



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:

$T = 0.693 \cdot (RA + 2 \cdot RB) \cdot C$

$F = 1/T = 1.44 / (RA + 2 \cdot RB) \cdot C$

$D = (RA + RB) / (RA + 2 \cdot RB)$

Title		
Size	Number	Revision
A3		
Date:	1/10/2023	Sheet of
File:	555TimerOrganFinal.SchDoc	Drawn By: