

Device Modeling Report

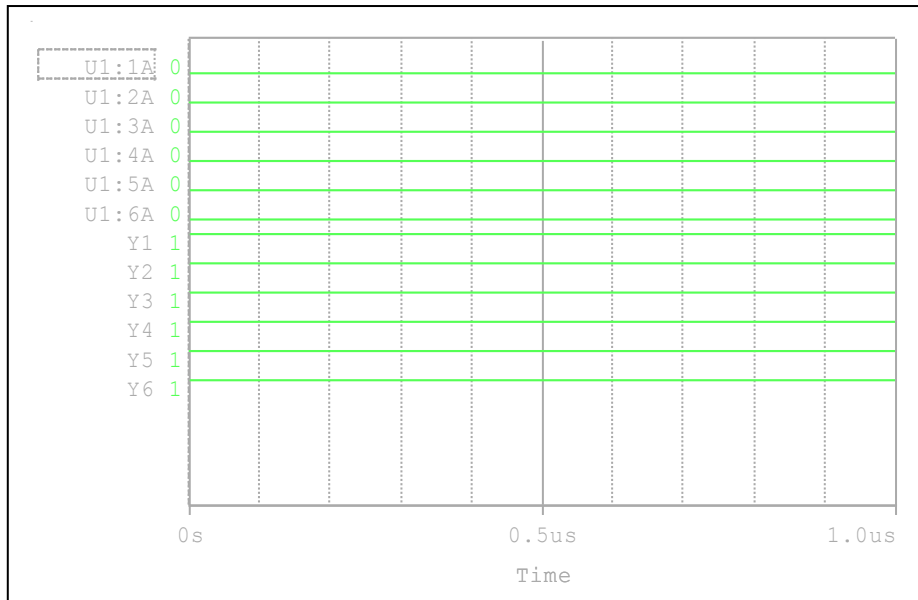
COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74AC04FN
MANUFACTURER : TOSHIBA



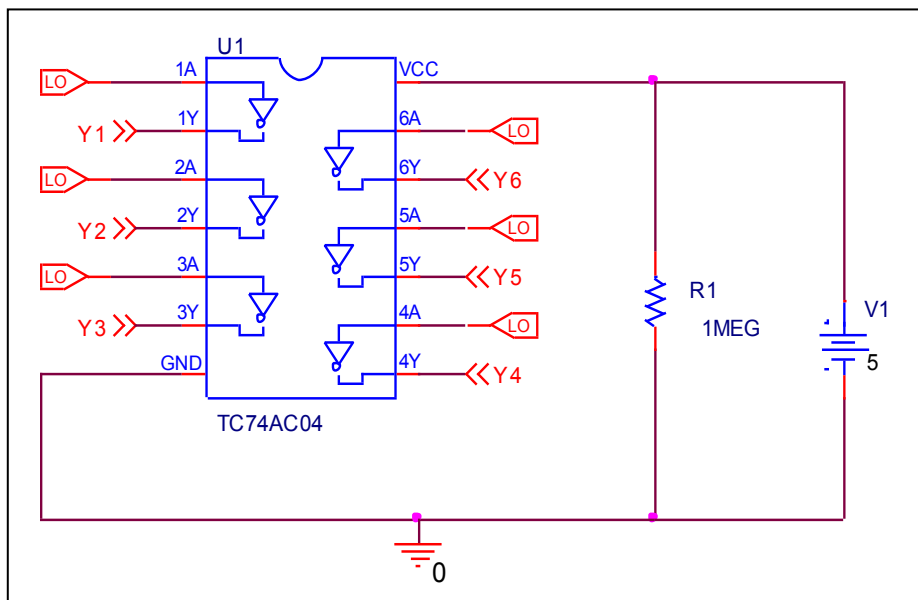
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

