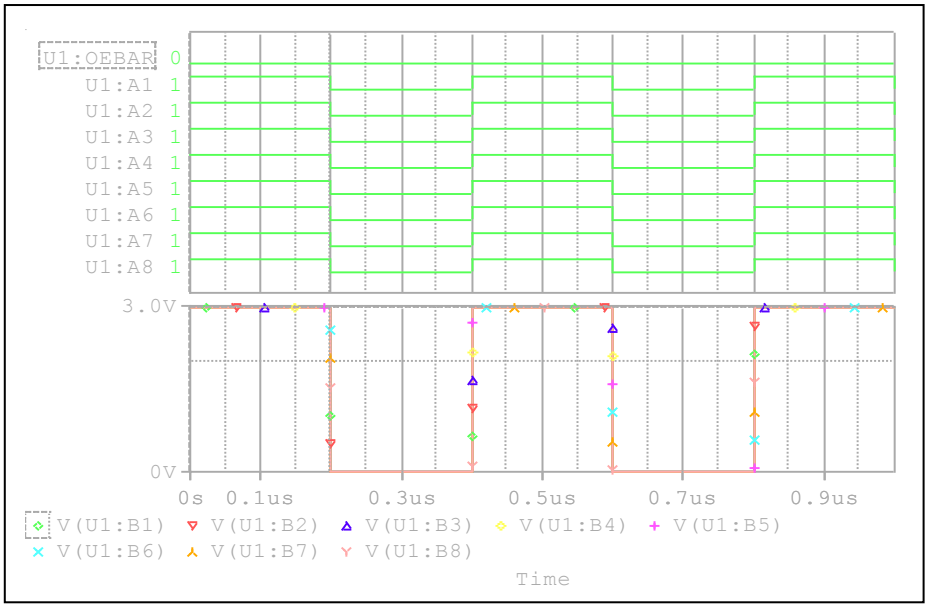
Device Modeling Report

COMPONENTS : CMOS DIGITAL INTEGRATED CIRCUIT
PART NUMBER : TC7MBD3245AFK
MANUFACTURER : TOSHIBA

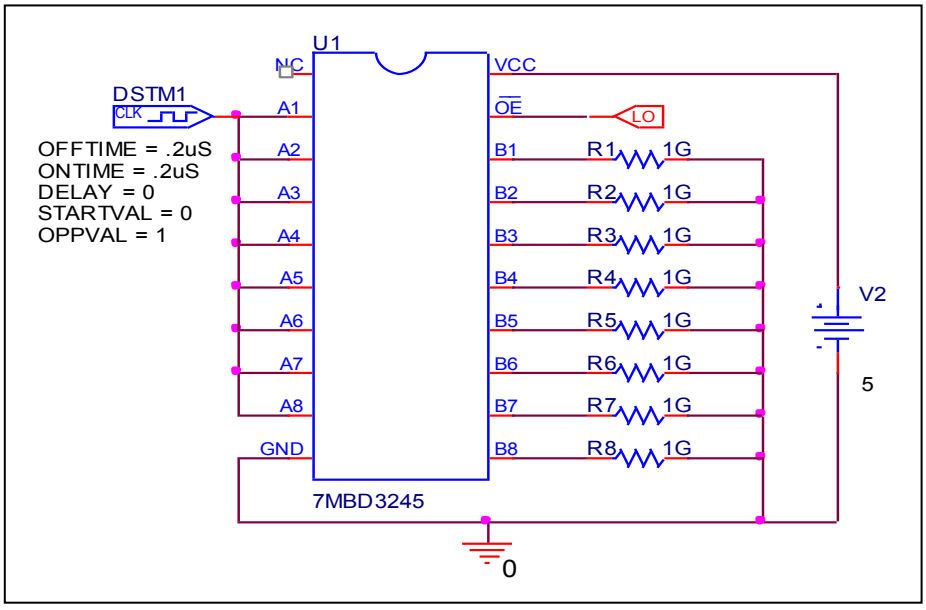
Bee Technologies Inc.

