

Device Modeling Report

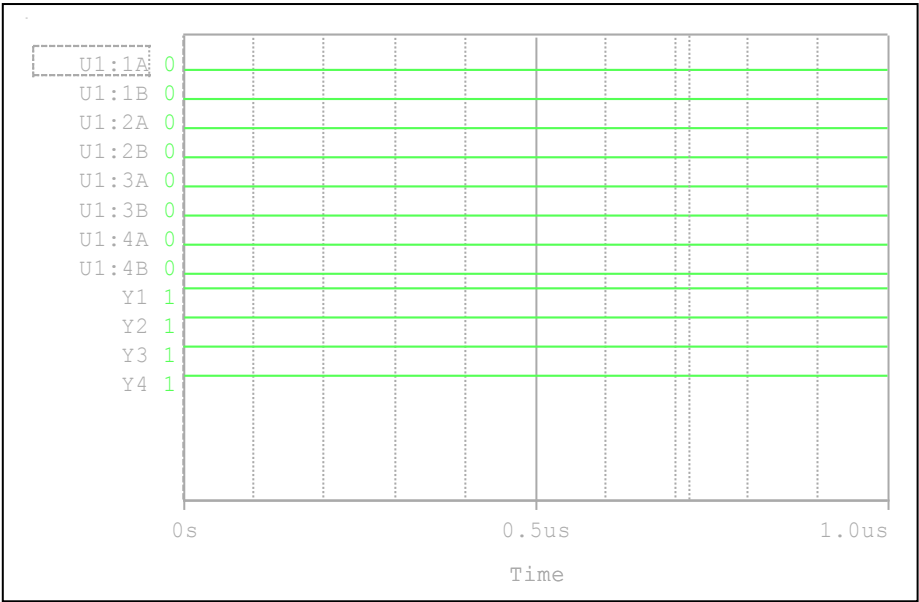
COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74HCT02AFN
MANUFACTURER : TOSHIBA



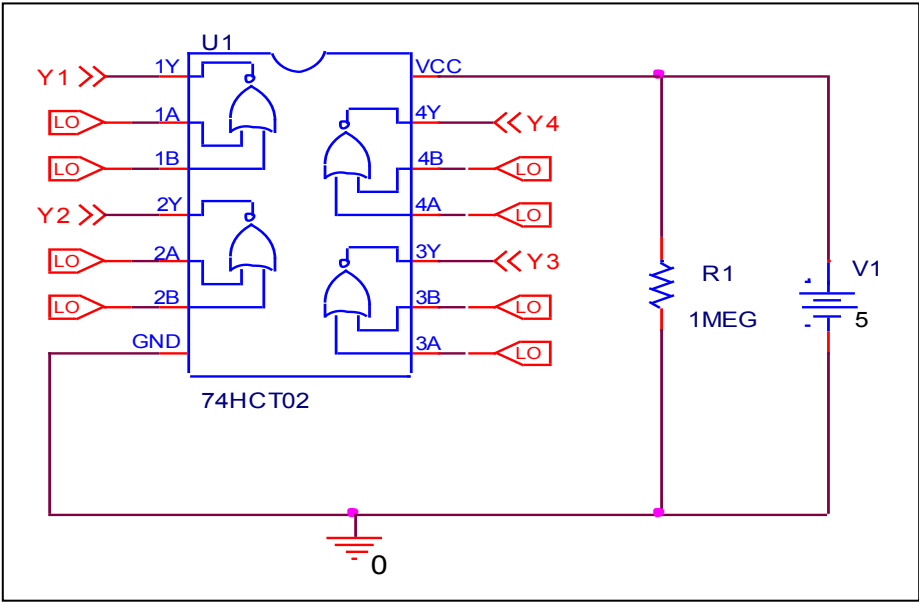
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

