FEATURES

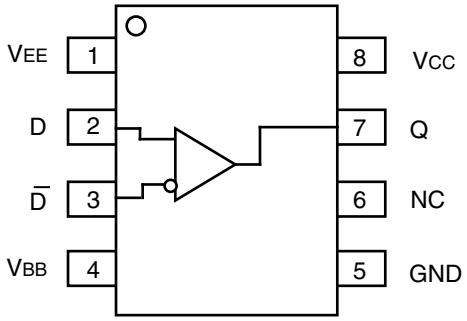
- **2.6ns typical propagation delay**
- **Differential ECL inputs**
- **24mA TTL outputs**
- **Flow-through pinouts**
- **Available in 8-pin SOIC package**

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 V_{BB} output allows the ELT25 to also be used in a single-ended input mode. In this mode the V_{BB} output is tied to the $\overline{D}$ input for a non-inverting buffer or the D input for an inverting buffer. If used the V_{BB} pin should be bypassed to ground via a 0.01µF capacitor.

PIN CONFIGURATION/BLOCK DIAGRAM



SOIC
TOP VIEW

PIN NAMES

Pin	Function
Q	TTL Output
D	Differential ECL Inputs
V_{CC}	Positive Supply
V_{EE}	Negative Supply
V_{BB}	Reference Output
GND	Ground

ABSOLUTE MAXIMUM RATINGS[1]

Symbol	Paramter	Value	Unit
V_{CC}	Power Supply Voltage	–0.5 to +7.0	V
V_{IN}	ECL Input Voltage	V_{EE} to GND+0.5	V
V_{OUT}	Voltage Applied to Output at HIGH State	–0.5 to +5.5	V
I_{OUT}	Current Applied to Output at LOW State	Twice the Rated I_{OL}	mA
T_{store}	Storage Temperature	–65 to +150	°C
T_A	Operating Temperature	–40 to +85	°C

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.

TRUTH TABLE

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

DC ELECTRICAL CHARACTERISTICS

V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V

		T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Unit	Condition
I_{CC}	Power Supply Current	—	14	—	14	9	14	—	14	mA	—
I_{EE}	Power Supply Current	—	14	—	14	5.5	14	—	14	mA	—

AC ELECTRICAL CHARACTERISTICS

V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V

		T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Unit	Condition
t_{PLH} t_{PHL}	Propagation Delay D to Output Q	1.7	3.6	1.7	3.6	1.7	3.6	1.7	3.6	ns	C_L = 20pF
f_{MAX}	Maximum Frequency	150	—	150	—	150	—	150	—	MHz	C_L = 20pF
t_r t_f	Output Rise/Fall Time (1.0V to 2.0V)	—	1.5	—	1.5	—	1.5	—	1.5	ns	C_L = 20pF

TTL DC ELECTRICAL CHARACTERISTICS

V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V

		T_A = –40°C		T_A = 0°C		T_A = +25°C		T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Unit	Condition
V_{OH}	Output HIGH Voltage	2.4	—	2.4	—	2.4	—	2.4	—	V	I_{OH} = –3.0mA
V_{OL}	Output LOW Voltage	—	0.5	—	0.5	—	0.5	—	0.5	V	I_{OL} = 24mA
I_{OS}	Output Short Circuit Current	–60	–200	–60	–200	–60	–200	–60	–200	mA	V_{OUT} = 0V

ECL DC ELECTRICAL CHARACTERISTICS

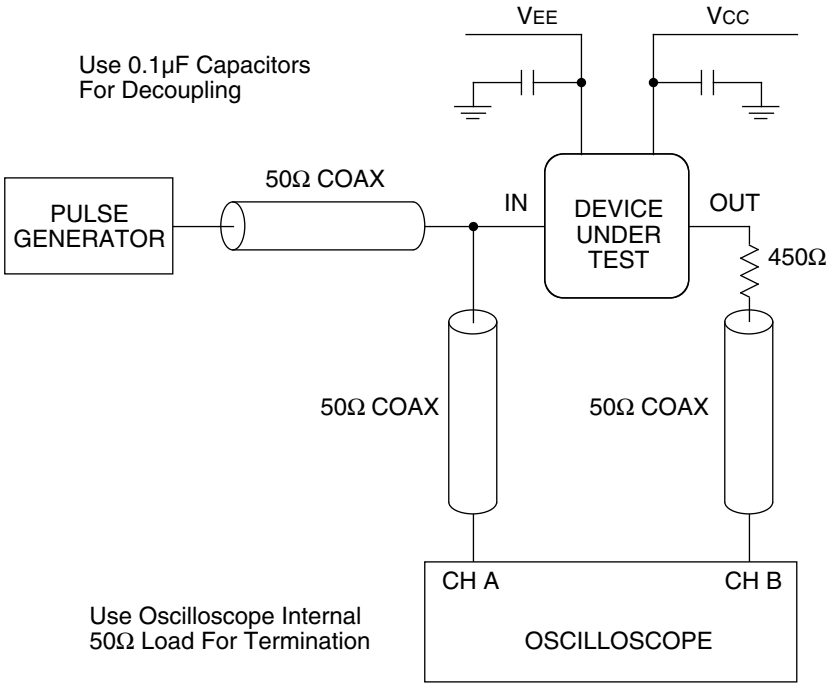
V_{CC} = 4.5V to 5.5V; V_{EE} = –4.2V to –5.5V