Truth Table

Circuit simulation result



Evaluation circuit

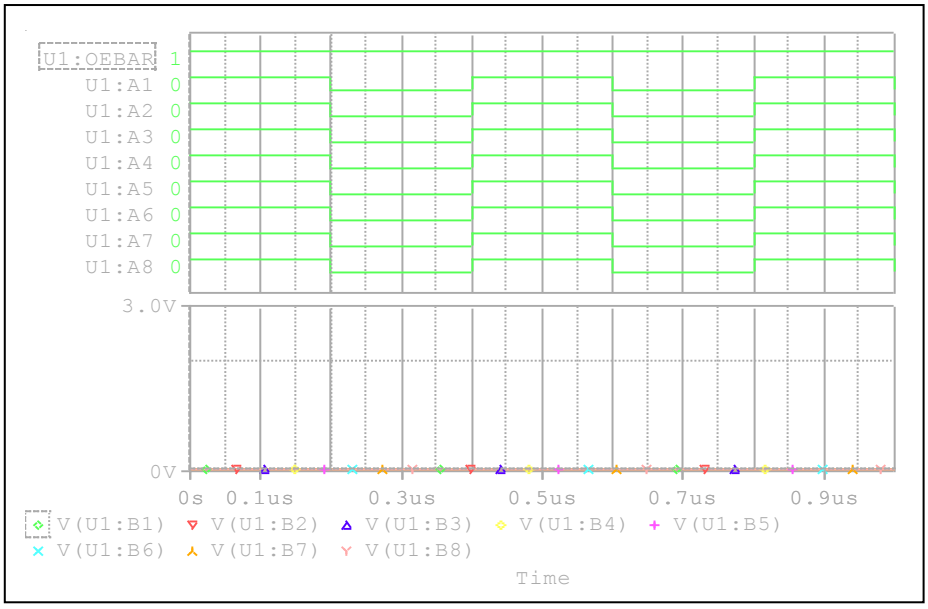


Comparison table **Function : A port = B port**

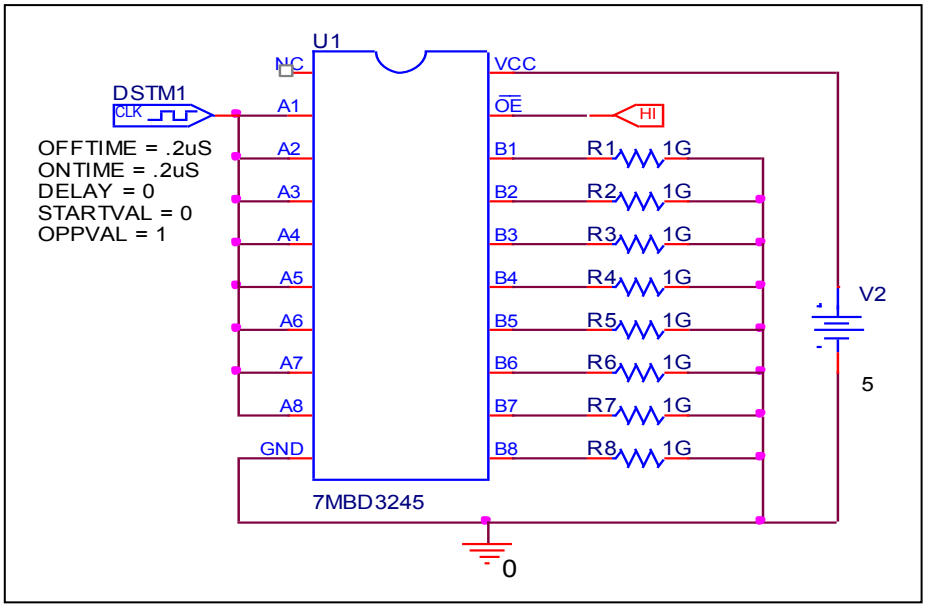
Input	Output		%Error
$\overline{OE}$	Measurement	Simulation	
L	A=B	A=B	0

