeded. This is a stress rating only and functional operation is not implied at conditions other than those detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

LVTTL DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics: V_{CC} = +3.3V ±5%; Values valid from –40°C to +85°C unless otherwise noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Power Supply Current	I_{CC}	—	—	30	mA	—
Output High Voltage	V_{OH}	2.0	—	—	V	I_{OH} = –3.0 mA
Output Low Voltage	V_{OL}	—	—	0.5	V	I_{OL} = 24 mA
Output Short Circuit Current	I_{OS}	–240	—	–80	mA	V_{OUT} = 0V

LVPECL DC ELECTRICAL CHARACTERISTICS

Electrical Characteristics: V_{CC} = +3.3V ±5%; Values valid from –40°C to +85°C unless otherwise noted.

Parameter	Symbol	Min.	Typ.	Max.	Units	Conditions
Input High Current	I_{IH}	—	—	150	µA	—
Input Low Current	I_{IL}	0.5	—	—	µA	—
Common Mode Range	V_{CMR}	1.5	—	V_{CC}	V	—
Input High Voltage	V_{IH}	2135	—	2420	mV	Note 1
Input Low Voltage	V_{IL}	1490	—	1825	mV	Note 1

Note 1: These values are for V_{CC} = 3.3V. Level specifications will vary 1:1 V_{CC}.

AC ELECTRICAL CHARACTERISTICS

Electrical Characteristics: V_{CC} = +3.3V ±5%; Values valid from –40°C to +85°C unless otherwise noted.						
Parameter	**Symbol**	**Min.**	**Typ.**	**Max.**	**Units**	**Condition**
Maximum Input Frequency	f_{MAX}	160	—	—	MHz	C_L = 20 pF, Note 1, Note 2
Propagation Delay	t_{PD}	1.5	2.0	2.5	ns	C_L = 20 pF
Part-to-Part Skew	t_{SKPP}	—	—	0.5	ns	C_L = 20 pF, Note 3, Note 6
Within-Device Skew	t_{SKEW++}	—	—	0.3	ns	Note 4, Note 6
	$t_{SKEW—}$	—	—			Note 5, Note 6
Input Swing	V_{PP}	200	—	1000	mV	Note 7
Output Rise/Fall Time (1.0V to 2.0V)	t_r/t_f	0.5	—	1.0	ns	C_L = 20 pF

Note 1: Frequency at which output levels will meet a 0.8V to 2.0V minimum swing.

2: The f_{MAX} value is specified as the minimum guaranteed maximum frequency. Actual operational maximum frequency may be greater.

3: Part-to-Part skew considering HIGH-to-HIGH transitions at common V_{CC} level

4: Within-Device skew considering HIGH-to-HIGH transitions at common V_{CC} level.

5: Within-Device skew considering LOW-to-LOW transitions at common V_{CC} level.

6: All skew parameters are guaranteed, but not tested.

7: Input swing for which AC parameters are guaranteed.200 mV input guarantees full logic at output.

TEMPERATURE SPECIFICATIONS

Parameters	**Symbol**	**Min.**	**Typ.**	**Max.**	**Units**	**Conditions**
Temperature Ranges						
Lead Temperature	—	—	—	+260	°C	Soldering, 20 sec.
Ambient Operating Temperature	T_A	–40	—	+85	°C	—
Storage Temperature	T_S	–65	—	+150	°C	—

TRUTH TABLE

D	**/D**	**Q**
L	H	L
H	L	H
Open	Open	L

2.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 2-1.

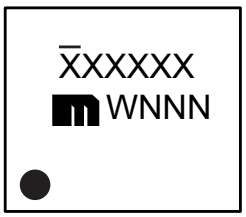
TABLE 2-1: PIN FUNCTION TABLE

Pin Number	Pin Name	Description
1, 2	D0, /D0	No Connect.
4, 3	D1, /D1	Differential LVPECL Inputs.
5	GND	Ground.
7, 6	Q0, /Q1	LVTTL Outputs.
8	VCC	+3.3V Supply.

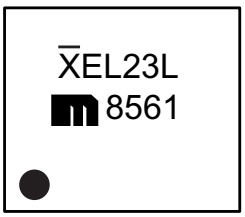
3.0 PACKAGING INFORMATION

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).

