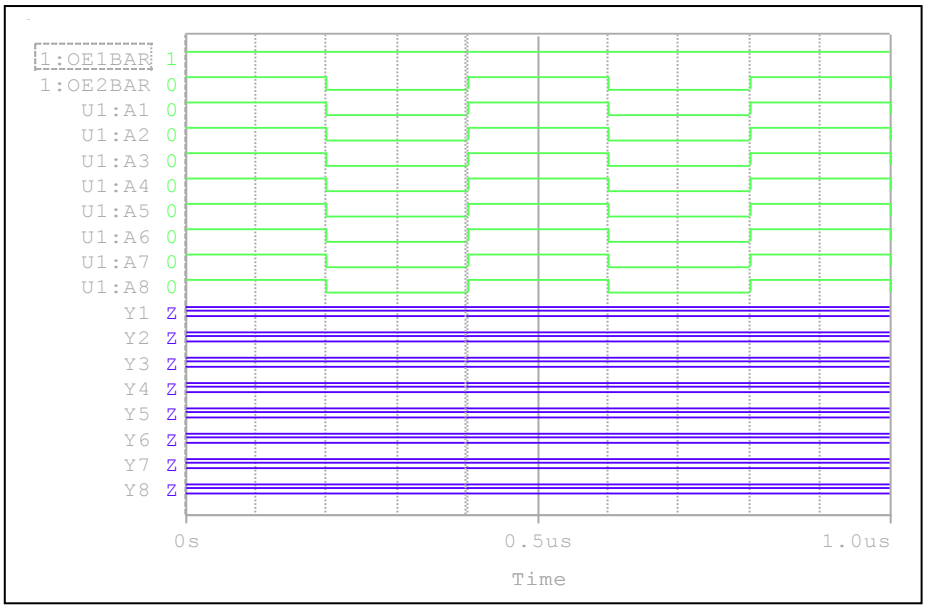
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC74LCX541FW
MANUFACTURER : TOSHIBA

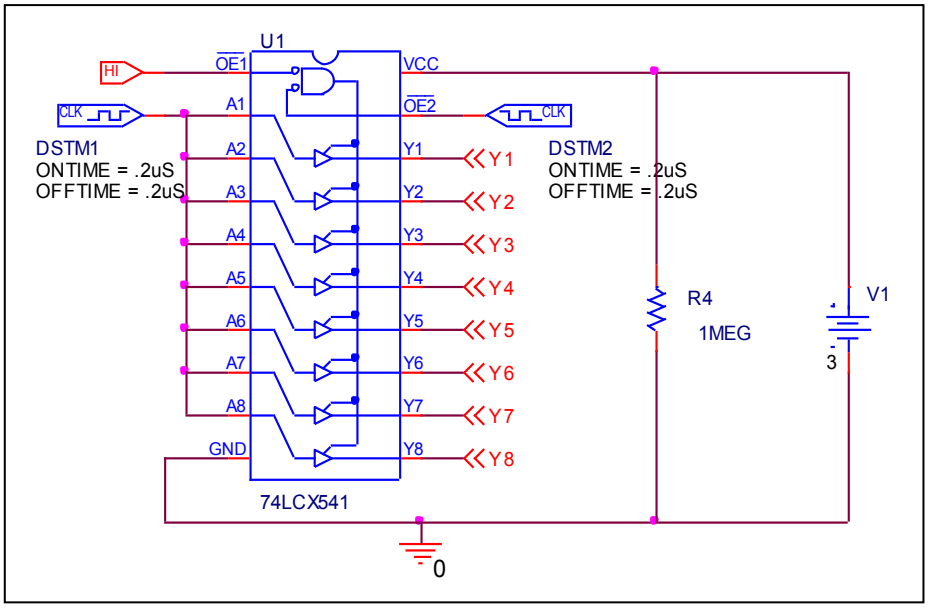
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

