

FEATURES

- 620ps typical propagation delay
- Fully differential design
- Supports standard operation
- Available in 20-pin SOIC package

DESCRIPTION

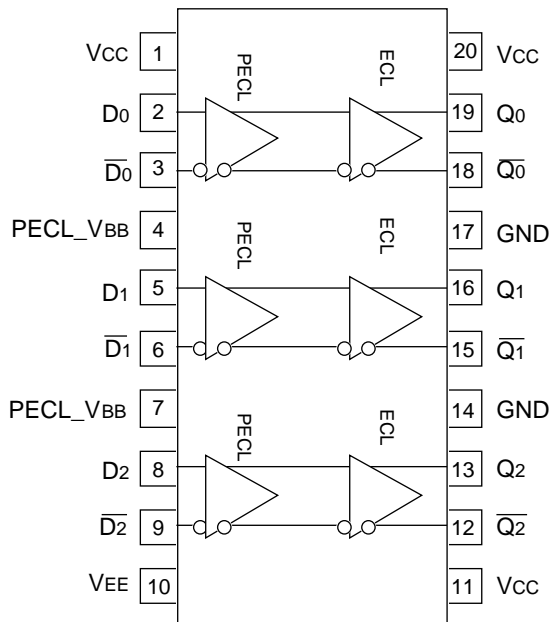
The SY100EL91 is a triple PECL-to-ECL translator. It receives standard voltage PECL signals and translates them to different ECL output signals.

A V_{BB} output is provided for interfacing with single ended PECL signals at the input. If a single ended input is to be used, the V_{BB} output should be connected to the \bar{D} input. The active signal would then drive the D input. When used, the V_{BB} output should be bypassed to ground via a $0.01\mu\text{F}$ capacitor. The V_{BB} output is designed to act as the switching reference for the EL91 under single ended input switching conditions. As a result this pin can only source/sink up to 0.5mA of current.

To accomplish the level translation the EL91 requires three power rails. The V_{CC} supply should be connected to the positive supply, and the V_{EE} pin should be connected to the negative power supply. The GND pins as expected are connected to the system ground plane. Both V_{EE} and V_{CC} should be bypassed to ground via $0.01\mu\text{F}$ capacitors.

Under open input conditions, the \bar{D} input will be biased at $V_{CC}/2$ and the D input will be pulled to GND. This condition will force the Q output to a LOW, ensuring stability.

PIN CONFIGURATION/BLOCK DIAGRAM



**SOIC
TOP VIEW**

PIN NAMES

Pin	Function
D_n	PECL Inputs
Q_n	ECL Outputs
PECL_VBB	PECL Reference Voltage Output

PECL INPUT DC ELECTRICAL CHARACTERISTICS

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.	
VCC	Power Supply Voltage	4.75	—	5.25	4.75	—	5.25	4.75	—	5.25	4.75	—	5.25	V
VIH	Input HIGH Voltage ⁽¹⁾	3.835	—	4.120	3.835	—	4.120	3.835	—	4.120	3.835	—	4.120	V
VIL	Input LOW Voltage ⁽¹⁾	3.190	—	3.525	3.190	—	3.525	3.190	—	3.525	3.190	—	3.525	V
I _{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	μA
I _{IL}	Input LOW Current $\frac{Dn}{Dn}$	0.5	—	—	0.5	—	—	0.5	—	—	0.5	—	—	μA
		-600	—	—	-600	—	—	-600	—	—	-600	—	—	
V _{BB}	Output Reference ⁽¹⁾	3.620	—	3.740	3.620	—	3.740	3.620	—	3.740	3.620	—	3.740	V
I _{CC}	Power Supply Current	—	—	11	—	—	11	—	6.0	11	—	—	11	mA

NOTE:

1. These values are for V_{CC} = 5V. Level specifications will vary 1:1 with V_{CC}.

ECL OUTPUT DC ELECTRICAL CHARACTERISTICS

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.	
V _{EE}	Power Supply Voltage	-4.2	—	-5.5	-4.2	—	-5.5	-4.2	—	-5.5	-4.2	—	-5.5	V
V _{OH}	Output HIGH Voltage	-1085	—	-880	-1025	—	-880	-1025	-955	-880	-1025	—	-880	mV
V _{OL}	Output LOW Voltage	-1830	—	-1555	-1810	—	-1620	-1810	-1705	-1620	-1810	—	-1620	mV
I _{EE}	Power Supply Current	—	—	28	—	—	28	—	22	28	—	—	30	mA

