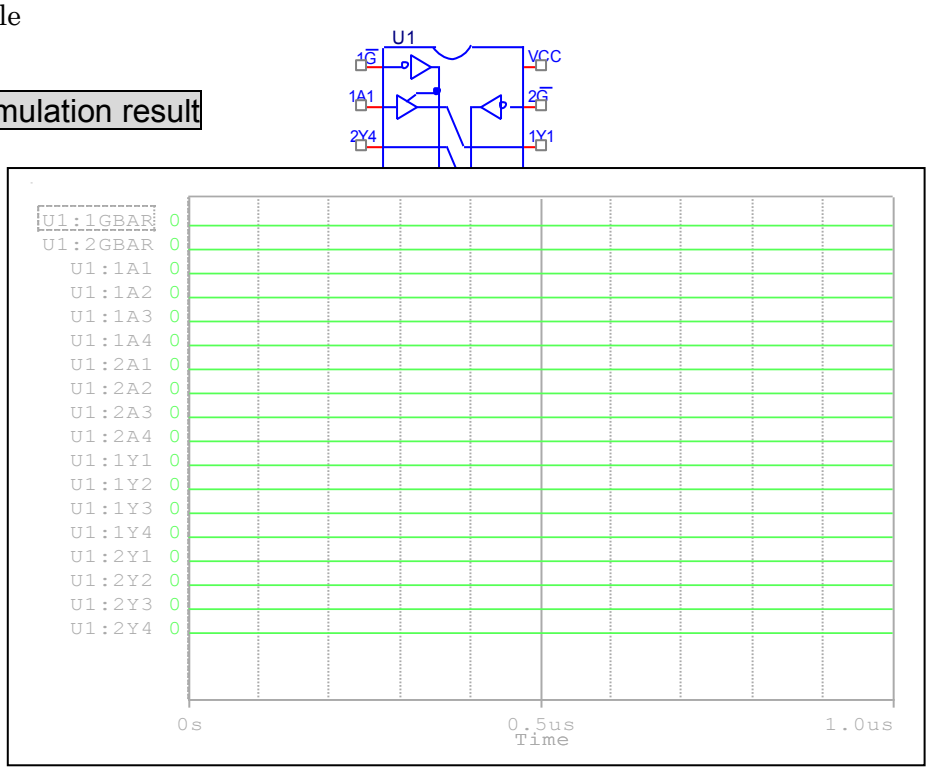
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74VHC244FT
MANUFACTURER : TOSHIBA

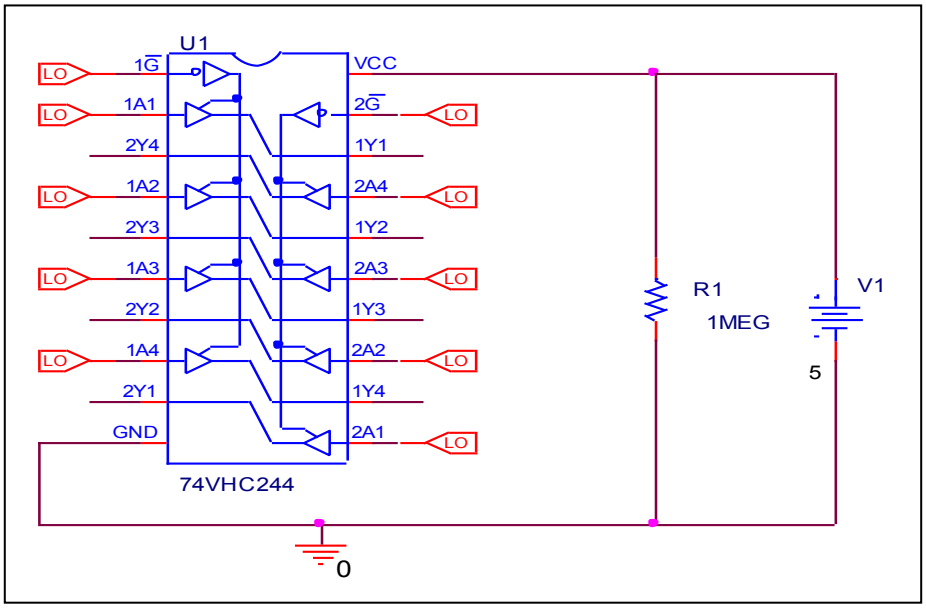
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

