5V/3.3V TTL-TO-DIFFERENTIAL PECL TRANSLATOR

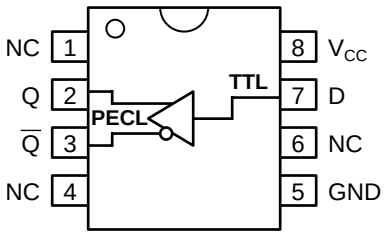
Precision Edge™
SY10ELT20V
SY100ELT20V

FEATURES

- **3.3V and 5V power supply options**
- **300ps typical propagation delay**
- **Low power**
- **Differential PECL output**
- **PNP TTL input for minimal loading**
- **Flow-through pinouts**
- **Available in 8-pin SOIC package and in die form**

Precision Edge™

PIN CONFIGURATION/BLOCK DIAGRAM



SOIC
TOP VIEW

DESCRIPTION

The SY10/100ELT20V is a single TTL-to-differential PECL translator. Because PECL (Positive ECL) levels are used, either +5V or +3.3V and ground are required. The small outline 8-lead SOIC package and low skew single gate design make the ELT20V ideal for applications that require the translation of a clock or data signal where minimal space, low power, and low cost are critical.

The ELT20V 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	Differential PECL Output
D	TTL Input
V_{CC}	+5V/+3.3V Supply
GND	Ground

ABSOLUTE MAXIMUM RATINGS(Note 1)

Symbol	Paramter	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_{store}	Storage Temperature	–65 to +150	°C
T_A	Operating Temperature	–40 to +85	°C

TRUTH TABLE

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

DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.3V ±10% or +5.0V ±10%

		T_A = –40°C		T_A = 0°C		T_A = +25°C			T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Typ.	Max.	Min.	Max.	Unit	Condition
I_{CC}	Power Supply Current	—	20	—	20	—	—	20	—	20	mA	—

TTL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.3V ±10% or +5.0V ±10%

		T_A = –40°C		T_A = 0°C		T_A = +25°C			T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Typ.	Max.	Min.	Max.	Unit	Condition
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

PECL DC ELECTRICAL CHARACTERISTICS

V_{CC} = +3.3V ±10% or +5.0V ±10%

		T_A = –40°C		T_A = 0°C		T_A = +25°C			T_A = +85°C			
Symbol	Parameter	Min.	Max.	Min.	Max.	Min.	Typ.	Max.	Min.	Max.	Unit	Condition
V_{OH}	Output HIGH Voltage(Note 2)										mV	
	10ELT	3920	4110	3980	4160	4020	—	4190	4090	4280		
	100ELT	3915	4120	3975	4120	3975	—	4120	3975	4120		
V_{OL}	Output LOW Voltage(1)										mV	
	10ELT	3050	3350	3050	3370	3050	—	3370	3050	3405		
	100ELT	3170	3445	3190	3380	3190	—	3380	3190	3380		

AC ELECTRICAL CHARACTERISTICS(Note 3)

V_{CC} = +3.3V ±10% or +5.0V ±10%

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.	Typ.	Max.	Min.	Max.		
t_{PLH} t_{PHL}	Propagation Delay(Note 3)	100	600	100	600	100	—	600	100	600	ps	50Ω to V_{CC} – 2.0V
t_{skpp}	Part-to-Part Skew(Note 4)	—	500	—	500	—	—	500	—	500	ps	50Ω to V_{CC} – 2.0V
f_{MAX}	Maximum Input Frequency	350	—	350	—	350	—	—	350	—	MHz	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

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.

Note 2. These values are for VCC = 5.0V. Level Specifications will vary 1:1 with VCC.

Note 3. Input Rise Time < 1.0ns.

Note 4. Guaranteed by design. Not tested in production.

PRODUCT ORDERING INFORMATION(NOTE 1)

Ordering Code	Package Type	Operating Range	Marking Code
SY10ELT20VZC	Z8-1	Commercial	HEL20V
SY10ELT20VZCTR(3)	Z8-1	Commercial	HEL20V
SY100ELT20VZC	Z8-1	Commercial	XEL20V
SY100ELT20VZCTR(3)	Z8-1	Commercial	XEL20V

Ordering Code	Package Type	Operating Range	Marking Code
SY10ELT20VZI(2)	Z8-1	Industrial	HEL20V
SY10ELT20VZITR(2,3)	Z8-1	Industrial	HEL20V
SY100ELT20VZI(2)	Z8-1	Industrial	XEL20V
SY100ELT20VZITR(2,3)	Z8-1	Industrial	XEL20V
SY100ELT20VXC	DIE	25°C	—