Truth Table

Circuit simulation result



Evaluation circuit

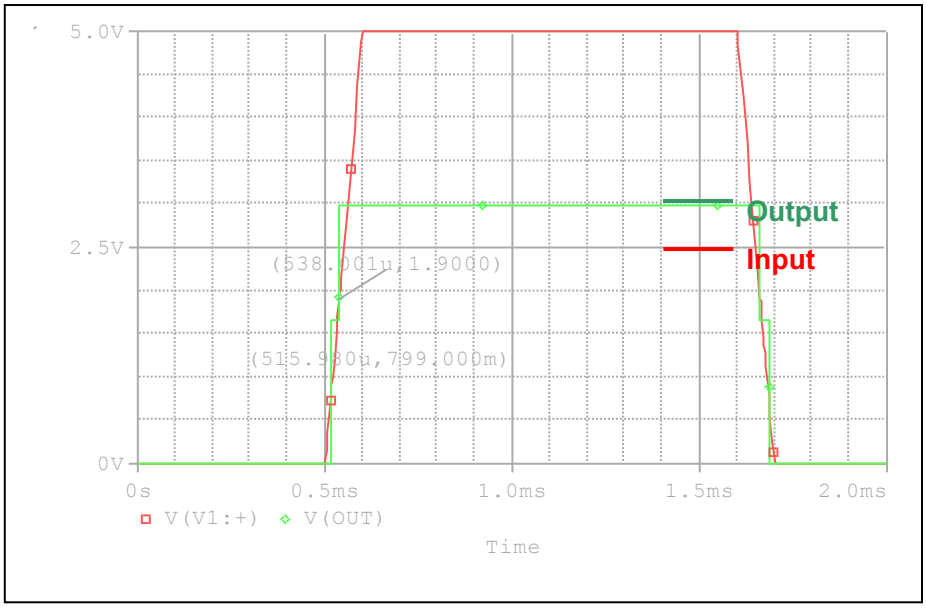


Comparison table

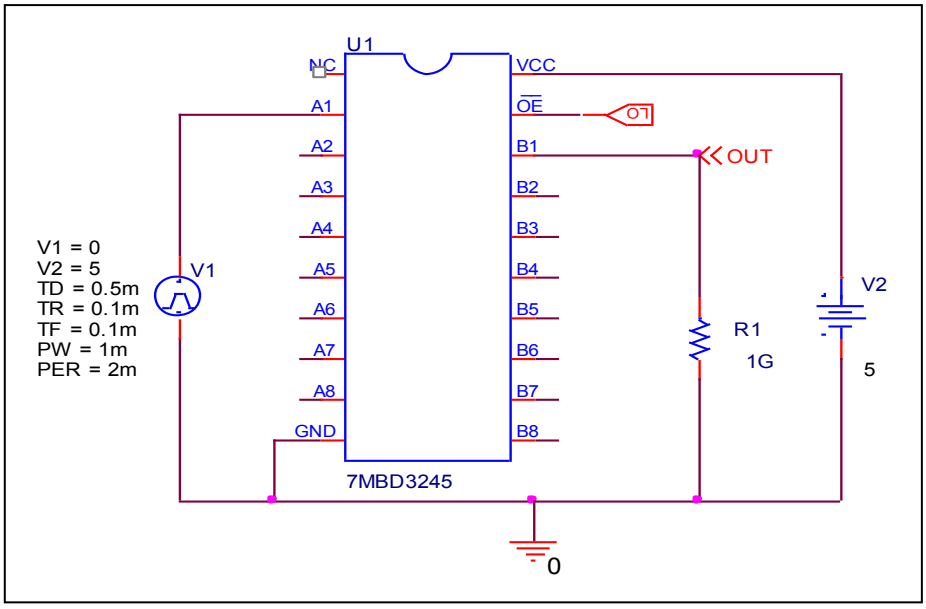
Input	Output		%Error
$\overline{OE}$	Measurement	Simulation	
H	Disconnect	Disconnect	0

