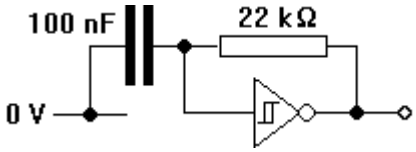
Designing a falling-edge-to-pulse converter

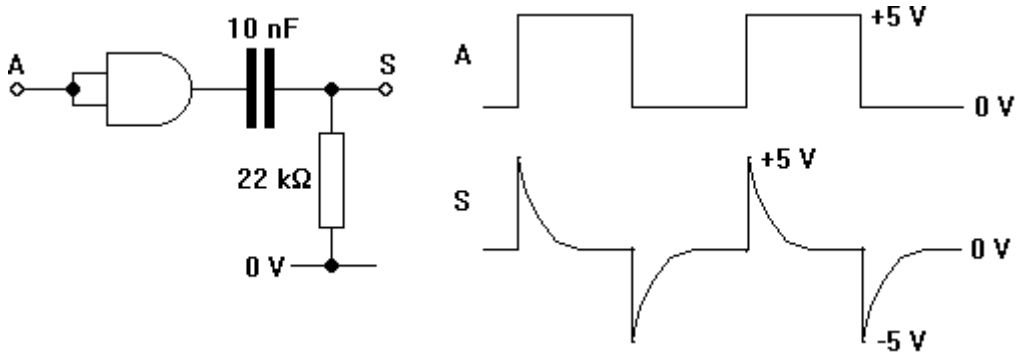
You are going to design a circuit which produces a single 50 μs pulse each time a falling-edge enters it.

1. Assemble the relaxation oscillator shown below. Run the 40106 Schmitt trigger inverter off supply rails at +5 V and 0 V.



2. Use a CRO to verify that the oscillator feeds out a square wave with a frequency of about 1 kHz.

3. Assemble the circuit shown below. Connect A to the output of the oscillator and S to the second input of the CRO. Verify that the waveforms at A and S are as shown below.



4. Connect both inputs of an AND gate to S and look at its output with the CRO. Verify that it produces a single 0.15 ms pulse at every rising edge at A.

5. Adapt the circuit so that it produces a 50 μs pulse on each falling edge at A.