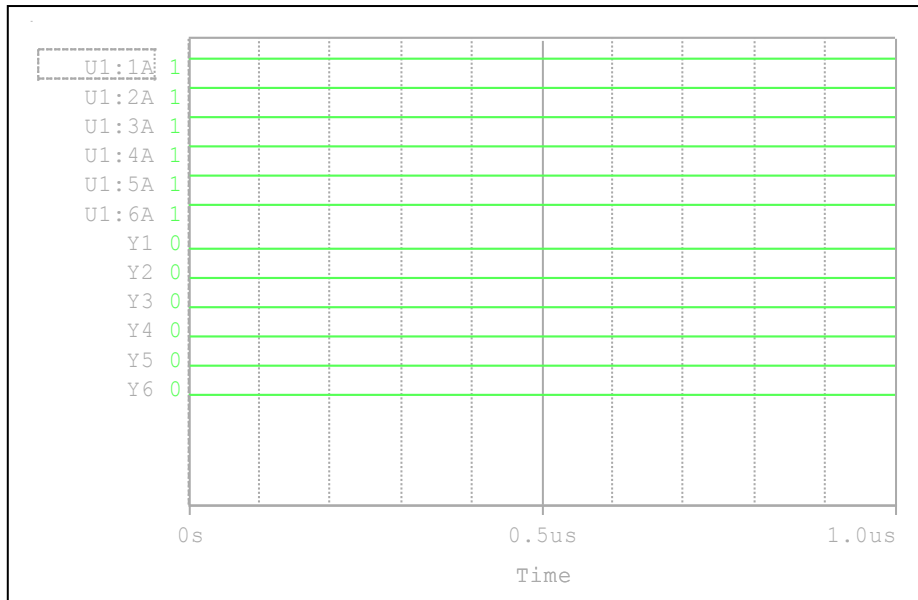


Comparison table

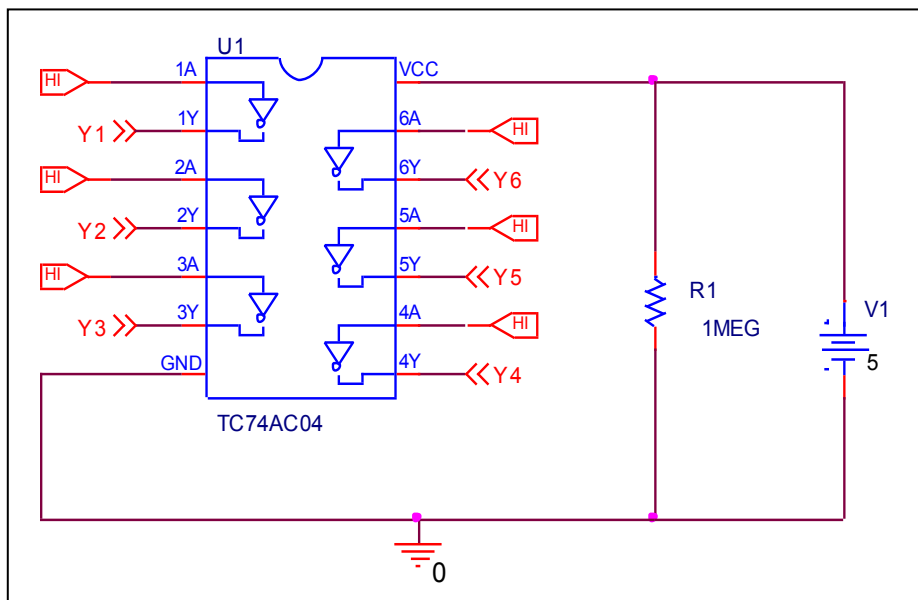
Input	Output		%Error
	Yn (Measurement)	Yn (Simulation)	
L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