AC ELECTRICAL CHARACTERISTICS

PECL: $V_{CC} = +4.75V$ to $+5.25V$, ECL: $V_{EE} = -4.2V$ to $-5.5V$

Symbol	Parameter	$T_A = -40^\circ C$			$T_A = 0^\circ C$			$T_A = +25^\circ C$			$T_A = +85^\circ C$			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t _{PLH} t _{PHL}	Propagation Delay D to Q Diff. S.E.	520 470	620 620	720 770	520 470	620 620	720 770	520 470	620 620	720 770	550 500	650 650	750 800	ps
t _{skew}	Within-Device Skew ⁽¹⁾ Output-to-Output Part-to-Part (Diff.) Duty Cycle (Diff.)	— — —	— — 25	100 200 —	— — —	— — 25	100 200 —	— — —	20 — 25	100 200 —	— — —	— — 25	100 200 —	ps
V _{PP}	Minimum Input Swing ⁽²⁾	200	—	—	200	—	—	200	—	—	200	—	—	mV
V _{CMR}	Common Mode Range ⁽³⁾ $V_{PP} < 500mV$ $V_{PP} > 500mV$	1.3 1.5	— —	$V_{CC}-0.2$ $V_{CC}-0.2$	1.2 1.4	— —	$V_{CC}-0.2$ $V_{CC}-0.2$	1.2 1.4	— —	$V_{CC}-0.2$ $V_{CC}-0.2$	1.2 1.4	— —	$V_{CC}-0.2$ $V_{CC}-0.2$	V
t _r t _f	Output Rise/Fall Times Q (20% to 80%)	320	400	580	320	400	580	320	400	580	320	400	580	ps

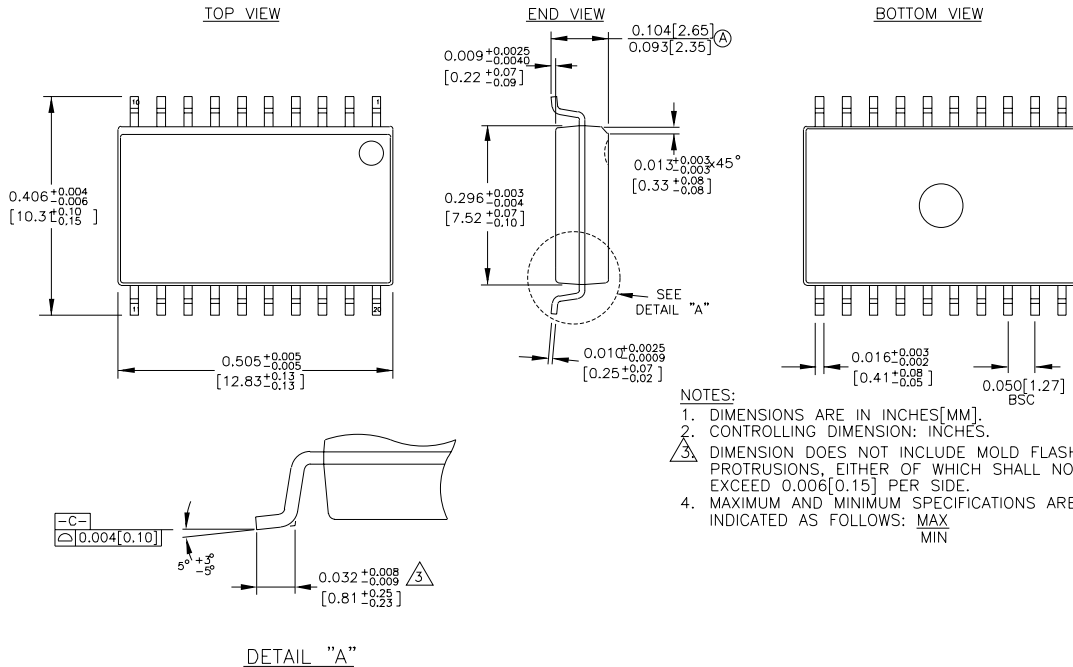
NOTES:

- Skew is measured between outputs under identical transitions.
- Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ~40.
- The CMR range is referenced to the most positive side of the differential input signal. Normal operation is obtained if the HIGH level falls within the specified range and the peak-to-peak voltage lies between V_{PP} min. and 1V.

PRODUCT ORDERING CODE

Ordering Code	Package Type	Operating Range
SY100EL91ZC	Z20-1	Commercial
SY100EL91ZCTR	Z20-1	Commercial

20 LEAD SOIC .300" WIDE (Z20-1)



Rev. 03

MICREL-SYNERGY 3250 SCOTT BOULEVARD SANTA CLARA CA 95054 USA

TEL + 1 (408) 980-9191 FAX + 1 (408) 914-7878 WEB <http://www.micrel.com>

This information is believed to be accurate and reliable, however no responsibility is assumed by Micrel for its use nor for any infringement of patents or other rights of third parties resulting from its use. No license is granted by implication or otherwise under any patent or patent right of Micrel Inc.

© 2000 Micrel Incorporated