

Device Modeling Report

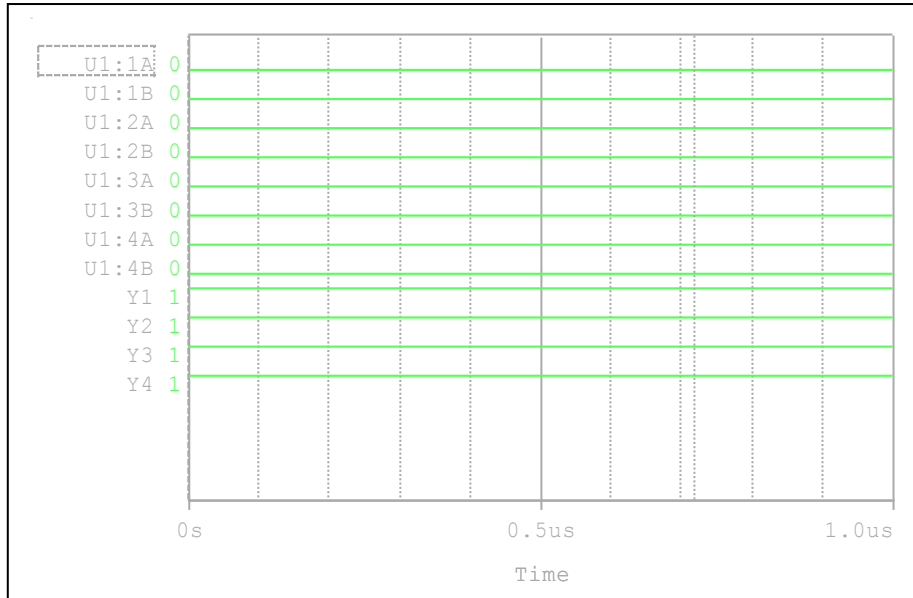
COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74VHC02F
MANUFACTURER : TOSHIBA



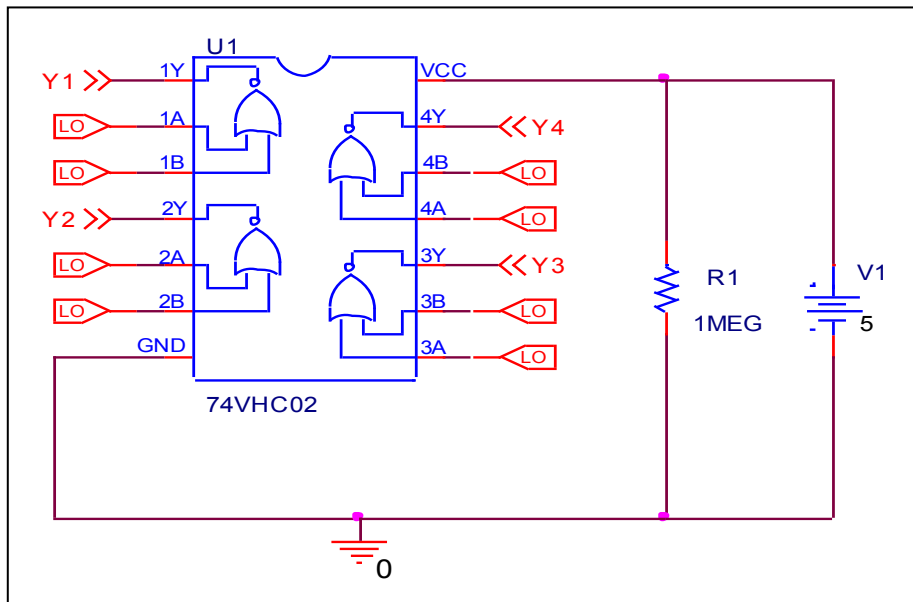
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

