3.3V, DUAL DIFFERENTIAL LVPECL-TO-LVTTL TRANSLATOR

Precision Edge®
SY10ELT23L
SY100ELT23L

FEATURES

- **3.3V power supply**
- **2.0ns typical propagation delay**
- **<500ps typical output-to-output skew**
- **Differential LVPECL inputs**
- **24mA LVTTL outputs**
- **Flow-through pinouts**
- **Available in 8-pin SOIC package**



Precision Edge®

DESCRIPTION

The SY10/100ELT23L are dual differential LVPECL-to-LVTTL translators 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-pin SOIC package and the low skew, dual gate design of the ELT23L makes it ideal for applications which require the translation of a clock and a data signal.

The ELT23L is available in both ECL standards: the 10ELT is compatible with positive ECL 10H logic levels, while the 100ELT is compatible with positive ECL 100K logic levels.

PIN NAMES

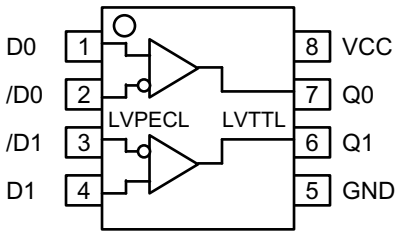
Pin	Function
Qn	LVTTL Outputs
Dn	Differential LVPECL Inputs
VCC	+3.3V Supply
GND	Ground

TRUTH TABLE

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

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PACKAGE/ORDERING INFORMATION(1)



8-Pin SOIC (Z8-1)

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10ELT23LZC	Z8-1	Commercial	HEL23L	Sn-Pb
SY10ELT23LZCTR(2)	Z8-1	Commercial	HEL23L	Sn-Pb
SY100ELT23LZC	Z8-1	Commercial	XEL23L	Sn-Pb
SY100ELT23LZCTR(2)	Z8-1	Commercial	XEL23L	Sn-Pb
SY10ELT23LZI	Z8-1	Industrial	HEL23L	Sn-Pb
SY10ELT23LZITR(2)	Z8-1	Industrial	HEL23L	Sn-Pb
SY100ELT23LZI	Z8-1	Industrial	XEL23L	Sn-Pb
SY100ELT23LZITR(2)	Z8-1	Industrial	XEL23L	Sn-Pb
SY10ELT23LZG(3)	Z8-1	Industrial	HEL23L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10ELT23LZGTR(2, 3)	Z8-1	Industrial	HEL23L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT23LZG(3)	Z8-1	Industrial	XEL23L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT23LZGTR(2, 3)	Z8-1	Industrial	XEL23L with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

1. Contact factory for die availability. Dice are guaranteed at T_A = 25°C, DC Electricals only.
2. Tape and Reel.
3. Pb-Free package is recommended for new designs.

ABSOLUTE MAXIMUM RATINGS(1)

Symbol	Rating	Value	Unit
V_{CC}	Power Supply Voltage	–0.5 to +3.8	V
V_{IN}	PECL Input Voltage	0 to V_{CC}+0.5	V
V_{OUT}	Voltage Applied to Output at HIGH State	–0.5 to V_{CC}	V
I_{OUT}	Current Applied to Output at LOW State	Twice the Rated I_{OL}	mA
T_{LEAD}	Lead Temperature (soldering, 20sec.)	+260	°C
T_S	Storage Temperature	–65 to +150	°C
T_A	Operating Temperature Range	–40 to +85	°C

Notes:

1. Permanent device damage may 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 ratlng conditions for extended periods may affect device reliability.

LVTTL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.3V ±5%.

Symbol	Parameter	T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
V_{OH}	Output HIGH Voltage	2.0	—	2.0	—	2.0	—	2.0	—	V	I_{OH} = –3.0mA
V_{OL}	Output LOW Voltage	—	0.5	—	0.5	—	0.5	—	0.5	V	I_{OL} = 24mA
I_{CC}	Power Supply Current	—	30	—	30	—	30	—	30	mA	
I_{OS}	Output Short-Circuit Current	–80	–240	–80	–240	–80	–240	–80	–240	mA	V_{OUT} = 0V

LVPECL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.3V ±5%.

Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA
I_{IL}	Input LOW Current	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	µA
V_{CMR}	Common Mode Range	1.5	—	V_{CC}	1.5	—	V_{CC}	1.5	—	V_{CC}	1.5	—	V_{CC}	V
V_{PP}	Minimum Peak-to-Peak Input(1)	200	—	—	200	—	—	200	—	—	200	—	—	mV
V_{IH}	Input HIGH Voltage(2)													mV
	10ELT	2070	—	2410	2130	—	2460	2170	—	2490	2130	—	2565	
	100ELT	2135	—	2420	2135	—	2420	2135	—	2420	2135	—	2420	
V_{IL}	Input LOW Voltage(2)													mV
	10ELT	1350	—	1800	1350	—	1820	1350	—	1820	1350	—	1820	
	100ELT	1490	—	1825	1490	—	1825	1490	—	1825	1490	—	1825	

Notes:

1. 200mV input guaranteed full logic at output.
2. These values are fro V_{CC} = 3.3V. Level specification will vary 1:1 with V_{CC}.

AC ELECTRICAL CHARACTERISTICS

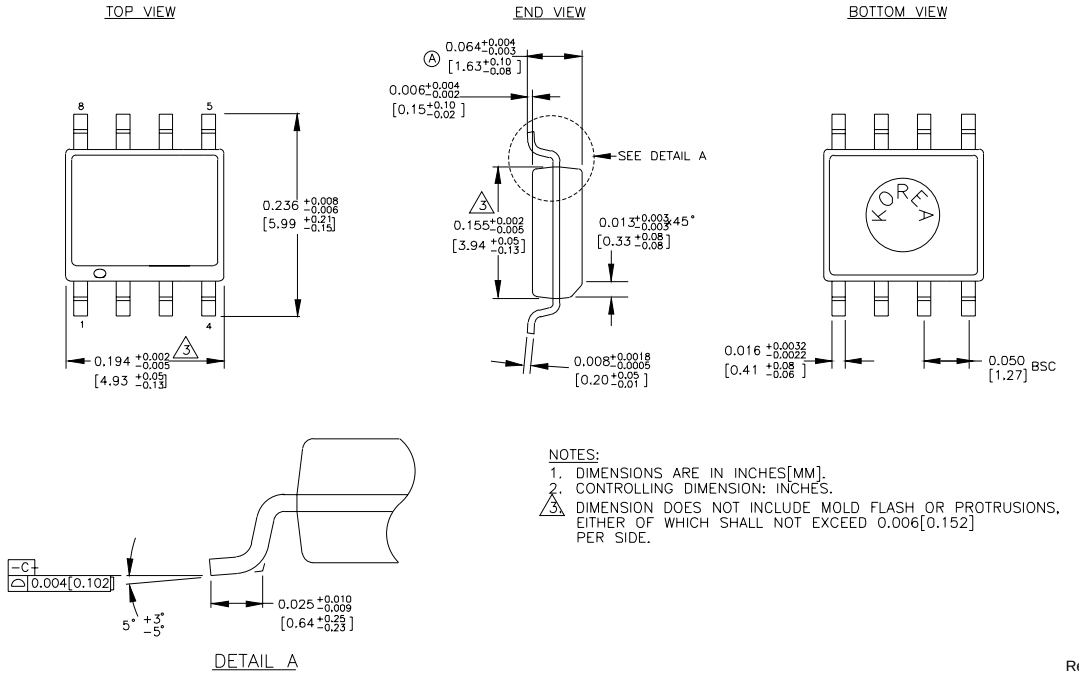
V_{CC} = +3.3V ±5%.

Symbol	Parameter	T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
f_{MAX}	Maximum Input Frequency(1, 2)	160	—	160	—	160	—	160	—	MHz	C_L = 20pF
t_{PD}	Propagation Delay	1.5	2.5	1.5	2.5	1.5	2.5	1.5	2.5	ns	C_L = 20pF
t_{skpp}	Part-to-Part Skew(3, 6)	—	0.5	—	0.5	—	0.5	—	0.5	ns	C_L = 20pF
t_{SKEW++}	Within-Device Skew(4, 6)	—	0.3	—	0.3	—	0.3	—	0.3	ns	C_L = 20pF
$t_{SKEW- -}$	Within-Device Skew(5, 6)	—	0.3	—	0.3	—	0.3	—	0.3	ns	C_L = 20pF
tr, tf	Output Rise/Fall Times 1.0V to 2.0V	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	ns	C_L = 20pF

Notes:

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. Device-to-Device 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.

8-PIN SOIC .300" WIDE (Z8-1)



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 0.006[0.152] PER SIDE.

Rev. 03

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