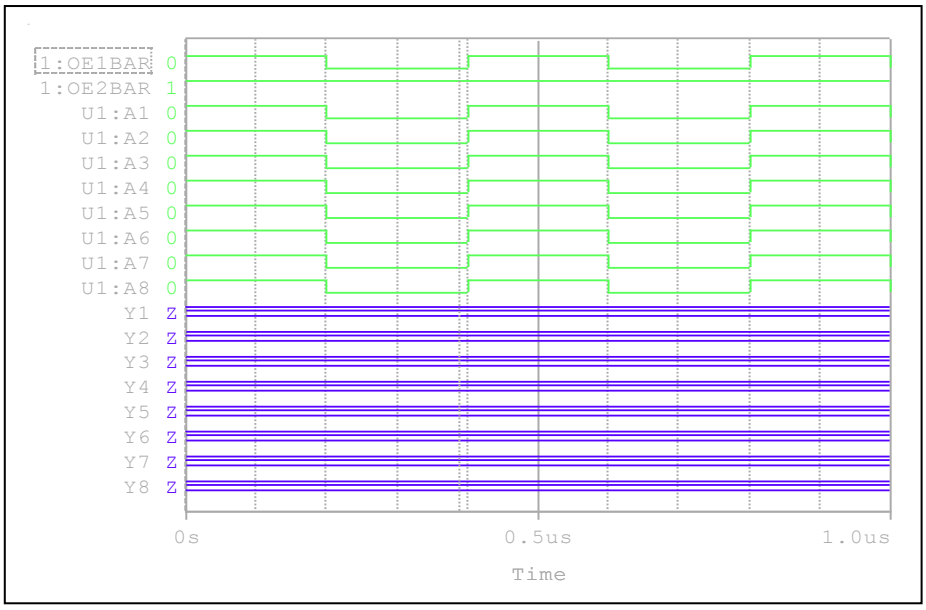


Comparison table

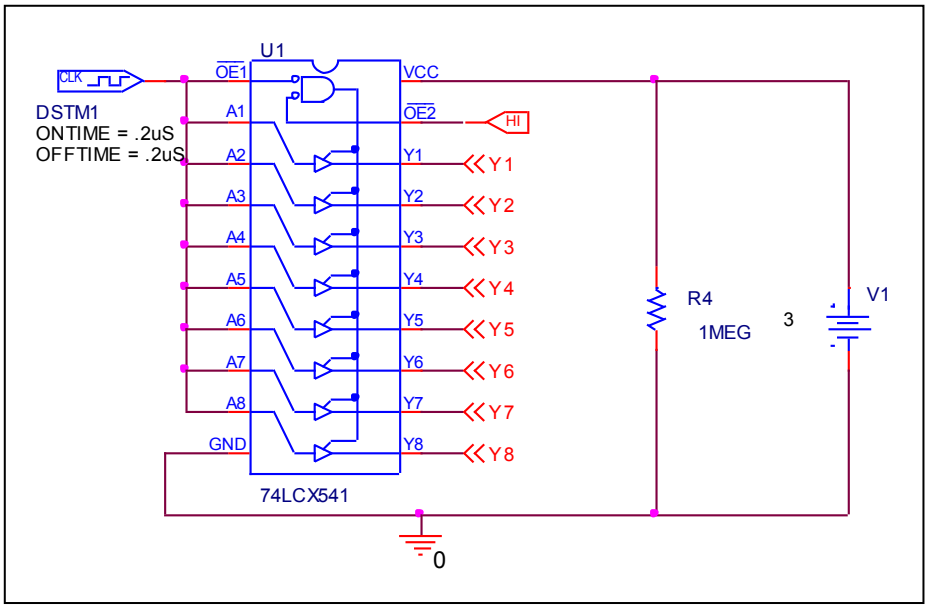
Input			Output		%Error
$\overline{OE1}$	$\overline{OE2}$	An	Yn (Measurement)	Yn (Simulation)	
H	X	X	Z	Z	0

