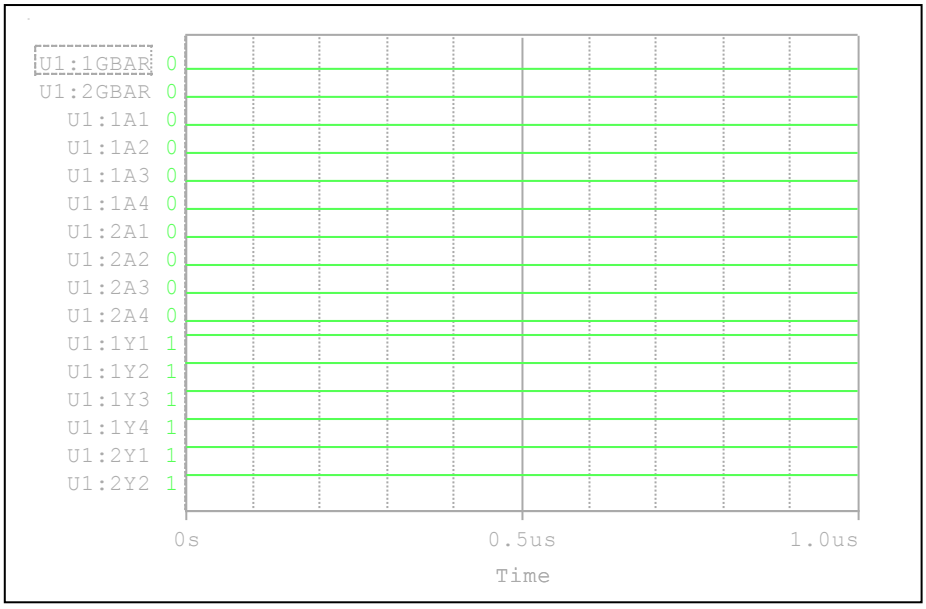
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74ACT240FT
MANUFACTURER : TOSHIBA

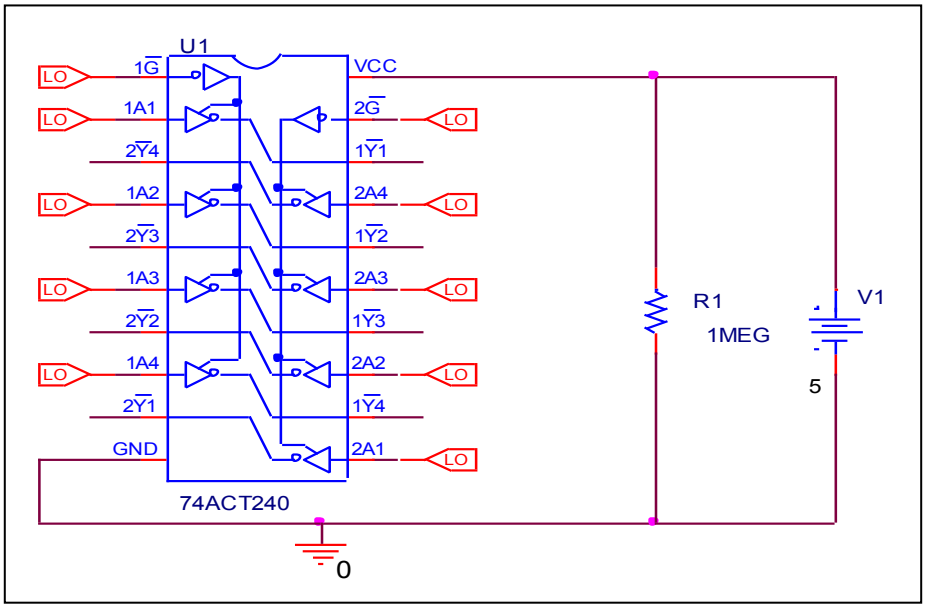
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

