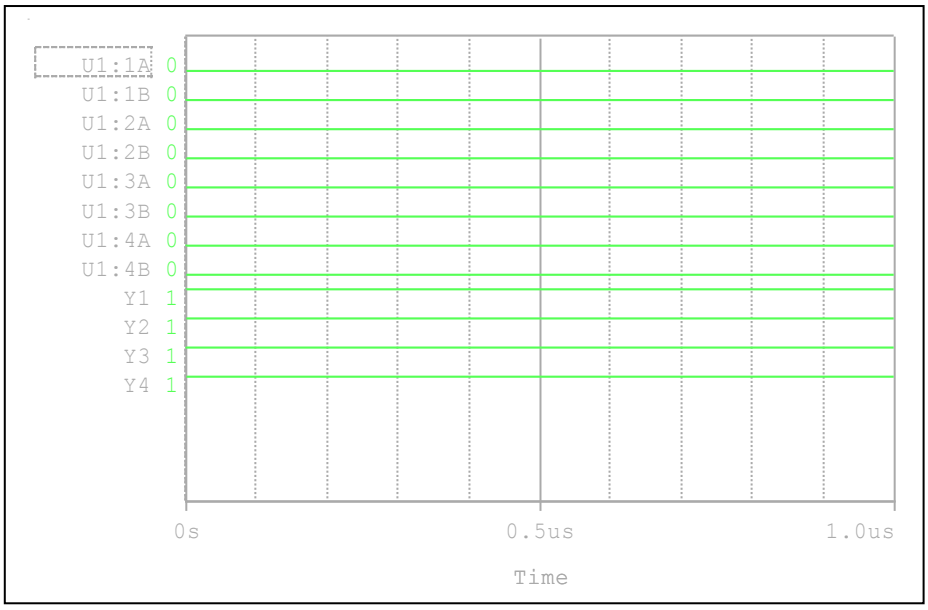
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74HC00AFN
MANUFACTURER : TOSHIBA

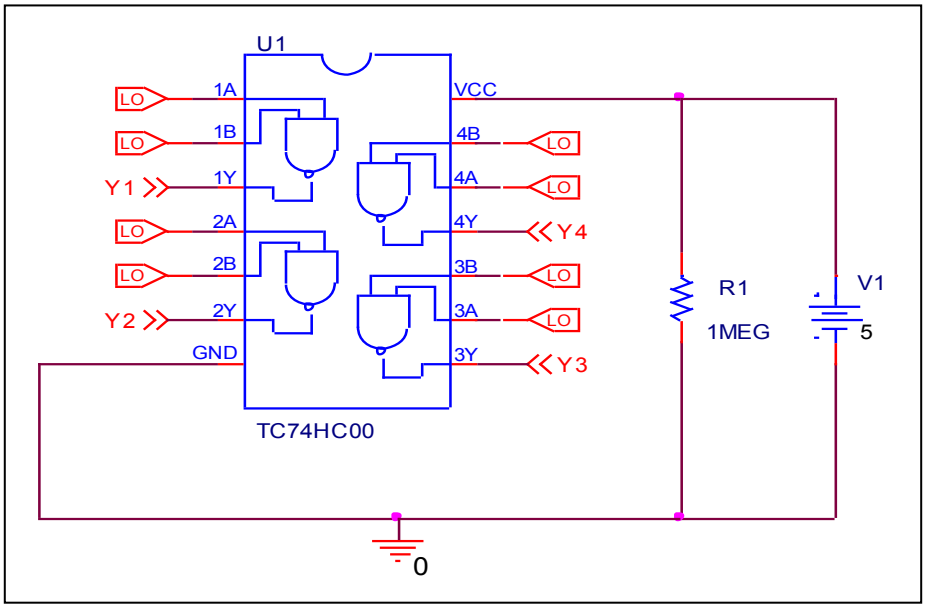
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