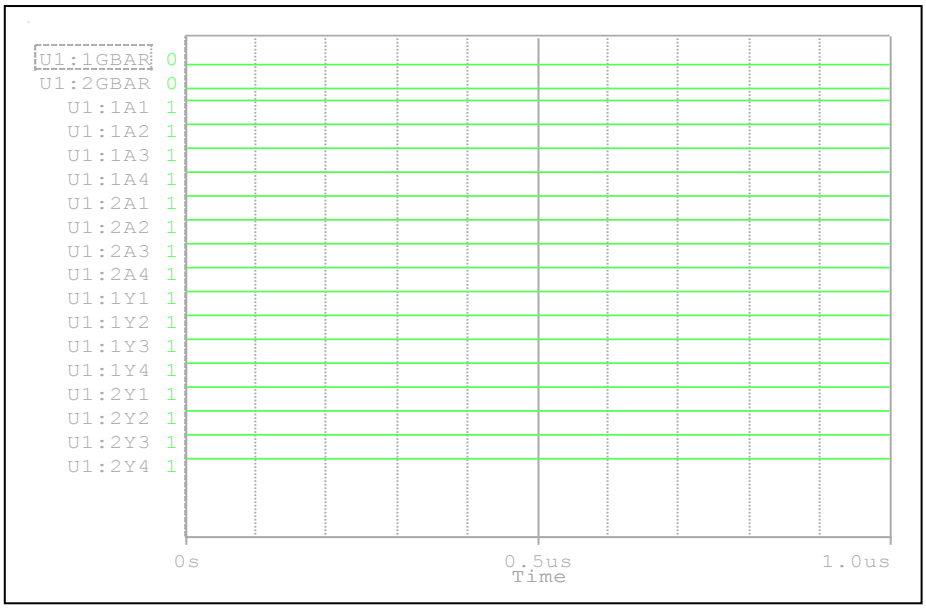


Comparison table

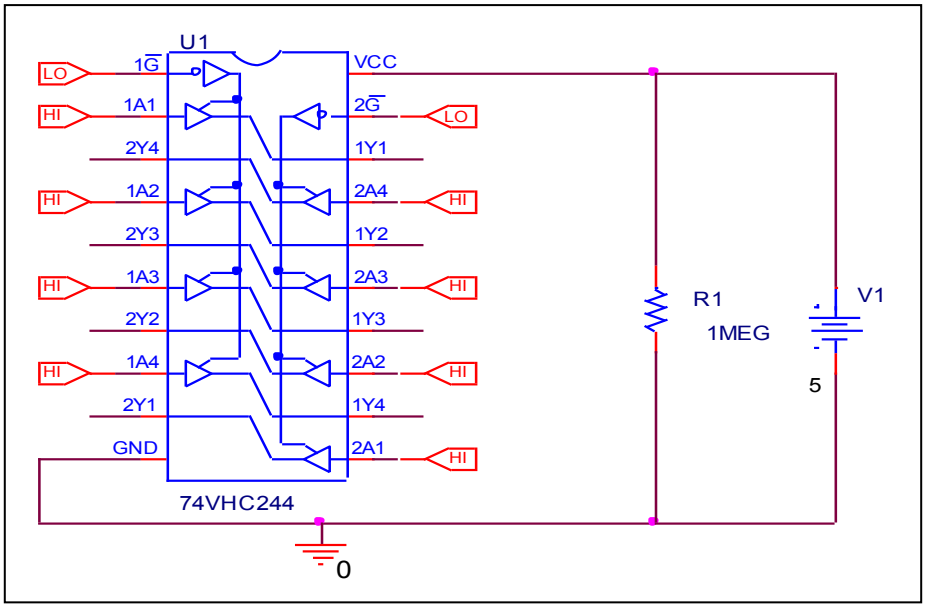
Input		Output		%Error
$\overline{G}$	An	Yn (Measurement)	Yn (Simulation)	
L	**L**	L	L	0