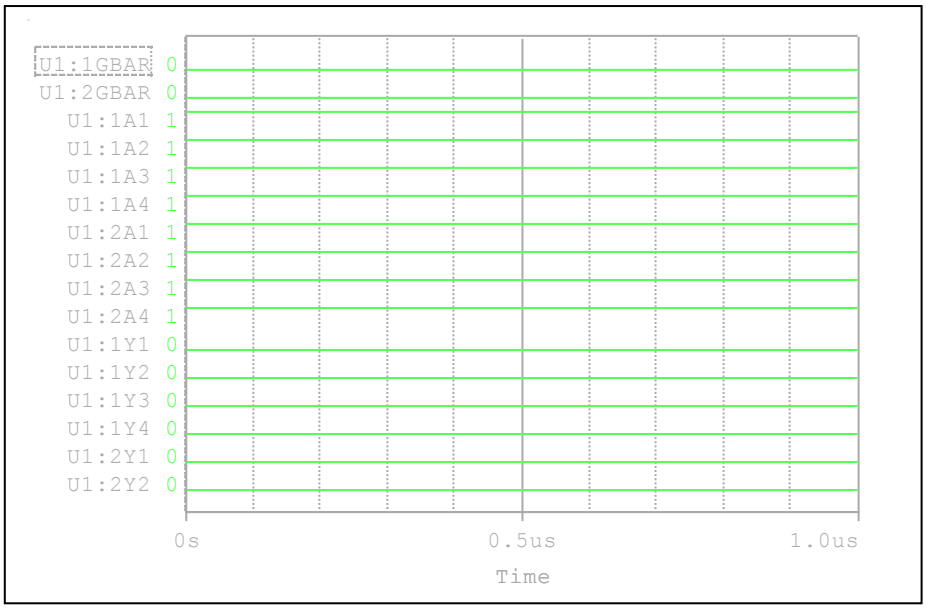


Comparison table

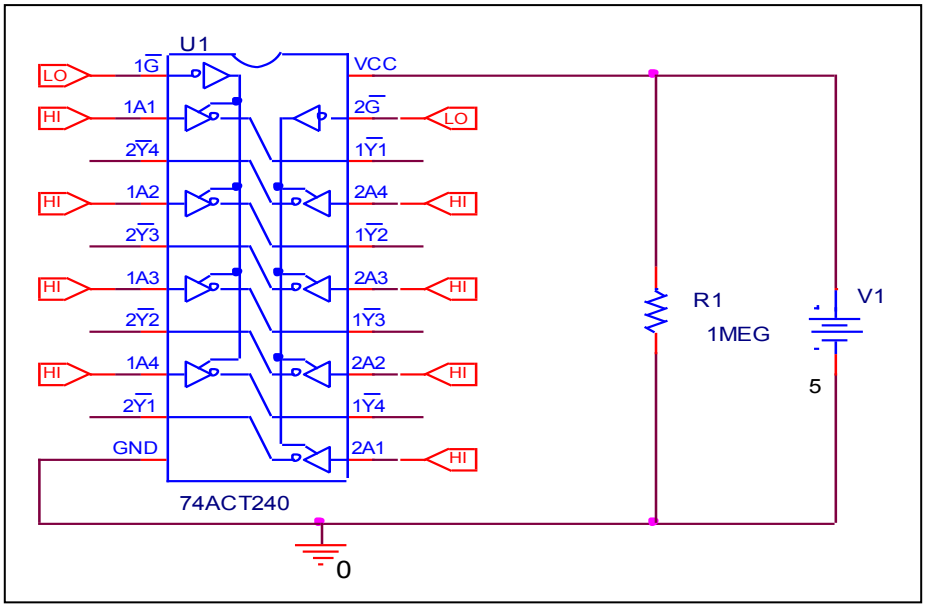
Input		Output		%Error
$\overline{G}$	An	$\overline{Y}n$ (Measurement)	$\overline{Y}n$ (Simulation)	
L	L	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

