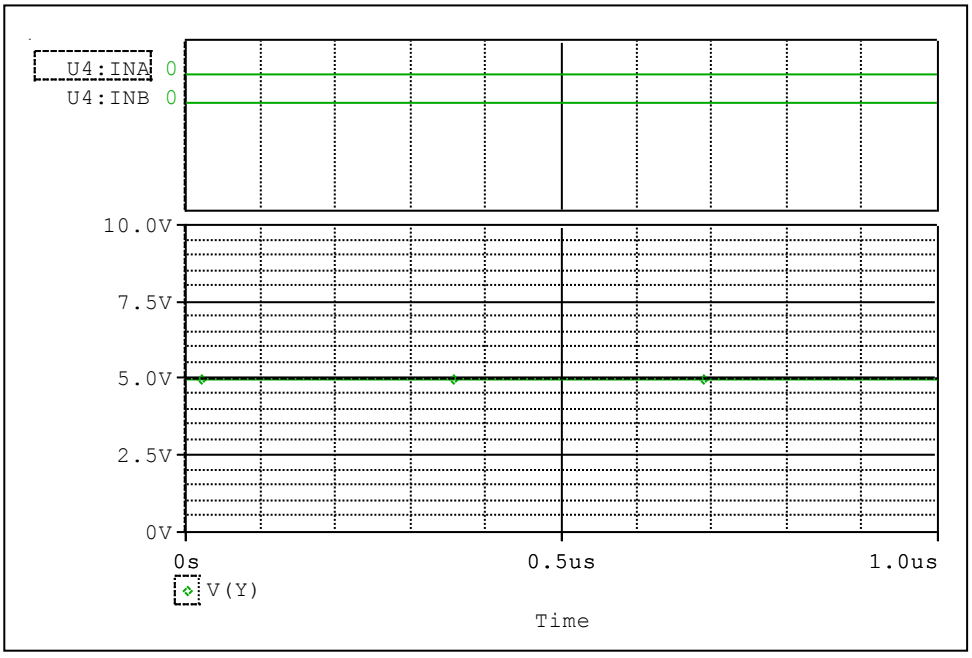
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC7SZ00AFE
MANUFACTURER : TOSHIBA

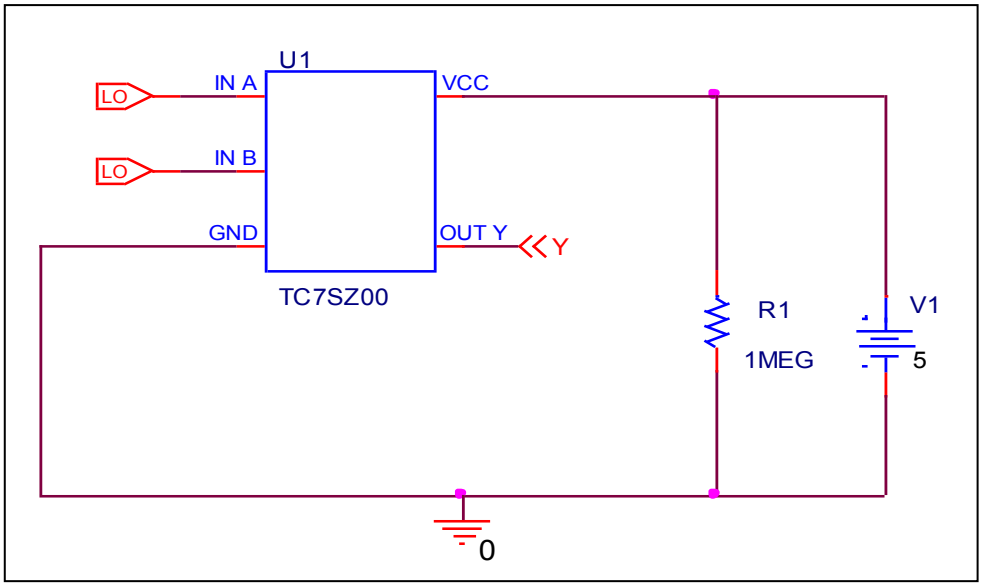
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

