

Device Modeling Report

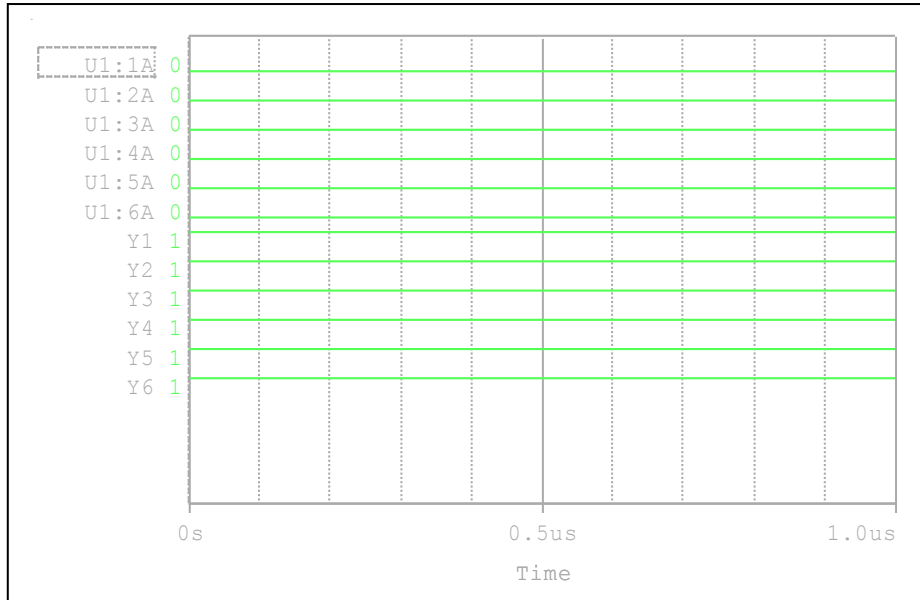
COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74HCU04AP
MANUFACTURER : TOSHIBA



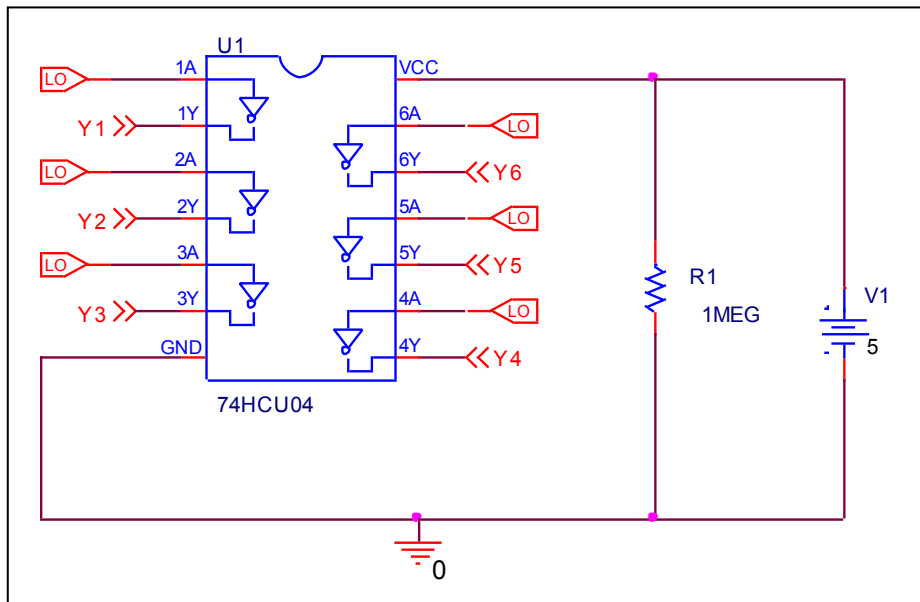
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

