



3.3V DUAL TTL-to-DIFFERENTIAL PECL TRANSLATOR

SY10ELT22L
SY100ELT22L

FEATURES

- 3.3V power supply
- 300ps typical propagation delay
- <100ps output-to-output skew
- Differential PECL outputs
- PNP TTL inputs for minimal loading
- Flow-through pinouts
- Available in 8-pin SOIC package

DESCRIPTION

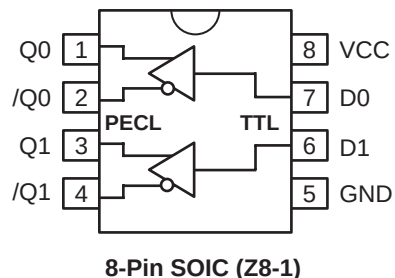
The SY10/100ELT22L are dual TTL-to-differential PECL translators with +3.3V power supply. Because PECL (Positive ECL) levels are used, only +3.3V and ground are required. The small outline 8-lead SOIC package and the low skew, dual gate design of the ELT22L makes it ideal for applications which require the translation of a clock and a data signal.

The ELT22L 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
Q _n	Differential PECL Outputs
D _n	TTL Inputs
Vcc	+3.3V Supply
GND	Ground

PACKAGE/ORDERING INFORMATION

Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10ELT22LZC	Z8-1	Commercial	HEL22L	Sn-Pb
SY10ELT22LZCTR ⁽²⁾	Z8-1	Commercial	HEL22L	Sn-Pb
SY100ELT22LZC	Z8-1	Commercial	XEL22L	Sn-Pb
SY100ELT22LZCTR ⁽²⁾	Z8-1	Commercial	XEL22L	Sn-Pb
SY100ELT22LZI	Z8-1	Industrial	XEL22L	Sn-Pb
SY100ELT22LZITR ⁽²⁾	Z8-1	Industrial	XEL22L	Sn-Pb
SY10ELT22LZG ⁽³⁾	Z8-1	Industrial	HEL22L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10ELT22LZGTR ^(2, 3)	Z8-1	Industrial	HEL22L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT22LZG ⁽³⁾	Z8-1	Industrial	XEL22L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT22LZGTR ^(2, 3)	Z8-1	Industrial	XEL22L with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

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

ABSOLUTE MAXIMUM RATINGS⁽¹⁾

Symbol	Parameter	Value	Unit
V _{CC}	Power Supply Voltage	-0.5 to +7.0	V
V _I	TTL Input Voltage	-0.5 to V _{CC}	V
I _I	TTL Input Current	-30 to +5.0	mA
I _{OUT}	PECL Output Current — Continuous — Surge	50 100	mA
T _{LEAD}	Lead Temperature (soldering, 20sec.)	+260	°C
T _{store}	Storage Temperature	-65 to +150	°C
T _A	Operating Temperature	-40 to +85	°C

TRUTH TABLE

D	Q	$\bar{Q}$
H	H	L
L	L	H
Open	H	L

NOTE:

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 rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{CC} = +3.0V to +3.8V

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.		
I _{CC}	Power Supply Current	—	25	—	25	—	25	—	25	mA	—

NOTE:

1. Parametric values specified at: 3 volt Power Supply Range 10/100ELT22L Series: +3.0V to +3.8V.

TTL DC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{CC} = +3.0V to +3.8V

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 _{IH}	Input HIGH Voltage	2.0	—	2.0	—	2.0	—	2.0	—	V	—
V _{IL}	Input LOW Voltage	—	0.8	—	0.8	—	0.8	—	0.8	V	—
I _{IH}	Input HIGH Current	—	20 100	—	20 100	—	20 100	—	20 100	μA	V _{IN} = 2.7V V _{IN} = V _{CC}
I _{IL}	Input LOW Current	—	-0.2	—	-0.2	—	-0.2	—	-0.2	mA	V _{IN} = 0.5V
V _{IK}	Input Clamp Voltage	—	-1.2	—	-1.2	—	-1.2	—	-1.2	V	I _{IN} = -18mA

NOTE:

1. Parametric values specified at: 3 volt Power Supply Range 10/100ELT22L Series: +3.0V to +3.8V.

PECL DC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{CC} = V_{CC} (Min.) to V_{CC} (Max.)

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.	
V _{OH}	Output HIGH Voltage ⁽²⁾													mV
	10ELT	2220	—	2410	2280	—	2460	2320	—	2490	2390	—	2580	
	100ELT	2220	—	2420	2275	—	2420	2275	—	2420	2275	—	2420	
V _{OL}	Output LOW Voltage ⁽²⁾													mV
	10ELT	1350	—	1650	1350	—	1670	1350	—	1670	1350	—	1705	
	100ELT	1470	—	1750	1490	—	1680	1490	—	1680	1490	—	1680	

NOTES:

1. Parametric values specified at: 3 volt Power Supply Range 10/100ELT22L Series: +3.0V to +3.8V.
2. These values are for V_{CC} = 3.3V. Level Specifications will vary 1:1 with V_{CC}.

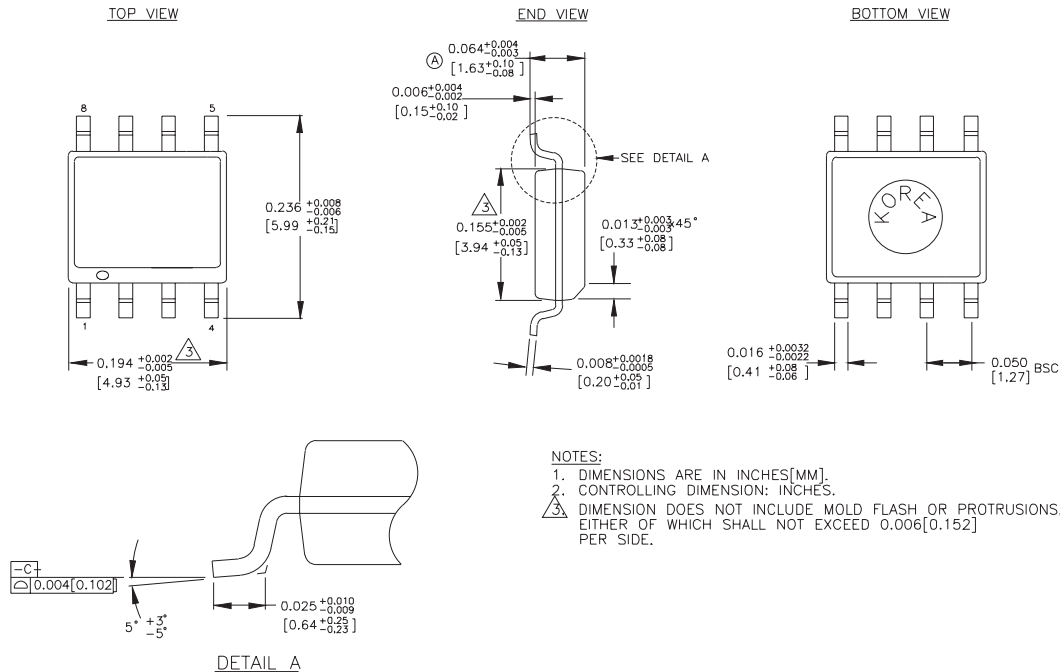
AC ELECTRICAL CHARACTERISTICS⁽¹⁾V_{CC} = +3.0V to +3.8V

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.		
t _{PD}	Propagation Delay to Output D, ENECL/ENTTL	100	600	100	600	100	600	100	600	ps	50Ω to V _{CC} – 2.0V
t _r t _f	Output Rise/Fall Time 20% to 80%	200	500	200	500	200	500	200	500	ps	50Ω to V _{CC} – 2.0V
t _{skpp}	Part-to-Part Skew ⁽²⁾	—	500	—	500	—	500	—	500	ps	50Ω to V _{CC} – 2.0V
t _{skew}	Within-Device Skew ^(2,3)	—	100	—	100	—	100	—	100	ps	50Ω to V _{CC} – 2.0V

NOTES:

1. Parametric values specified at: 3 volt Power Supply Range 10/100ELT22L Series: +3.0V to +3.8V.
2. Guaranteed, but not tested.
3. Same transition @common V_{CC} levels.

8-PIN SOIC .150" WIDE (Z8-1)



Rev. 03

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USATEL + 1 (408) 944-0800 FAX + 1 (408) 474-1000 WEB <http://www.micrel.com>

The information furnished by Micrel in this datasheet is believed to be accurate and reliable. However, no responsibility is assumed by Micrel for its use. Micrel reserves the right to change circuitry and specifications at any time without notification to the customer.

Micrel Products are not designed or authorized for use as components in life support appliances, devices or systems where malfunction of a product can reasonably be expected to result in personal injury. Life support devices or systems are devices or systems that (a) are intended for surgical implant into the body or (b) support or sustain life, and whose failure to perform can be reasonably expected to result in a significant injury to the user. A Purchaser's use or sale of Micrel Products for use in life support appliances, devices or systems is at Purchaser's own risk and Purchaser agrees to fully indemnify Micrel for any damages resulting from such use or sale.

© 2005 Micrel, Incorporated.