Truth Table

Circuit simulation result



Evaluation circuit

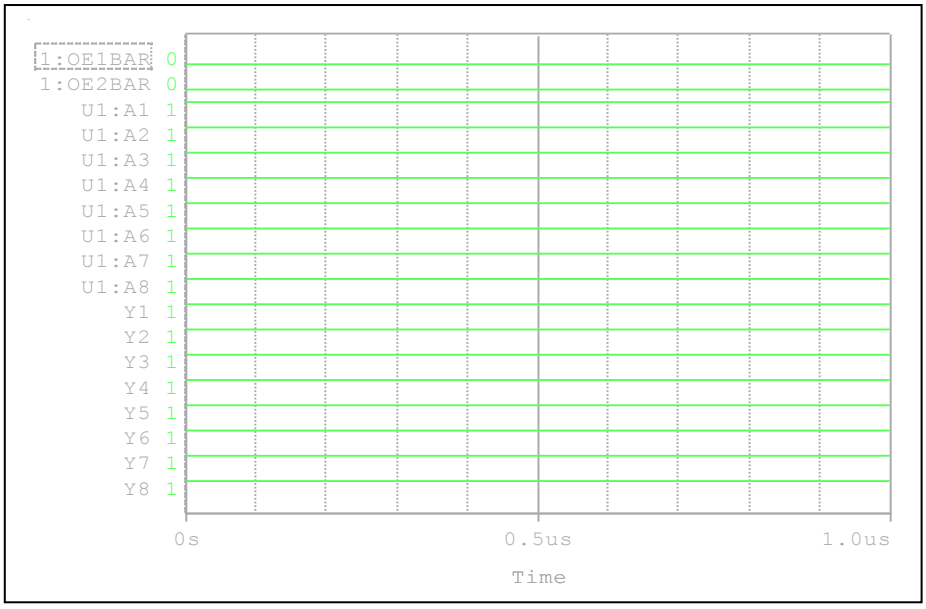


Comparison table

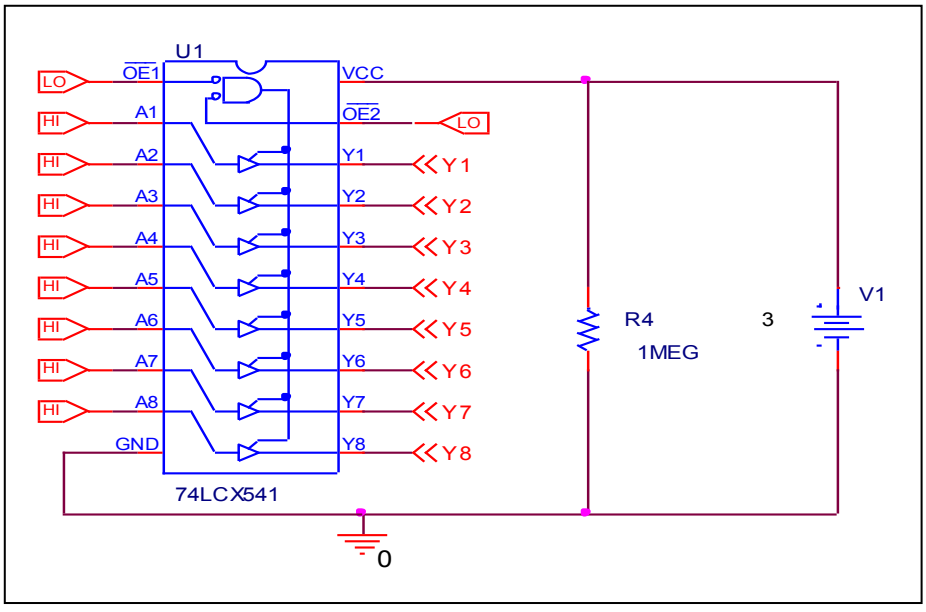
Input			Output		%Error
$\overline{OE1}$	$\overline{OE2}$	An	Yn (Measurement)	Yn (Simulation)	
X	H	X	Z	Z	0

Truth Table

Circuit simulation result



Evaluation circuit

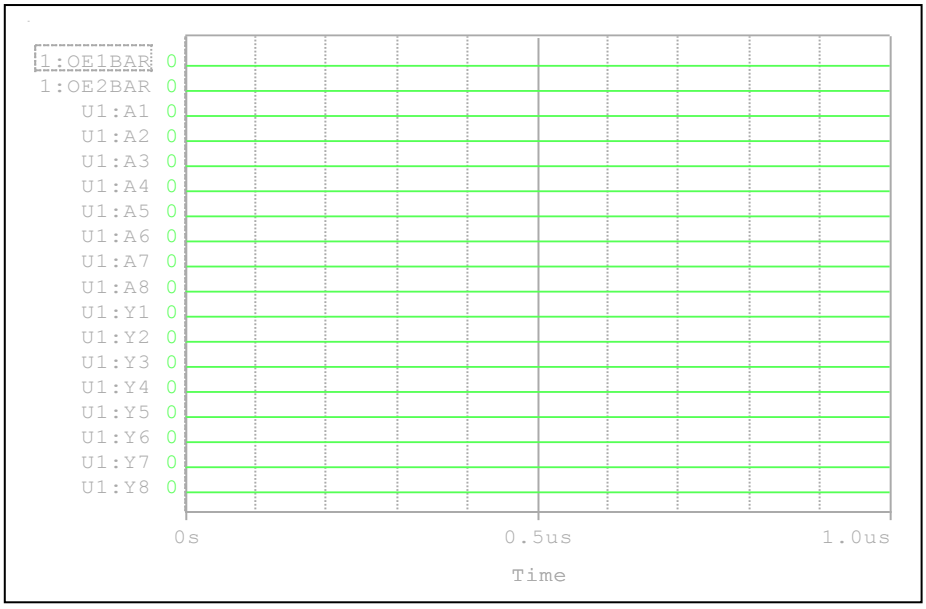


Comparison table

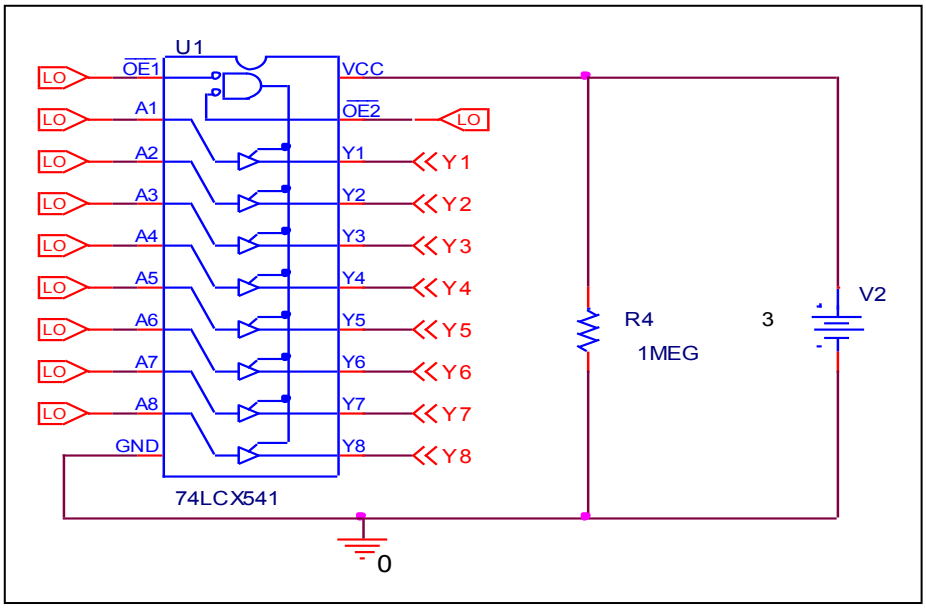
Input			Output		%Error
$\overline{OE1}$	$\overline{OE2}$	An	Yn (Measurement)	Yn (Simulation)	
L	L	H	H	H	0