Truth Table

Circuit simulation result



Evaluation circuit

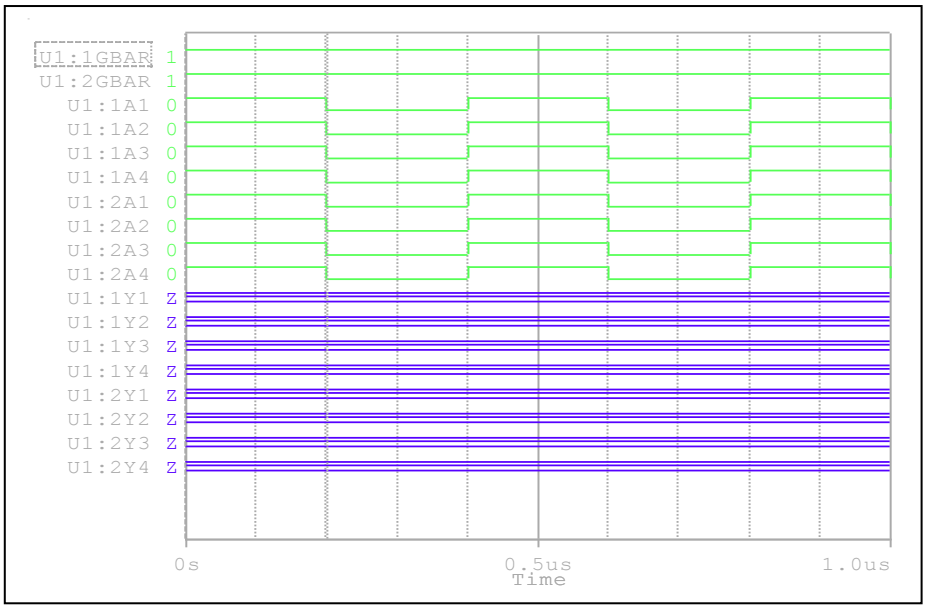


Comparison table

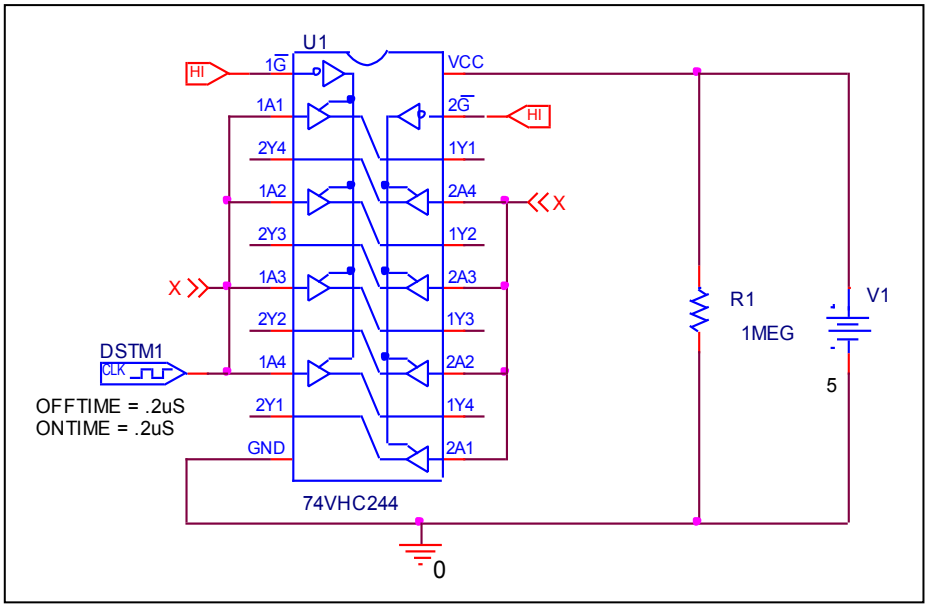
Input		Output		%Error
$\overline{G}$	An	Yn (Measurement)	Yn (Simulation)	
L	**H**	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