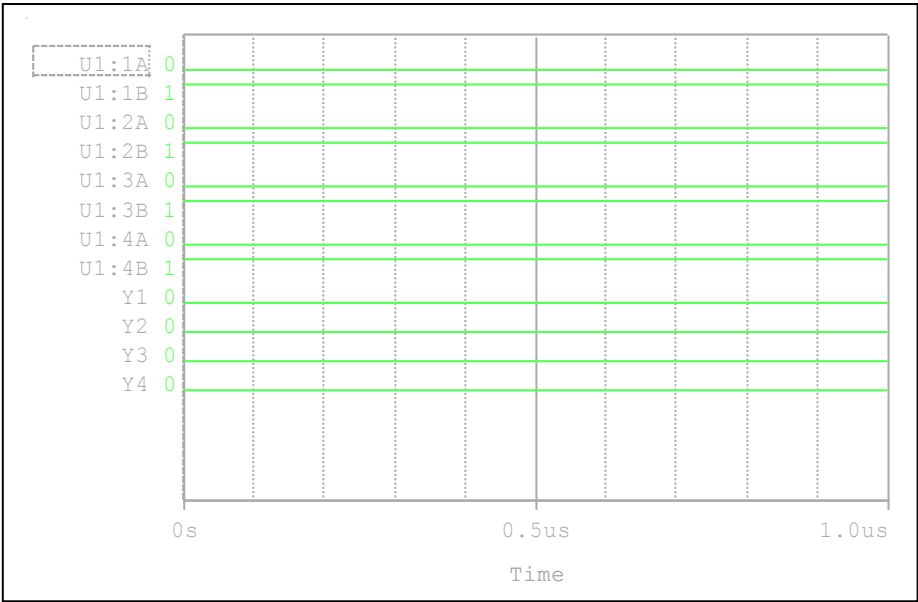


Comparison table

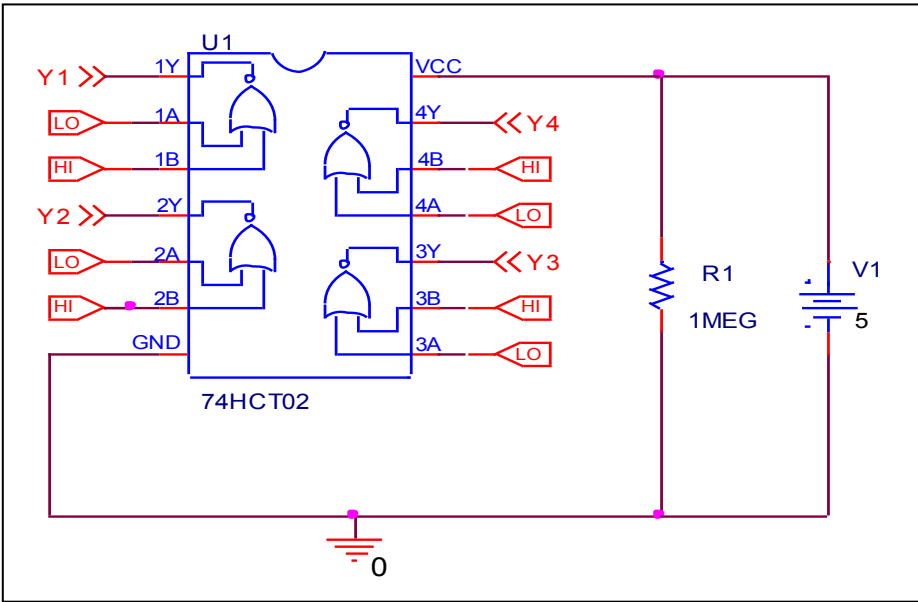
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
L	L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