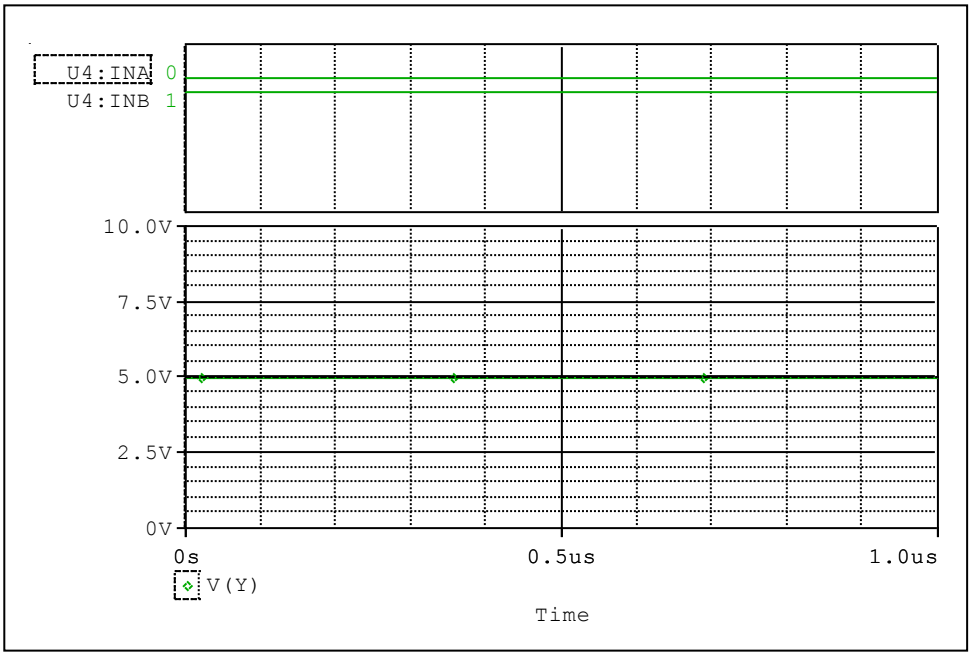


Comparison table

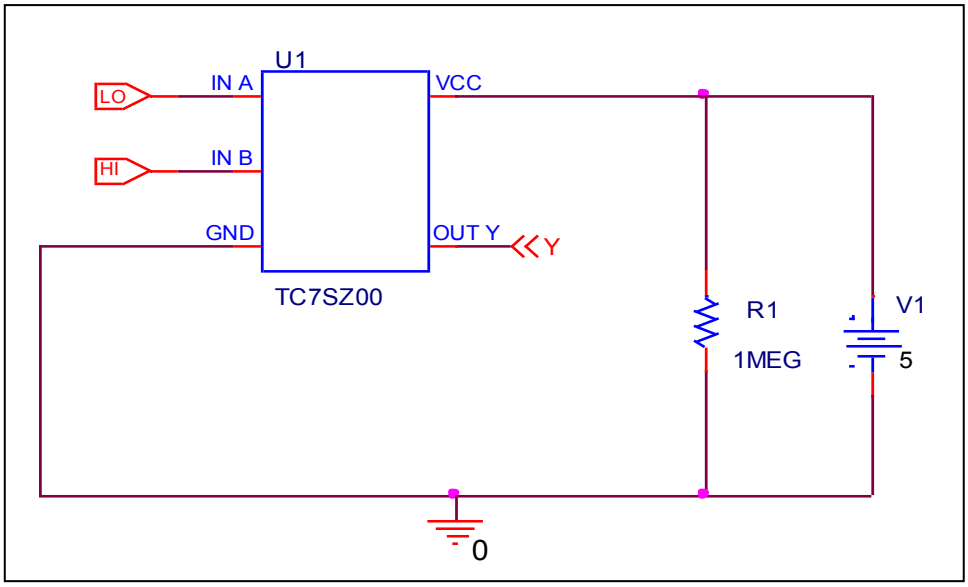
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
L	L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit



Comparison table

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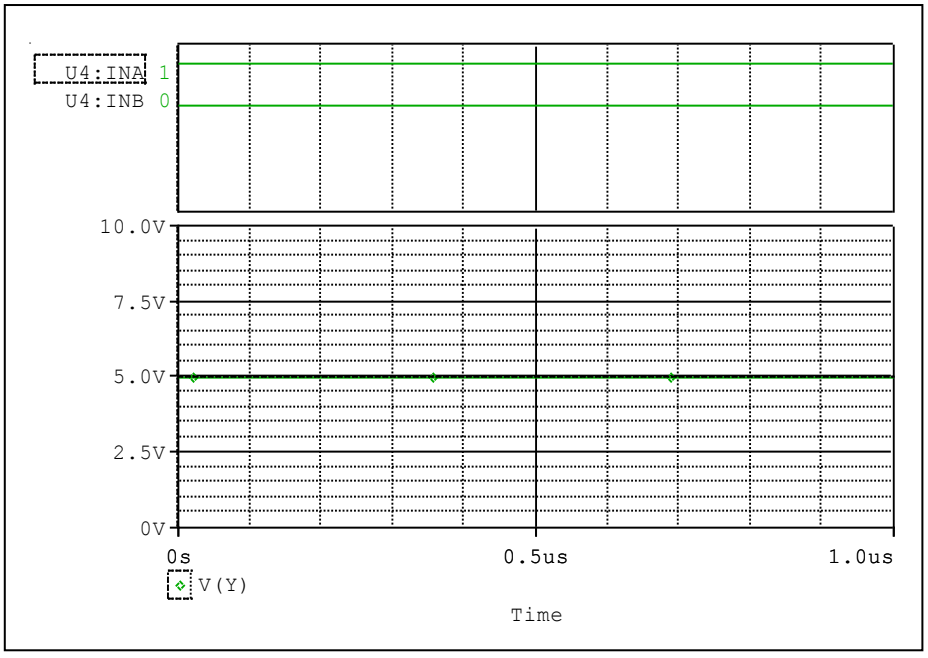
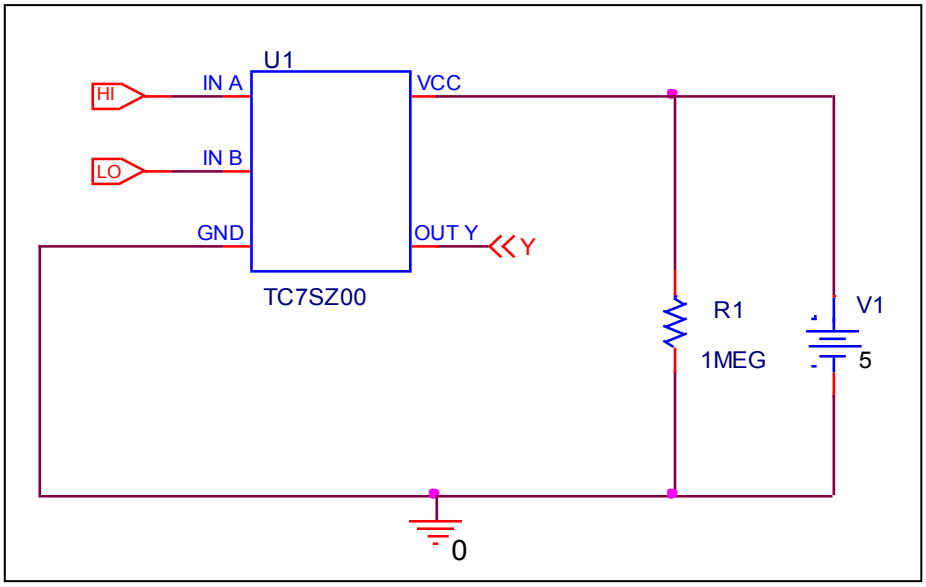
An	Bn	Yn (Measurement)	Yn (Simulation)	
L	H	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