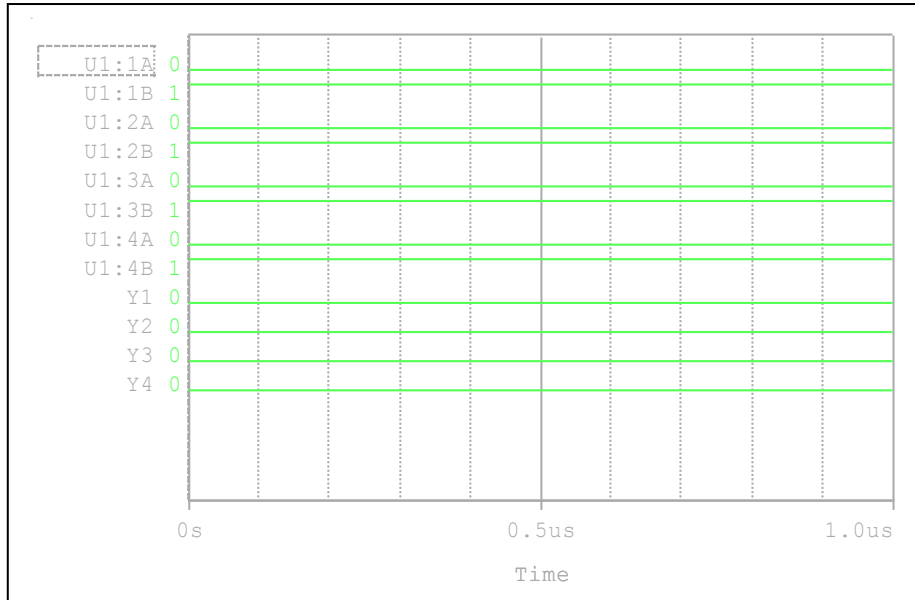


Comparison table

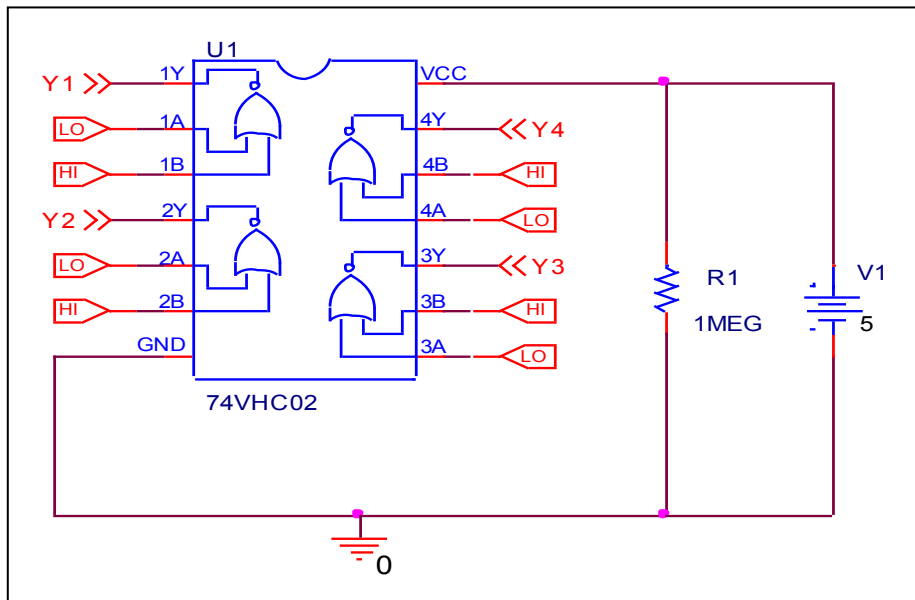
| Input | | Output | | %Error |
|-------|----|------------------|-----------------|--------|
| An | Bn | Yn (Measurement) | Yn (Simulation) | |
| L | L | H | H | 0 |

