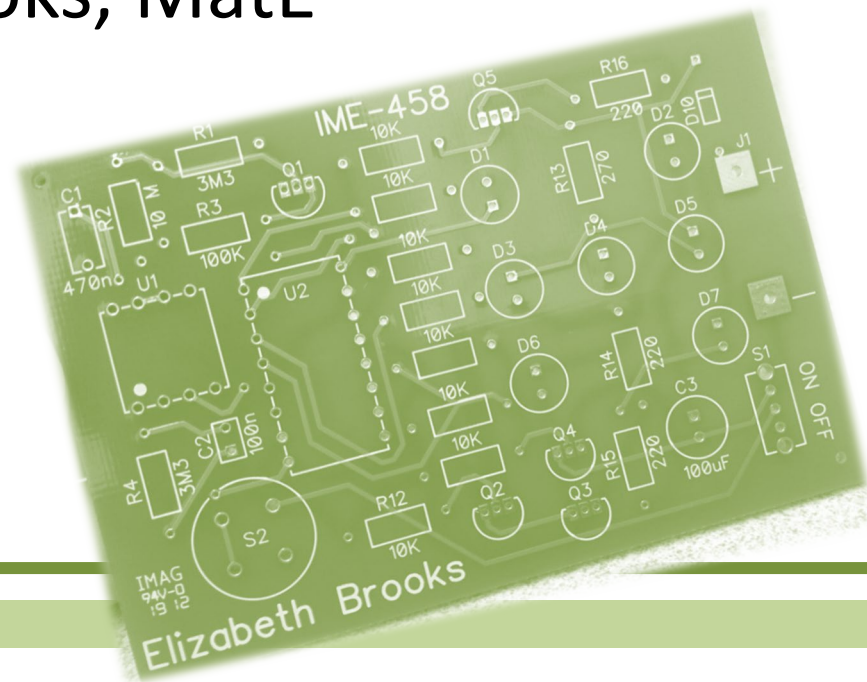
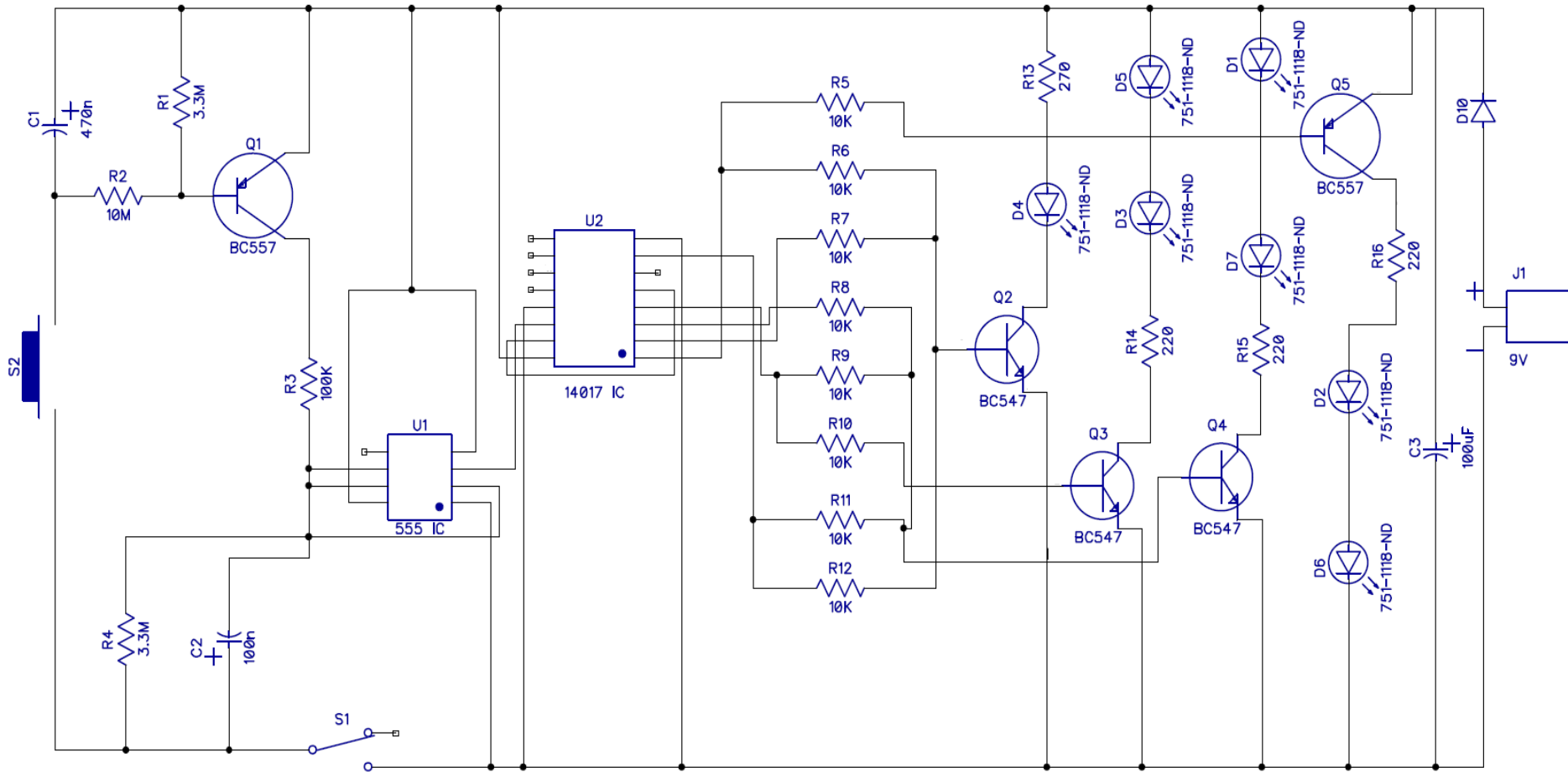