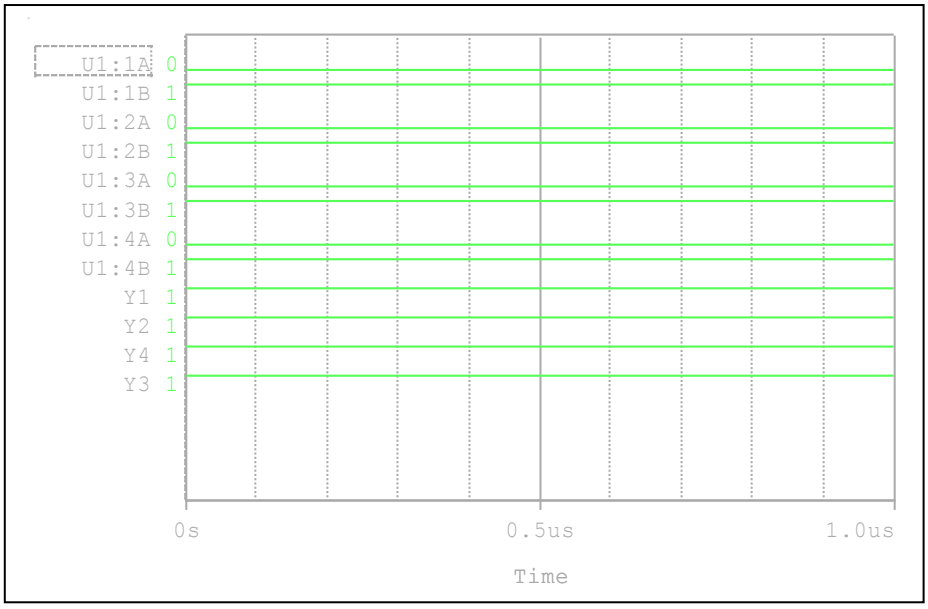


Comparison table

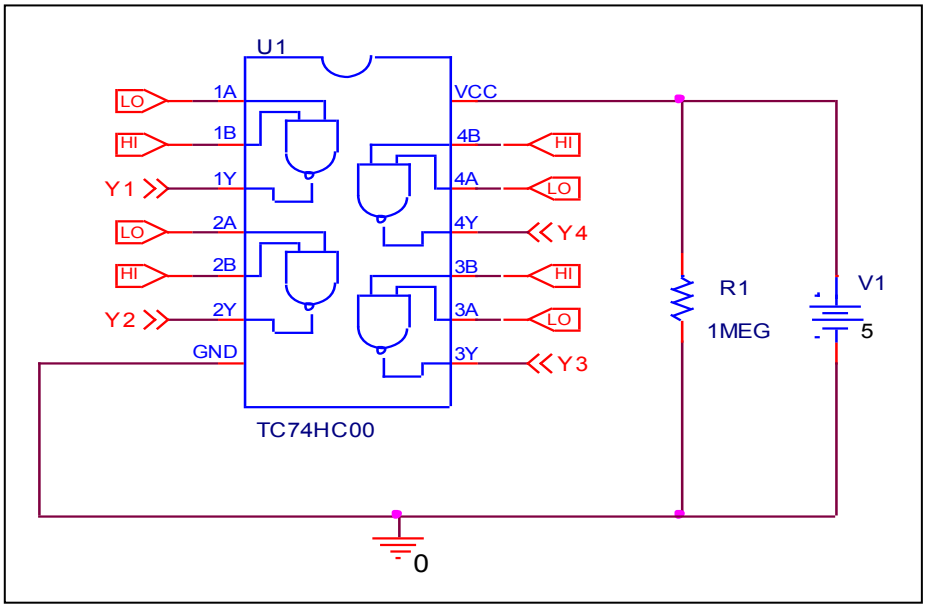
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
L	L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit



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L	H	H	H	0

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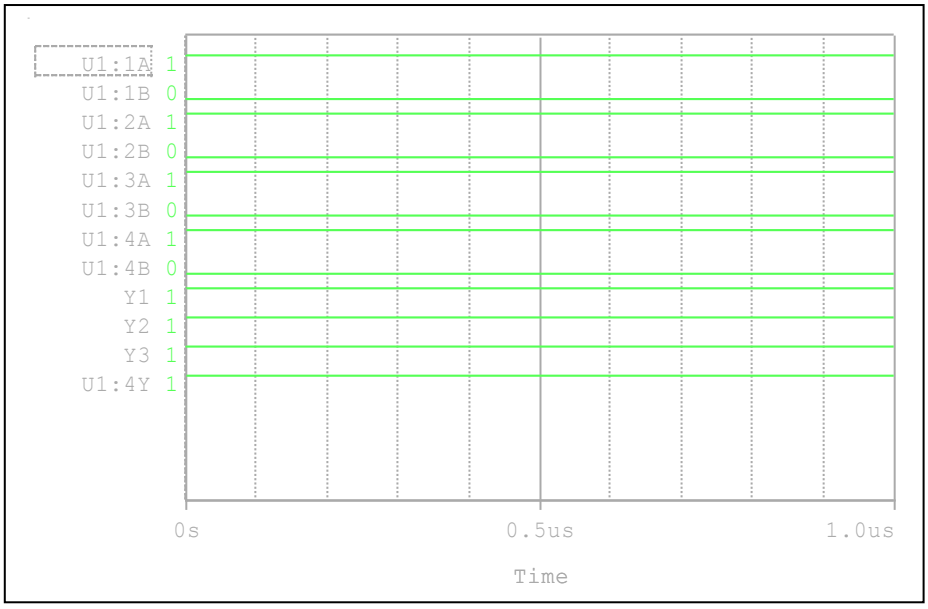
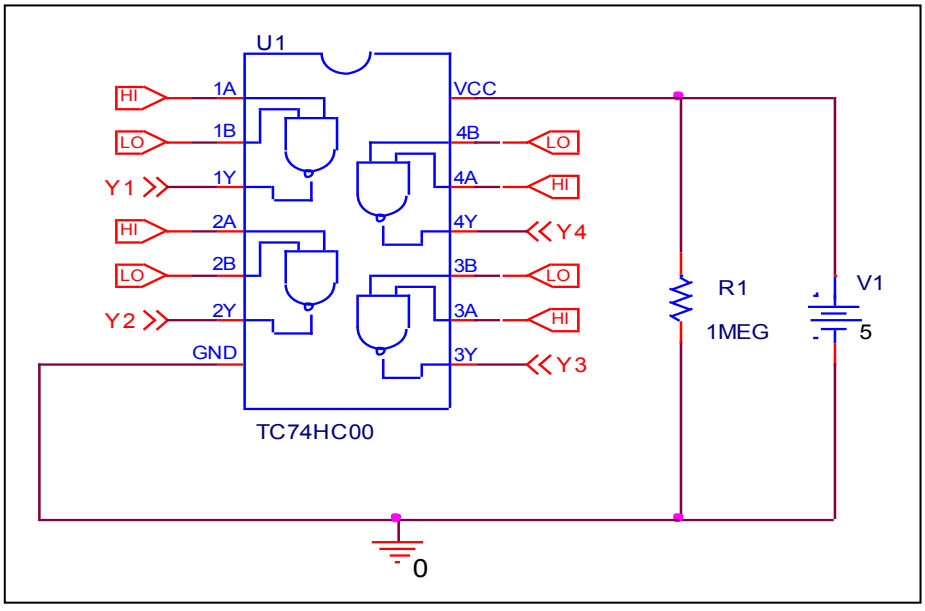