Truth Table

Circuit simulation result



Evaluation circuit

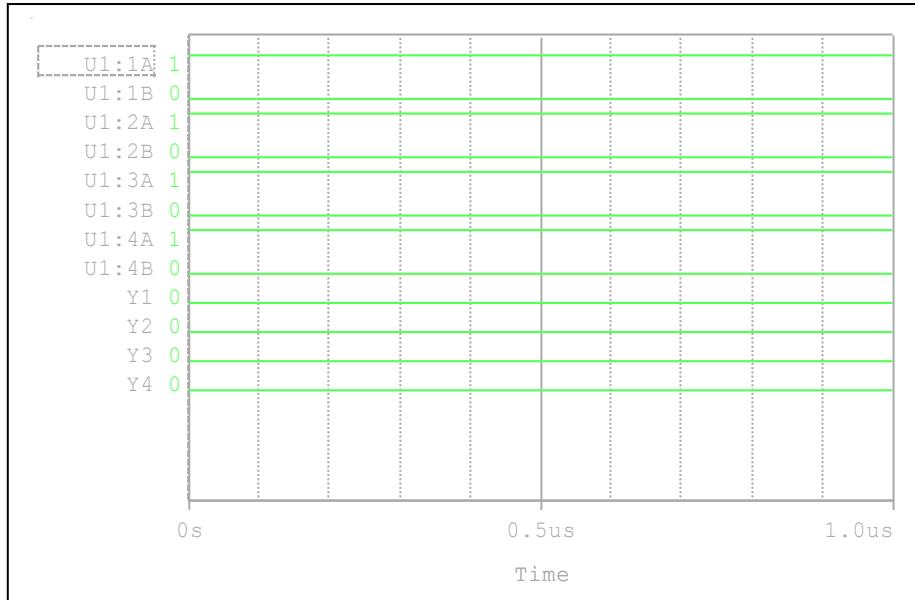


Comparison table

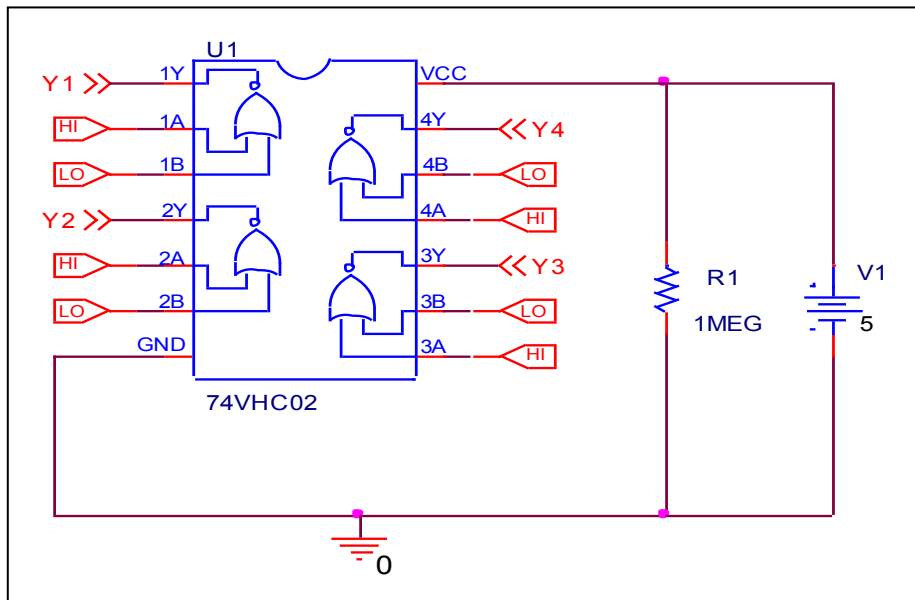
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Truth Table