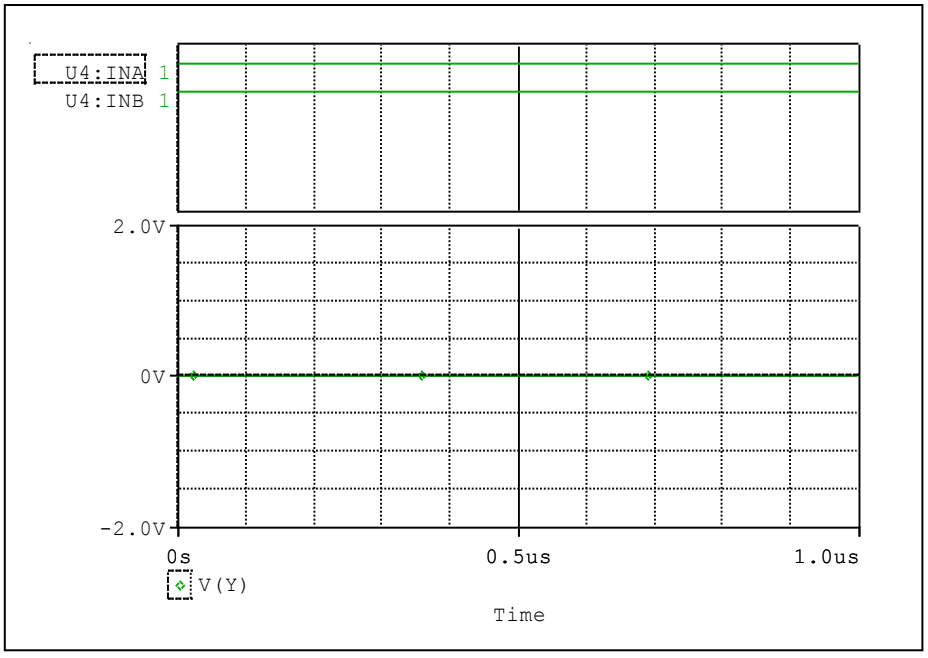


Comparison table

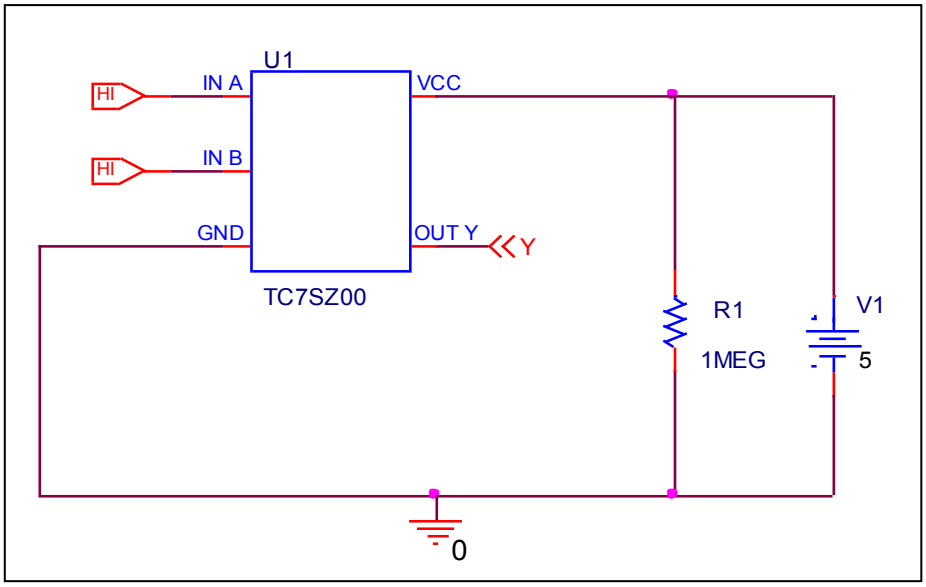
Input		Output		%Error
An	**Bn**	**Yn (Measurement)**	**Yn (Simulation)**	
H	**L**	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

