


**DIFFERENTIAL
ECL-to-TTL TRANSLATOR**

SY100ELT25

FEATURES

- 2.6ns typical propagation delay
- Differential ECL inputs
- 24mA TTL outputs
- Flow-through pinouts
- Available in 8-pin SOIC package

DESCRIPTION

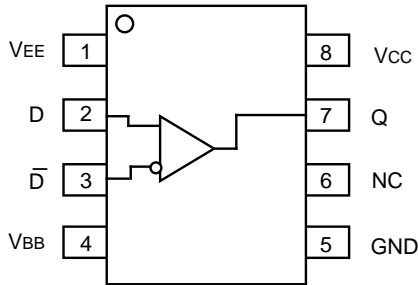
The SY100ELT25 is a differential ECL-to-TTL translator. Because ECL levels are used, a +5V, -5.2V (or -4.5V) and ground are required. The small outline 8-lead SOIC package and the single gate of the ELT25 makes it ideal for those applications where performance, space and low power are at a premium.

The VBB output allows the ELT25 to also be used in a single-ended input mode. In this mode the VBB output is tied to the \bar{D} input for a non-inverting buffer or the D input for an inverting buffer. If used the VBB pin should be bypassed to ground via a 0.01 μ F capacitor.

PIN NAMES

Pin	Function
Q	TTL Output
D	Differential ECL Inputs
VCC	Positive Supply
VEE	Negative Supply
VBB	Reference Output
GND	Ground

PACKAGE/ORDERING INFORMATION



8-Pin SOIC (Z8-1)

Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100ELT25ZC	Z8-1	Commercial	XEL25	Sn-Pb
SY100ELT25ZCTR ⁽²⁾	Z8-1	Commercial	XEL25	Sn-Pb
SY100ELT25ZI	Z8-1	Industrial	XEL25	Sn-Pb
SY100ELT25ZITR ⁽²⁾	Z8-1	Industrial	XEL25	Sn-Pb
SY100ELT25ZG ⁽³⁾	Z8-1	Industrial	XEL25 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100ELT25ZGTR ^(2, 3)	Z8-1	Industrial	XEL25 with 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
VCC	Power Supply Voltage	-0.5 to +7.0	V
VIN	ECL Input Voltage	VEE to GND+0.5	V
VOUT	Voltage Applied to Output at HIGH State	-0.5 to +5.5	V
IOUT	Current Applied to Output at LOW State	Twice the Rated IOL	mA
TLEAD	Lead Temperature (soldering, 20sec.)	+260	°C
Tstore	Storage Temperature	-65 to +150	°C
TA	Operating Temperature	-40 to +85	°C

TRUTH TABLE

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

NOTE:

- 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

VCC = 4.5V to 5.5V; VEE = -4.2V to -5.5V

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
ICC	Power Supply Current	—	14	—	14	9	14	—	14	mA	—
IEE	Power Supply Current	—	14	—	14	5.5	14	—	14	mA	—

AC ELECTRICAL CHARACTERISTICS

VCC = 4.5V to 5.5V; VEE = -4.2V to -5.5V

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
tPLH tPHL	Propagation Delay D to Output Q	1.7	3.6	1.7	3.6	1.7	3.6	1.7	3.6	ns	CL = 20pF
fMAX	Maximum Frequency	150	—	150	—	150	—	150	—	MHz	CL = 20pF
tr tf	Output Rise/Fall Time (1.0V to 2.0V)	—	1.5	—	1.5	—	1.5	—	1.5	ns	CL = 20pF

TTL DC ELECTRICAL CHARACTERISTICS

VCC = 4.5V to 5.5V; VEE = -4.2V to -5.5V

Symbol	Parameter	TA = -40°C		TA = 0°C		TA = +25°C		TA = +85°C		Unit	Condition
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
VOH	Output HIGH Voltage	2.4	—	2.4	—	2.4	—	2.4	—	V	I _{OH} = -3.0mA
VOL	Output LOW Voltage	—	0.5	—	0.5	—	0.5	—	0.5	V	I _{OL} = 24mA
Ios	Output Short Circuit Current	-60	-200	-60	-200	-60	-200	-60	-200	mA	V _{OUT} = 0V

ECL DC ELECTRICAL CHARACTERISTICS

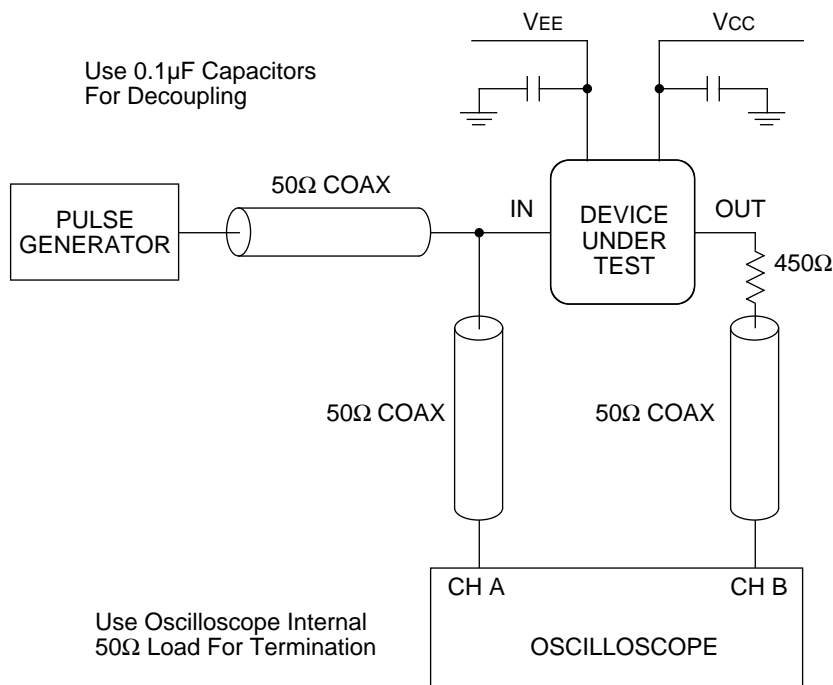
VCC = 4.5V to 5.5V; VEE = -4.2V to -5.5V