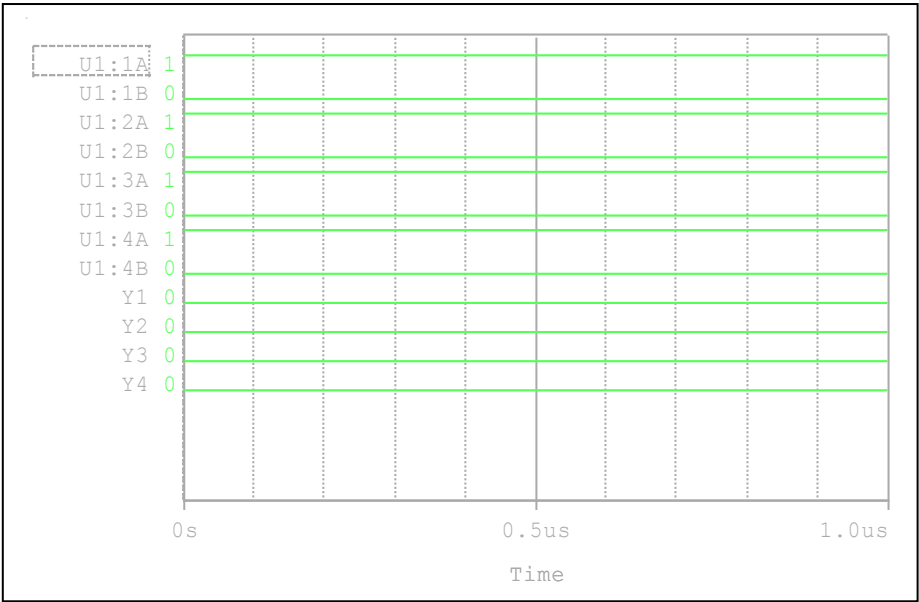


Comparison table

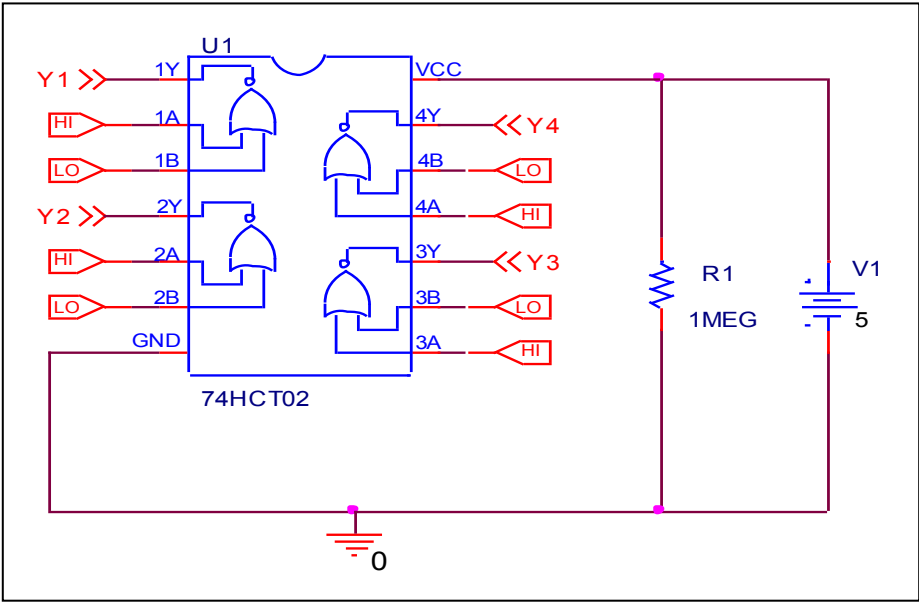
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
L	H	L	L	0