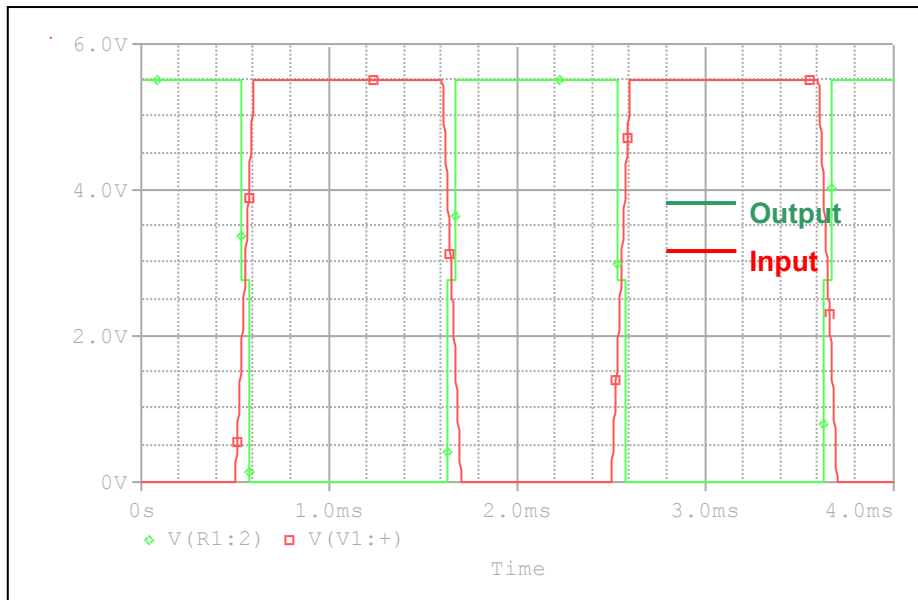


Comparison table

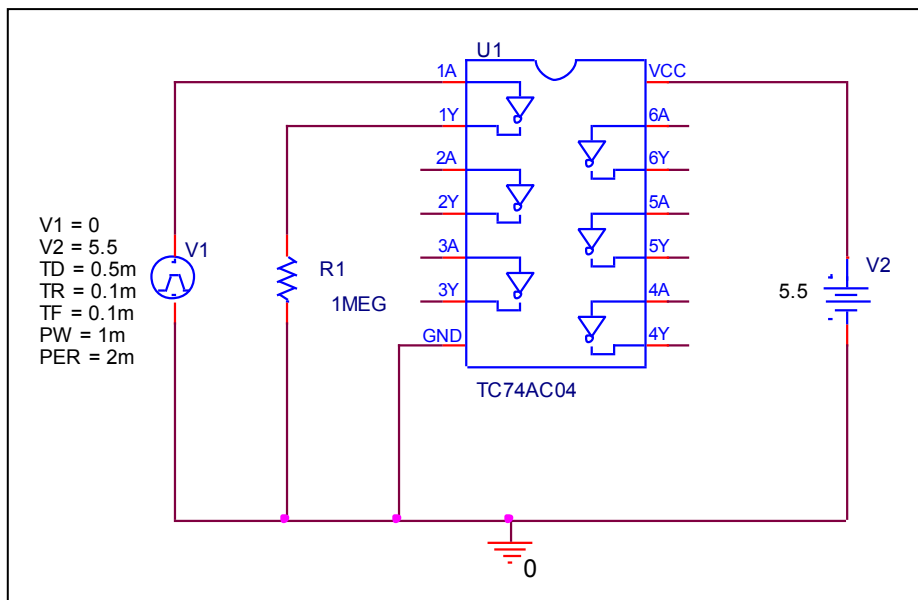
Input	Output		%Error
	Yn (Measurement)	Yn (Simulation)	
H	L	L	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