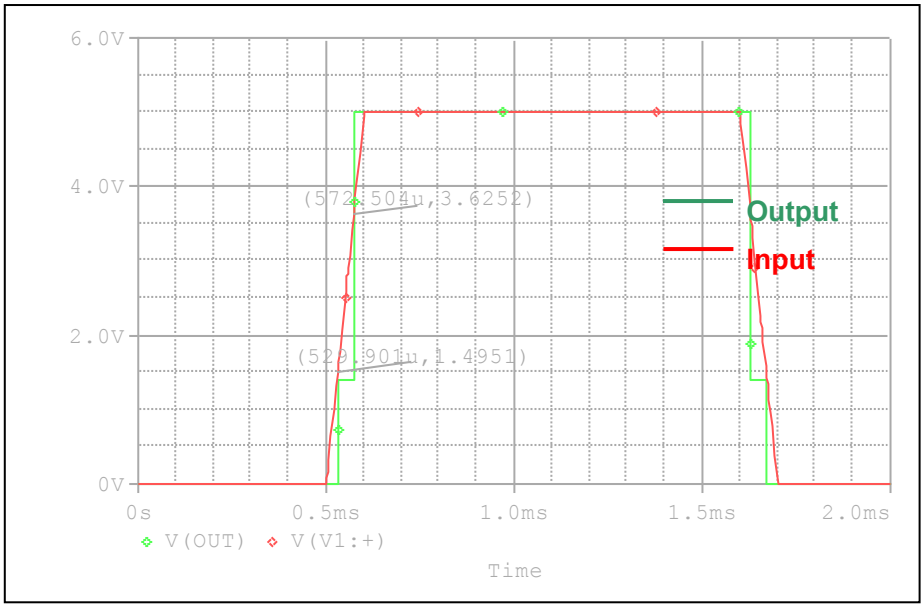


Comparison table

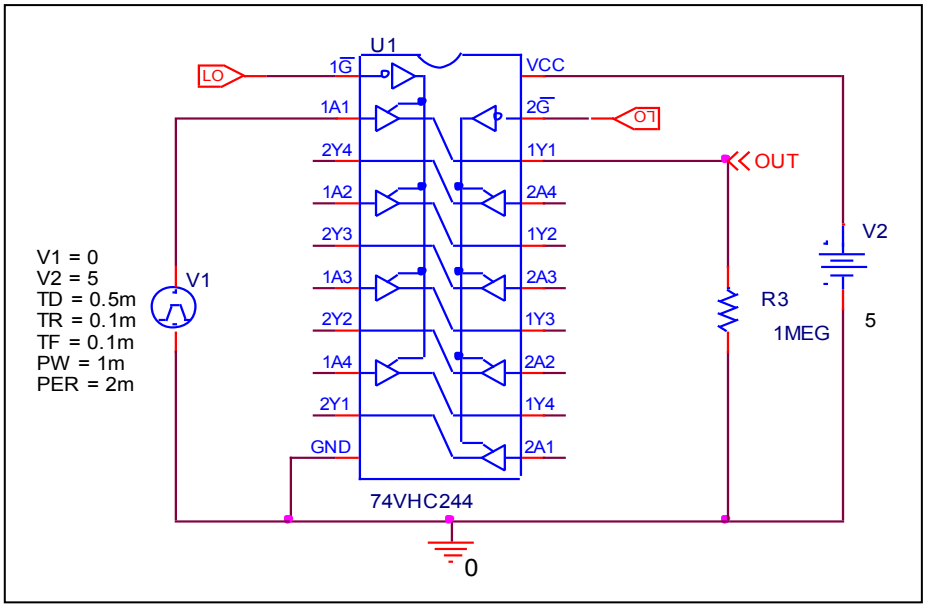
Input		Output		%Error
$\overline{G}$	An	Yn (Measurement)	Yn (Simulation)	
H	X	Z	Z	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