Truth Table

Circuit simulation result



Evaluation circuit

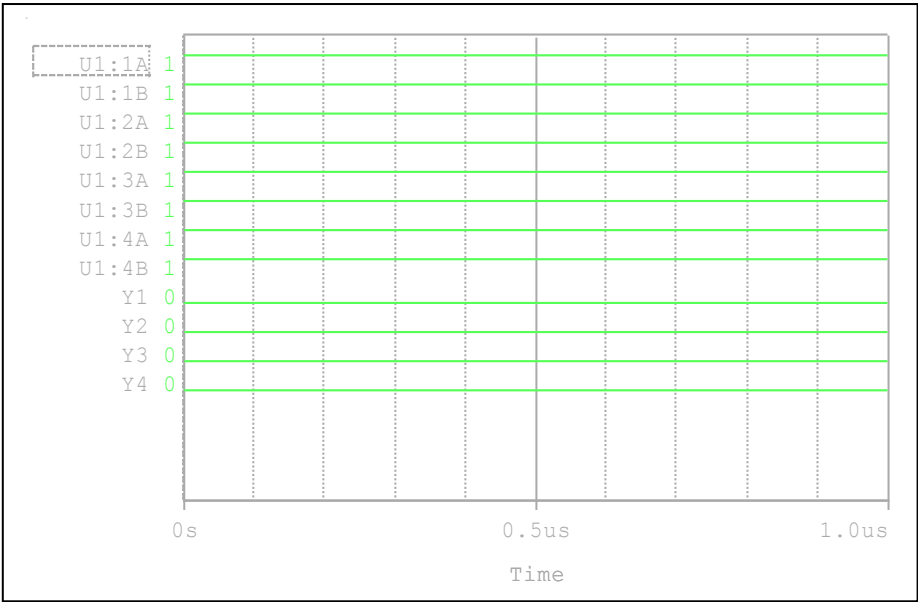


Comparison table

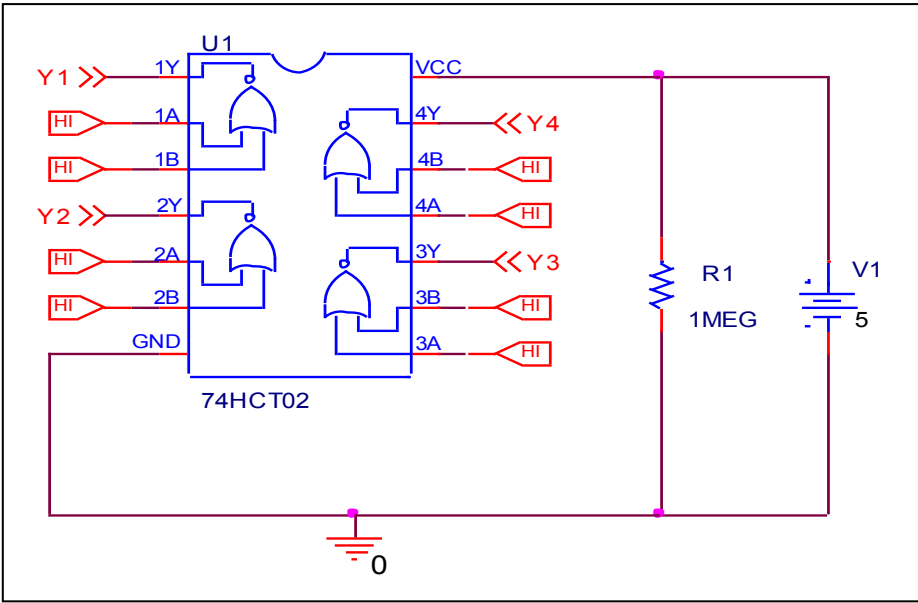
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
H	L	L	L	0

Truth Table

Circuit simulation result



Evaluation circuit

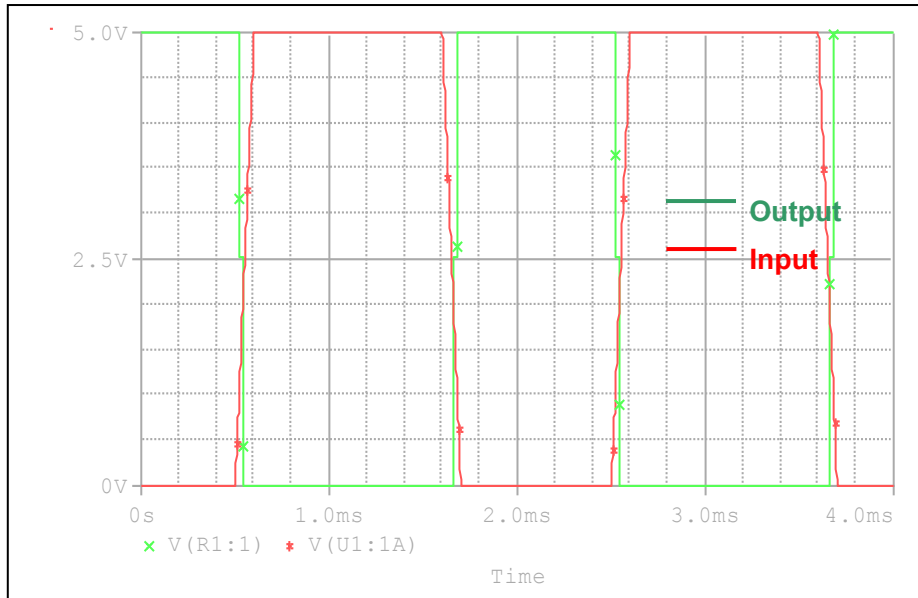


Comparison table

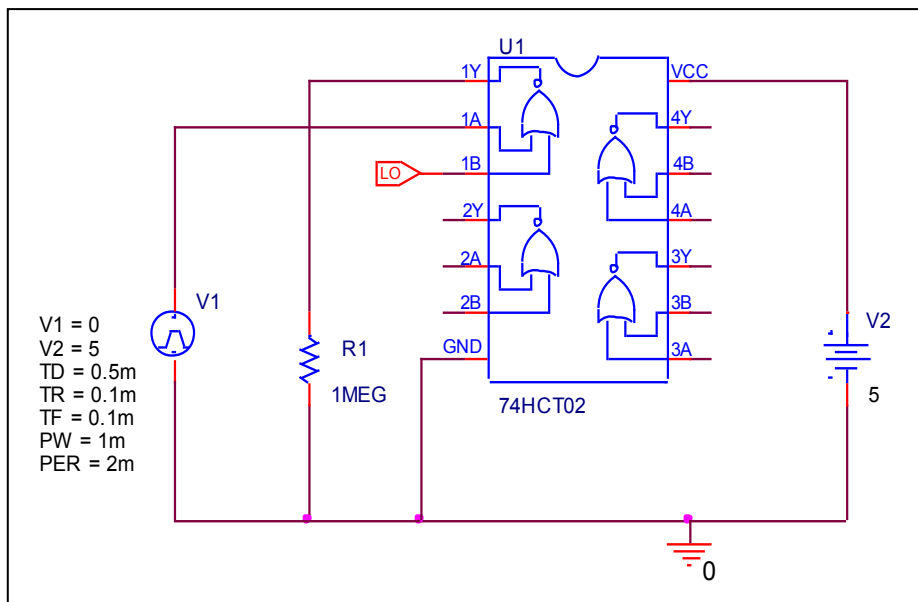
Input		Output		%Error
An	Bn	Yn (Measurement)	Yn (Simulation)	
H	H	L	L	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