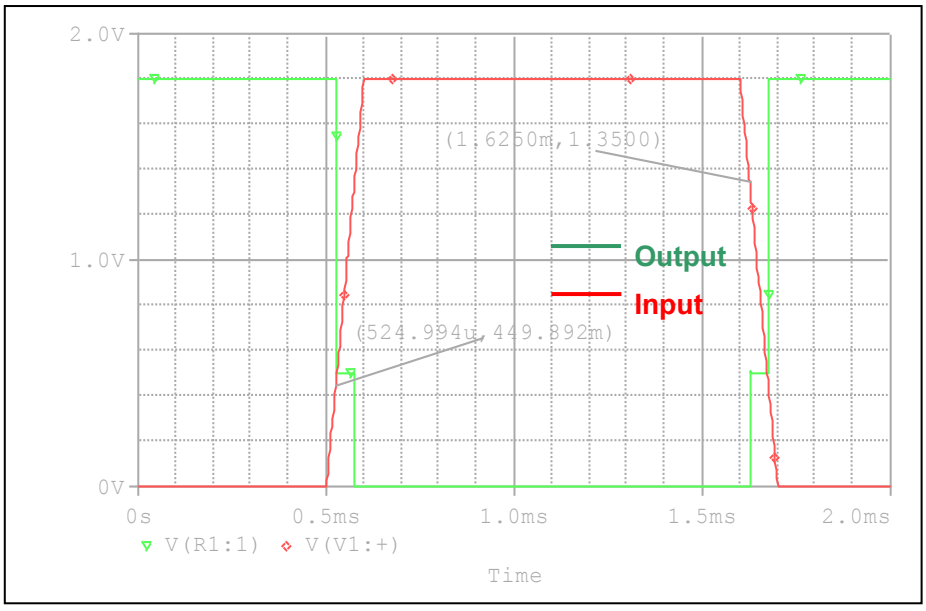


Comparison table

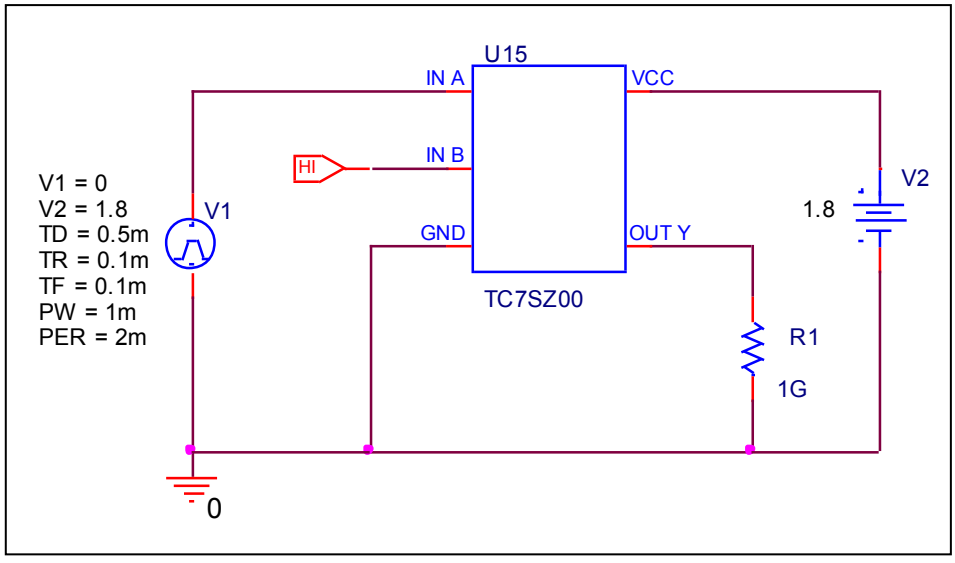
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
H	H	L	L	0

High Level and Low Level Input Voltage (Vcc=1.8V)

Circuit simulation result



Evaluation circuit

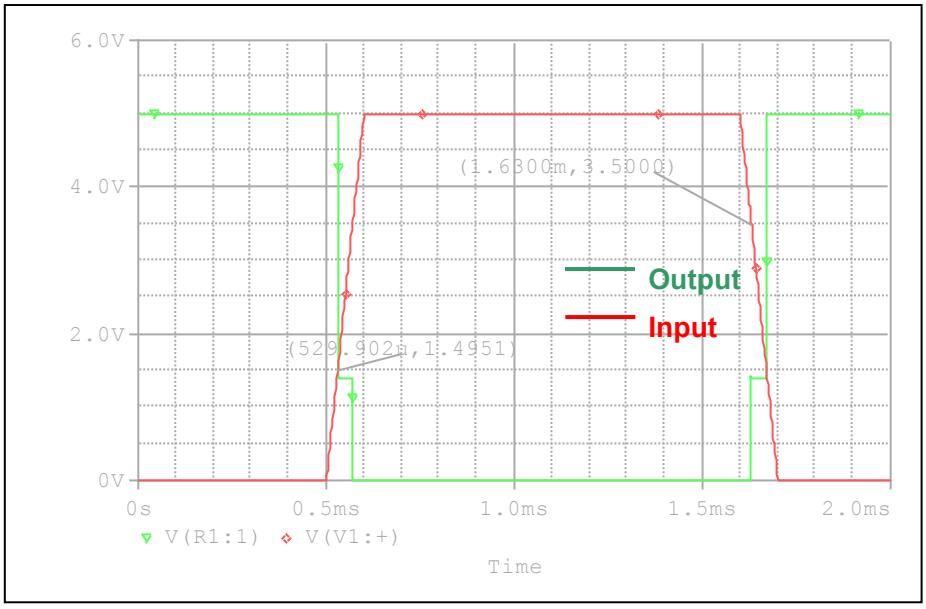


Comparison table

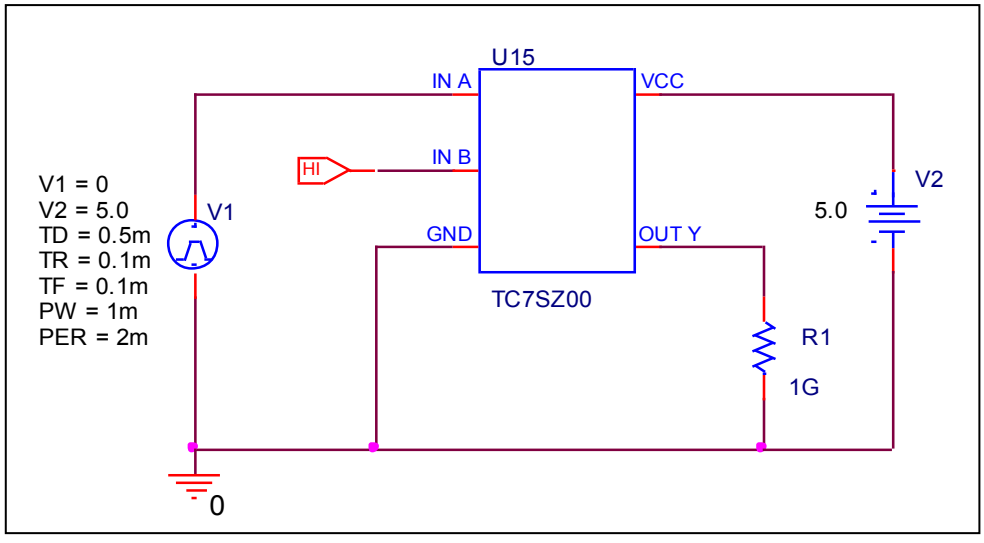
V_{CC} = 1.8V	Measurement	Simulation	%Error
Min V_{IH} (V) = (0.75*V_{CC}) V	1.35	1.35	0.000
Max V_{IL} (V) = (0.25*V_{CC}) V	0.45	0.449892	-0.024

High Level and Low Level Input Voltage (Vcc=5.0V)