LED Dice

Elizabeth Brooks, MatE

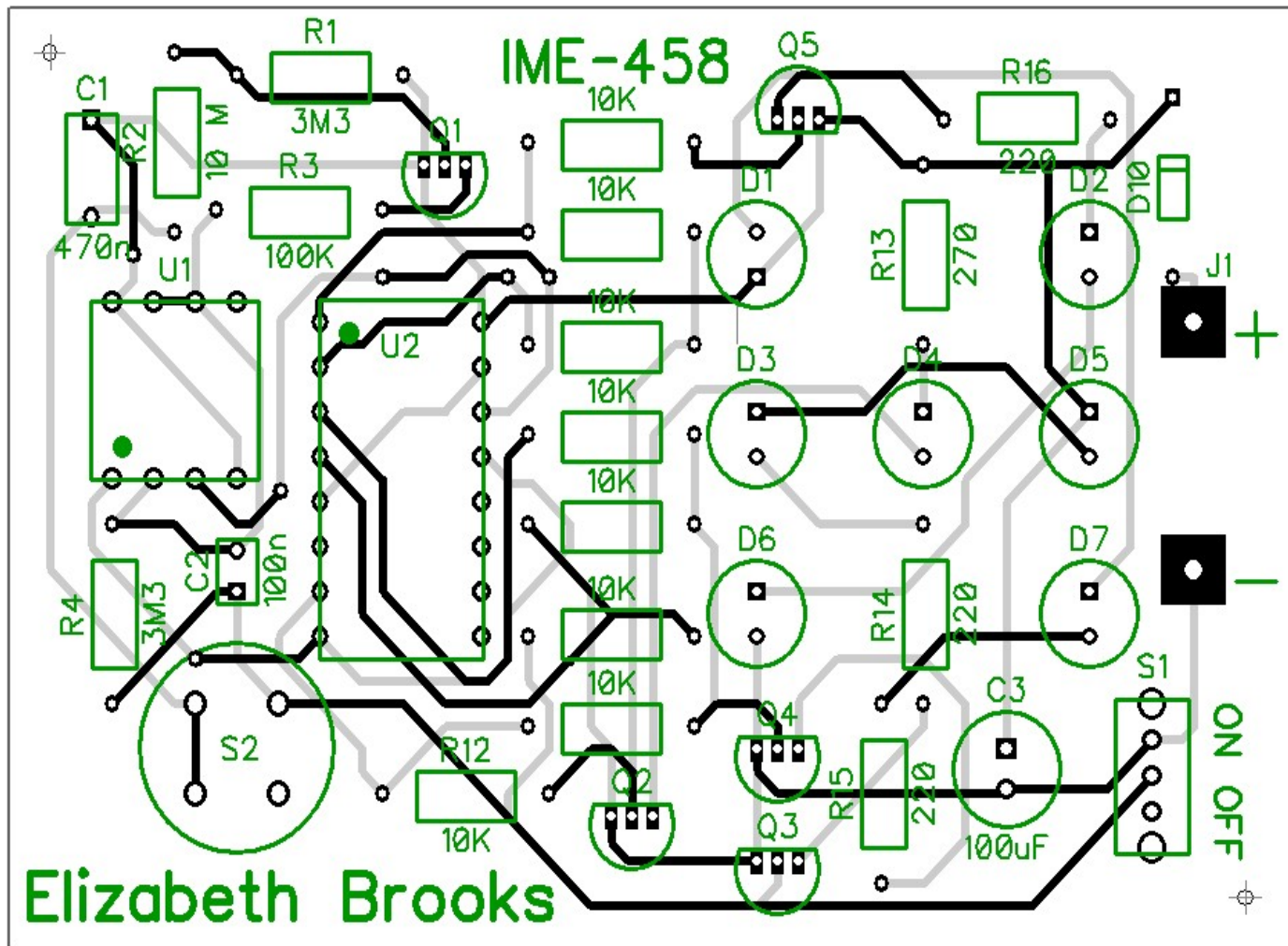


The device will “roll” and a sequence of LED's will light in the shape of a dice number.



Item #	Qty.	Reference Designator	Type	Value/ Part #	Package Type	Manufacturer	Manufacturer Part#
1	1	C1	monoblock capacitor	470 nF	through-hole	standard	
2	1	C2	monoblock capacitor	100 nF	through-hole	standard	
3	1	C3	electrolytic capacitor	100 µF 16V	through-hole	standard	
4	1	D10	diode	1N4148	axial	standard	
5	D1, D2, D3, D4, D5, 7	D6, D7	LED's	5 mm	through-hole	Vishay Semiconductors	751-1118-ND
6	1	U1	OSC Mono Timing IC	555 IC	Dip-8	Stmicroelectronics	497-1963-5-ND
7	1	U2	Decade Counter IC	14017 IC	Dip-16	Stmicroelectronics	497-1350-5-ND
8	2	Q1, Q5	pnp transistor	BC557	through-hole	On Semiconductor Fairchild	BC557BRL100SCT-ND
9	3	Q2, Q3, Q4	npn transistor	BC547	through-hole	Semiconductor	BC547BFS-ND
10	1	S2	hat keyswitch		PCB- mounted	standard	
11	1	S1	SPDT switch		PCB- mounted	standard	
12	3	R14, R15, R16	resistor	220 Ω	axial	standard	
13	1	R13	resistor	270 Ω	axial	standard	
14	R5, R6, R7, R8, R9, 8	R10, R11, R12	resistor	10 kΩ	axial	standard	
15	1	R3	resistor	100 kΩ	axial	standard	
16	1	R2	resistor	10 megaΩ	axial	standard	
17	2	R1, R4	resistor	3.3 megaΩ	axial	standard	
18	1	J1	9V battery snap			standard	

The PCB was designed in DipTrace.



The components were soldered on to the PCB.



Recommendations for improvement

- IC Width modification
 - Schematic simplification
 - Switch placement
 - Overall dimensions
 - Larger mounting holes
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