Circuit simulation result



Evaluation circuit

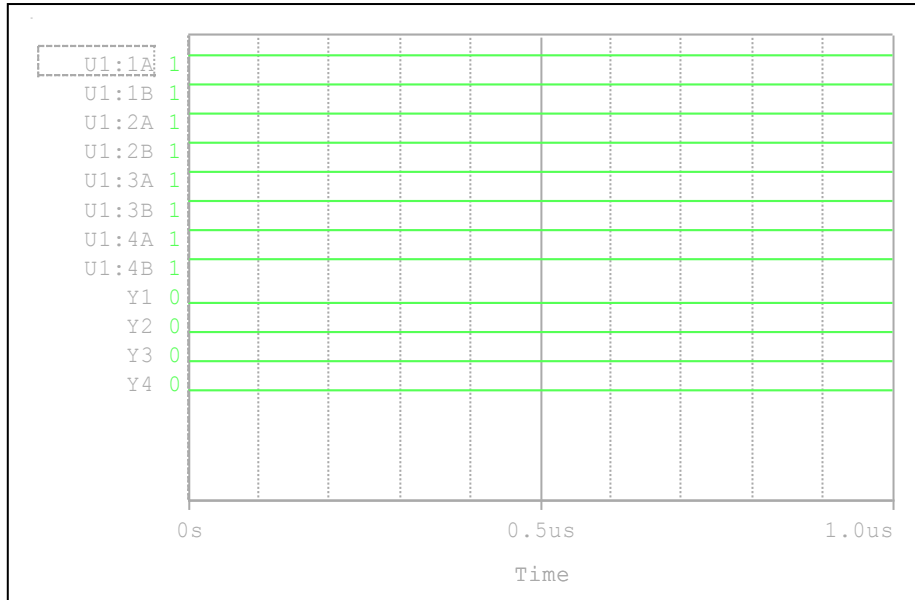


Comparison table

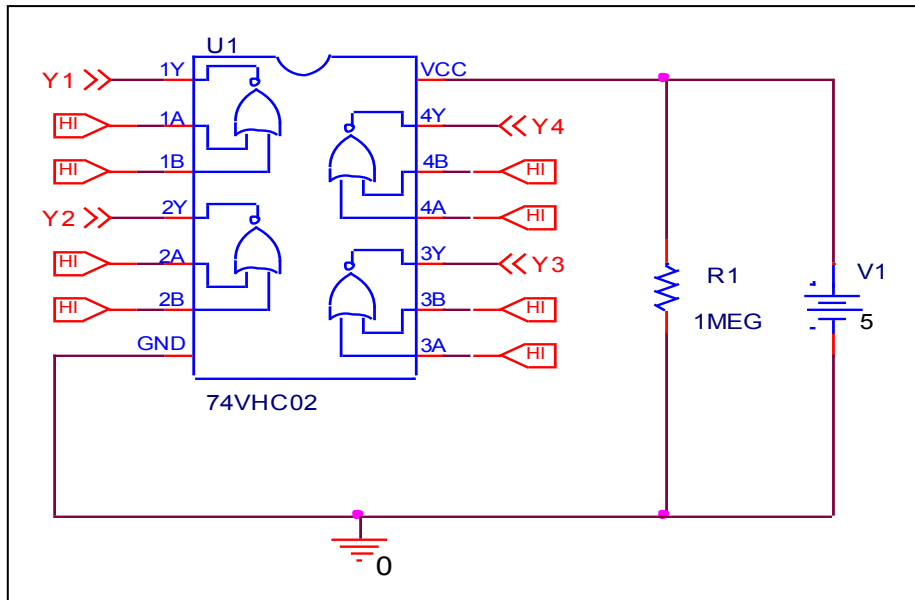
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Truth Table