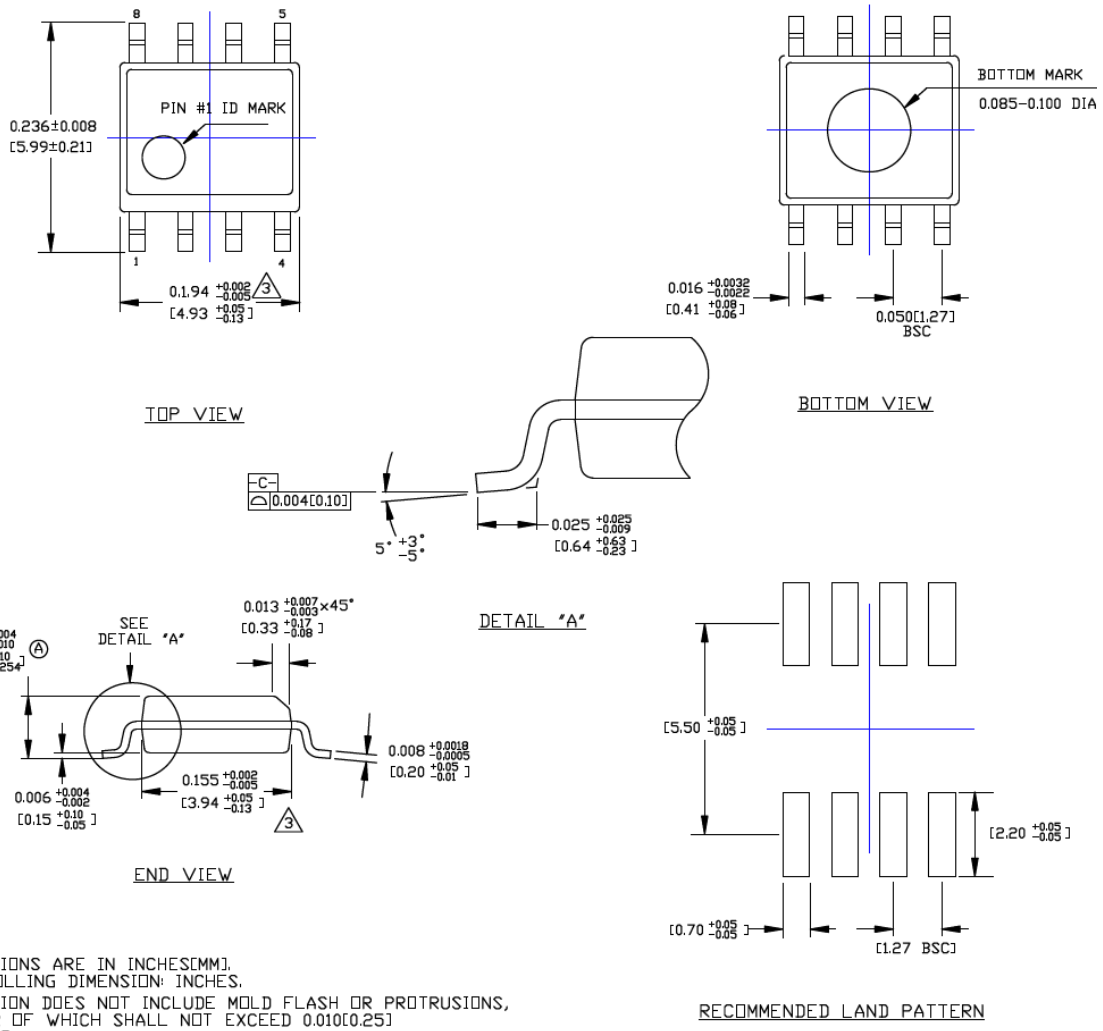
Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information. Package may or may not include the corporate logo.

Underbar (_) and/or Overbar (‾) symbol may not be to scale.

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 (August 2019)

- Converted Micrel document SY100ELT23L to Microchip data sheet DS20006236A.
- Minor text changes throughout.
- Removal of all reference to the discontinued SY10ELT23L.

NOTES:

PRODUCT IDENTIFICATION SYSTEM

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

Part No.	X	X	X	-XX
Device	Supply Voltage	Package	Temp. Range	Packing

Device:	SY100ELT23: 3.3V Differential LVPECL-to-LVTTL Translator		
Supply Voltage:	L	=	3.3V
Package:	Z	=	8-Lead SOIC
Temperature Range:	G	=	–40°C to +85°C (NiPdAu Lead-Free)
Tape and Reel:	<blank>	=	95/Tube
	TR	=	1,000/Reel

Examples:

a) SY100ELT23LZG:
SY100ELT23, 3.3V Supply Voltage,
8-Lead SOIC, –40°C to +85°C Temperature Range,
95/Tube

b) SY100ELT23LZG-TR:
SY100ELT23, 3.3V Supply Voltage,
8-Lead SOIC, –40°C to +85°C Temperature 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.
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