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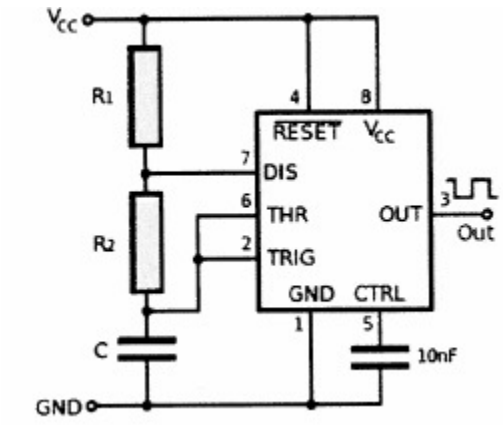
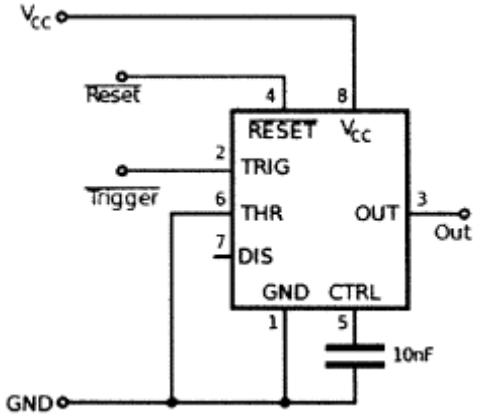
ENEE 307 Experiments – 555 Timer.

1. Study the 555 Timer, see pages 1369 – 1374 of Sedra/Smith, "Microelectronic Circuits," 6th edition. More data including pin numbers is available at http://en.wikipedia.org/wiki/555_timer_IC. A full data sheet is at http://www.ti.com/lit/ds/symlink/ne555.pdf
   The package available is the 8 pin one. For this experiment make a design for each of a) Astable (=continuous pulse generator), b) bistable (=flip-flop) and c) Monostable (=triggered one-shot). The connections are shown below.
2. Beginning with the astable configuration, start with typical values of the TI data sheet:R1=3.9KOhm, R2=3KOhm, C=0.01uFd, VCC=5V. Check, analytically and by experiment, the results. Try several other values of R's and C's to check analytical design equations. (R1=RA & R2=Rb on some data sheets)
3. For the monostable design start with C=1uFd and R near 91KOhm.
4. Check the behavior of the bistable configuration by set and reset pulses observing the rise and fall times.
5. The Philips application note, AN170 of December 1988, pages 7 – 9, gives several other uses which if time allows would be worth testing. These are also nicely summarized on page 5 of http://www.williamson-labs.com/555_apps.htm.

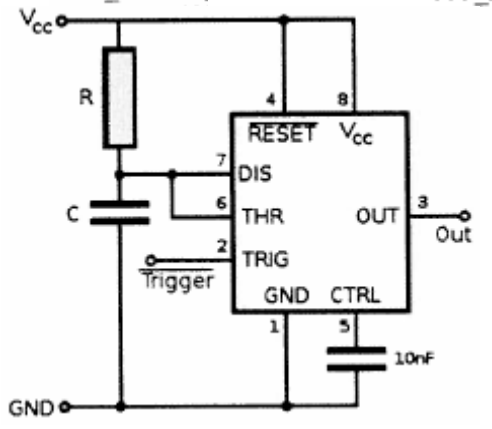
The following connection diagrams are copied from the Wikipedia web page.



555_Astable



555_Bistable



555_Monostable