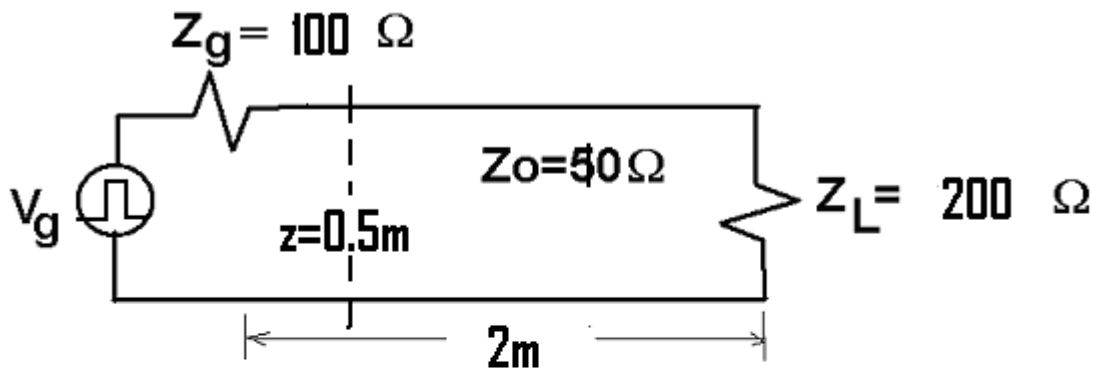
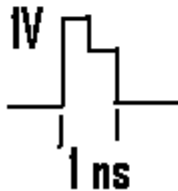


Example Exam Problems on Pulsed Transients
ECE 3300 Midterm I September 29, 2004

1. (33 points) For the lossless transmission line with velocity of propagation $2/3$ the speed of light and voltage pulse shown below
- Sketch the voltage at $z = 0.5$ m as a function of time up to 40 ns.
 - Sketch the voltage on the line at time $t = 20$ ns.



$V_g(t)$



Harder Problem: Application of Pulsed Transient Bounce Diagrams

ECE 3300 Midterm I September 27, 2006

Problem 2: (30 points) A square digital clock pulse is 1ns wide. The clock is running at 100 MHz on a line that has a 25 ohm impedance and a velocity of propagation that is $2/3$ the speed of light. The clock is used to trigger a memory chip with an input impedance of 10Mohms.

- What must the generator voltage be in order for the magnitude of the pulse ON THE LINE to be 3.3V? (The generator has an impedance of 50 ohms.) Sketch $V_g(t)$.
- If the trigger threshold on the memory chip (the minimum voltage required to trigger the chip to read or write data) is 1.5 V, how many times will the chip be triggered?
- Sketch the voltage at the center of the line as a function of time showing the first four pulses. Label your graph, showing the time and magnitude of each pulse.