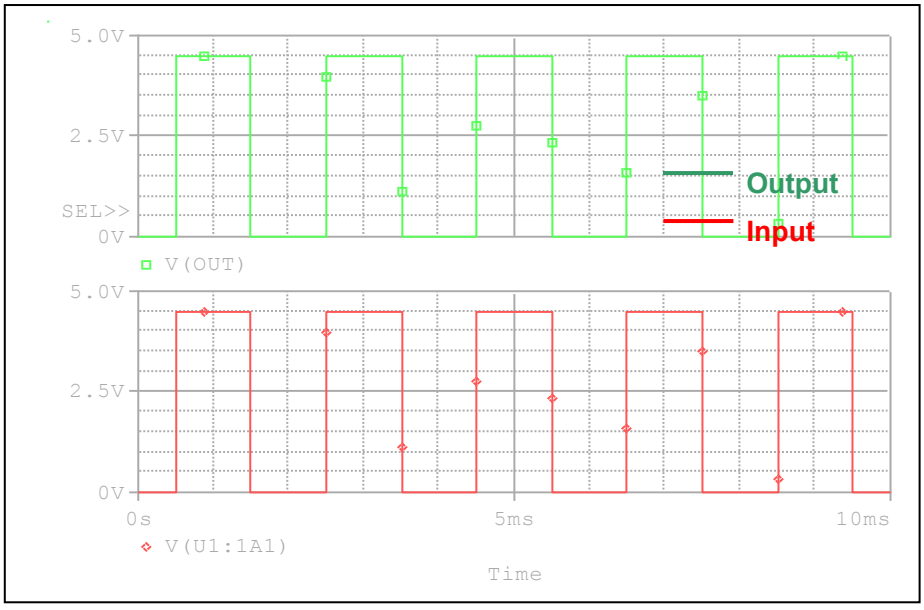


Comparison table

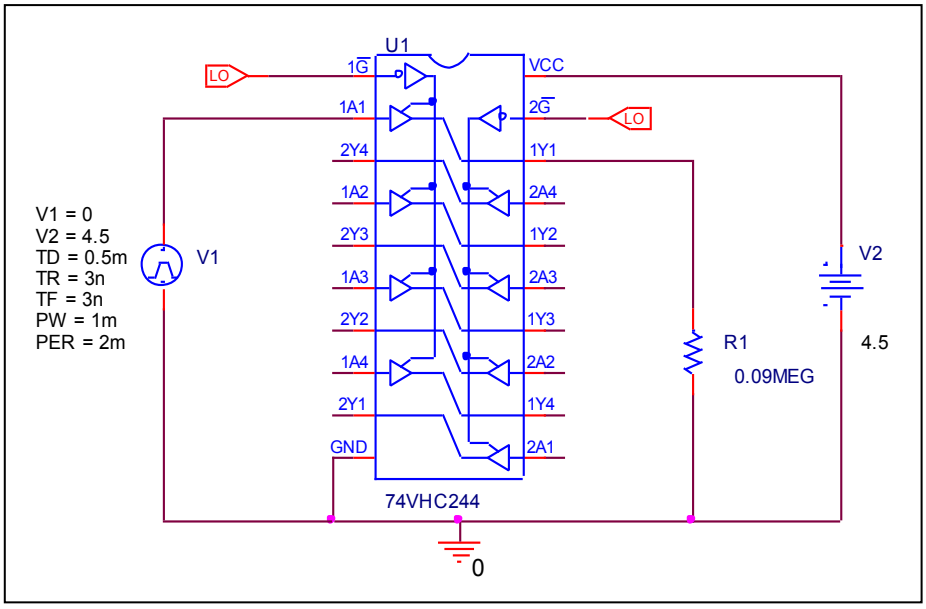
V_{CC} = 5 V	Measurement	Simulation	%Error
Min V_{IH} = (V_{CC}*0.7) V	3.5	3.6252	3.577
Min V_{IL} = (V_{CC}*0.3) V	1.5	1.4951	-0.327