High Level and Low Level Input Voltage

Circuit simulation result



Evaluation circuit

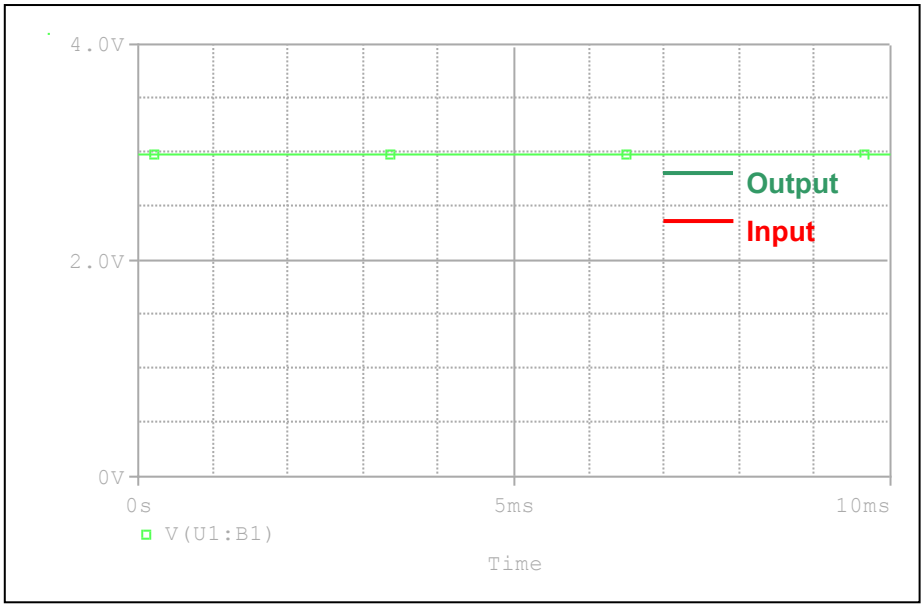


Comparison table

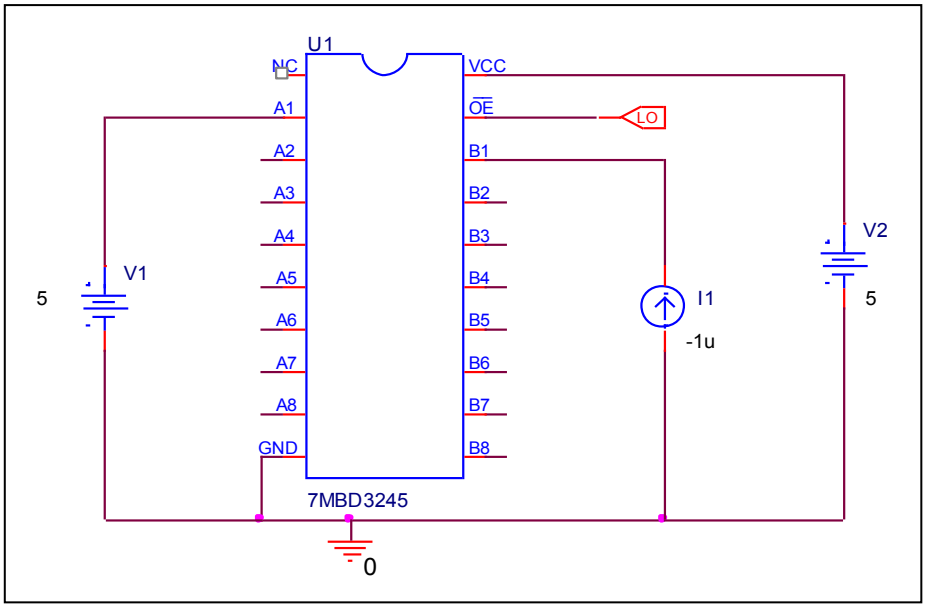
V_{CC} = 5 V	Measurement	Simulation	%Error
V_{IH} (V)	2	1.9	-5.000
V_{IL} (V)	0.8	0.799	-0.125