TOPOGRAPHIES AND PAD COORDINATES

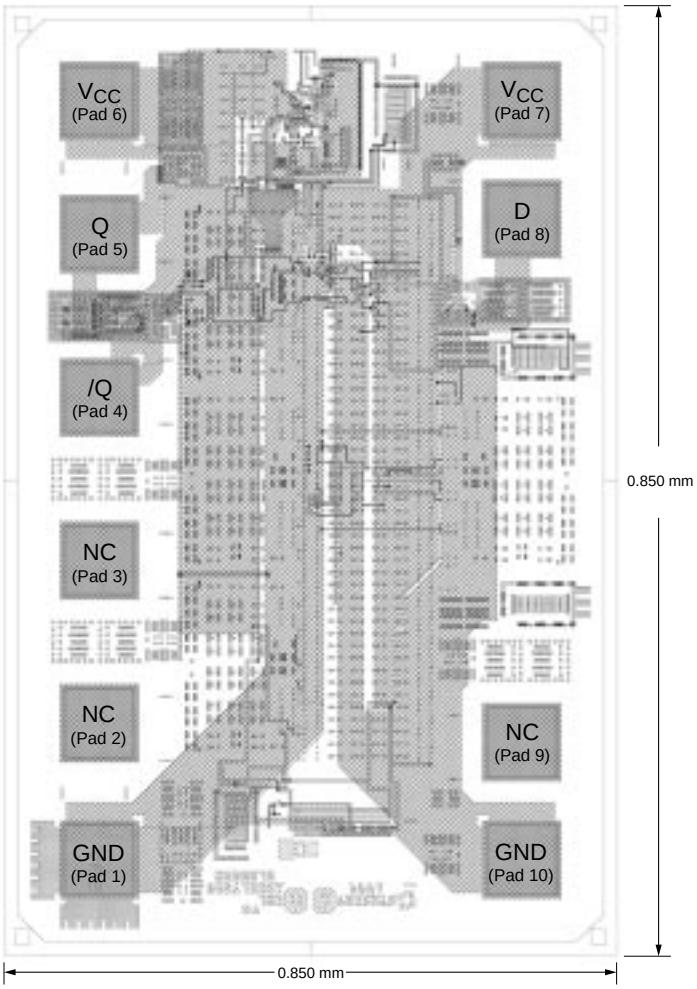


Figure 1. Chip Topographies

PAD COORDINATES TABLE

Pad Number	Coordinates (µm)[4]
1	619.5, –344.5
2	396.5, –344.5
3	130.5, –344.5
4	–135.5, –344.5
5	–401.5, –344.5
6	–619.5, –344.5
7	–619.5, 344.5
8	–427.5, 344.5
9	427.5, 344.5
10	619.5, 344.5

CHIP INFORMATION

Transistor Count:	98
Substrate:	Connect to GND
Process:	Bipolar

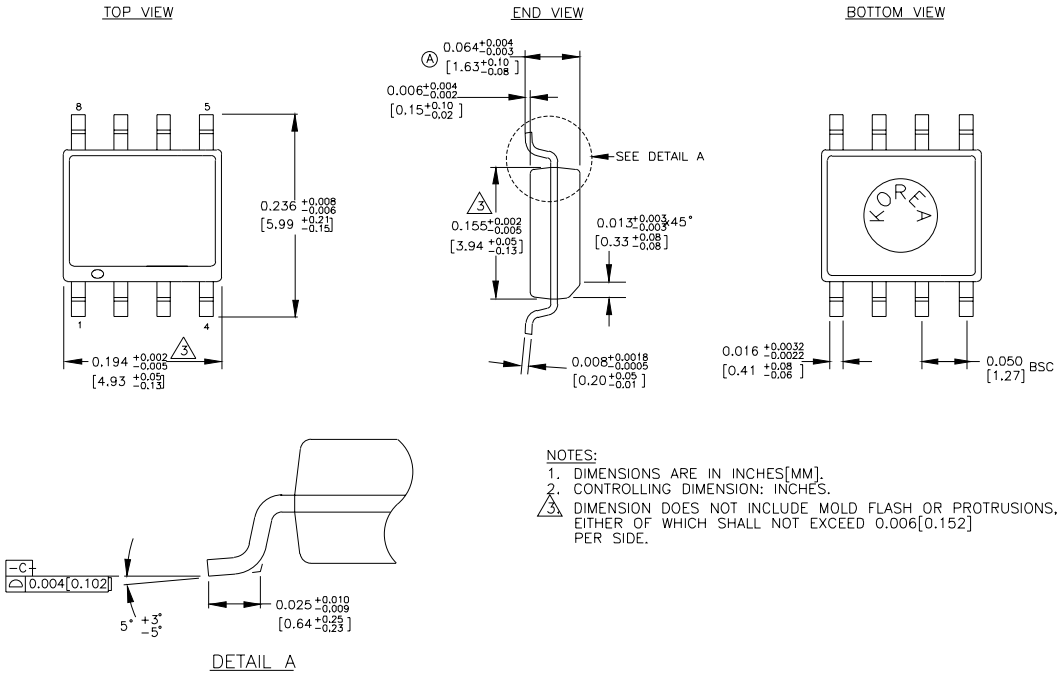
Note 1. Contact factory for die availability. Die is guaranteed at T_A = 25°C, DC electricals only. Shipped in waffle pack.

Note 2. Recommended for new designs.

Note 3. Tape and Reel.

Note 4. Coordinates reference from the center of the die.

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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