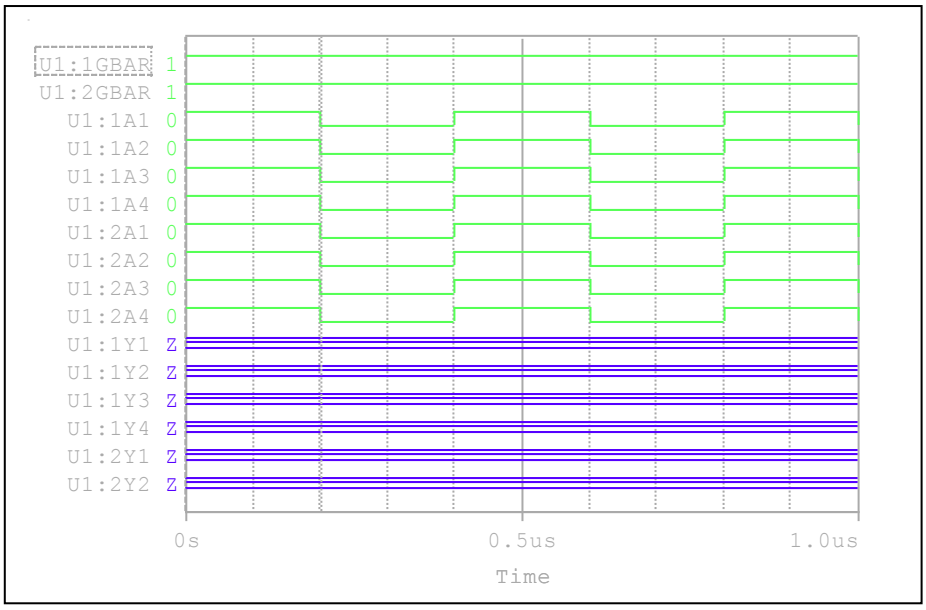


Comparison table

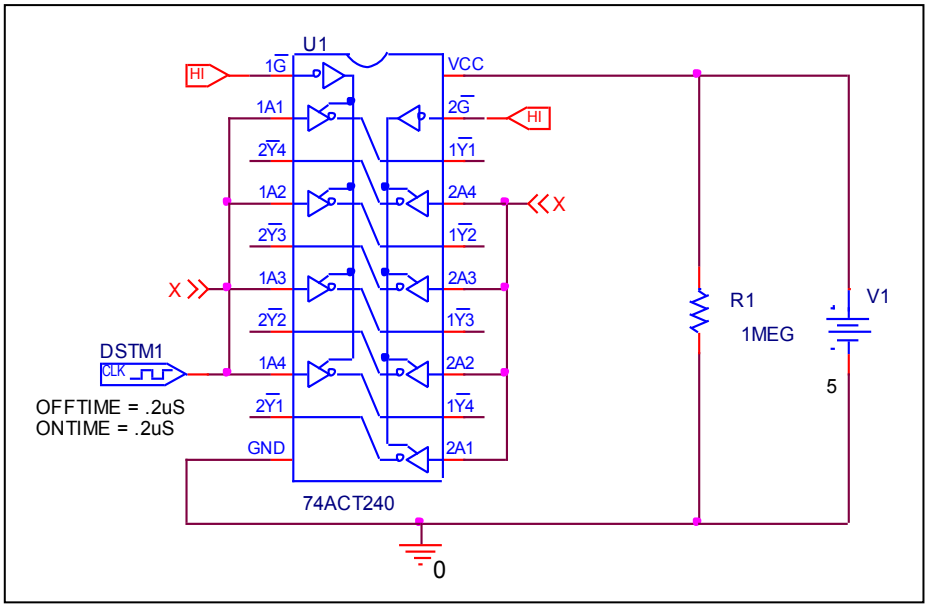
Input		Output		%Error
$\overline{G}$	An	$\overline{Y}n$ (Measurement)	$\overline{Y}n$ (Simulation)	
L	H	L	L	0