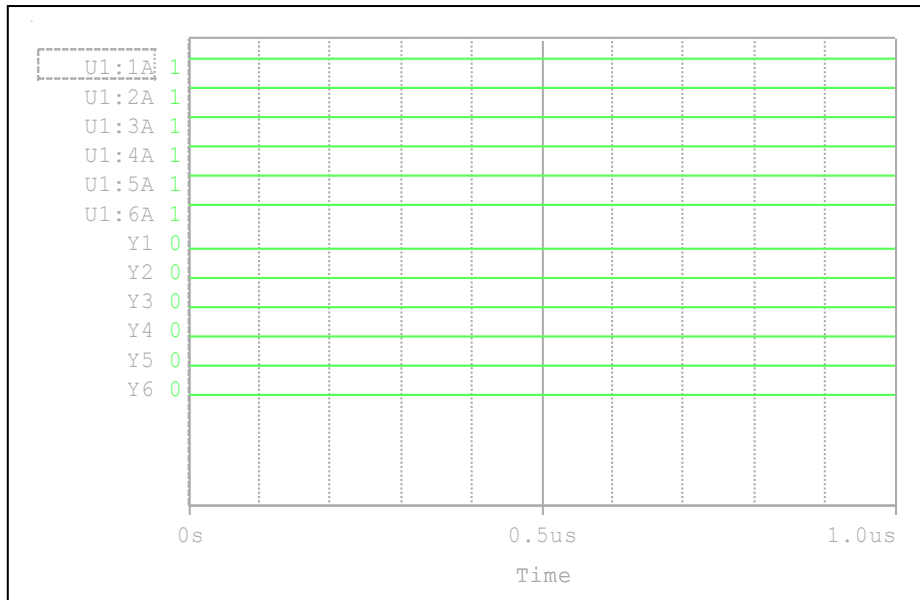


Comparison table

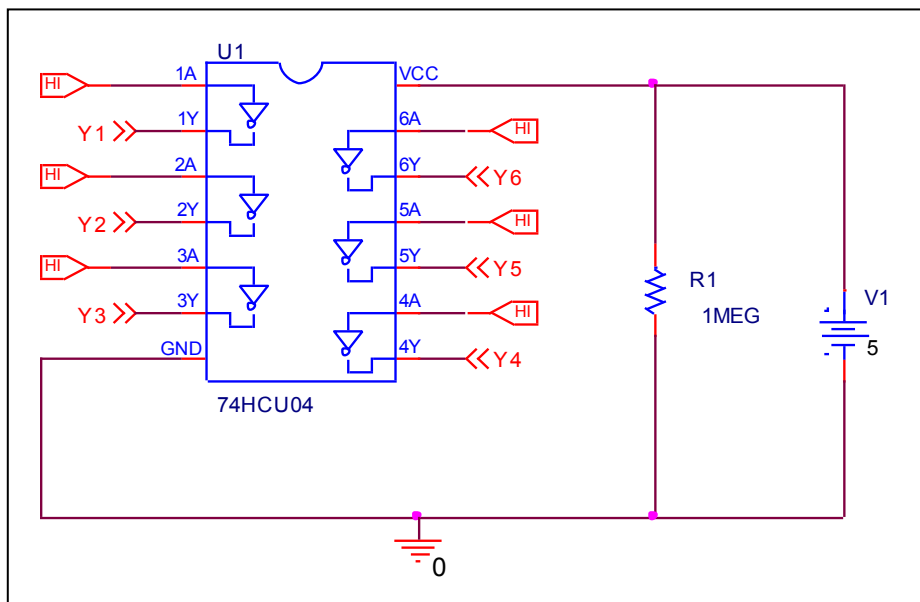
Input	Output		%Error
	Yn (Measurement)	Yn (Simulation)	
L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