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

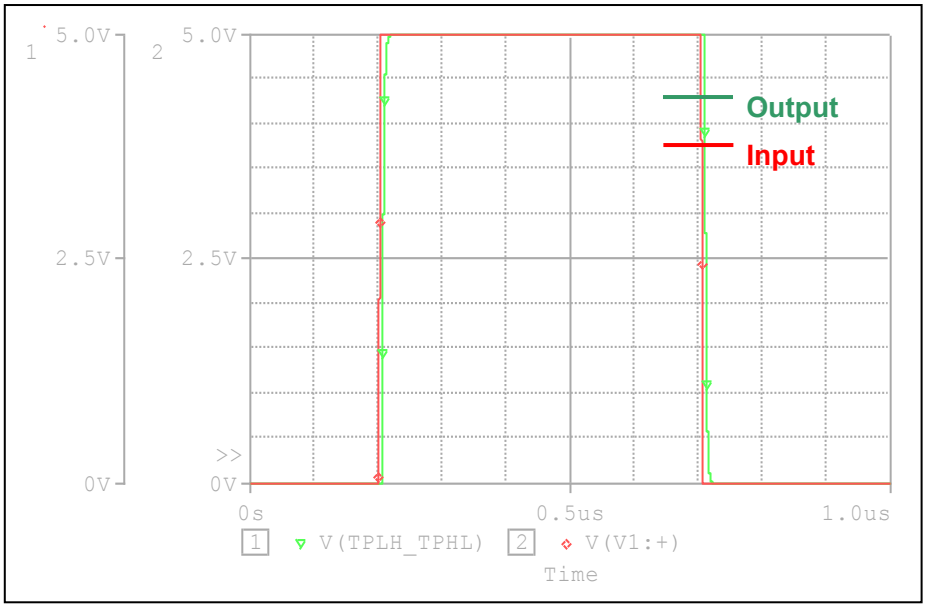


Comparison table

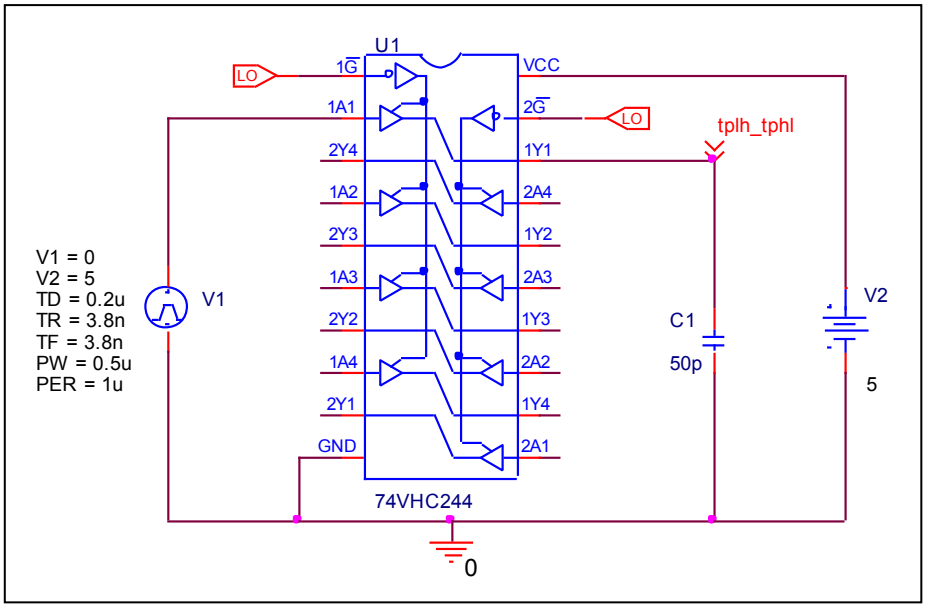
V_{CC} = 4.5V	Measurement	Simulation	%Error
V_{OH} (V)	4.5	4.4978	-0.049
V_{OL} (V)	0	0	0

