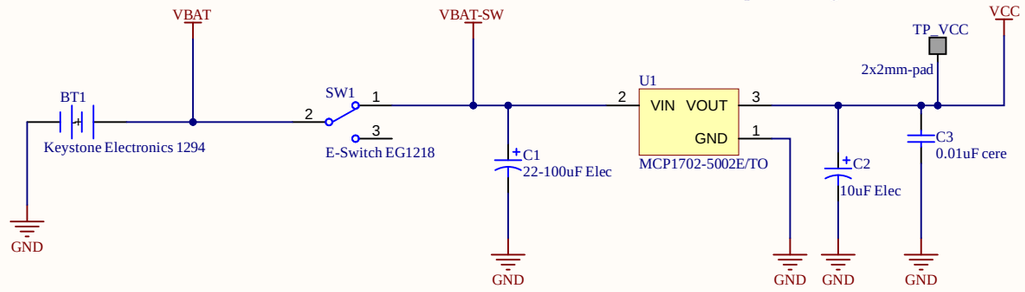
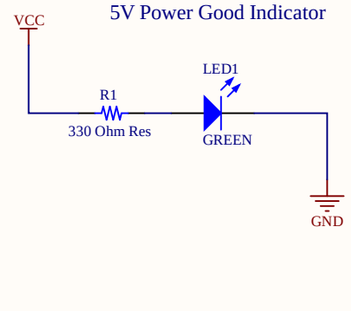
555 Based Mini-Organ with 12-Note Diatonic Scale

Battery Power Input 9V (Li-Ion Recommend)



5V LDO "Low Drop Out" Regulator

5V Power Good Indicator



555 Timer NOTES:

Timer running in ASTABLE mode with RA fixed and RB is gated in via momentary switches. This allows a single resistor to change the frequency of the timer.

However, there is a shortcoming/side effect. Both RA and RB (and C) are part of the timer frequency, but RA and RB both are ALSO part of the duty cycle! However, as we have selected RA, the duty cycle is approximately 50% and deviates only a few percent from the lowest frequency note to the highest. This is acceptable for this crude design, but might not work for something where you need very accurate duty cycle, etc. Point is, be aware, and consider everything in your designs.

The governing formulas for frequency and duty cycle can be found in the data sheet of course, but I like copying to my schematic, so I don't have to hunt them down. This is a good habit to get into, use TEXT to add formulas, etc. to your designs and "comment" or "annotate" as you would SOFTWARE!!!

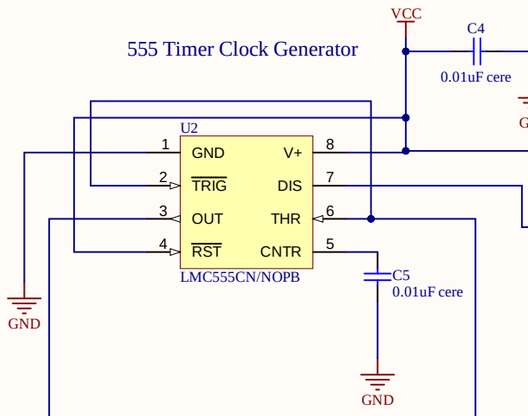
Given, RA, RB, and C:

T = 0.693*(RA + 2*RB)*C

F = 1/T = 1.44 / (RA + 2*RB)*C

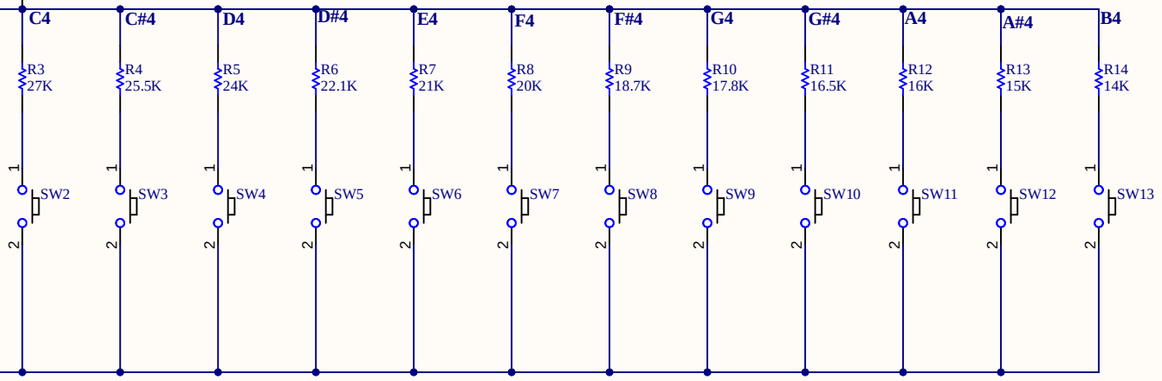
D = (RA + RB)/(RA + 2*RB)

555 Timer Clock Generator

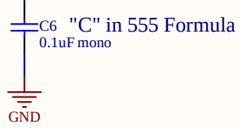


"RA" in 555 Formula

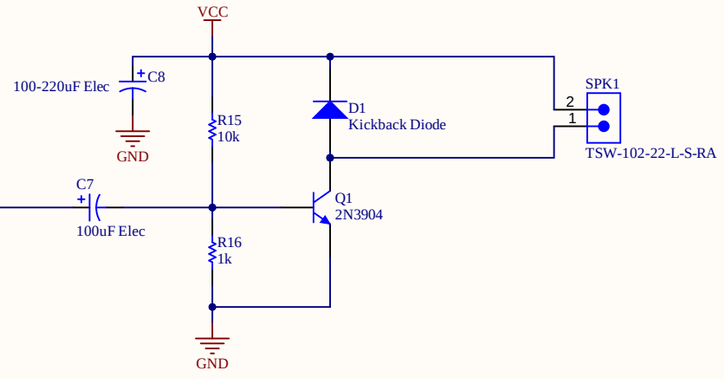
"RB" in 555 Formula (Note Frequency Dominant Term)



"C" in 555 Formula



Single Transistor Audio Amp (Current)



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