Circuit simulation result



Evaluation circuit

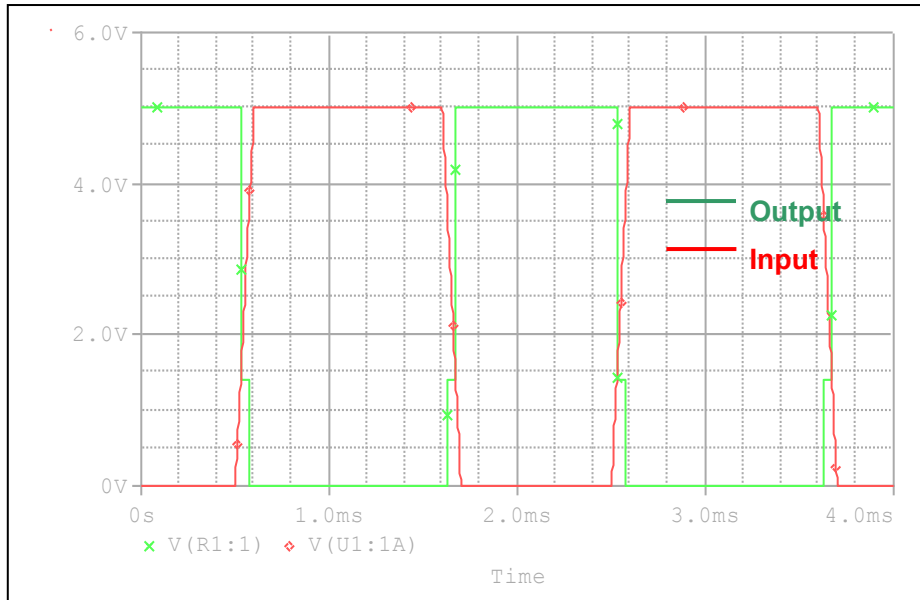


Comparison table

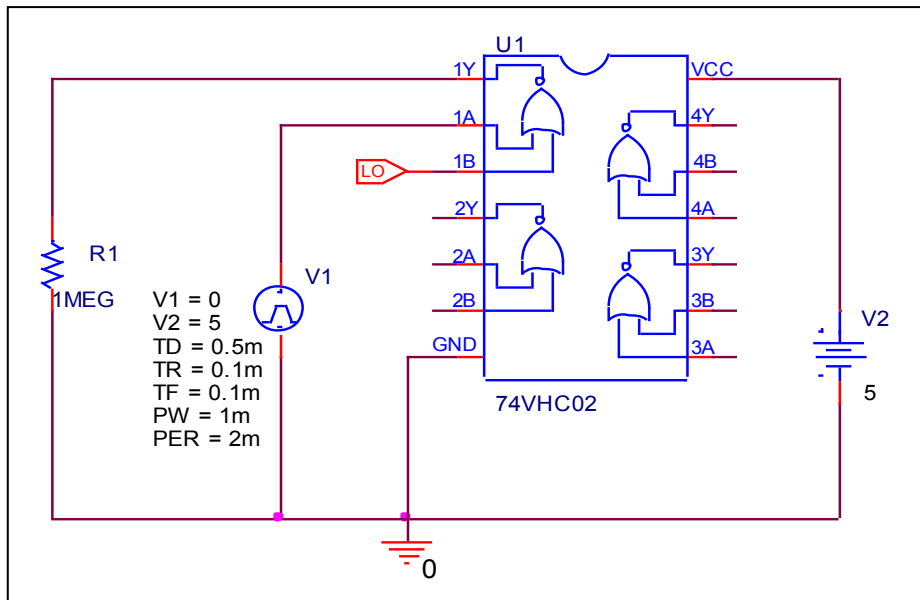
| Input | | Output | | %Error |
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| An | Bn | Yn (Measurement) | Yn (Simulation) | |
| H | H | L | L | 0 |

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

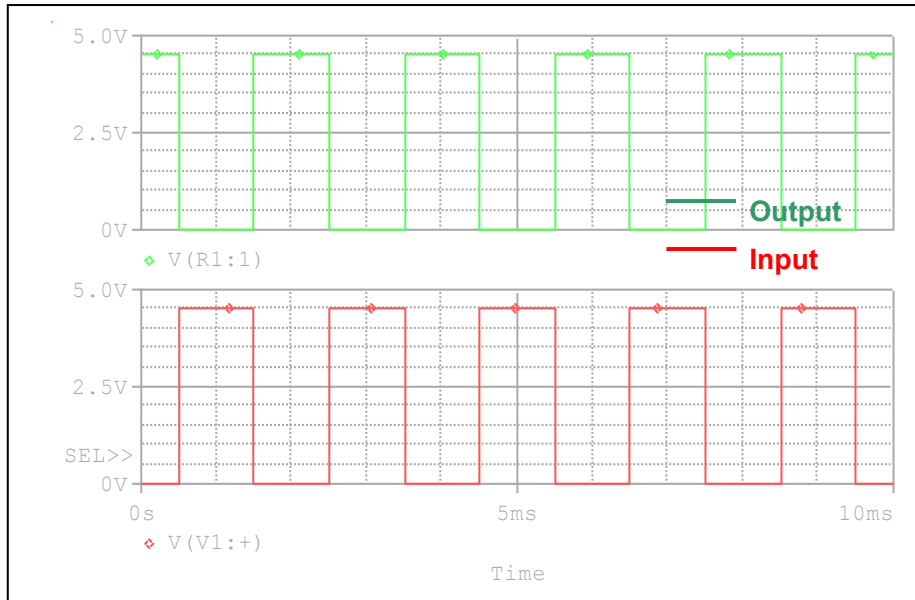


Comparison table

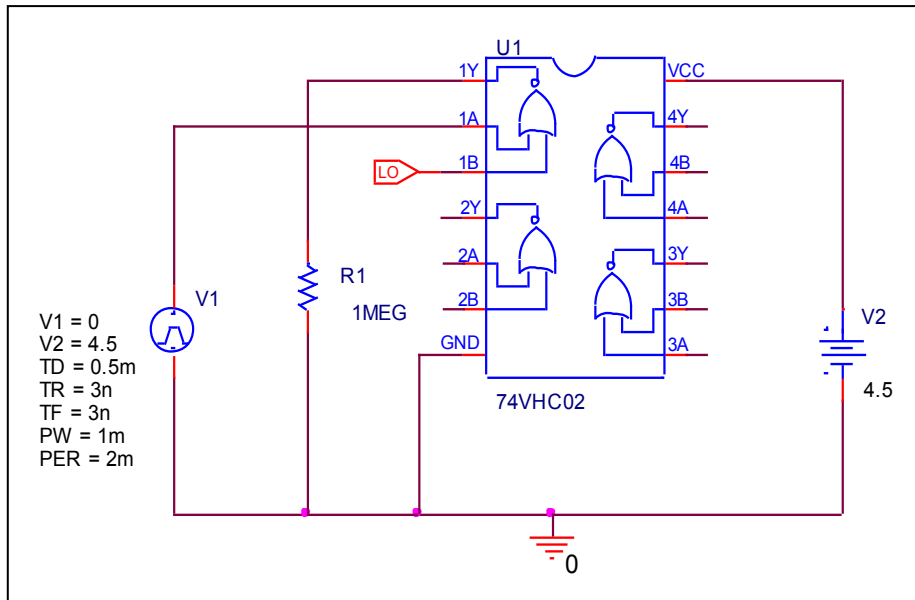
| $V_{CC} = 5V$ | Measurement | Simulation | %Error |
|---------------------------------------|-------------|------------|--------|
| Min $V_{IH} = (V_{CC} \cdot 0.7)$ (V) | 3.5 | 3.6252 | 3.577 |
| Min $V_{IL} = (V_{CC} \cdot 0.3)$ (V) | 1.5 | 1.4951 | -0.327 |

