÷4 Divider

MC100LVEL33

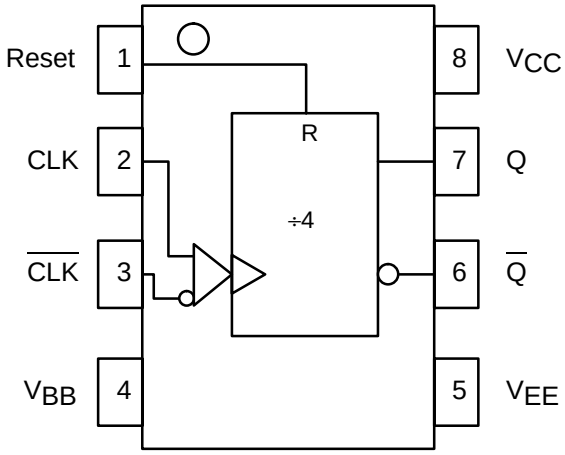
The MC100LVEL33 is an integrated ÷4 divider. The differential clock inputs and the V_{BB} allow a differential, single-ended or AC coupled interface to the device. If used, the V_{BB} output should be bypassed to ground with a 0.01µF capacitor. Also note that the V_{BB} is designed to be used as an input bias on the EL33 only, the V_{BB} output has limited current sink and source capability. The LVEL is functionally equivalent to the EL33 and works from a low voltage supply.

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 allows for the synchronization of multiple LVEL33's in a system.

- 630ps Propagation Delay
- 4.0GHz Toggle Frequency
- High Bandwidth Output Transitions
- Operates from –3.3V (or 3.3V) Supply
- 75kΩ Internal Input Pulldown Resistors
- >2000V ESD Protection

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751-05

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



PIN DESCRIPTION

PIN	FUNCTION
CLK	Clock Inputs
Reset	Asynch Reset
V_{BB}	Ref Voltage Output
Q	Data Ouputs

DC CHARACTERISTICS (V_{EE} = V_{EE}(min) to V_{EE}(max); V_{CC} = GND)

Symbol	Characteristic	–40°C			0°C			25°C			85°C			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
I_{EE}	Power Supply Current		33	37		33	37		33	37		35	39	mA
V_{EE}	Power Supply Voltage	–3.0		–3.8	–3.0		–3.8	–3.0		–3.8	–3.0		–3.8	V
V_{BB}	Output Reference Voltage	–1.38		–1.26	–1.38		–1.26	–1.38		–1.26	–1.38		–1.26	V
I_{IH}	Input HIGH Current			150			150			150			150	µA
I_{IL}	Input LOW Current $\overline{CLK}$ Other	–600 0.5			–600 0.5			–600 0.5			–600 0.5			µA

AC CHARACTERISTICS (V_{EE} = V_{EE}(min) to V_{EE}(max); V_{CC} = GND)

Symbol	Characteristic	–40°C			0°C			25°C			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_{PLH} t_{PHL}	Propagation Delay CLK to Q (Diff) CLK to Q (SE) Reset to Q	 510 460 500		 690 740 700	 530 480 510		 710 760 710	 540 490 520		 720 770 720	 600 550 580		 780 830 780	 ps
t_{rr}	Reset Recovery	300			300			300			300			ps
t_{skew}	Duty Cycle Skew[2]			20			20			20			20	ps
V_{PP}	Minimum Input Swing[1]	150			150			150			150			mV
V_{CMR}	Common Mode Range[3] V_{PP} < 500mV V_{PP} ≥ 500mV	 –2.0 –1.8		 –0.4 –0.4	 –2.1 –1.9		 –0.4 –0.4	 –2.1 –1.9		 –0.4 –0.4	 –2.1 –1.9		 –0.4 –0.4	V
t_r t_f	Output Rise/Fall Times Q (20% – 80%)	120		320	120		320	120		320	120		320	ps

1. Minimum input swing for which AC parameters are guaranteed.
2. Duty cycle skew is the difference between T_{PLH} and T_{PLL}.
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. The lower end of the CMR range varies 1:1 with V_{EE}. The numbers in the spec table assume a nominal V_{EE} = –3.3V. Note for PECL operation, the V_{CMR}(min) will be fixed at 3.3V – |V_{CMR}(min)|.

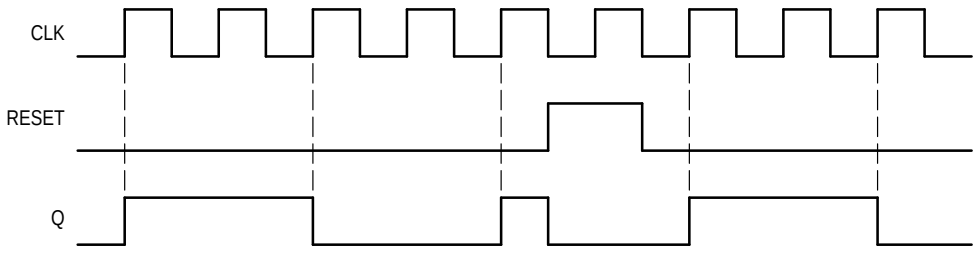
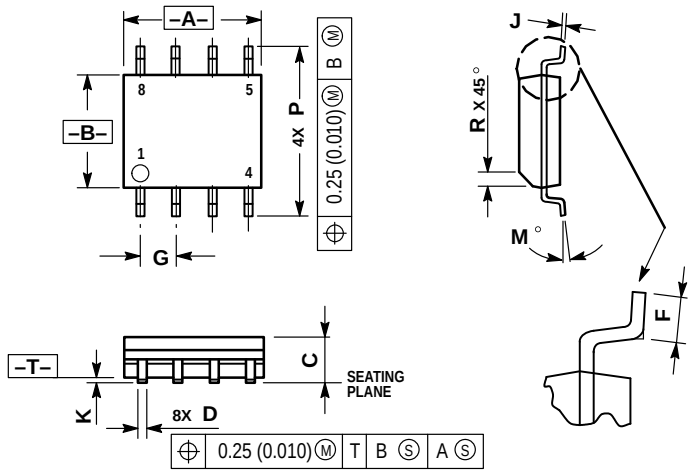


Figure 1. Timing Diagram

OUTLINE DIMENSIONS

D SUFFIX
PLASTIC SOIC PACKAGE
CASE 751–05
ISSUE P



NOTES:
1. DIMENSIONS A AND B ARE DATUMS AND T IS A DATUM SURFACE.
2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
3. DIMENSIONS ARE IN MILLIMETER.
4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
6. DIMENSION D DOES NOT INCLUDE MOLD PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS	
DIM	MIN	MAX
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.35	0.49
F	0.40	1.25
G	1.27 BSC	
J	0.18	0.25
K	0.10	0.25
M	0 °	7 °
P	5.80	6.20
R	0.25	0.50

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