Truth Table

Circuit simulation result



Evaluation circuit

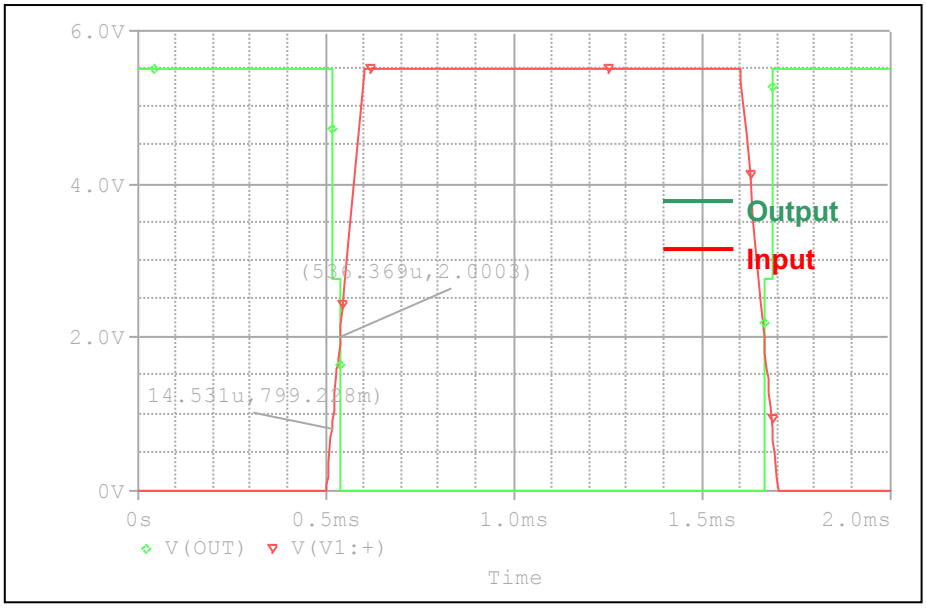


Comparison table

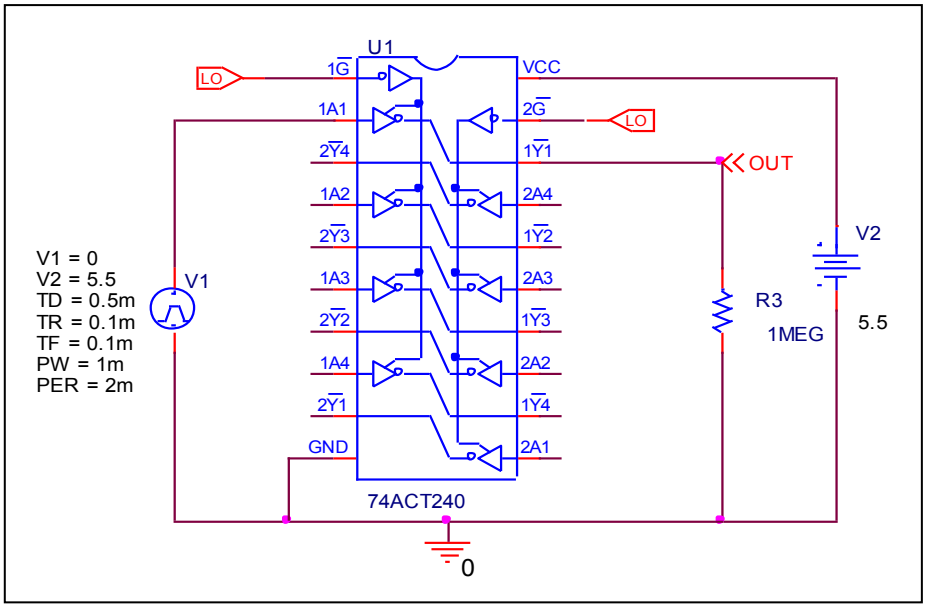
Input		Output		%Error
$\overline{G}$	An	$\overline{Yn}$ (Measurement)	$\overline{Yn}$ (Simulation)	
H	X	Z	Z	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