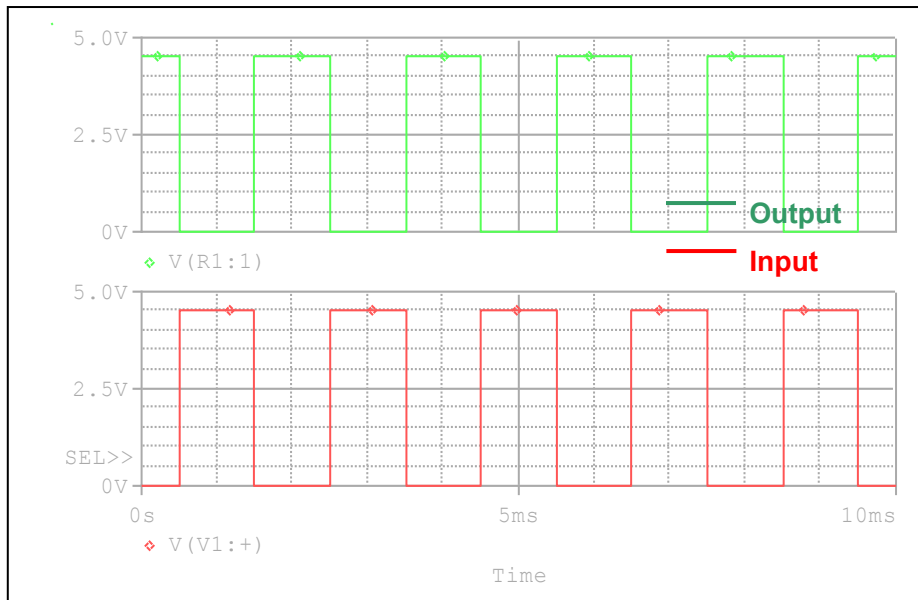


Comparison table

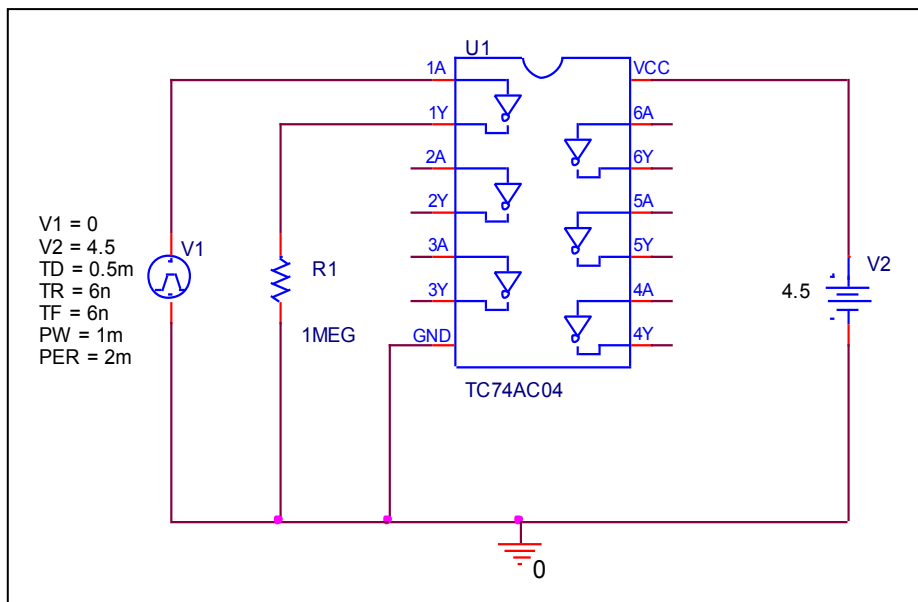
$V_{CC} = 5.5V$	Measurement	Simulation	%Error
$V_{IH} (V)$	3.85	3.9328	2.151
$V_{IL} (V)$	1.65	1.6447	-0.321