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 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

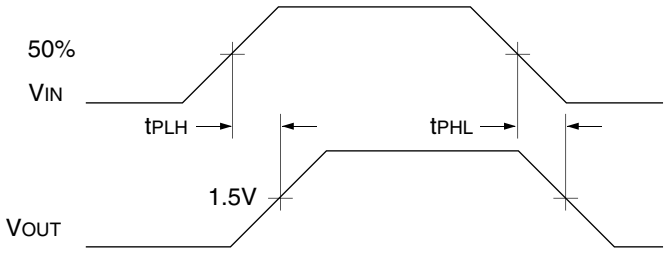
NOTE:

1. 200mV input guarantees full logic at output.

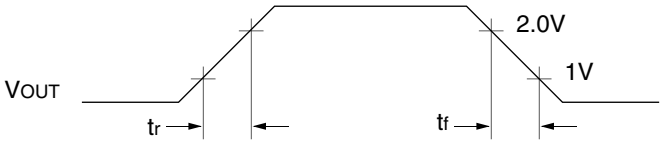
TTL SWITCHING CIRCUIT



ECL/TTL PROPAGATION DELAY — SINGLE ENDED



ECL/TTL WAVEFORMS: RISE AND FALL TIMES



PRODUCT ORDERING CODE

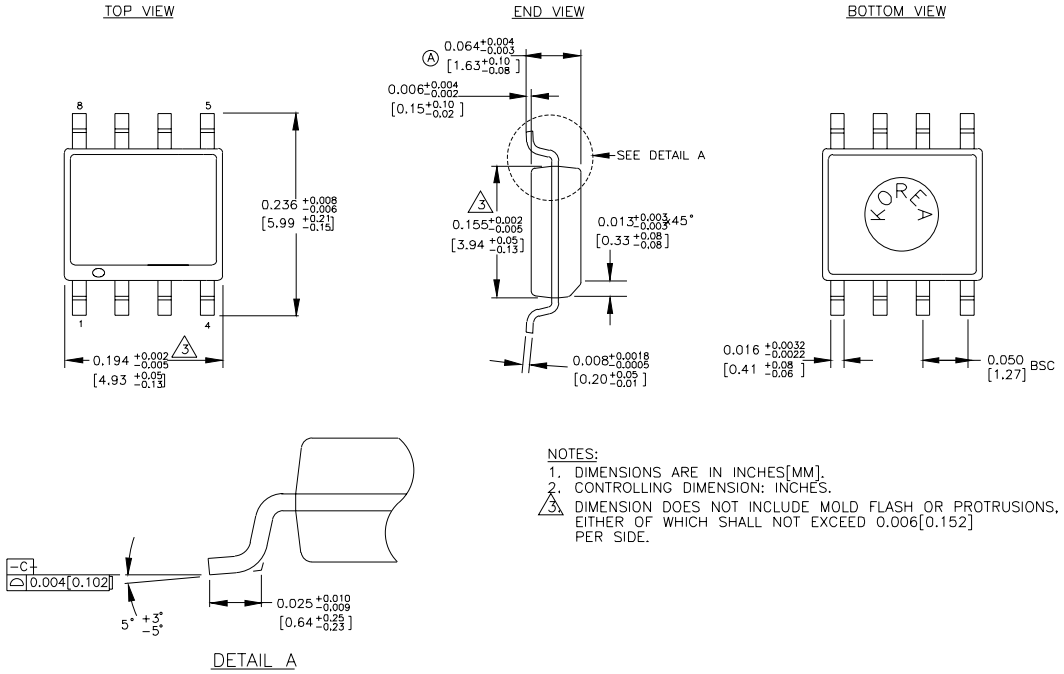
Ordering Code	Package Type	Operating Range	Marking Code
SY100ELT25ZC	Z8-1	Commercial	XEL25
SY100ELT25ZCTR[1]	Z8-1	Commercial	XEL25

Ordering Code	Package Type	Operating Range	Marking Code
SY100ELT25ZI[2]	Z8-1	Industrial	XEL25
SY100ELT25ZITR[1, 2]	Z8-1	Industrial	XEL25

Note 1. Tape and Reel.

Note 2. Recommended for new designs.

8 LEAD SOIC .150" 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.

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