Circuit simulation result



Evaluation circuit

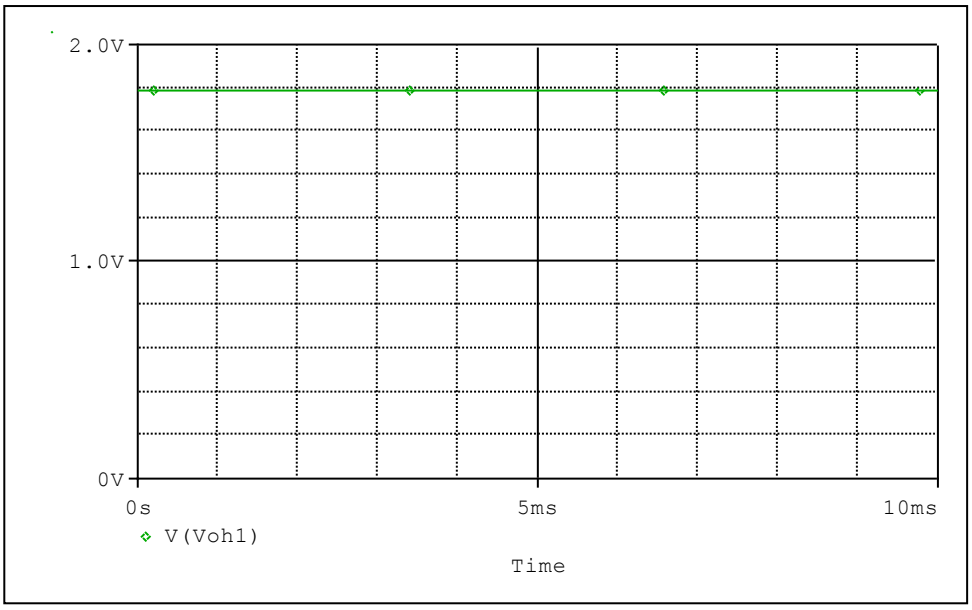


Comparison table

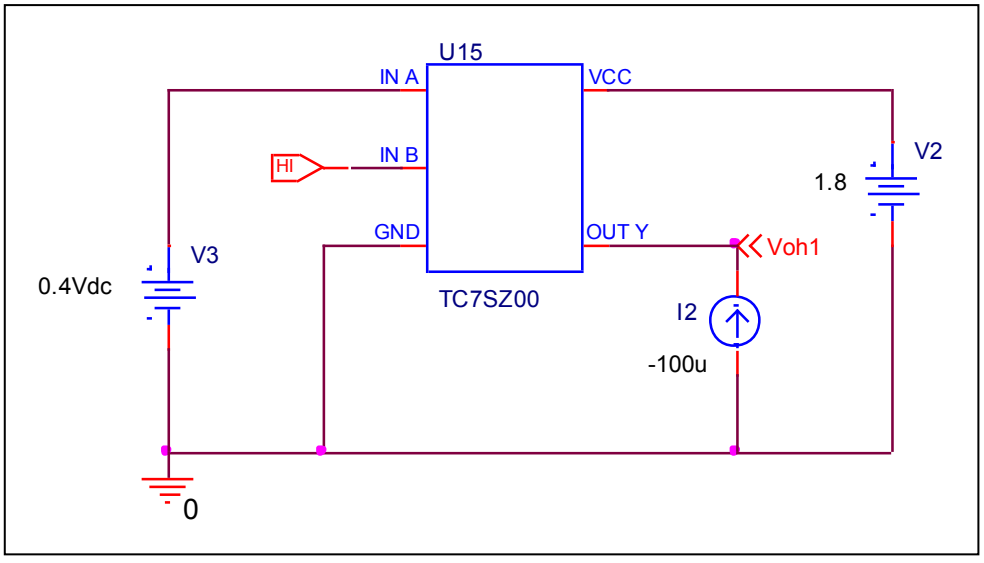
V_{CC} = 5.0V	Measurement	Simulation	%Error
Min V_{IH} (V) = ($0.7*V_{CC}$) V	3.5	3.5	0.000
Max V_{IL} (V) = ($0.3*V_{CC}$) V	1.5	1.4951	-0.327

High Level Output Voltage (V_{CC} = 1.8 V)

