EEE 202 CIRCUIT THEORY
LAB 3

Design a passive linear circuit to generate high voltage spikes from a square wave generator of 10V p-p with a source resistance of 50Ω , with frequency range less than 5MHz.(eg: 500KHz square wave)

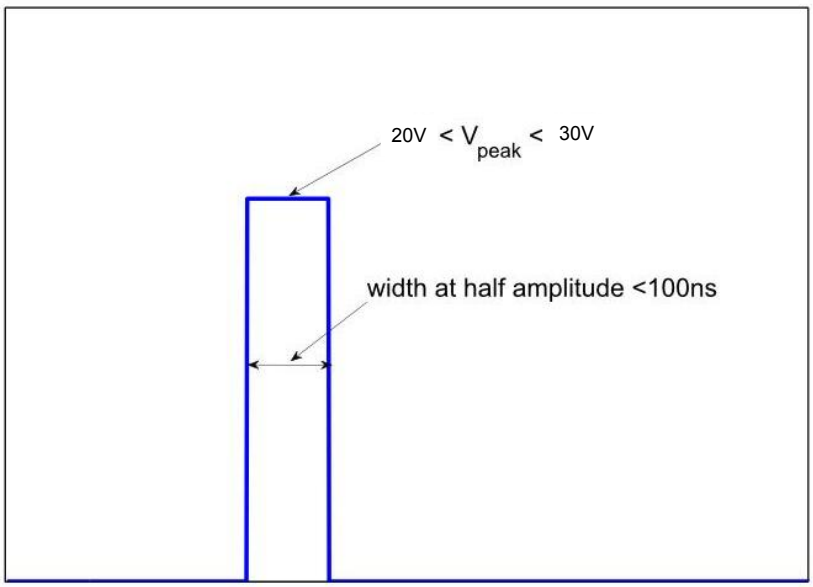

Figure 1: Generated Pulse

Generated voltage spikes must be 25 ± 5V peak. The pulse width at half-amplitude point should be less than 100ns. Note that your spikes may not have square shape.

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

Preliminary Work

Verify your proposed method using SPICE. Assume that fall and rise times of the square wave generator are not zero, but rather 10ns.

Experimental Work

Implement your design. Measure fall and rise times of the square wave generator. Measure the peak voltage you generated. Compare with your expectations.

Available materials in the lab

You can use toroidal cores, T25-10, T37-7, T38-8, T50-7, to wind transformers. There are standard values of capacitors and resistors available.