3.3V power supply

- **620ps propagation delay**
- **Fully differential design**
- **Supports low voltage operation**
- **Available in 20-pin SOIC package**

The SY100EL91L is a triple LVPECL-to-ECL or LVPECL-to-LVECL translator.

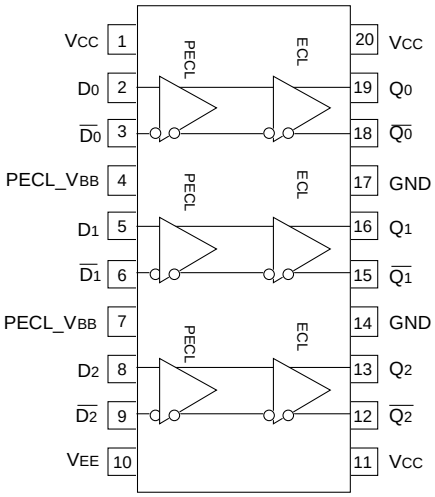
A V_{BB} output is provided for interfacing with single ended PECL signals at the input. If a single ended input is to be used, the V_{BB} output should be connected to the $\overline{D}$ input. The active signal would then drive the D input. When used, the V_{BB} output should be bypassed to ground via a 0.01µF capacitor. The V_{BB} output is designed to act as the switching reference for the EL91L 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 EL91L 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 0.01µF capacitors.

Under open input conditions, the $\overline{D}$ 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.

	Vcc	V_{EE}
LVPECL-to-ECL	3.3V	–5.0V
LVPECL-to-LVECL	3.3V	–3.3V

Pin	Function
Dn	PECL Inputs
Q_n	ECL Outputs
PECL_V_{BB}	PECL Reference Voltage Output



20-Pin Wide SOIC (Z20-1)

(1)

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY100EL91LZC	Z20-1	Commercial	SY100EL91LZC	Sn-Pb
SY100EL91LZCTR[2]	Z20-1	Commercial	SY100EL91LZC	Sn-Pb
SY100EL91LZI	Z20-1	Industrial	SY100EL91LZI	Sn-Pb
SY100EL91LZITR[2]	Z20-1	Industrial	SY100EL91LZI	Sn-Pb
SY100EL91LZG[3]	Z20-1	Industrial	SY100EL91LZG with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL91LZGTR[2, 3]	Z20-1	Industrial	SY100EL91LZG with Pb-Free bar-line indicator	Pb-Free NiPdAu

Notes:

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

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_{CC}	Power Supply Voltage	3.0	—	3.8	3.0	—	3.8	3.0	3.3	3.8	3.0	—	3.8	V
V_{IH}	Input HIGH Voltage(2)	2.135	—	2.420	2.135	—	2.420	2.135	2.350	2.420	2.135	—	2.420	V
V_{IL}	Input LOW Voltage(2)	1.490	—	1.825	1.490	—	1.825	1.490	—	1.825	1.490	—	1.825	V
I_{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	µA
I_{IL}	Input LOW Current Dn $\overline{Dn}$	0.5 -600	— —	— —	0.5 -600	— —	— —	0.5 -600	— —	— —	0.5 -600	— —	— —	µA
V_{BB}	Output Reference(2)	1.920	—	2.040	1.920	—	2.040	1.920	—	2.040	1.920	—	2.040	V
I_{CC}	Power Supply Current	—	—	10	—	—	10	—	6.0	10	—	—	10	mA

Notes:

1. Parametric values specified at: 3 volt Power Supply Range 100EL91L Series -3.0V to -3.8V.
2. These levels are for V_{CC} = 3.3V. Level specifications will vary 1:1 with V_{CC}.

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_{EE}	Power Supply ECL Voltage LVECL	-4.2 -3.0	— —	-5.5 -3.8	-4.2 -3.0	— —	-5.5 -3.8	-4.2 -3.0	— —	-5.5 -3.8	-4.2 -3.0	— —	-5.5 -3.8	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

Note:

1. Parametric values specified at: 3 volt Power Supply Range 100EL91L Series -3.0V to -3.8V.

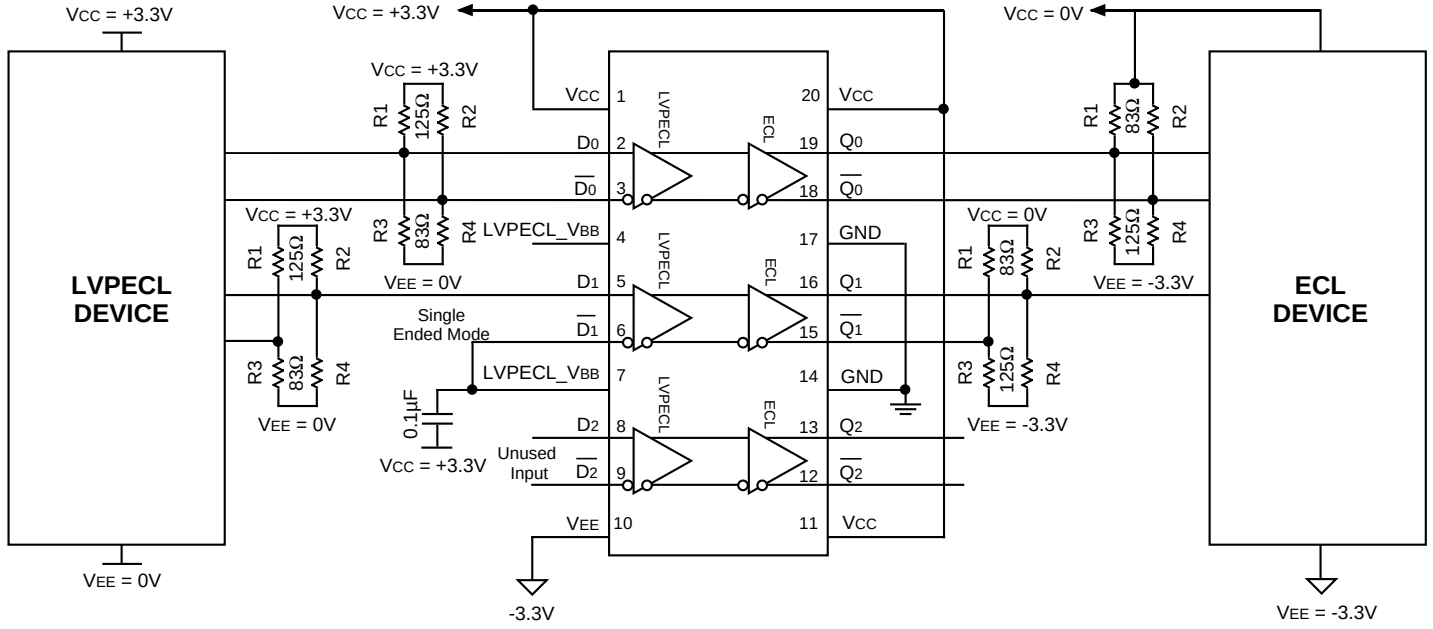
V_{CC} = +3.0V to +3.8V, ECL: V_{EE} = -4.2V to -5.5V, LVECL: V_{EE} = -3.0V to -3.8V

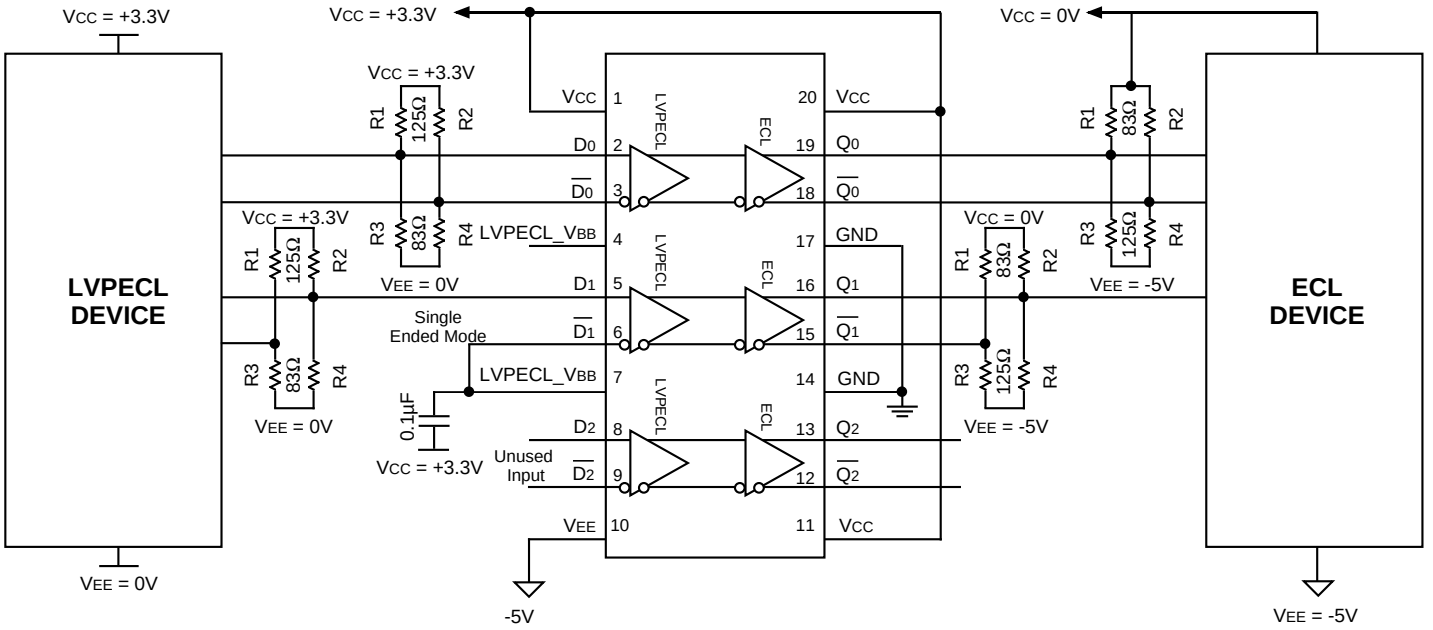
Symbol	Parameter	T_A = –40°C			T_A = 0°C			T_A = +25°C			T_A = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
t_{PD}	Propagation Delay Diff.	490	590	690	510	610	710	520	620	720	560	660	760	ps
	D to Q S.E.	440	590	740	460	610	760	470	620	770	510	660	810	
t_{skew}	Within-Device Skew[1]													
	Output-to-Output	—	40	100	—	40	100	—	40	100	—	40	100	ps
	Part-to-Part (Diff.)	—	—	200	—	—	200	—	—	200	—	—	200	
	Duty Cycle (Diff.)	—	25	—	—	25	—	—	25	—	—	25	—	
V_{PP}	Minimum Input Swing[2]	150	—	—	150	—	—	150	—	—	150	—	—	mV
V_{CMR}	Common Mode Range[3]													V
	V_{PP} < 500mV	1.3	—	V_{CC}–0.2	1.2	—	V_{CC}–0.2	1.2	—	V_{CC}–0.2	1.2	—	V_{CC}–0.2	
	V_{PP} > 500mV	1.5	—	V_{CC}–0.2	1.4	—	V_{CC}–0.2	1.4	—	V_{CC}–0.2	1.4	—	V_{CC}–0.2	
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:

1. Skew is measured between outputs under identical transitions.
2. Minimum input swing for which AC parameters are guaranteed. The device has a DC gain of ~40.
3. 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.

4. Parametric values specified at: 3 volt Power Supply Range 100EL91L Series -3.0V to -3.8V.

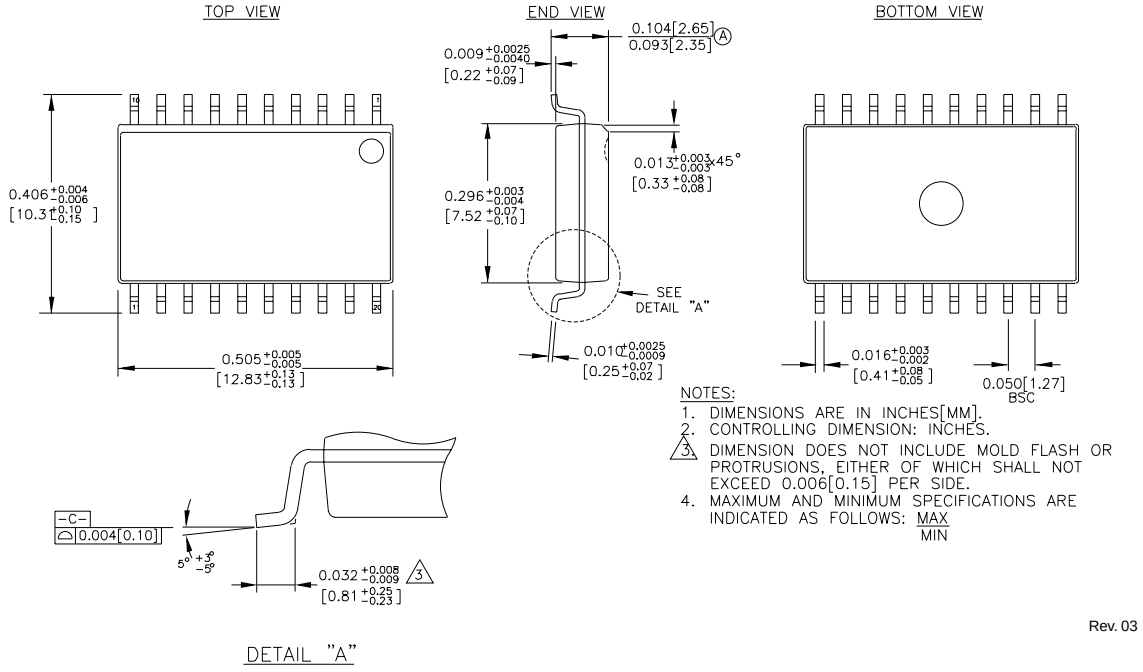




5.0V Configuration

Notes:

1. The schematic above demonstrates three different ways that all or any inputs of SY100EL91L can be used. The three modes or operation are: Differential LVPECL, Single-Ended LVPECL, and/or Open.
2. If D2 an $\overline{D2}$ are used in differential mode, then the same scheme of D0 and $\overline{D0}$ applies. If used in single-ended mode, then use the same scheme of D1 and $\overline{D1}$.



Rev. 03

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