Circuit simulation result



Evaluation circuit

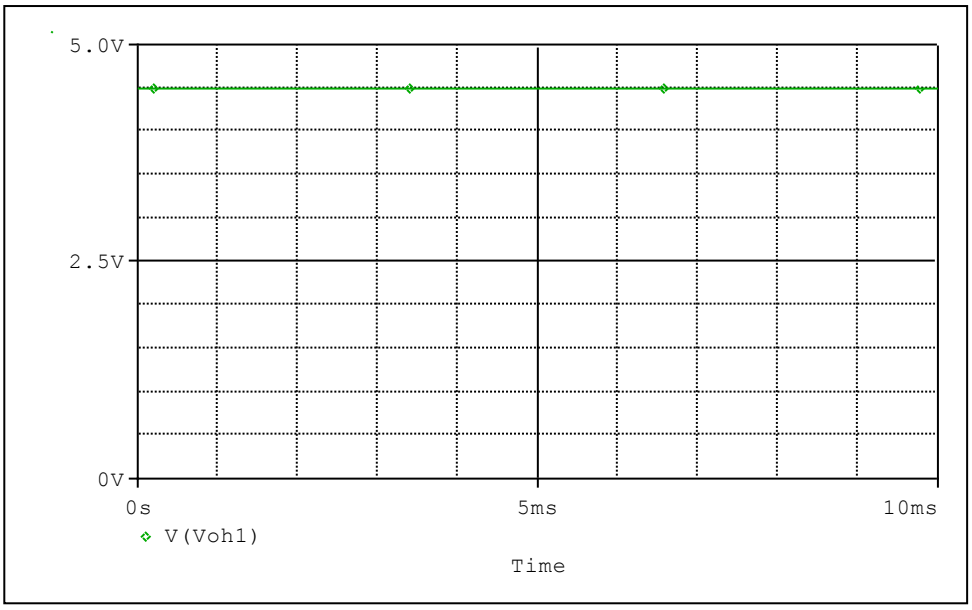


Comparison table

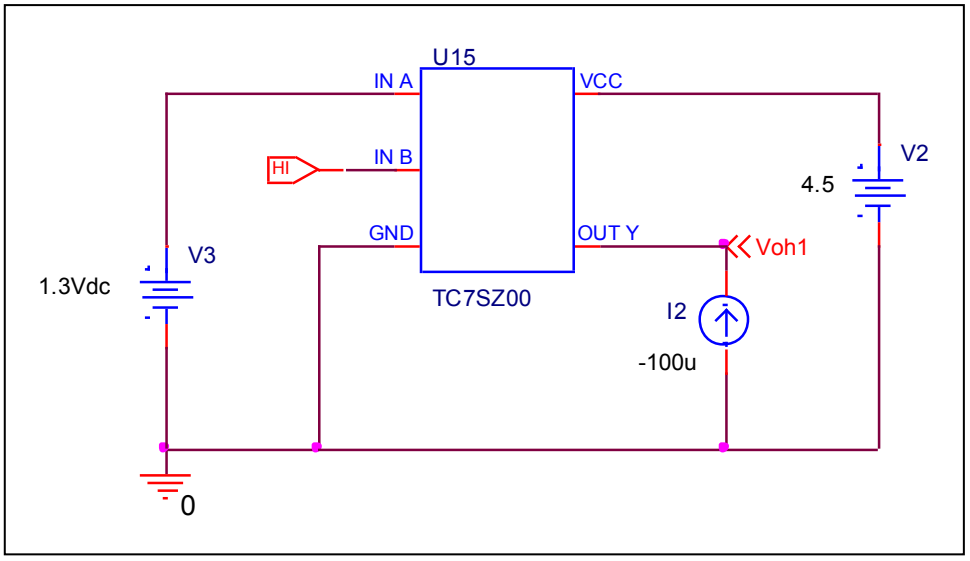
V_{CC} = 1.8V @ V_{IN} = V_{IL} ; I_{OH} =- 100uA	Measurement	Simulation	%Error
V_{OH} (V)	1.8	1.7989	-0.061

High Level Output Voltage (V_{CC} = 4.5 V)

Circuit simulation result



Evaluation circuit

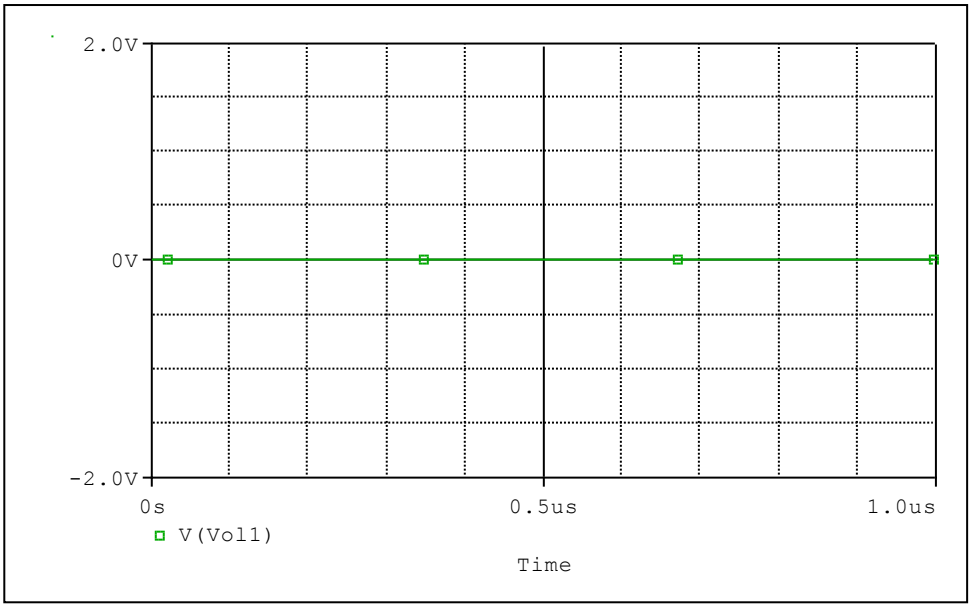


Comparison table

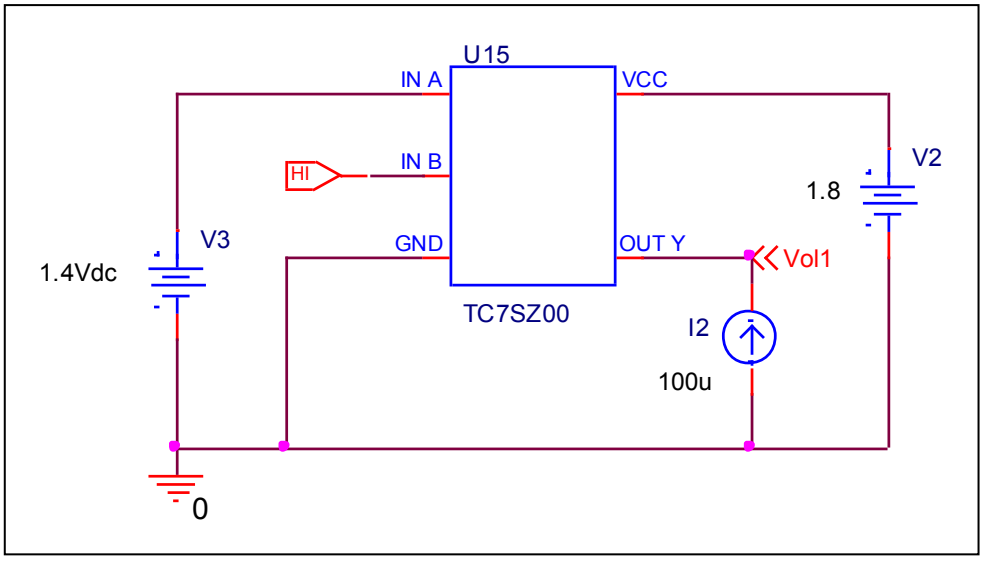
V_{CC} = 4.5V @ V_{IN} = V_{IL} ; I_{OH} =- 100uA	Measurement	Simulation	%Error
V_{OH} (V)	4.5	4.4976	-0.053

Low Level Output Voltage (V_{CC} = 1.8 V)