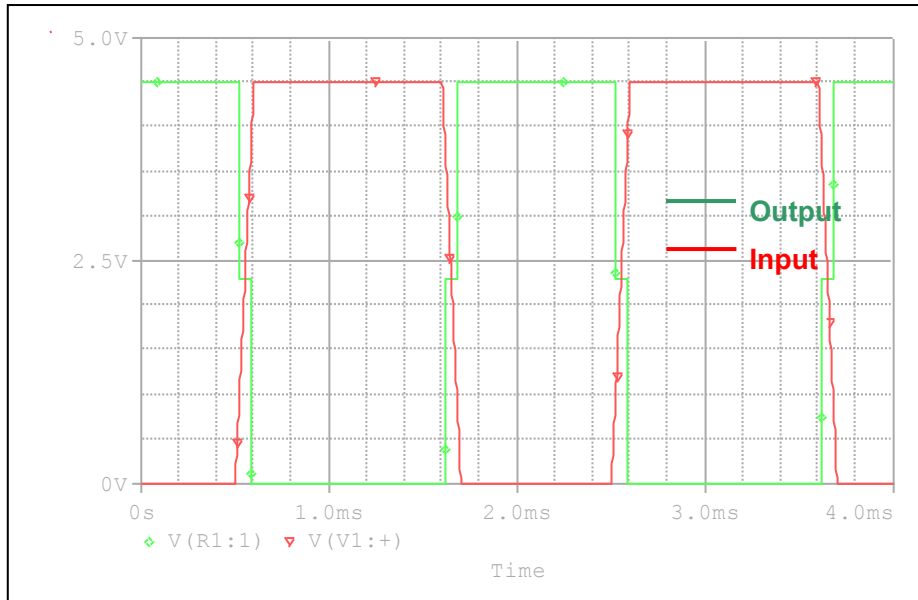


Comparison table

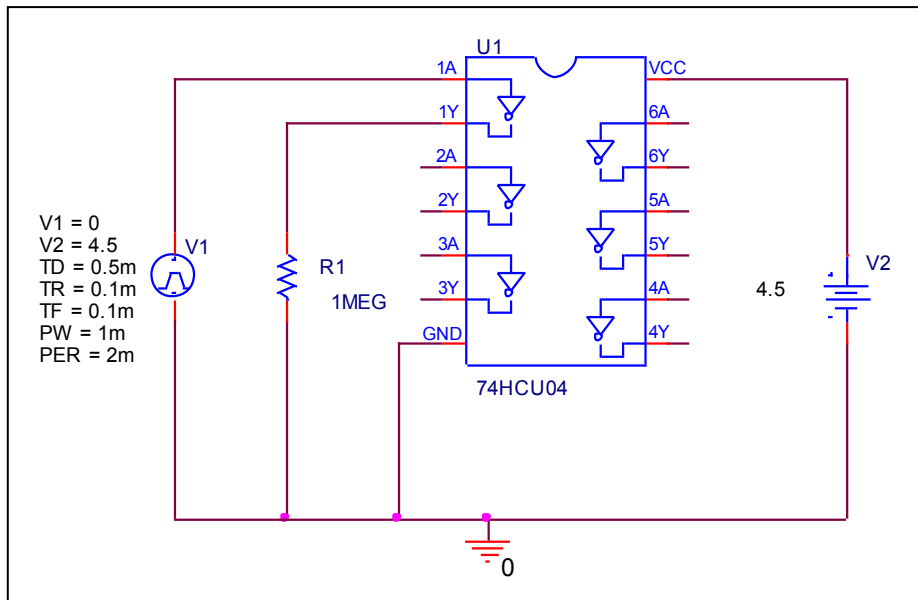
Input	Output		%Error
	Yn (Measurement)	Yn (Simulation)	
H	L	L	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

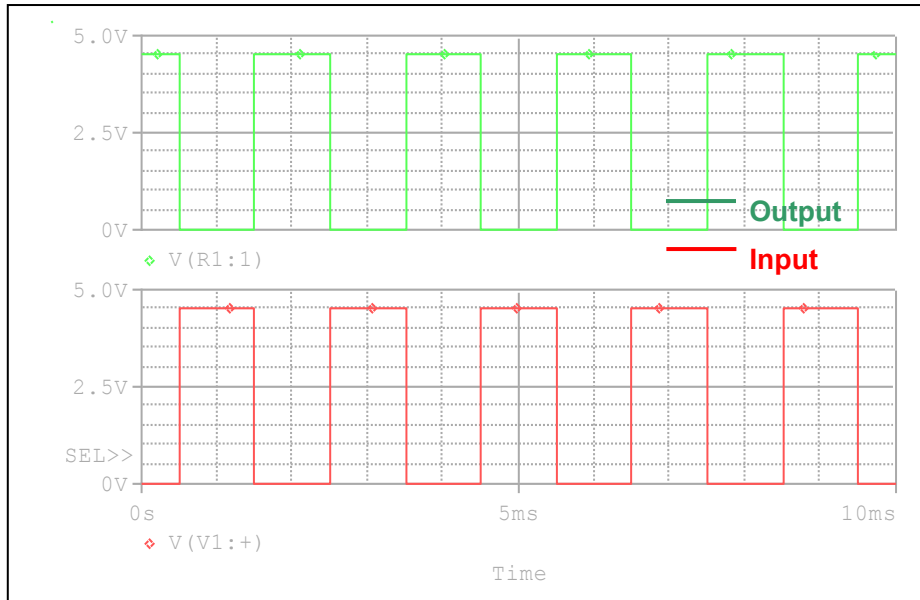


Comparison table

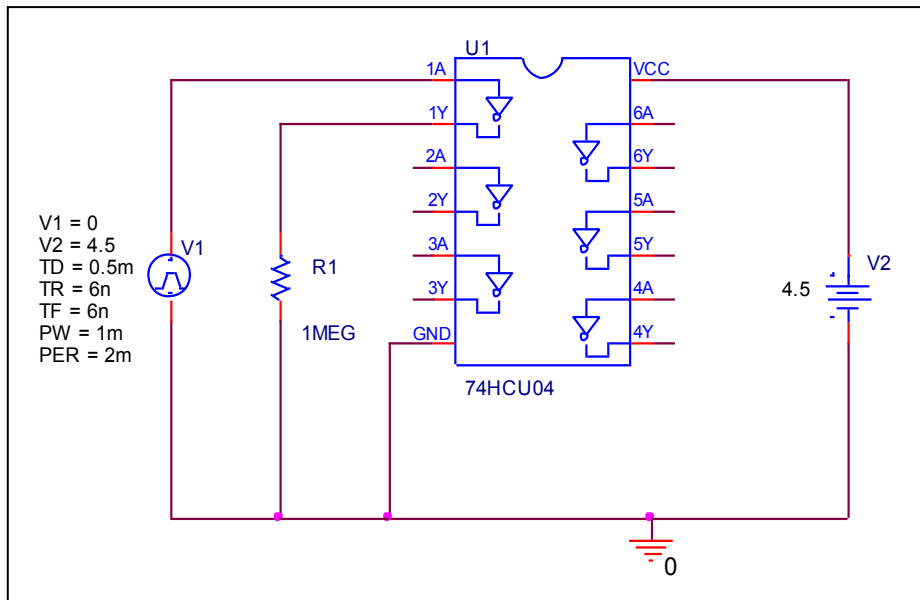
V _{CC} = 4.5V	Measurement	Simulation	%Error
V _{IH} (V)	3.6	3.6679	1.886
V _{IL} (V)	0.9	0.895559	-0.493

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

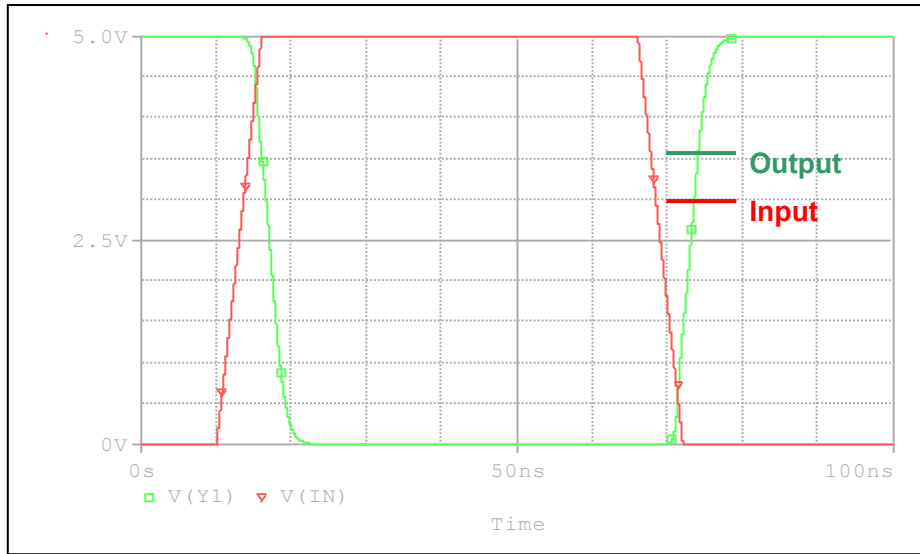


Comparison table

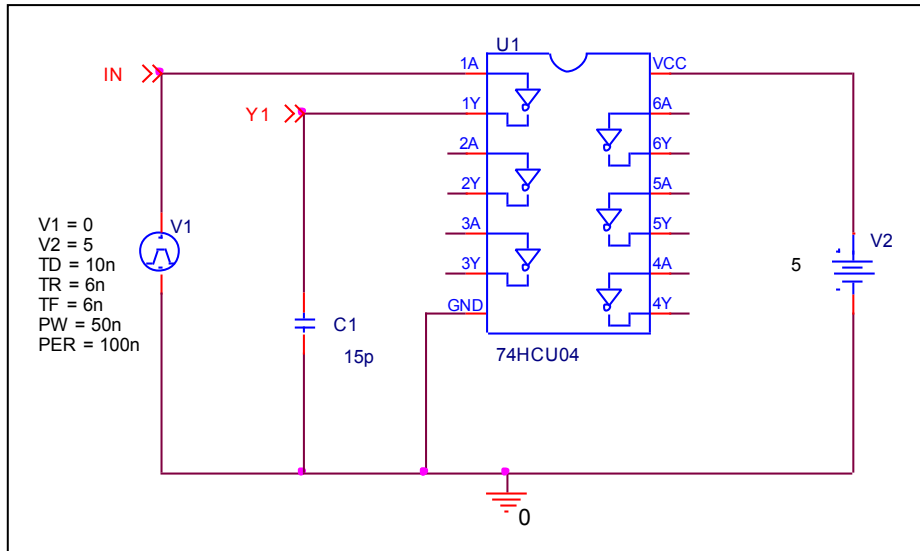
$V_{CC} = 4.5V$	Measurement	Simulation	%Error
$V_{OH} (V)$	4.5	4.4977	-0.051
$V_{OL} (V)$	0	0	0

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} (ns)	4	4.0113	0.283
t_{THL} (ns)	4	4.0036	0.090
T_{pLH} (ns)	4	4.0634	1.585
T_{pHL} (ns)	4	4.0577	1.442