Truth Table

Circuit simulation result



Evaluation circuit

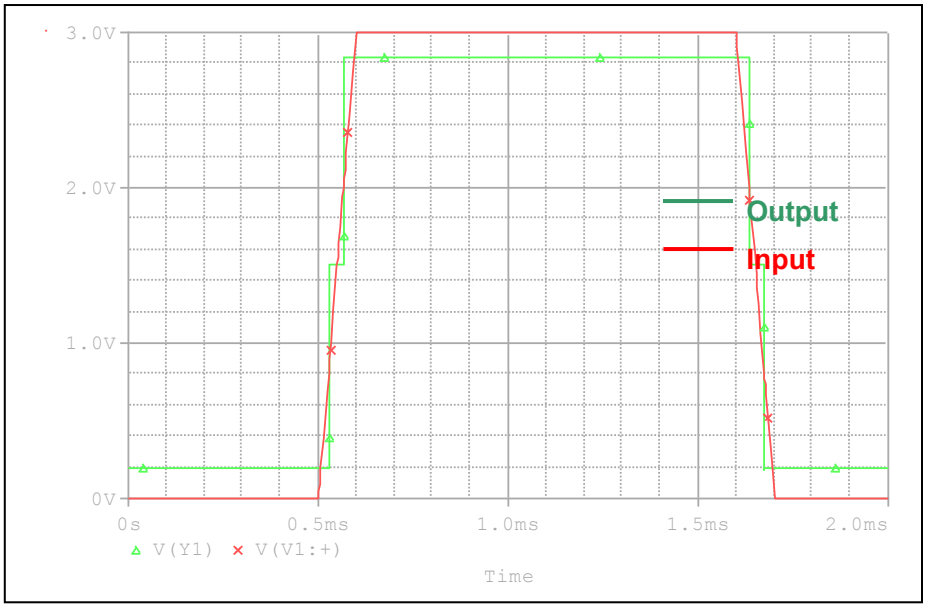


Comparison table

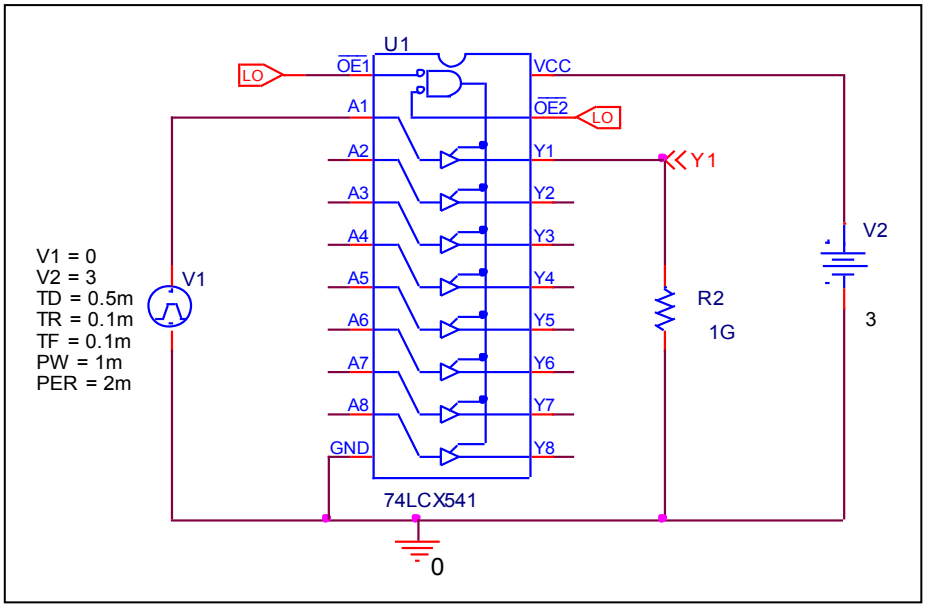
Input			Output		%Error
$\overline{OE1}$	$\overline{OE2}$	An	Yn (Measurement)	Yn (Simulation)	
L	L	L	L	L	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