Circuit simulation result



Evaluation circuit

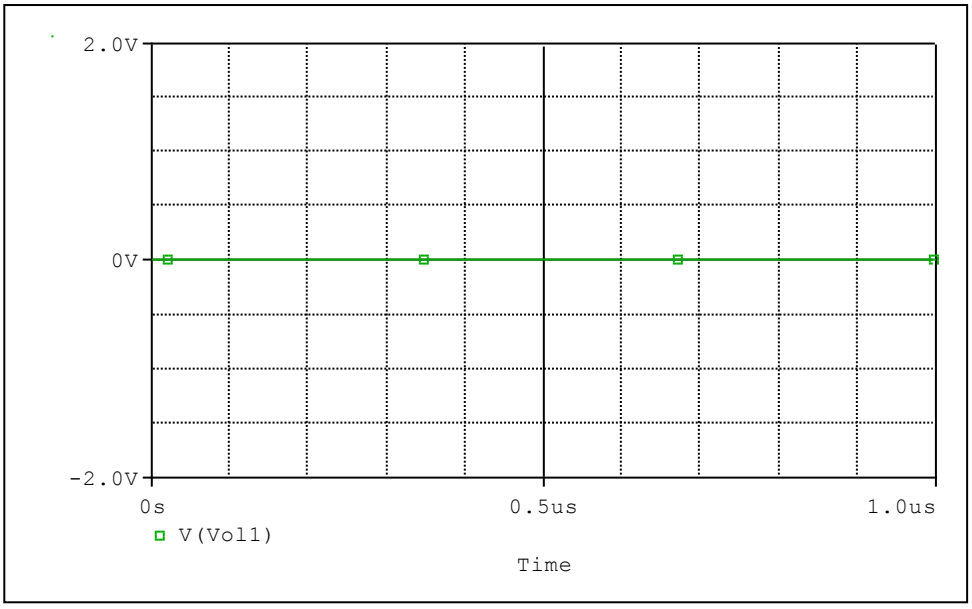


Comparison table

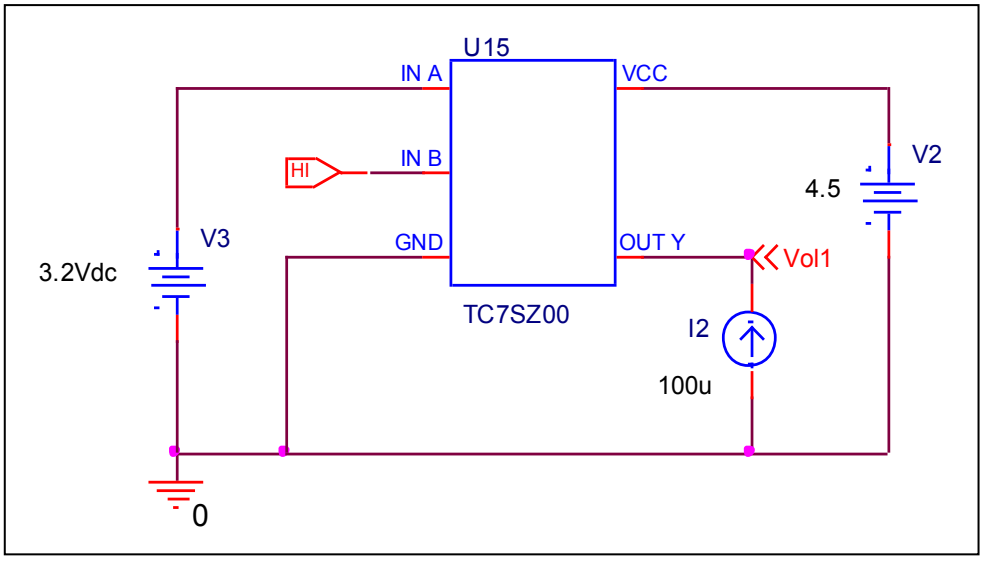
V_{CC} = 1.8V @ V_{IN} = V_{IH} ; I_{OL} = 100uA	Measurement	Simulation	%Error
V_{OL} (V)	0	0	0

Low Level Output Voltage (V_{CC} = 4.5 V)