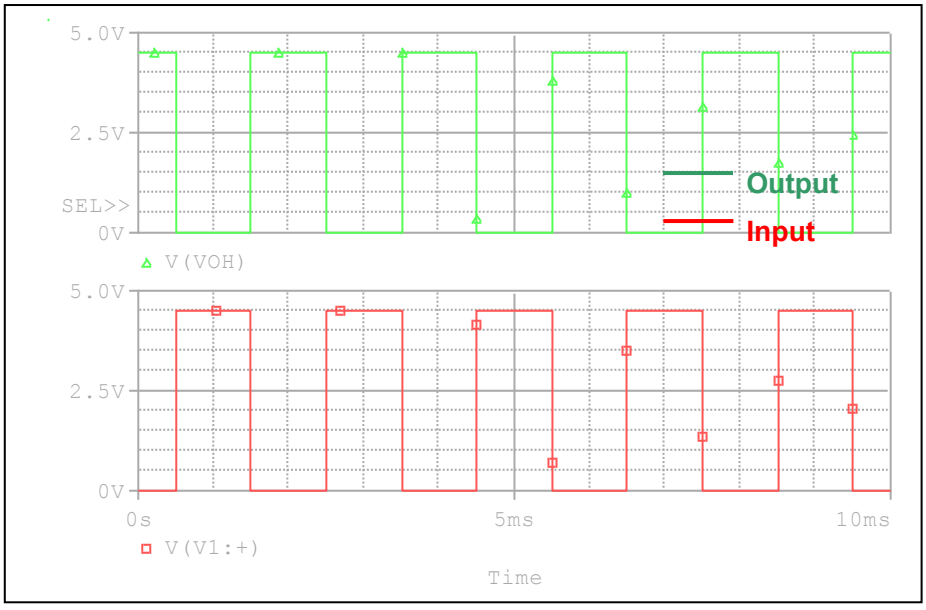


Comparison table

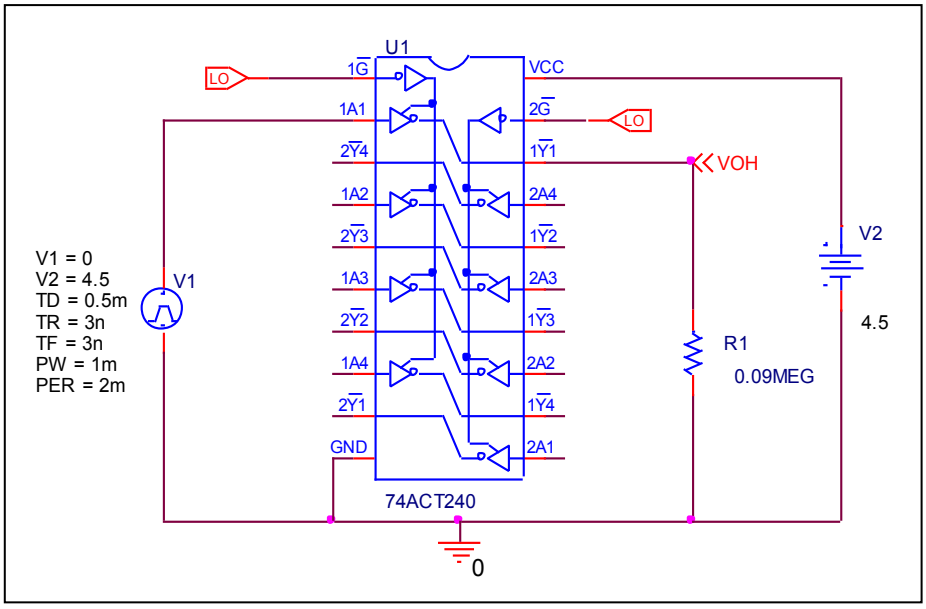
V_{CC} = 5V	Measurement	Simulation	%Error
V_{IH} (V)	2	2.0003	0.015
V_{IL} (V)	0.8	0.799228	-0.096