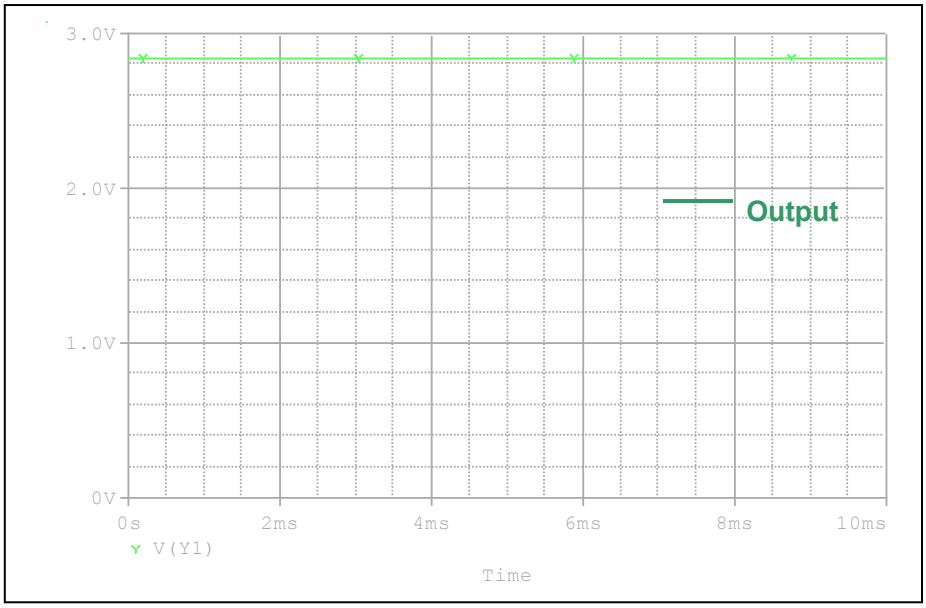


Comparison table

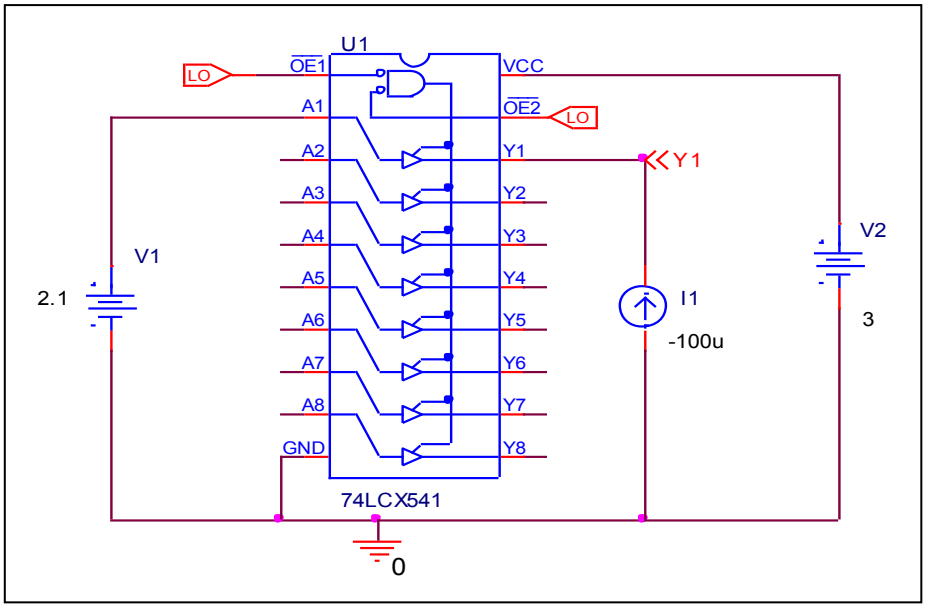
V_{CC} = 3V	Measurement	Simulation	%Error
V_{IH} (V)	2	2	0
V_{IL} (V)	0.8	0.799173	-0.103