High Level Output Voltage

Circuit simulation result



Evaluation circuit

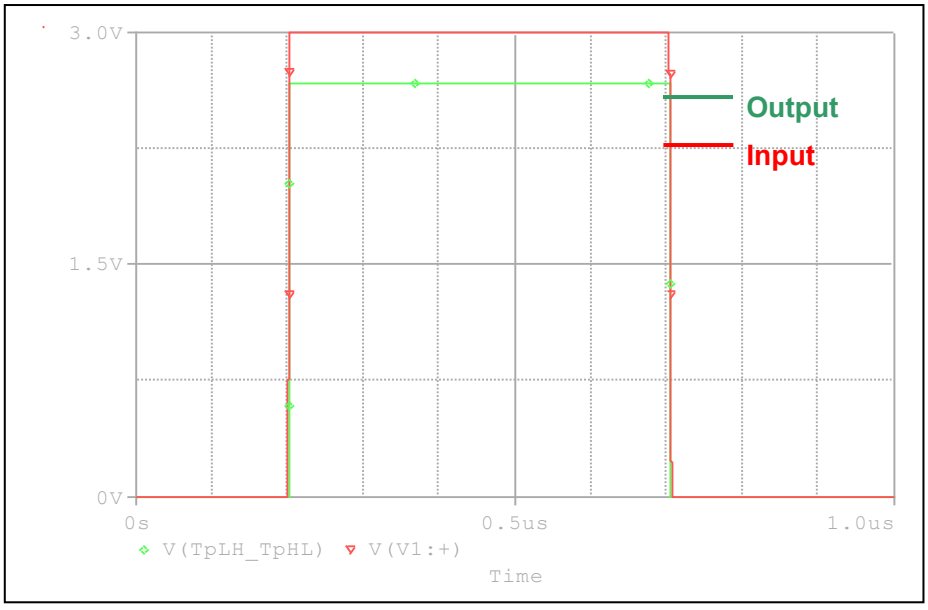


Comparison table

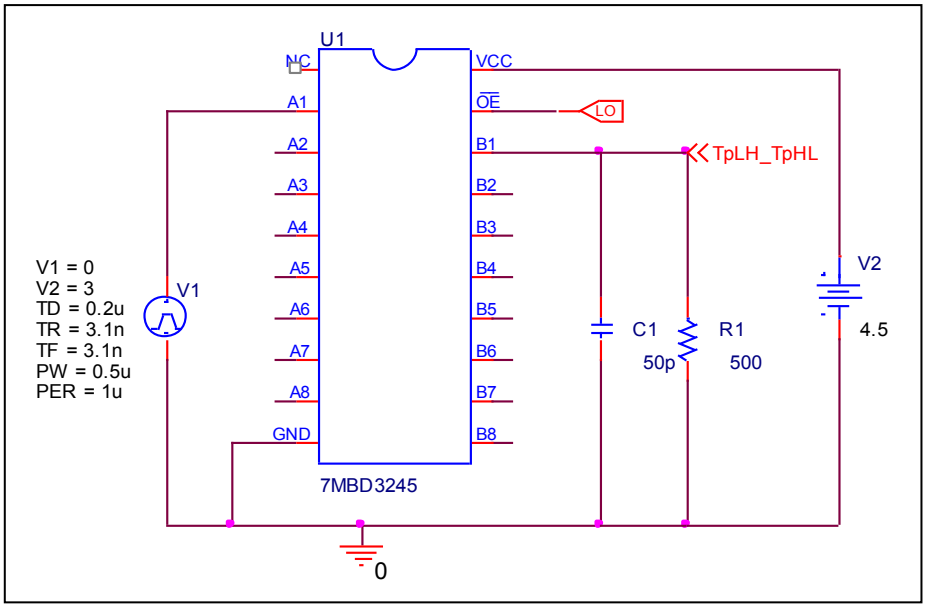
V_{CC} = 5V	Measurement	Simulation	%Error
V_{OH} (V)	3	2.9762	-0.793