Propagation Delay Time

Circuit simulation result



Evaluation circuit

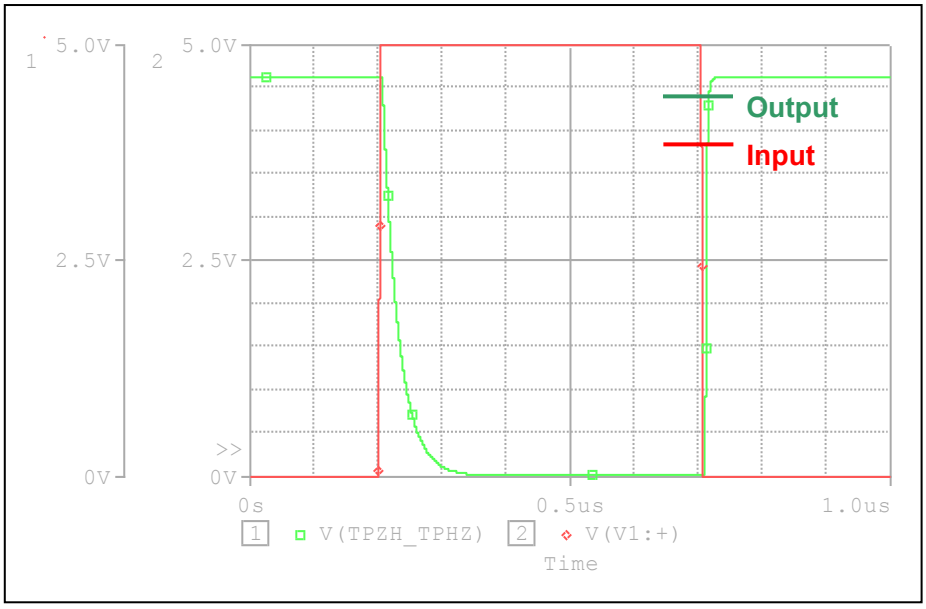


Comparison table C_L = 50 pF

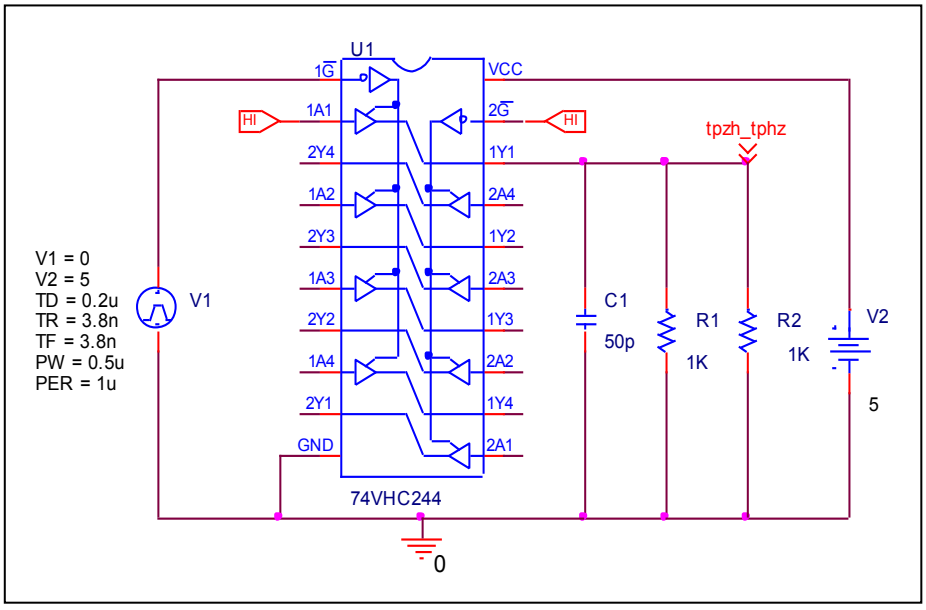
V_{CC} = 5 $Vt_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PLH} (ns)	5.4	5.4513	0.950
t_{PHL} (ns)	5.4	5.4677	1.254

Output enable time, high impedance (off) to high output (t_{PZH})
Output disable time, high to high impedance (off) output (t_{PHZ})