Evaluation circuit



Comparison table

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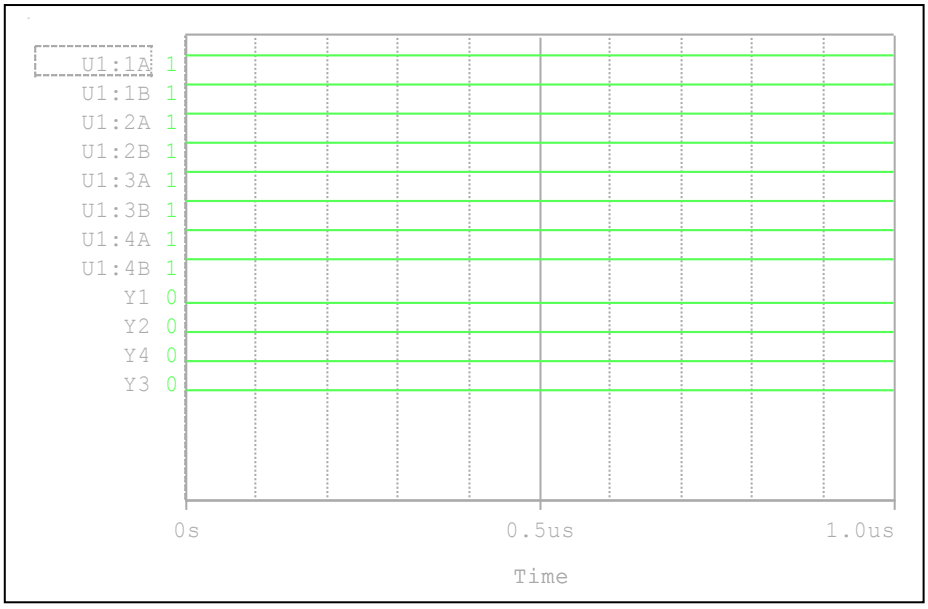
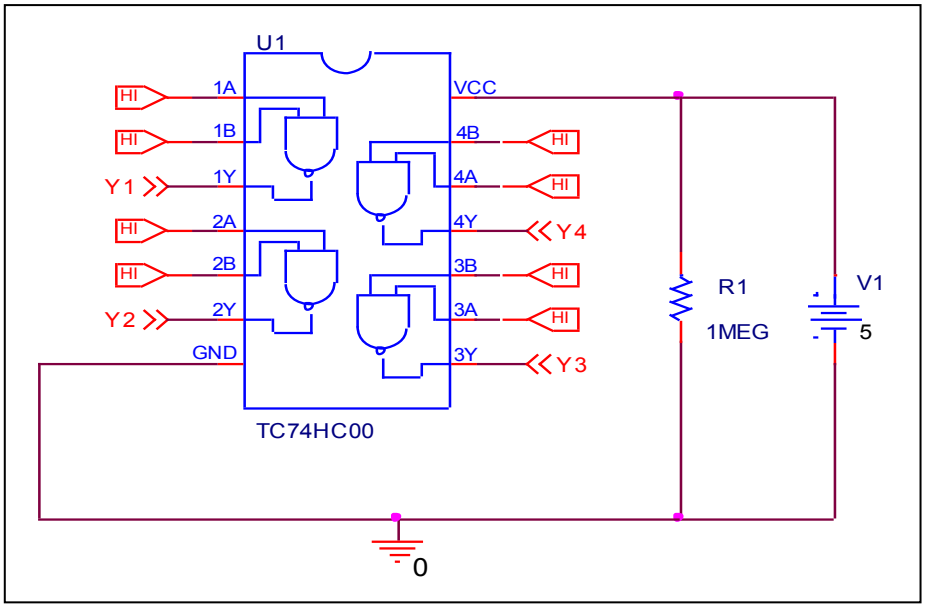
An	Bn	Yn (Measurement)	Yn (Simulation)	
H	L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