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

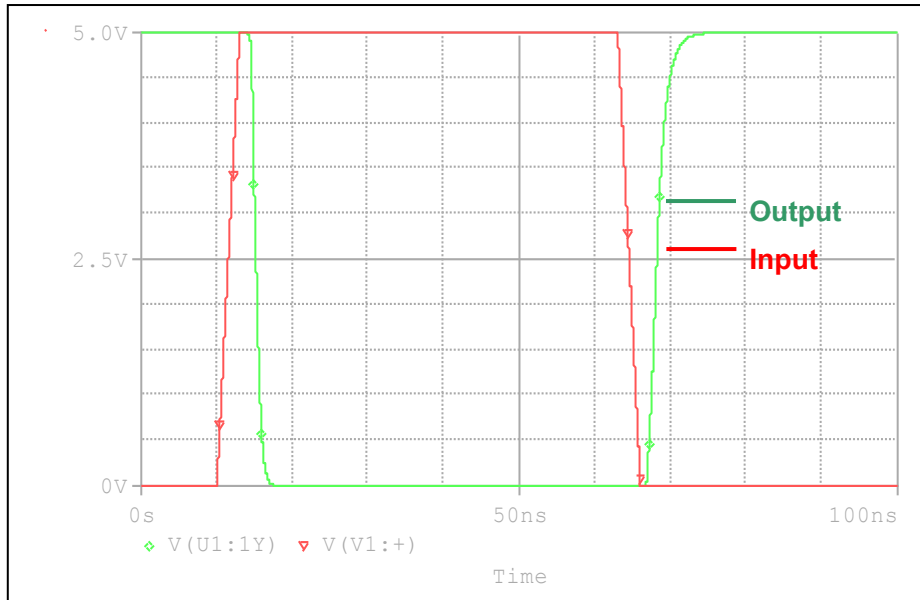


Comparison table

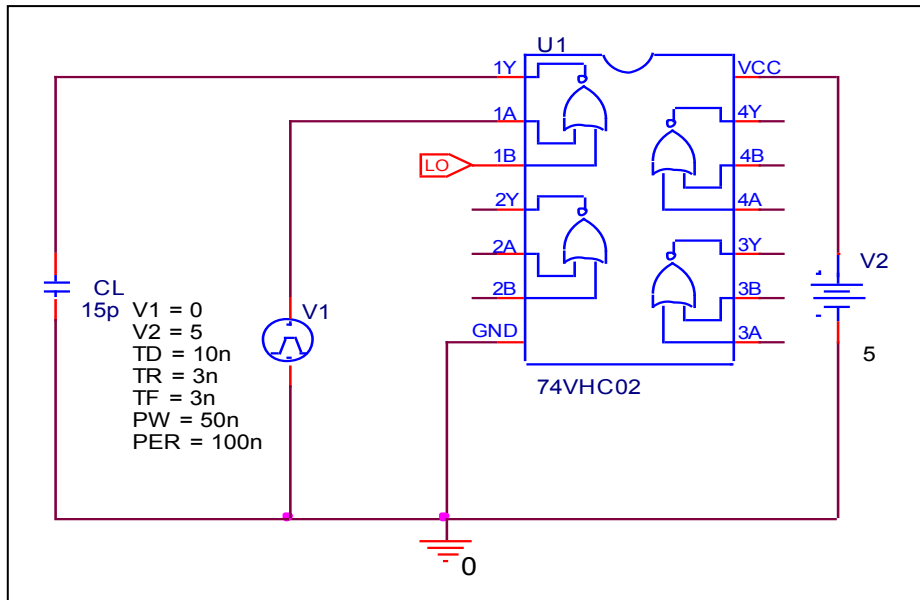
| $V_{CC} = 4.5V$ | Measurement | Simulation | %Error |
|-----------------|-------------|------------|--------|
| $V_{OH} (V)$ | 4.5 | 4.4965 | -0.078 |
| $V_{OL} (V)$ | 0 | 0 | 0 |

Propagation Delay Time

Circuit simulation result



Evaluation circuit



Comparison table

| $C_L=15\text{pF}, V_{CC}=5\text{V}, T_r=T_f=3\text{ns}$ | Measurement | Simulation | %Error |
|---|-------------|------------|--------|
| t_{pLH} (ns) | 3.6 | 3.6561 | 1.558 |
| t_{pHL} (ns) | 3.6 | 3.6664 | 1.844 |