Symbol	Parameter	TA = -40°C			TA = 0°C			TA = +25°C			TA = +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 HIGH Current	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	μA
V _{CMR}	Common Mode Range	V _{EE} +2.2	—	GND	V _{EE} +2.2	—	GND	V _{EE} +2.2	—	GND	V _{EE} +2.2	—	GND	V
V _{PP}	Minimum Peak-to-Peak Input ⁽¹⁾	200	—	—	200	—	—	200	—	—	200	—	—	mV
V _{IH}	Input HIGH Voltage	-1165	—	-880	-1165	—	-880	-1165	—	-880	-1165	—	-880	mV
V _{IL}	Input LOW Voltage	-1810	—	-1475	-1810	—	-1475	-1810	—	-1475	-1810	—	-1475	mV
V _{BB}	Reference Output	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	mV

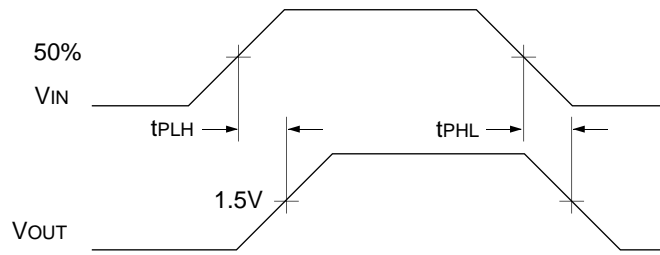
NOTE:

1. 200mV input guarantees full logic at output.

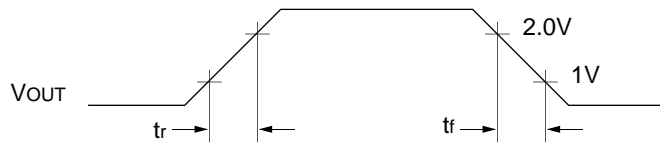
TTL SWITCHING CIRCUIT



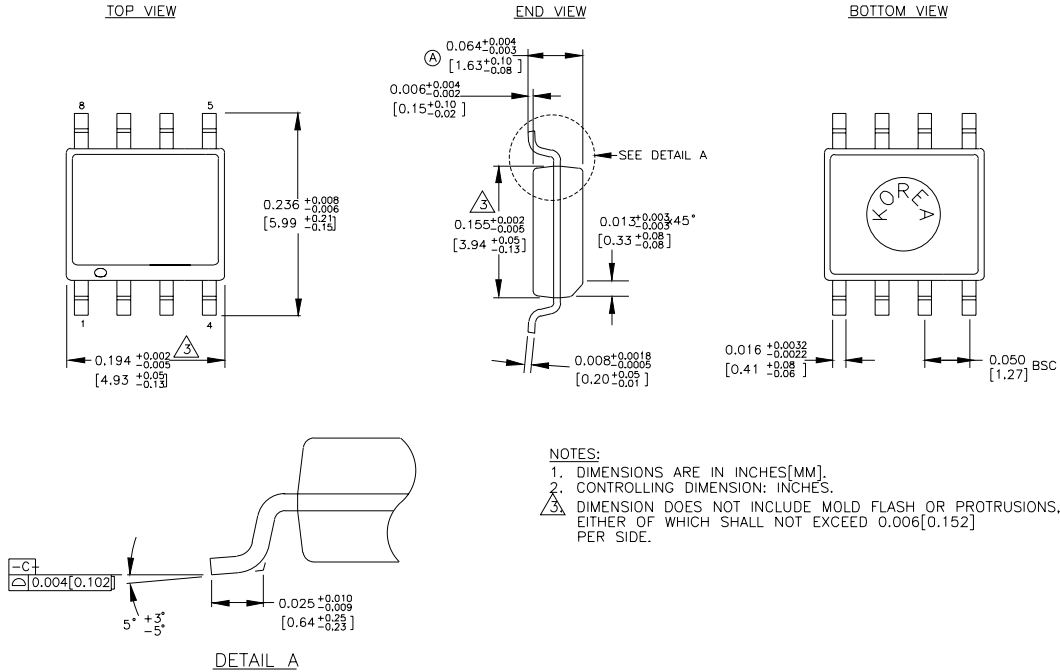
ECL/TTL PROPAGATION DELAY — SINGLE ENDED



ECL/TTL WAVEFORMS: RISE AND FALL TIMES



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



Rev. 03

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA

TEL + 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.

© 2006 Micrel, Incorporated.