High Level Output Voltage

Circuit simulation result



Evaluation circuit

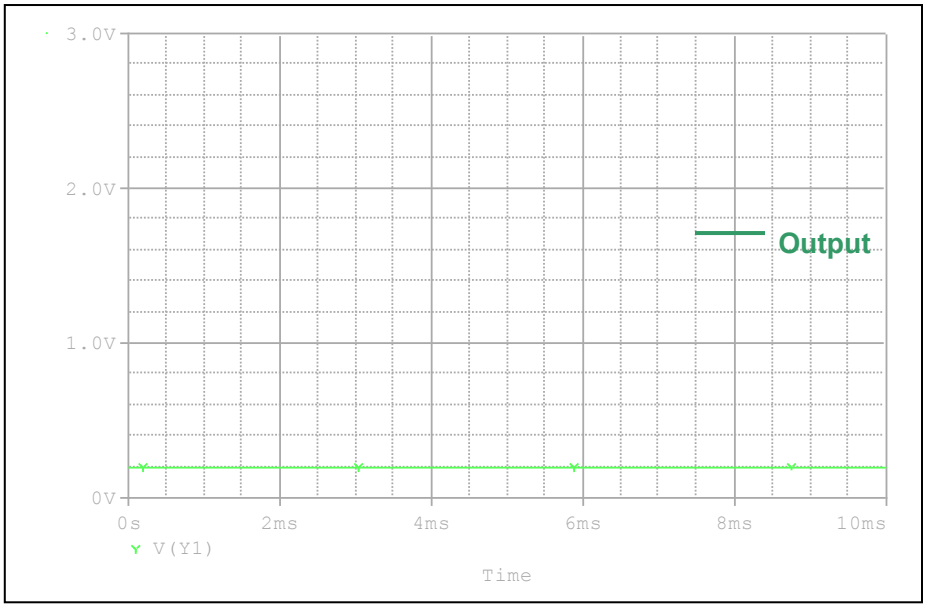


Comparison table

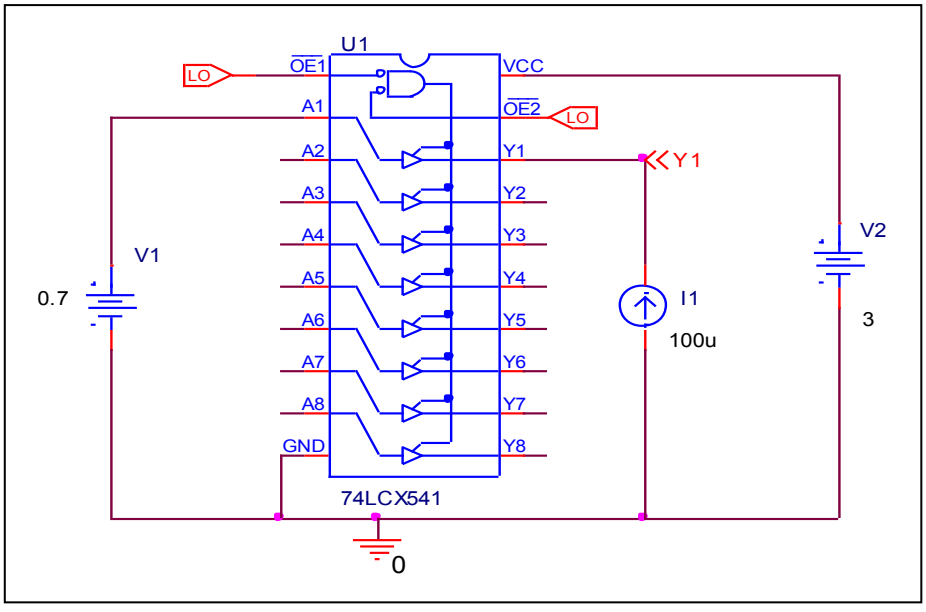
$V_{IN} = V_{IH}$, V_{CC} = 3 V	Measurement	Simulation	%Error
Min V_{OH} = (V_{CC} - 0.2) V	2.8	2.8340	1.214

