EEE 202 CIRCUIT THEORY
LAB 2

Design a passive linear circuit to generate high voltage spikes from 10V peak-to-peak square wave with a source resistance of 50Ω and frequency less than 5MHz.
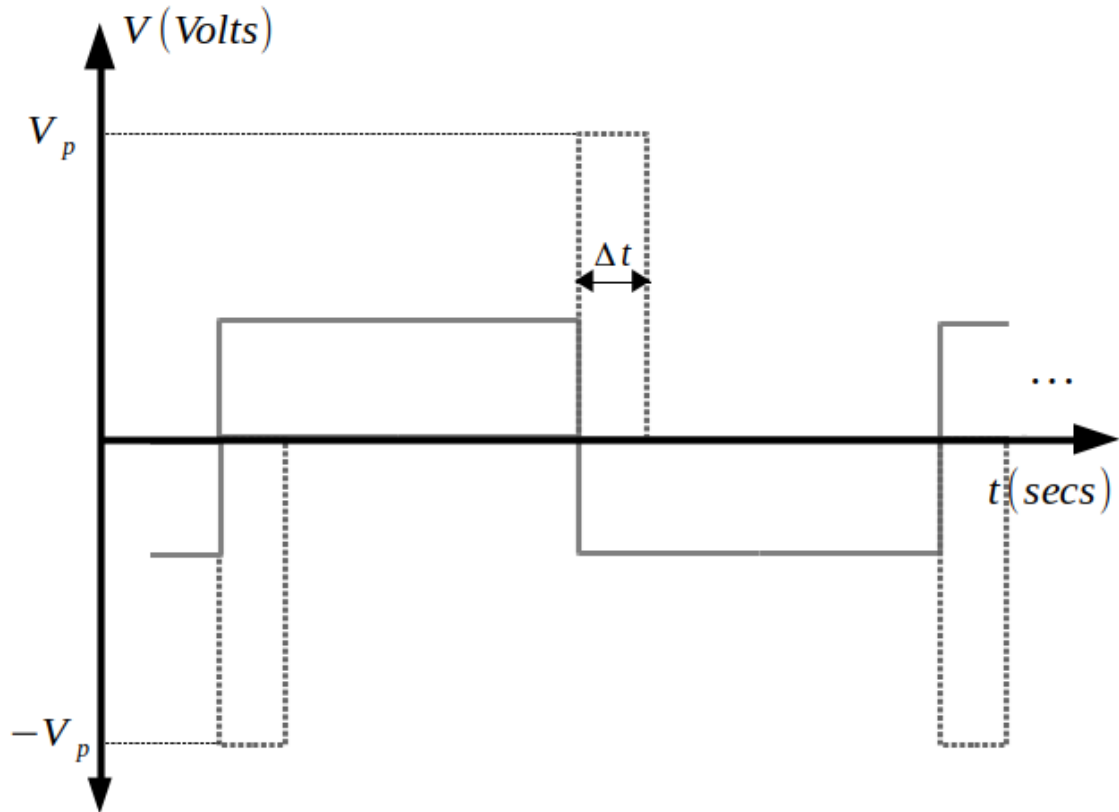

Figure 1: Input is a square pulse (gray line). Output is shown by dashed lines.

Peak value, V_p, of the voltage spikes must be $15V \leq V_p \leq 25V$. **Full width at half maximum (FWHM)**, must be less than 80ns ($\Delta t < 80ns$). Note that spikes are not required to be square shaped. Assume that fall and rise times of the square wave are 10ns.

Please make sure that the spike duration is much *shorther* than the input period!

Software lab

Verify your proposed method using SPICE.

Hardware lab

Implement your design. Measure fall, rise times and peak value of the square wave by connecting a 47Ω resistor across the terminals of the signal generator. Measure the peak voltage and half-amplitude width of the output. Compare expected and observed values.

Available materials in the lab

Toroidal cores (T25-10, T37-7, T38-8, T50-7) to wind transformers, capacitors and resistors with standard values.