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

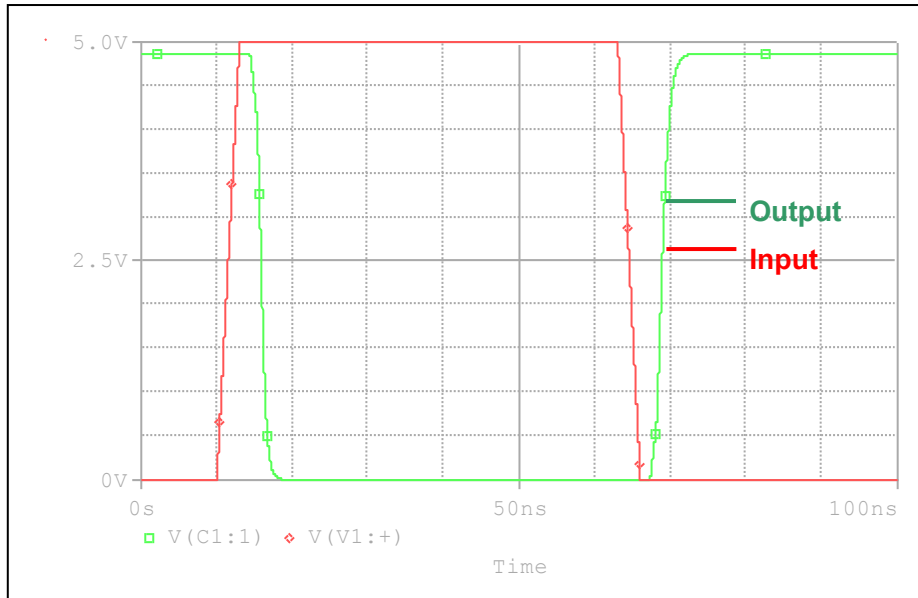


Comparison table

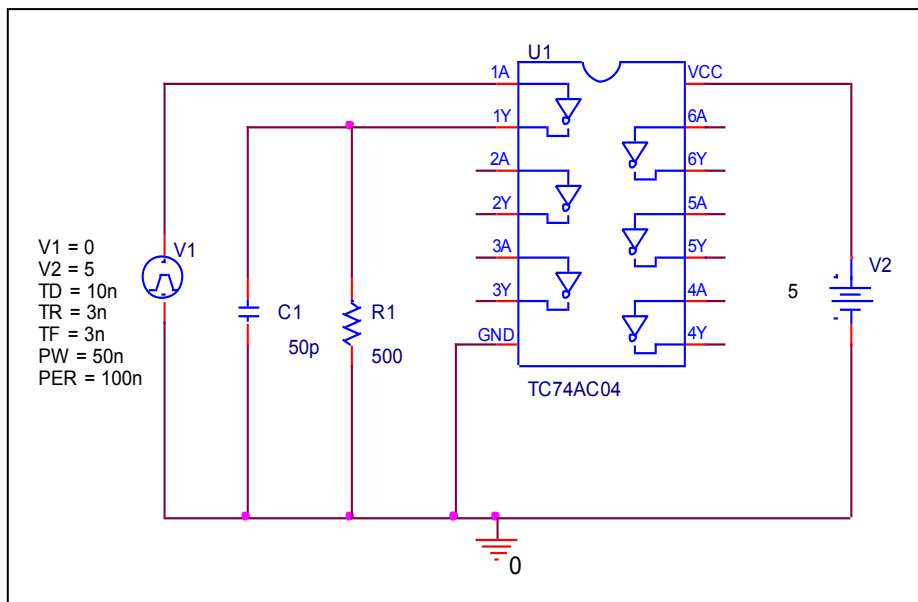
$V_{CC} = 4.5V$	Measurement	Simulation	%Error
$V_{OH} (V)$	4.5	4.4994	-0.013
$V_{OL} (V)$	0	0	0

Propagation Delay Time

Circuit simulation result



Evaluation circuit



Comparison table

$C_L=50\text{pF}, R_L=500\Omega, T_r=T_f=3\text{ns}$	Measurement	Simulation	%Error
$t_{pLH} \text{ (ns)}$	4.3	4.3569	1.323
$t_{pHL} \text{ (ns)}$	4.3	4.3656	1.526