Low Level Output Voltage

Circuit simulation result



Evaluation circuit

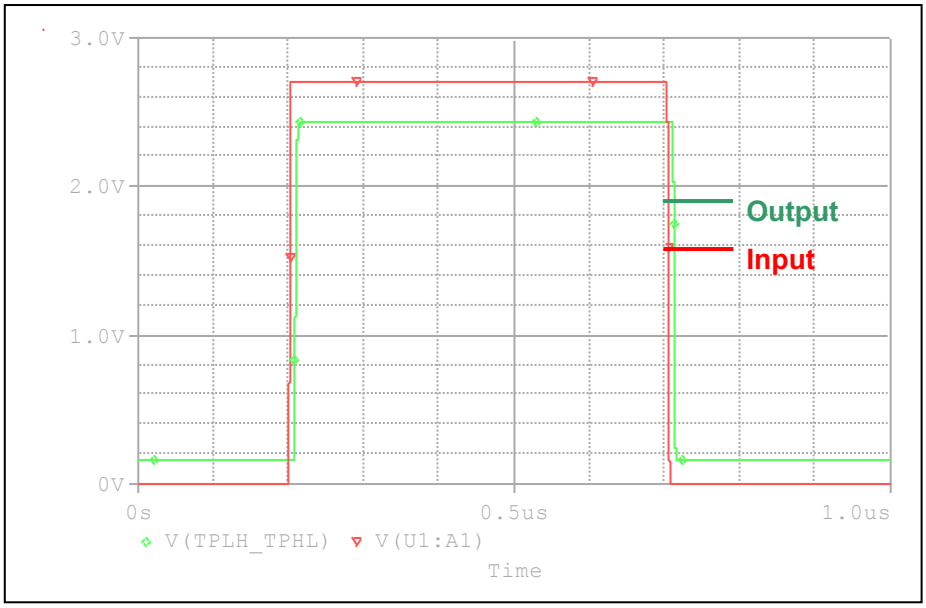


Comparison table

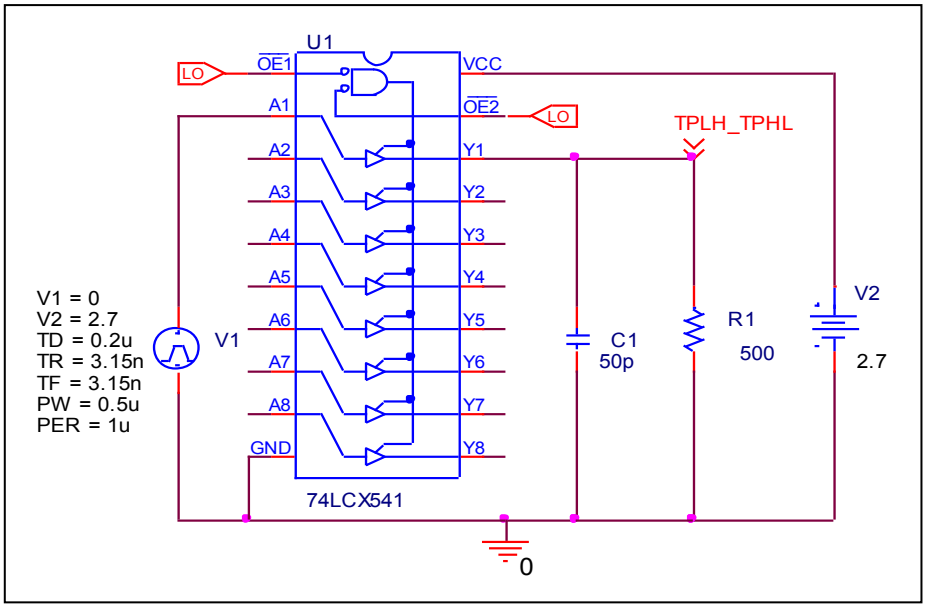
$V_{IN} = V_{IL}$, V_{CC} = 3 V	Measurement	Simulation	%Error
V_{OL} (V)	0.2	0.191208	-4.396

Propagation Delay Time

Circuit simulation result



Evaluation circuit

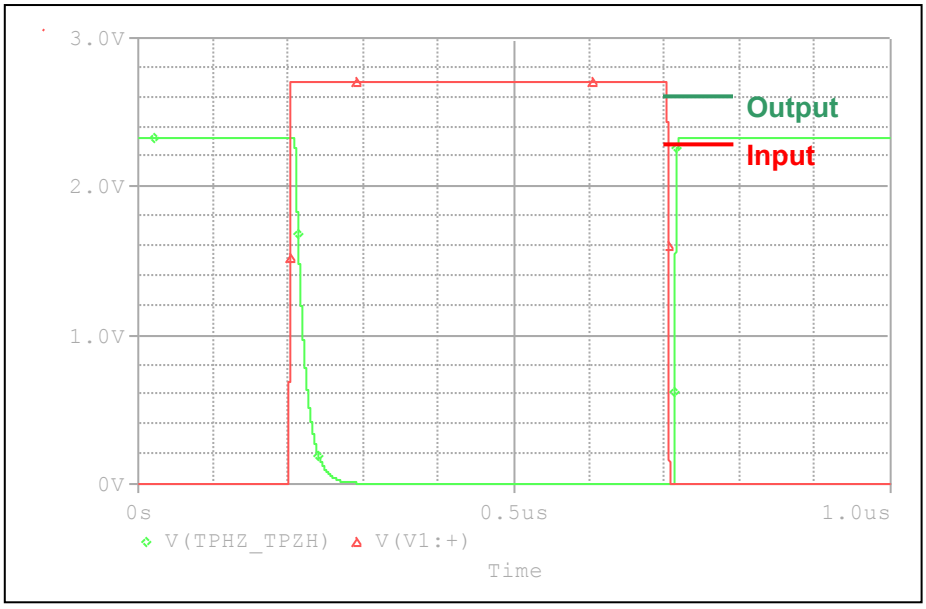


Comparison table C_L = 50 pF, R_L = 500 Ω

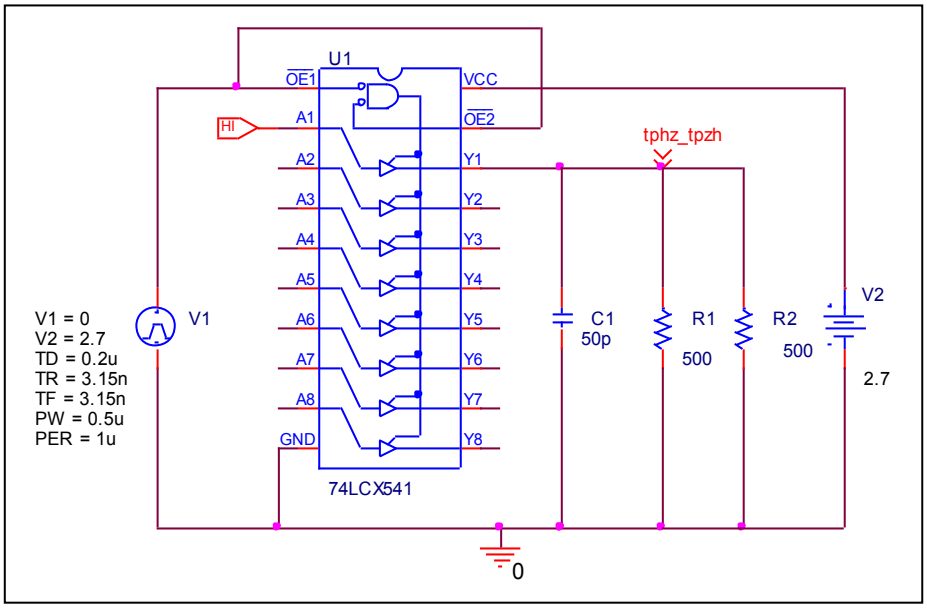
V_{CC} = 2.7 V, t_r=t_f= 2.5 ns	Measurement	Simulation	%Error
t_{pLH} (ns)	7.5	7.4215	-1.047
t_{pHL} (ns)	7.5	7.4696	-0.405