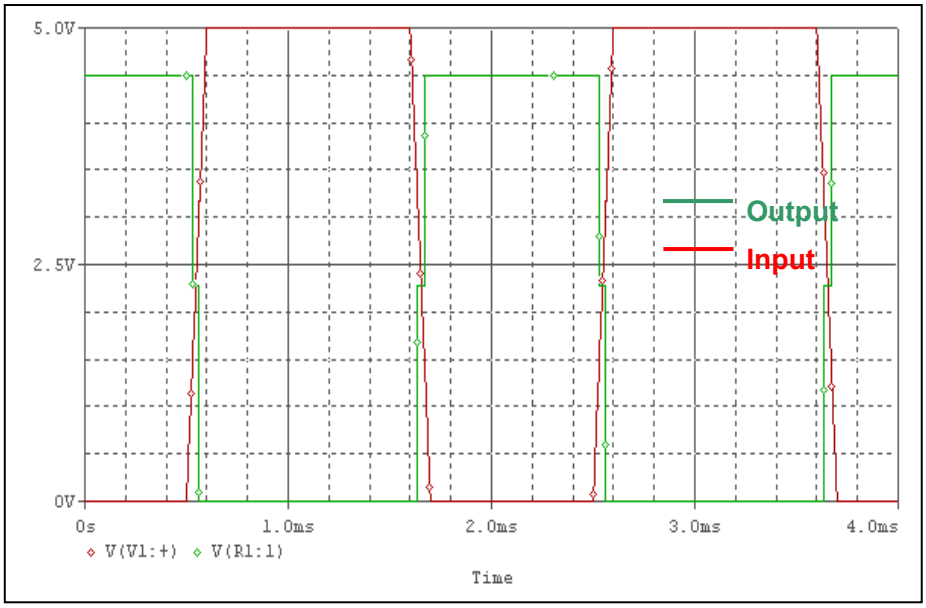


Comparison table

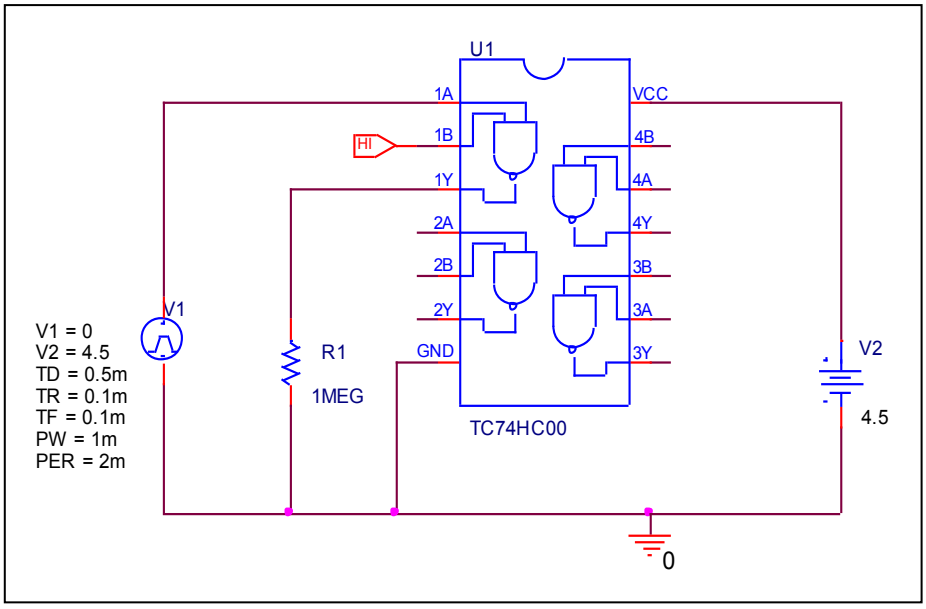
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
H	H	L	L	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