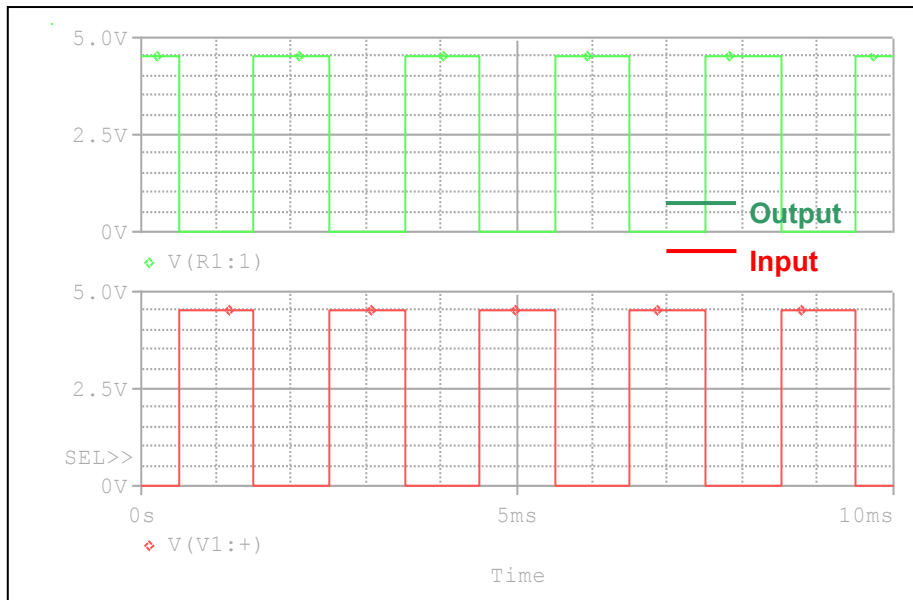


Comparison table

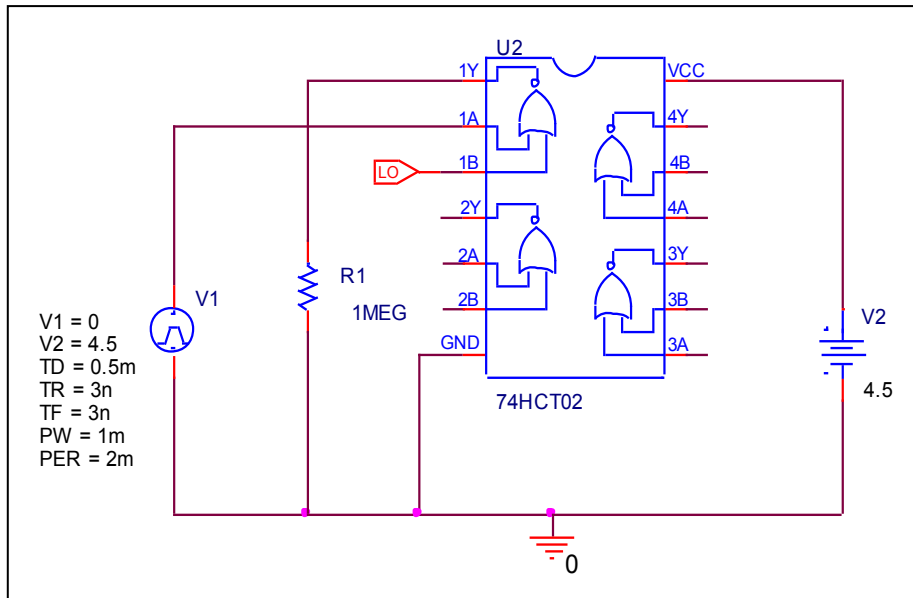
$V_{CC} = 5\text{ V}$	Measurement	Simulation	%Error
$V_{IH}\text{ (V)}$	2	2.0012	0.060
$V_{IL}\text{ (V)}$	0.8	0.800107	0.013