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

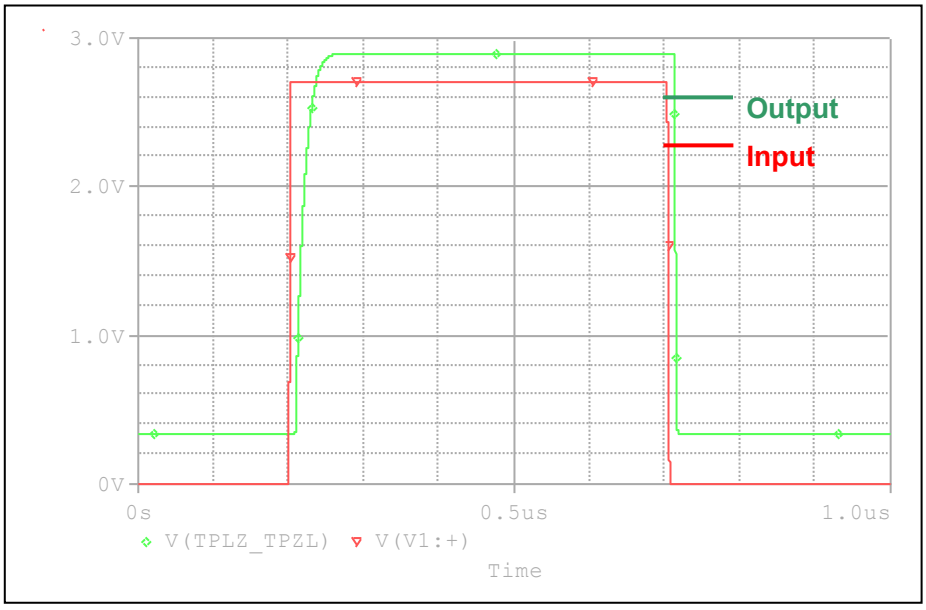


Comparison table C_L = 50 pF, R_L = 500 Ω

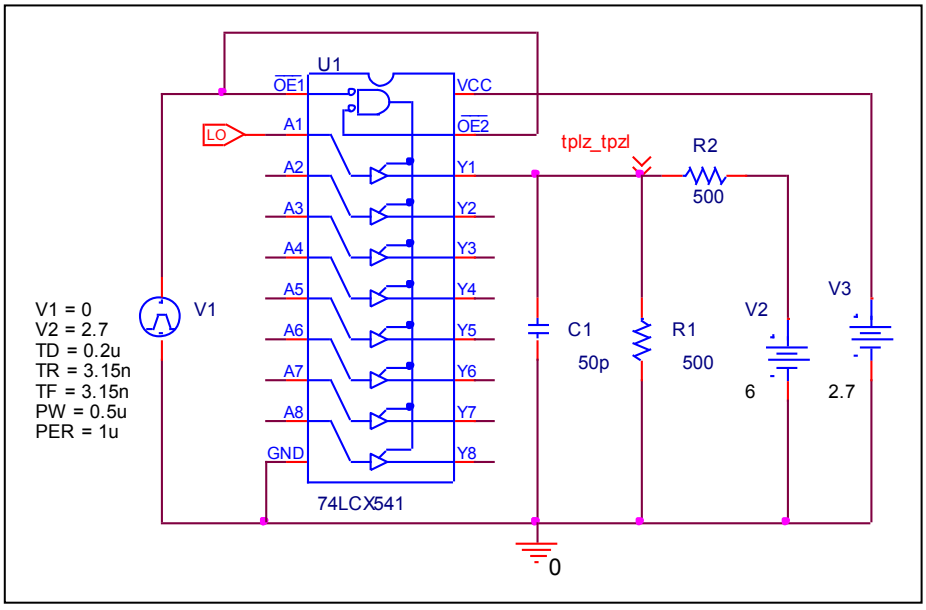
V_{CC} = 2.7 V, t_r=t_f= 2.5 ns	Measurement	Simulation	%Error
t_{PHZ} (ns)	8.5	8.3687	-1.545
t_{pZH} (ns)	9.5	9.4711	-0.304

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

V_{CC} = 2.7 V, t_r=t_f= 2.5 ns	Measurement	Simulation	%Error
t_{PLZ} (ns)	8.5	8.4395	-0.712
t_{pZL} (ns)	9.5	9.583	0.874