High Level and Low Level Output Voltage

Circuit simulation result



Evaluation circuit

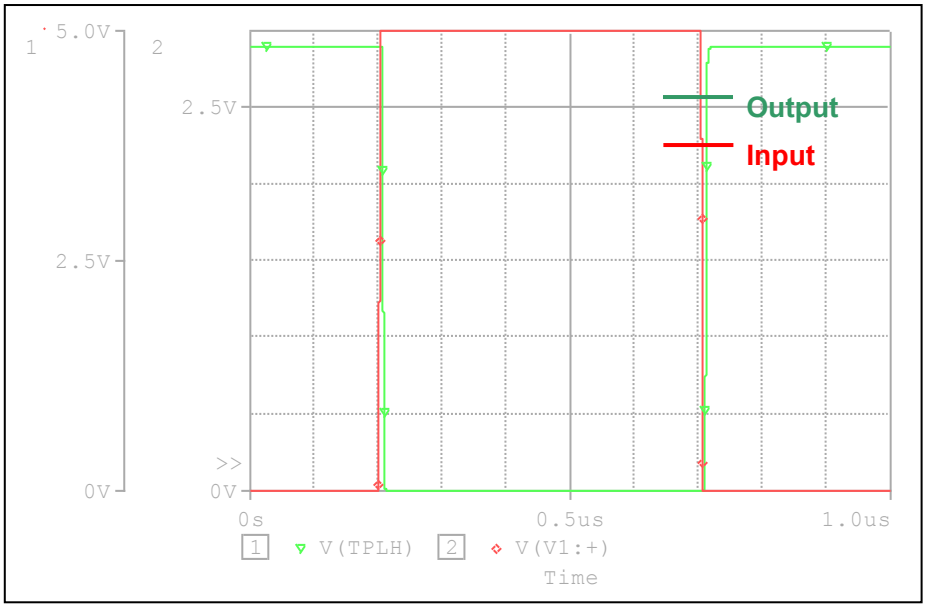


Comparison table

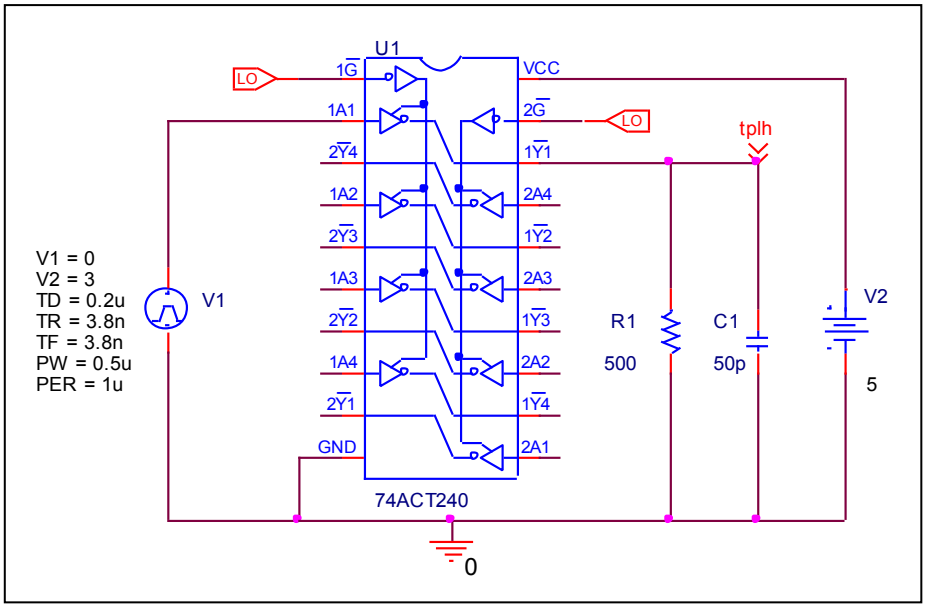
V_{CC} = 4.5V	Measurement	Simulation	%Error
V_{OH} (V)	4.5	4.499	-0.022
V_{OL} (V)	0	0	0