Propagation Delay Time

Circuit simulation result



Evaluation circuit

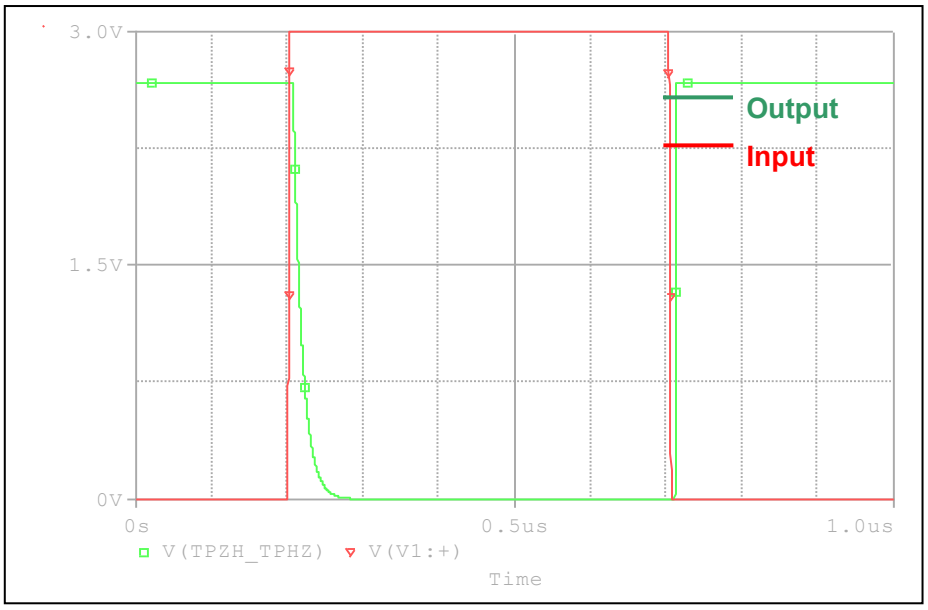


Comparison table **C_L = 50 pF, R_L = 500 Ω**

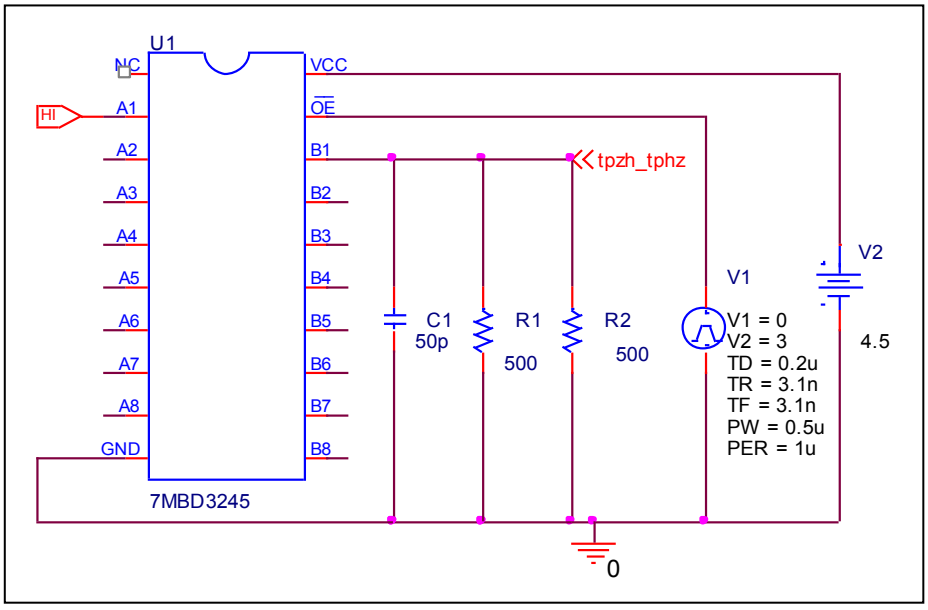
tr = tf = 2.5ns	Measurement	Simulation	%Error
t_{PLH} (ns)	0.32	0.314001	-1.875
t_{PHL} (ns)	0.32	0.319942	-0.018

