

FEATURES

- 3.3V and 5V power supply options
- 650ps propagation delay
- 4.0GHz toggle frequency
- High bandwidth output transistions
- Internal 75k Ω input pull-down resistors
- Available in 8-pin SOIC package

**Precision Edge[®]****DESCRIPTION**

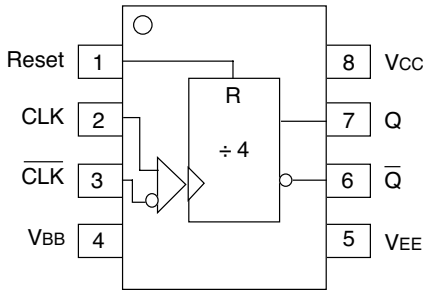
The SY10/100EL33/L are integrated $\div 4$ dividers. The differential clock inputs and the VBB allow a differential, single-ended or AC-coupled interface to the device. If used, the VBB output should be bypassed to ground with a 0.01 μ F capacitor. Also note that the VBB is designed to be used as an input bias on the EL33/L only; the VBB output has limited current sink and source capability.

The reset pin is asynchronous and is asserted on the rising edge. Upon power-up, the internal flip-flops will attain a random state; the reset input allows for the synchronization of multiple EL33/Ls in a system.

PIN NAMES

Pin	Function
CLK	Clock Inputs
Reset	Asynchronous Reset
VBB	Reference Voltage Output
Q	Data Outputs

PACKAGE/ORDERING INFORMATION



8-Pin SOIC (Z8-1)

Ordering Information⁽¹⁾

Part Number	Package Type	Operating Range	Package Marking	Lead Finish
SY10EL33ZC	Z8-1	Commercial	HEL33	Sn-Pb
SY10EL33ZCTR ⁽²⁾	Z8-1	Commercial	HEL33	Sn-Pb
SY100EL33ZC	Z8-1	Commercial	XEL33	Sn-Pb
SY100EL33ZCTR ⁽²⁾	Z8-1	Commercial	XEL33	Sn-Pb
SY10EL33ZI	Z8-1	Industrial	HEL33	Sn-Pb
SY10EL33ZITR ⁽²⁾	Z8-1	Industrial	HEL33	Sn-Pb
SY100EL33ZI	Z8-1	Industrial	XEL33	Sn-Pb
SY100EL33ZITR ⁽²⁾	Z8-1	Industrial	XEL33	Sn-Pb
SY10EL33LZC	Z8-1	Commercial	HEL33L	Sn-Pb
SY10EL33LZCTR ⁽²⁾	Z8-1	Commercial	HEL33L	Sn-Pb
SY100EL33LZC	Z8-1	Commercial	XEL33L	Sn-Pb
SY100EL33LZCTR ⁽²⁾	Z8-1	Commercial	XEL33L	Sn-Pb
SY10EL33LZI	Z8-1	Industrial	HEL33L	Sn-Pb
SY10EL33LZITR ⁽²⁾	Z8-1	Industrial	HEL33L	Sn-Pb
SY100EL33LZI	Z8-1	Industrial	XEL33L	Sn-Pb
SY100EL33LZITR ⁽²⁾	Z8-1	Industrial	XEL33L	Sn-Pb
SY10EL33ZG ⁽³⁾	Z8-1	Industrial	HEL33 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10EL33ZGTR ^(2, 3)	Z8-1	Industrial	HEL33 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL33ZG ⁽³⁾	Z8-1	Industrial	XEL33 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL33ZGTR ^(2, 3)	Z8-1	Industrial	XEL33 with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10EL33LZG ⁽³⁾	Z8-1	Industrial	HEL33L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY10EL33LZGTR ^(2, 3)	Z8-1	Industrial	HEL33L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL33LZG ⁽³⁾	Z8-1	Industrial	XEL33L with Pb-Free bar-line indicator	Pb-Free NiPdAu
SY100EL33LZGTR ^(2, 3)	Z8-1	Industrial	XEL33L 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.