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

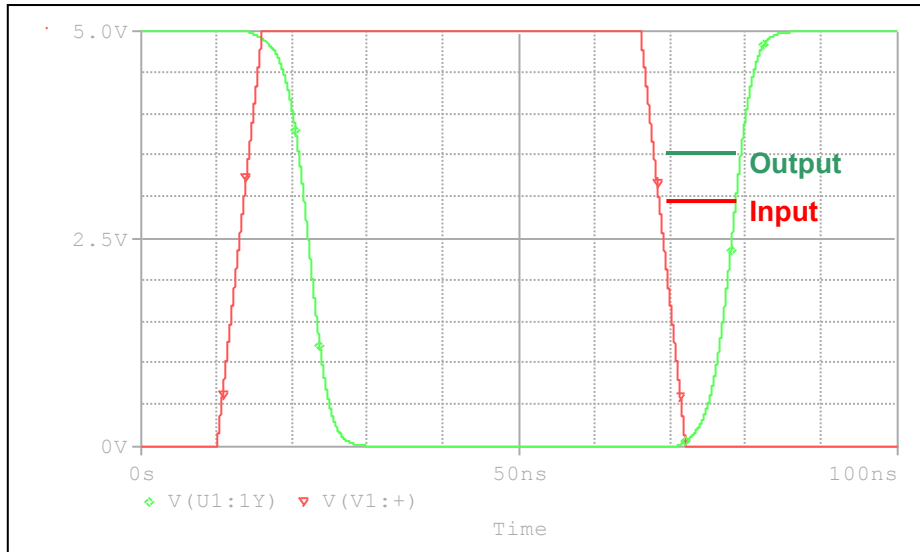


Comparison table

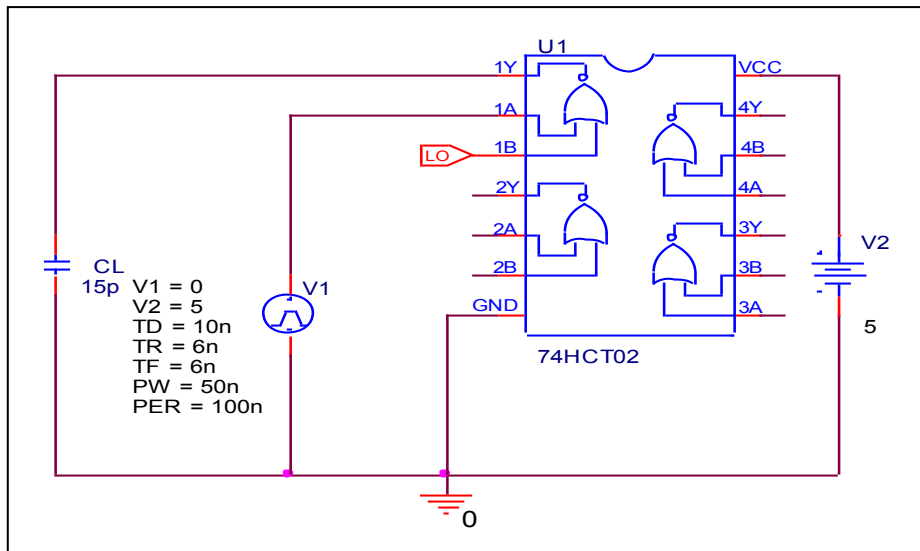
$V_{CC} = 4.5V$	Measurement	Simulation	%Error
$V_{OH} (V)$	4.5	4.4975	-0.056
$V_{OL} (V)$	0	0	0

Propagation Delay Time

Circuit simulation result



Evaluation circuit



Comparison table

$C_L=15\text{pF}, V_{CC} = 5\text{V}, t_r=t_f=6\text{ns}$	Measurement	Simulation	%Error
$t_{TLH} \text{ (ns)}$	6	6.0242	0.403
$t_{THL} \text{ (ns)}$	6	6.0616	1.027
$T_{pLH} \text{ (ns)}$	9	9.0775	0.861
$T_{pHL} \text{ (ns)}$	9	9.0818	0.909