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

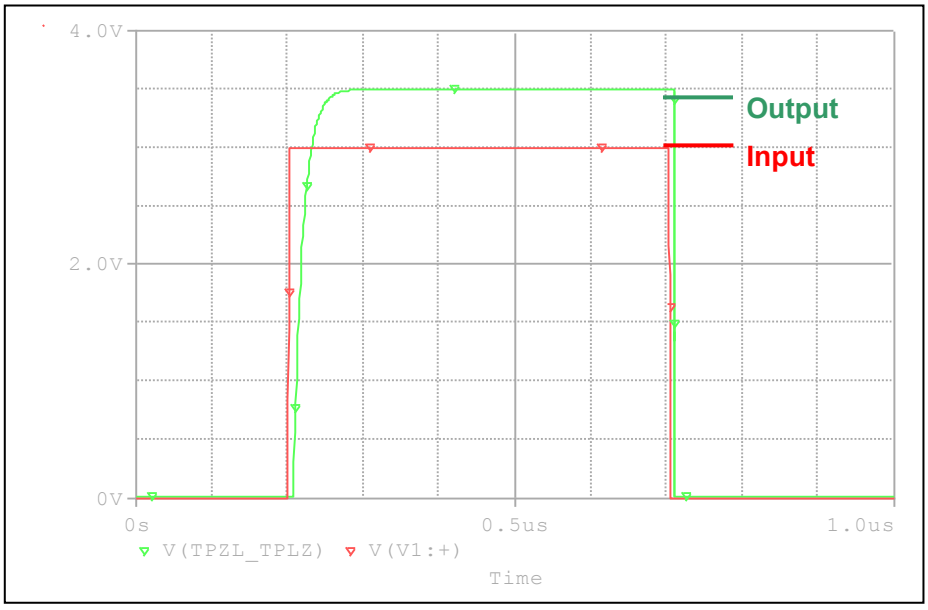


Comparison table **C_L = 50 pF, R_L = 500 Ω**

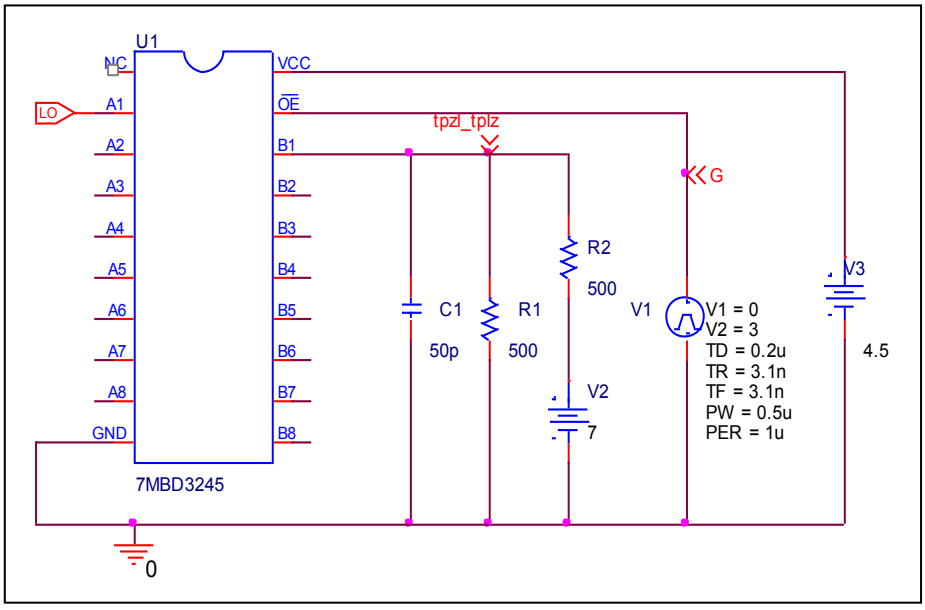
tr = tf = 2.5ns	Measurement	Simulation	%Error
t_{PZH} (ns)	7	6.9502	-0.711
t_{PHZ} (ns)	7	6.9467	-0.761

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**

tr = tf = 2.5ns	Measurement	Simulation	%Error
t_{PZL} (ns)	7	7.0501	0.716
t_{PLZ} (ns)	7	6.9435	-0.807