Circuit simulation result



Evaluation circuit

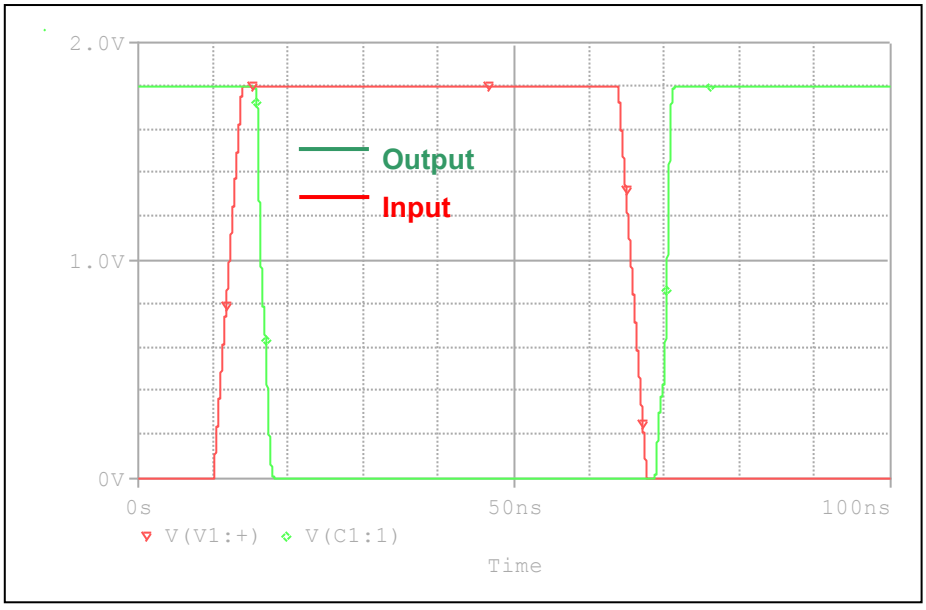


Comparison table

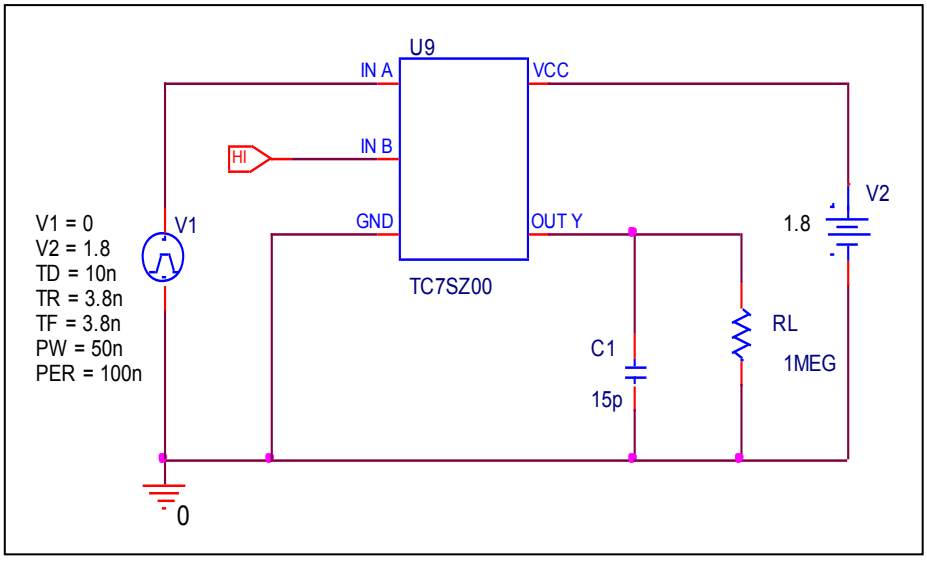
V_{CC} = 4.5 V @ V_{IN} = V_{IH} ; I_{OL} = 100uA	Measurement	Simulation	%Error
V_{OL} (V)	0	0	0

Propagation Delay Time (V_{CC} = 1.8 V)

Circuit simulation result



Evaluation circuit

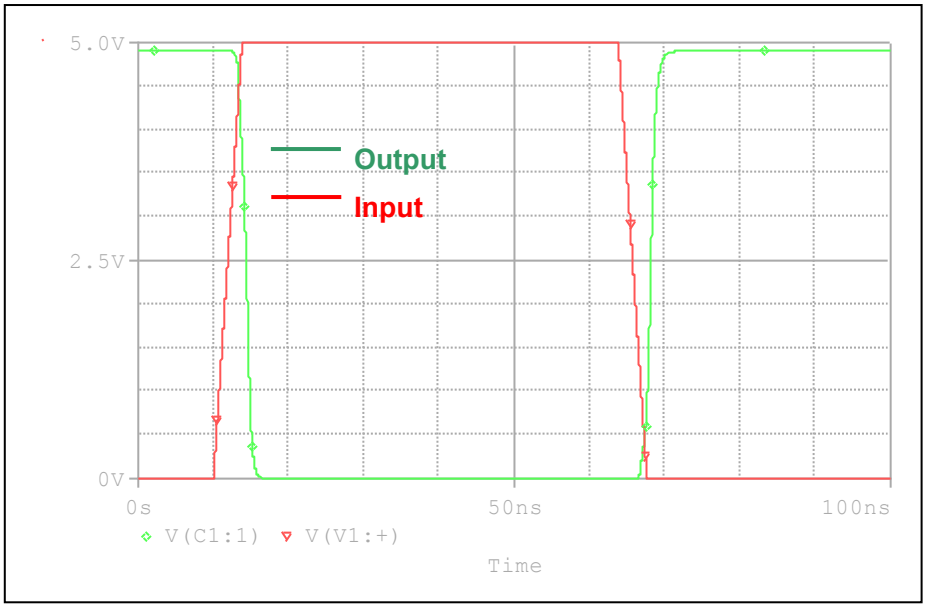


Comparison table C_L = 15 pF, R_L = 1 MΩ

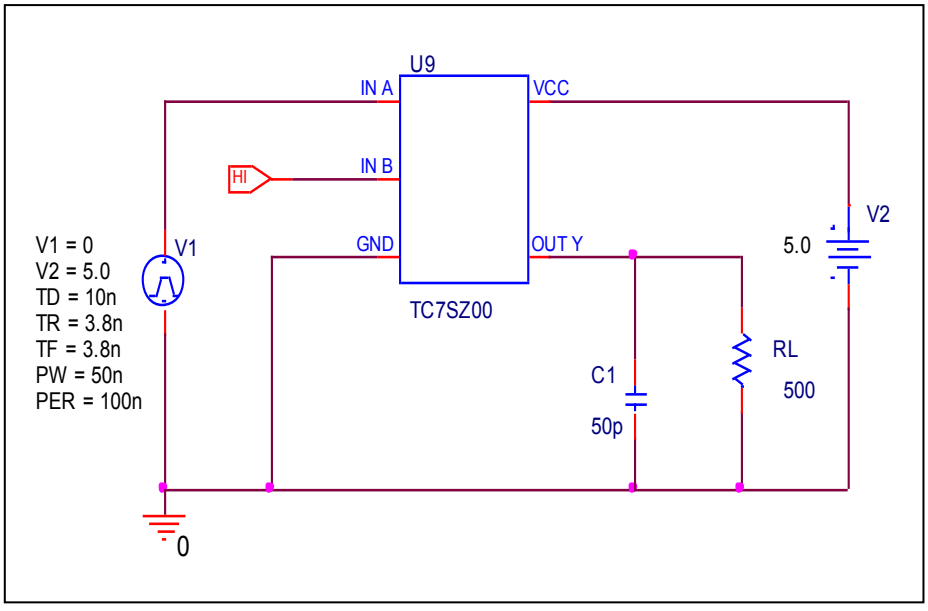
V_{CC} = 1.8V, tr = tf = 3 ns	Measurement	Simulation	%Error
t_{pLH} (ns)	4.5	4.5716	1.591
t_{pHL} (ns)	4.5	4.5448	0.996

Propagation Delay Time (V_{CC} = 5.0 V)

Circuit simulation result



Evaluation circuit



Comparison table C_L = 50 pF, R_L = 500Ω

V_{CC} = 5.0V, tr = tf = 3 ns	Measurement	Simulation	%Error
t_{pLH} (ns)	2.4	2.4418	1.742
t_{pHL} (ns)	2.4	2.4596	2.483