Propagation Delay Time

Circuit simulation result



Evaluation circuit

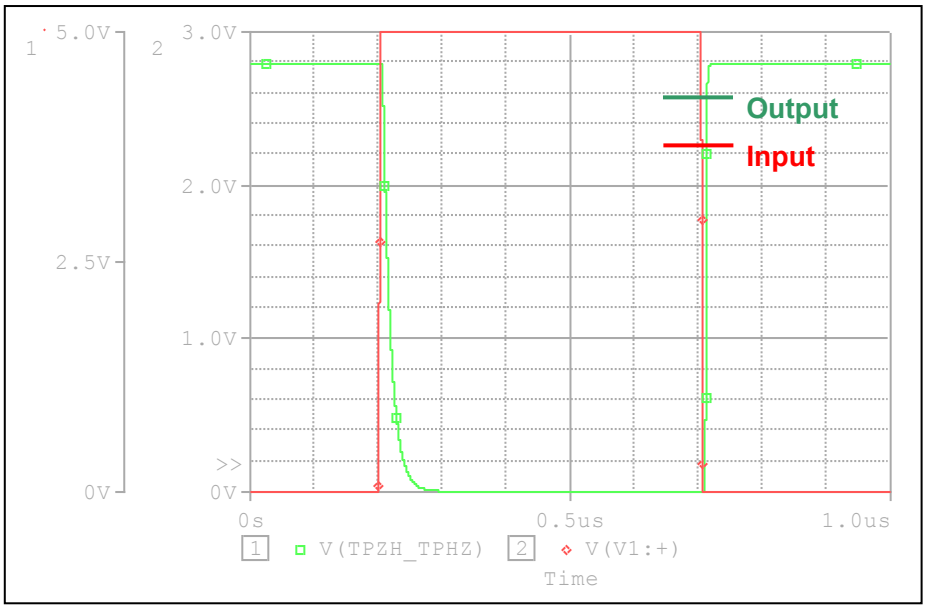


Comparison table C_L = 50 pF, R_L = 500 Ω

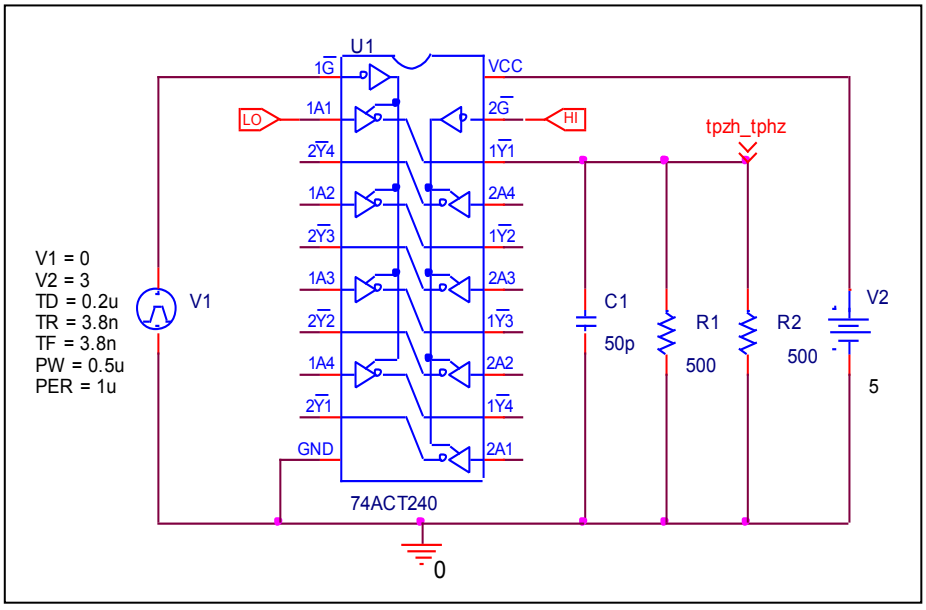
$t_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PLH} (ns)	5.7	5.7389	0.682
t_{PHL} (ns)	5.7	5.7455	0.798