Circuit simulation result



Evaluation circuit

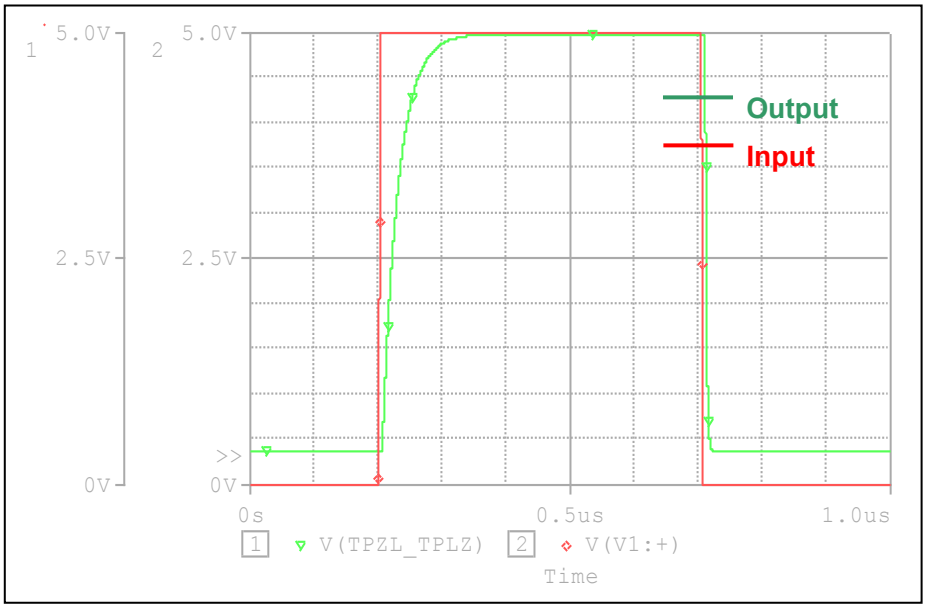


Comparison table C_L = 50 pF, R_L = 1 kΩ

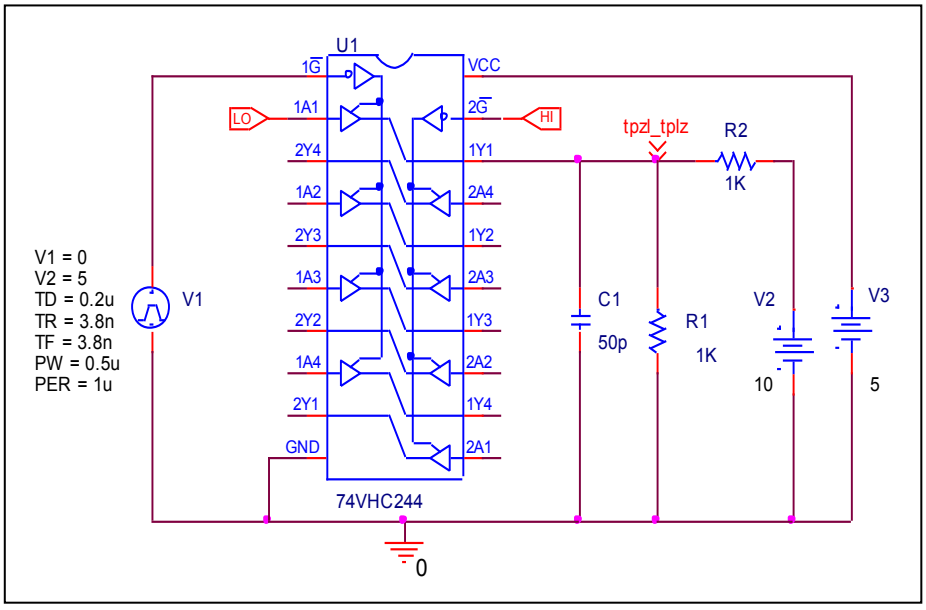
V_{CC} = 5 $Vt_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PZH} (ns)	6.2	6.2419	0.676
t_{PHZ} (ns)	6.7	6.7540	0.806

Output enable time, high impedance (off) to low output (t_{PZL})
Output disable time, low to high impedance (off) output (t_{PLZ})

Circuit simulation result



Evaluation circuit



Comparison table C_L = 50 pF, R_L = 1 kΩ

V_{CC} = 5 $Vt_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PZL} (ns)	6.2	6.2156	0.252
t_{PLZ} (ns)	6.7	6.7531	0.793