

Comments/ Calculations:

Astable 555 Timer

$$t_{HIGH} = 0.693 \times C_2 \times (R_2 + R_3)$$

$$t_{LOW} = 0.693 \times C_2 \times R_3$$

$$T = t_{HIGH} + t_{LOW}$$

$$\text{Frequency} = \frac{1}{(T)} = \frac{1.44}{((R_2 + 2R_3)C_2)}$$

$$\text{Duty Cycle} = \frac{(R_2 + R_3)}{(R_2 + 2R_3)} \times 100$$

C = Capacitance in Farads

R = Resistance in Ohms

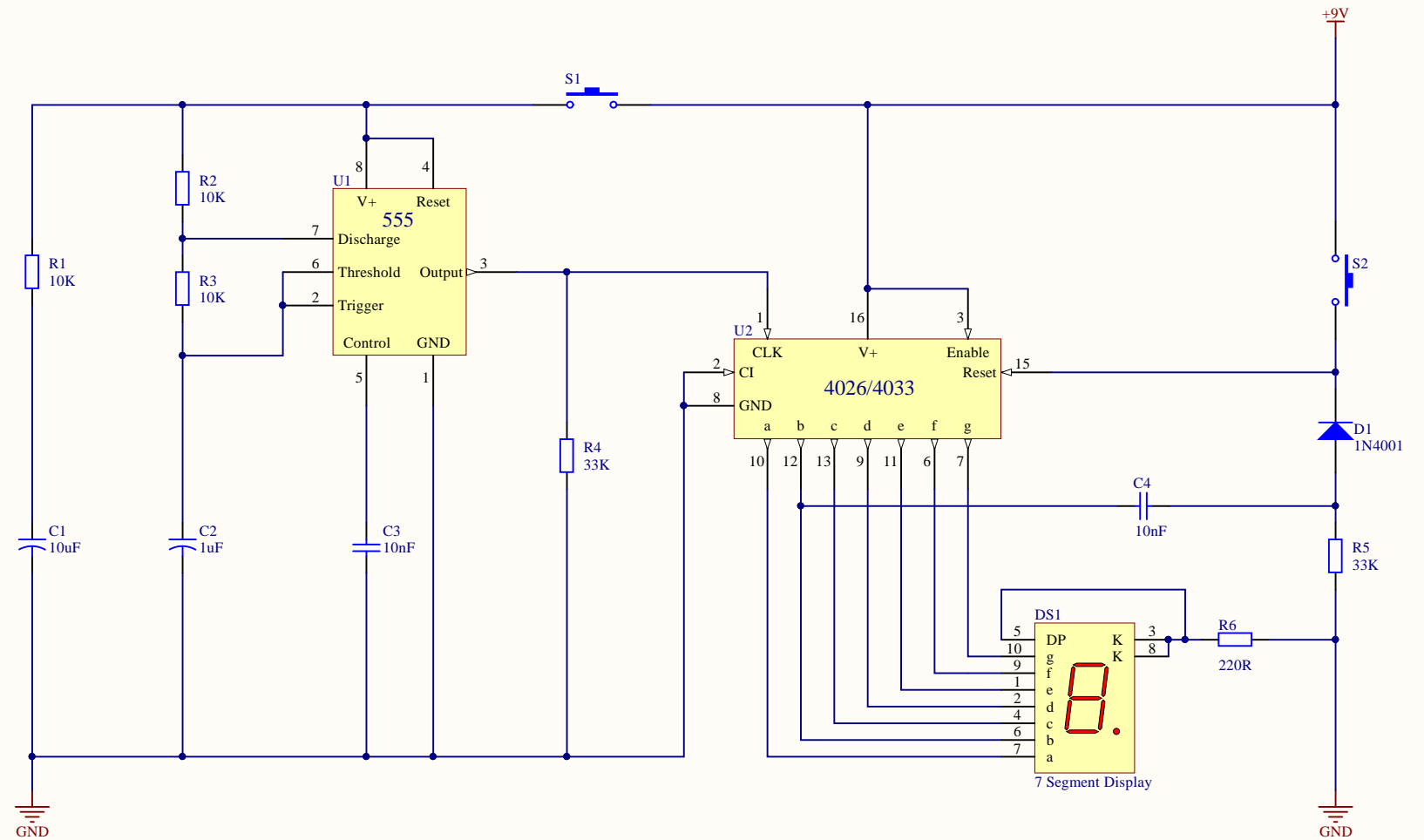
T = Time in Seconds

t = Time in Seconds

Frequency = Hertz

$$\text{Duty Cycle} = \%$$
$$R2 =$$
$$R3 =$$
$$C2 =$$


Schematic Circuit Diagram:



Data Sheets:

555 Timer:
Texas Instruments LM55CN/NOPB
<http://www.ti.com/lit/ds/symlink/lm555.pdf>

4026/4033:
Texas Instruments CD4026BE / CD4033BE
<http://www.ti.com/lit/ds/symlink/cd4026b.pdf>

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FR: N/A	Job No: N/A	File: F:\Kerris Worldskills\CompetitionTask\Figure 1.SchDoc				

Component list

Worldskills Pre-Competition Task

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Worldskills Pre-Comp Task.PrjPcb
Figure1.BomDoc
Kerris Boulton



The University of Manchester

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#	Designator	Comment	DesignItemId	Supplier 1	Supplier Part Number 1	Manufacturer 1	Manufacturer Part Number 1	Quantity
1	C1	10uF	Cap2	Farnell	9451382	Multicomp	MCGPR50V106M5X11	1
2	C2	1uF	Cap2	Farnell	9451358	Multicomp	MCGPR50V105M5X11	1
3	C3, C4	10nF	Cap	Farnell	1216435	Multicomp	MCRR25103X7RK0050	2
4	D1	1N4001	Diode 1N4001	Farnell	2323100	ON Semiconductor / Fairchild	1N4001	1
5	DS1	7 Segment Display	Dpy Red-CC	Farnell	2314249	Kingbright	SC56-11SURKWA	1
6	R1, R2, R3	10K	Res2	Farnell	2329855	TE Connectivity	LR0204F10K	3
7	R4, R5	33K	Res2	Farnell	2329922	TE Connectivity	LR0204F33K	2
8	R6	220R	Res2	Farnell	2329900	TE Connectivity	LR0204F220R	1
9	S1, S2	SW-PB	SW-PB	Farnell	2468761	TE Connectivity	1825910-7	2
10	U1	555	555 TIMER	Farnell	1564692	TI National Semiconductor	LM555CN/NOPB	1
11	U2	4026/4033	4026/4033	Farnell	1703295	Texas Instruments	CD4026BE	1

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