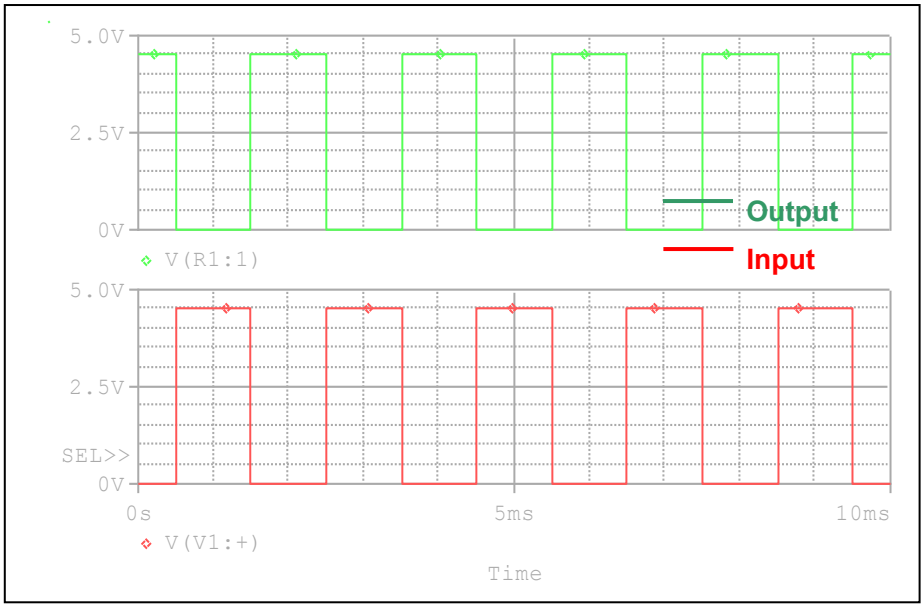


Comparison table

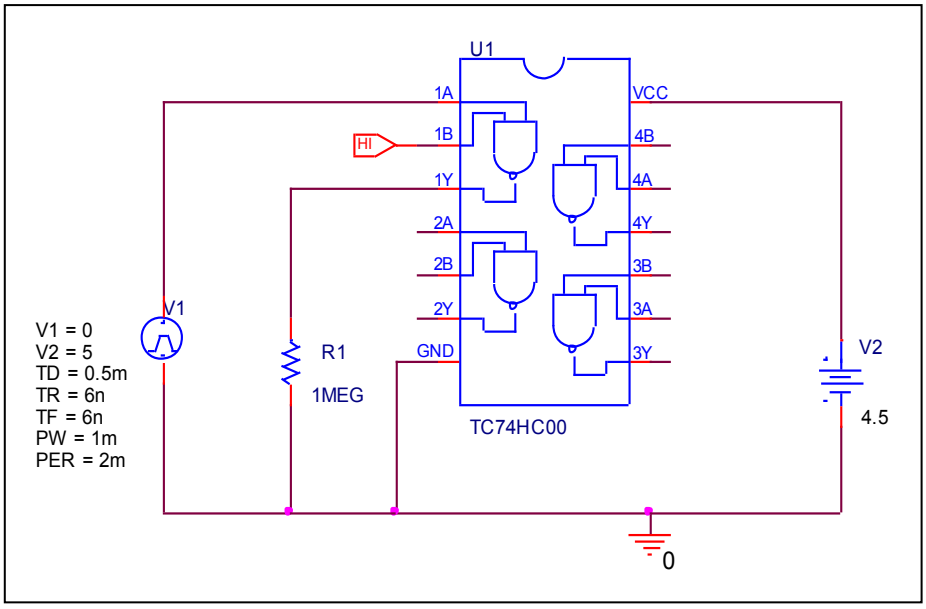
V_{CC} = 4.5V	Measurement	Simulation	%Error
V_{IH} (V)	3.15	3.1506	0.019
V_{IL} (V)	1.35	1.3456	-0.326

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

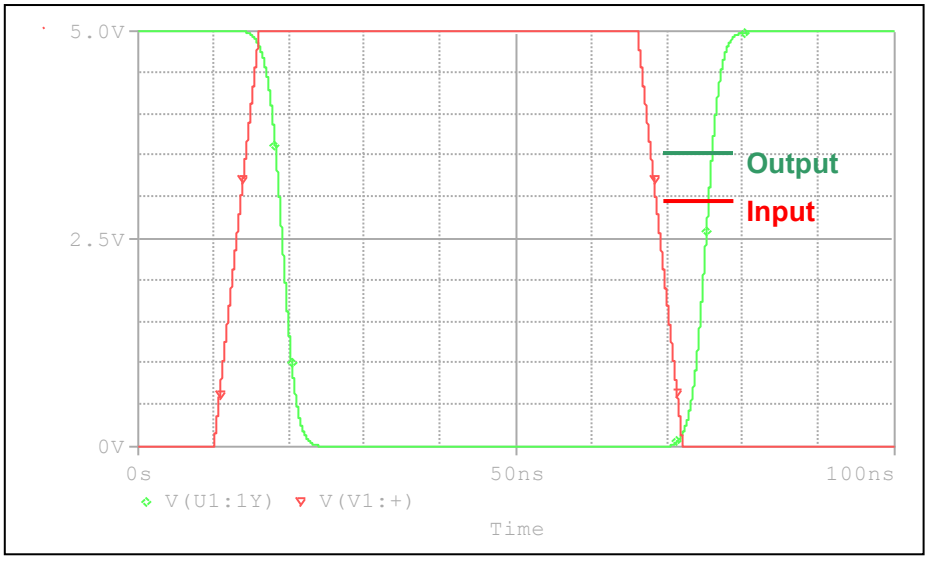


Comparison table

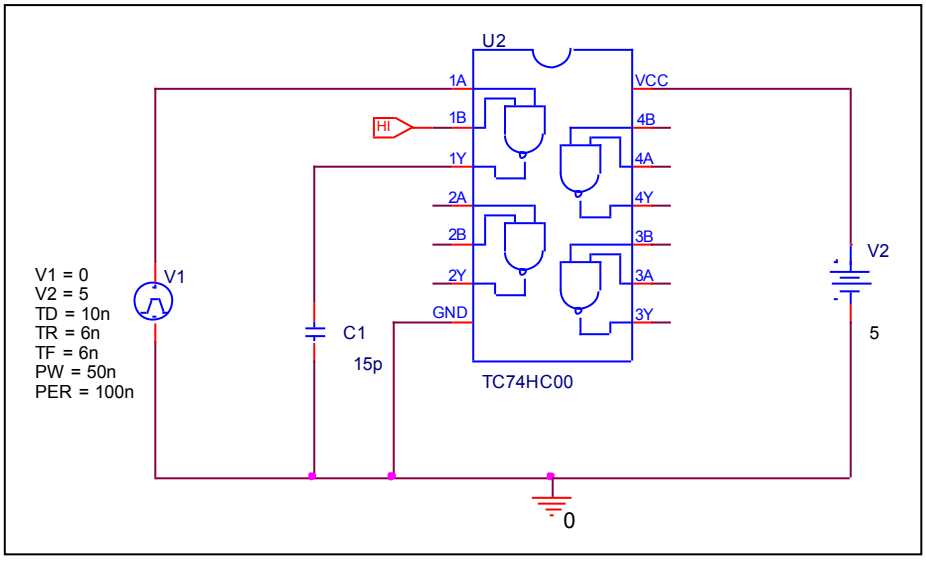
V_{CC} = 4.5V	Measurement	Simulation	%Error
V_{OH} (V)	4.5	4.4975	-0.056
V_{OL} (V)	0	0	0

Propagation Delay Time

Circuit simulation result



Evaluation circuit



Comparison table

C_L=15pF,V_{CC}= 5V,t_r=t_f=6ns	Measurement	Simulation	%Error
t_{TLH} (ns)	4	4.0014	0.035
t_{THL} (ns)	4	4.0168	0.420
T_{pLH} (ns)	6	6.0591	0.985
T_{pHL} (ns)	6	6.0419	0.698