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

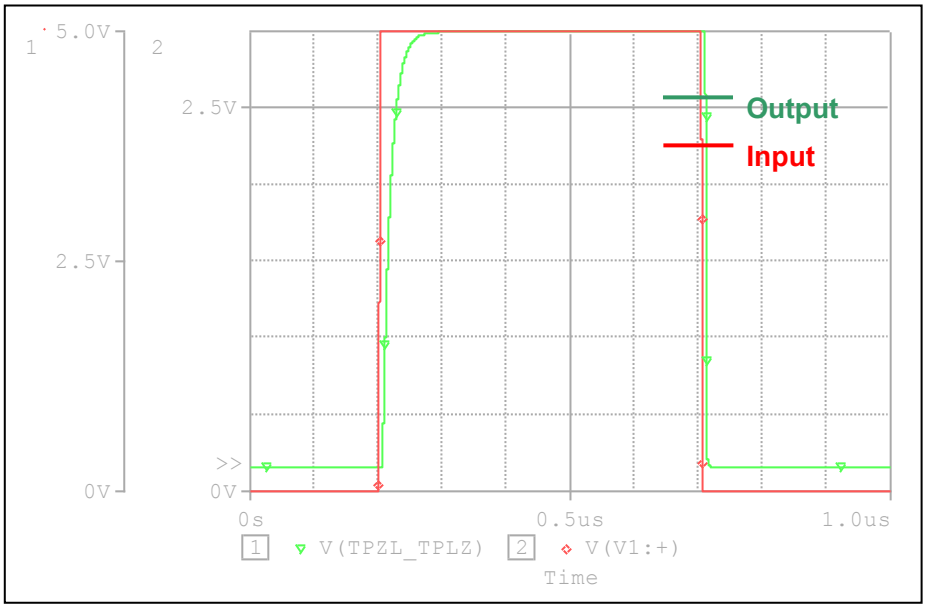


Comparison table C_L = 50 pF, R_L = 500 Ω

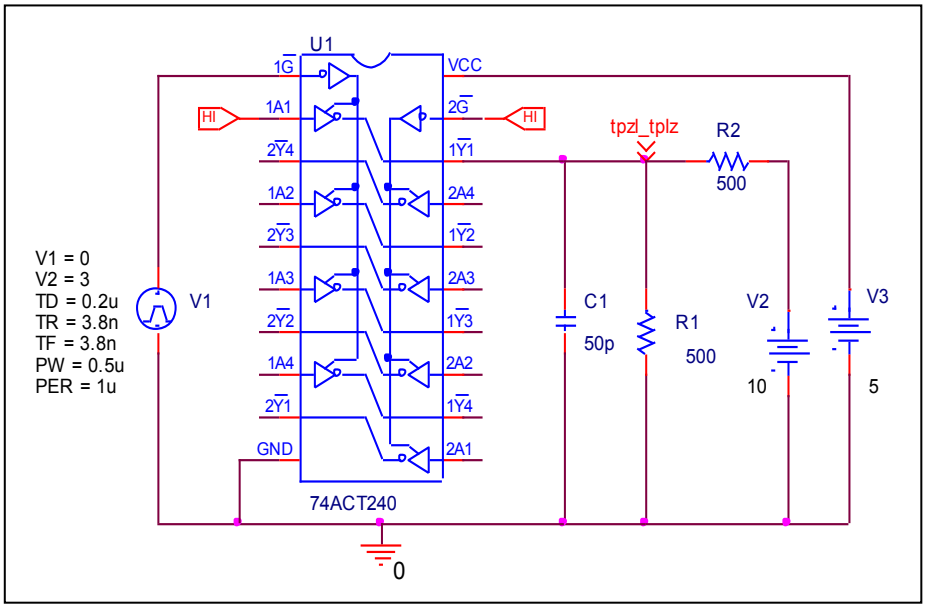
$t_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PZH} (ns)	6	6.0192	0.320
t_{PHZ} (ns)	5.9	5.9315	0.534

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 = 500 Ω

$t_r = t_f$ =3 ns	Measurement	Simulation	%Error
t_{PZL} (ns)	6	5.9927	-0.122
t_{PLZ} (ns)	5.9	5.9248	0.420