DC ELECTRICAL CHARACTERISTICS⁽¹⁾

VEE (Min) to VEE (Max); VCC = GND

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.	
IEE	Power Supply Current													mA
	10EL	—	27	33	—	27	33	—	27	33	—	27	33	
	100EL	—	27	33	—	27	33	—	27	33	—	31	37	
VBB	Output Reference Voltage													V
	10EL	-1.43	—	-1.30	-1.38	—	-1.27	-1.35	—	-1.25	-1.31	—	-1.19	
	100EL	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	-1.38	—	-1.26	
I _{IH}	Input HIGH Current	—	—	150	—	—	150	—	—	150	—	—	150	μA

Note:

- Parametric values specified at:

5 volt Power Supply Range	100EL33 Series:	-4.2V to -5.5V.
	10EL33 Series	-4.75V to -5.5V.
3 volt Power Supply Range	10/100EL33L Series:	-3.0V to -3.8V.

AC ELECTRICAL CHARACTERISTICS⁽¹⁾

VEE (Min) to VEE (Max); VCC = GND

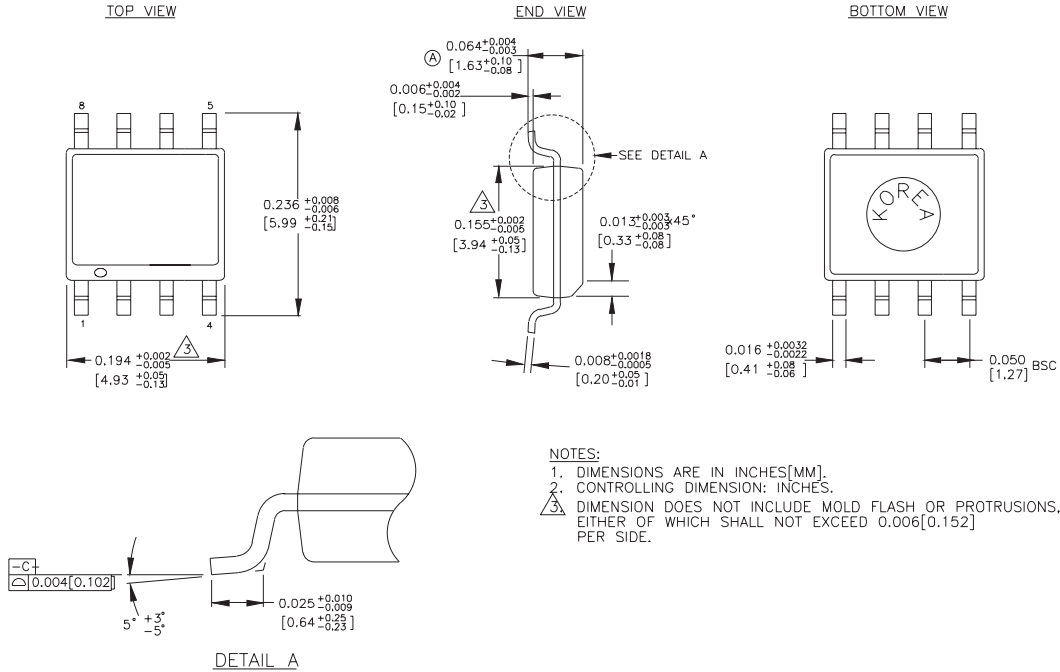
Symbol	Parameter	TA = -40°C			TA = 0°C			TA = +25°C			TA = +85°C			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
f _{MAX}	Maximum Toggle Frequency	3.4	4.2	—	3.8	4.2	—	3.8	4.2	—	3.8	4.2	—	GHz
t _{PD}	Prop. Delay to Output D Reset to Q	490	630 310	770 460	540 610	630 360	720 460	550 560	640 360	730 460	590 560	670 380	760 480	ps 580
V _{PP}	Minimum Input Swing ⁽²⁾	150	—	—	150	—	—	150	—	—	150	—	—	mV
t _r t _f	Output Rise/Fall Times Q (20% to 80%)	100	225	350	100	225	350	100	225	350	100	225	350	ps

Notes:

- Parametric values specified at:

5 volt Power Supply Range	100EL33 Series:	-4.2V to -5.5V.
	10EL33 Series	-4.75V to -5.5V.
3 volt Power Supply Range	10/100EL33L Series:	-3.0V to -3.8V.
- Minimum input swing for which AC parameters are guaranteed.

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



Rev. 03

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