

555 Timer – “Experimenters Universal” PCB

The pcb shown at right, can be used to build up most “555” timer applications using conventional leaded components. It is compact in size, at only 1.2” x 1.6”.

You will notice the pads for the 3 resistors R1, R4 and R5 are spaced at 0.1” and require these resistors to be mounted vertically. The pads for C2 and C3 allow capacitors with either 0.1” or 0.2” lead spacing to be used.

Potentiometers R2 and R3 together with diodes D1 & D2 allow you to adjust the on and off time at pin 3 independently. Or for “conventional” 555 circuits just use R2 by itself with a jumper in the D2 position. (with D1 and R3 not inserted)

U1 can be either the regular 555 timer IC or the CMOS version (LMC555) as they have the same pinout. However the LMC555 has many differences in characteristics like much lower standby current and drive capability. (Refer to the applicable data sheet for details)

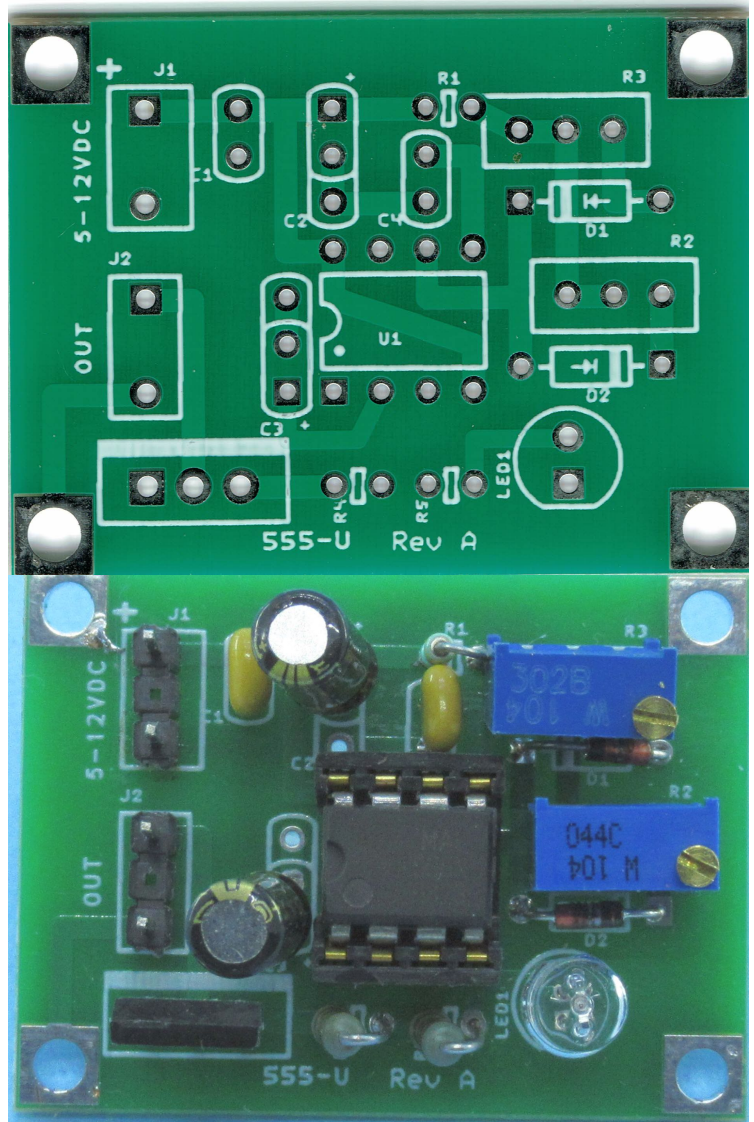
The LM555 can source up to 100 mA at pin 3. For higher current loads a medium power transistor Q1(like BD139) can be added with a drive resistor R4. Q1 is wired open collector to J2, meaning a load must be connected from J2 to an external Vcc.

LED1 and current limiting resistor R5 are optional. However, LED1 allows a simple visual means of monitoring the pin 3 output level.

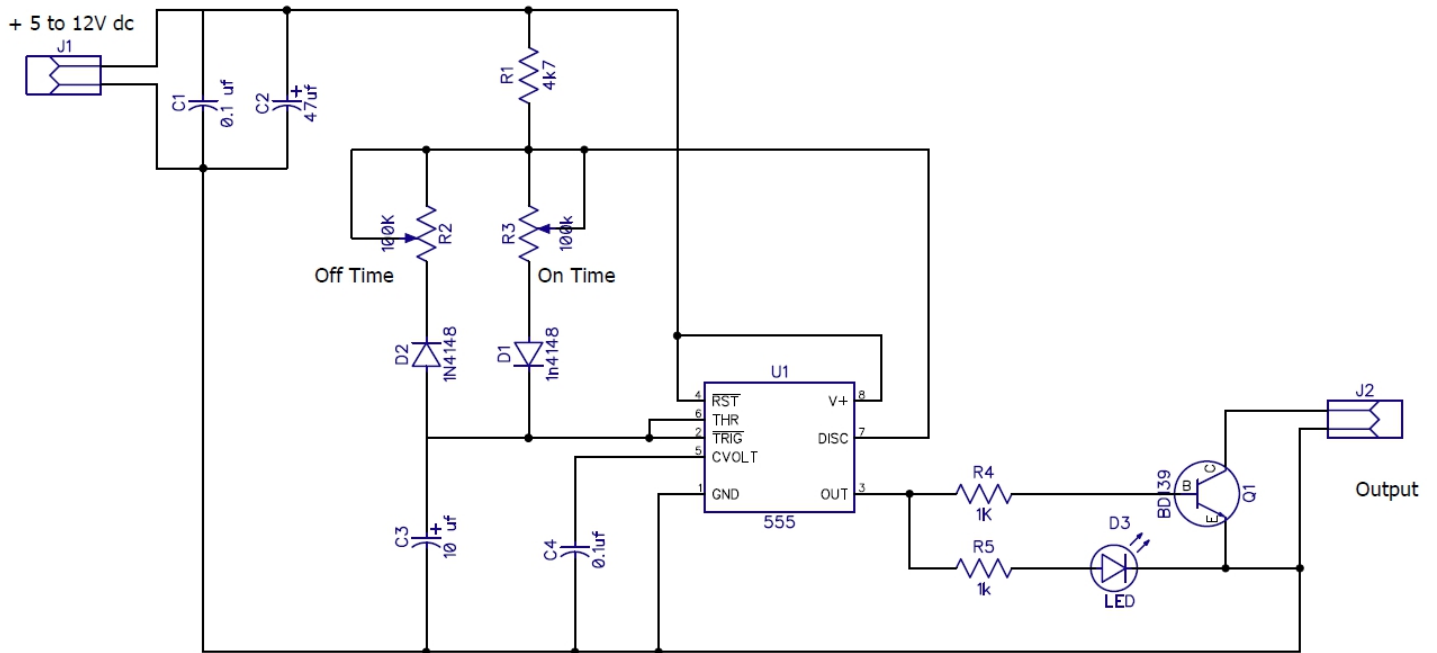
Most astable modes of operation with a 555 require pin 2 (trigger) to be connected to Pin 6 (threshold) and pin 4 (reset) to be connected to pin 8(Vcc).

The pin 2 to pin 6 copper trace is on the pcb bottom side, and the pin 4 to 8 copper trace is on the top side beneath the 555.

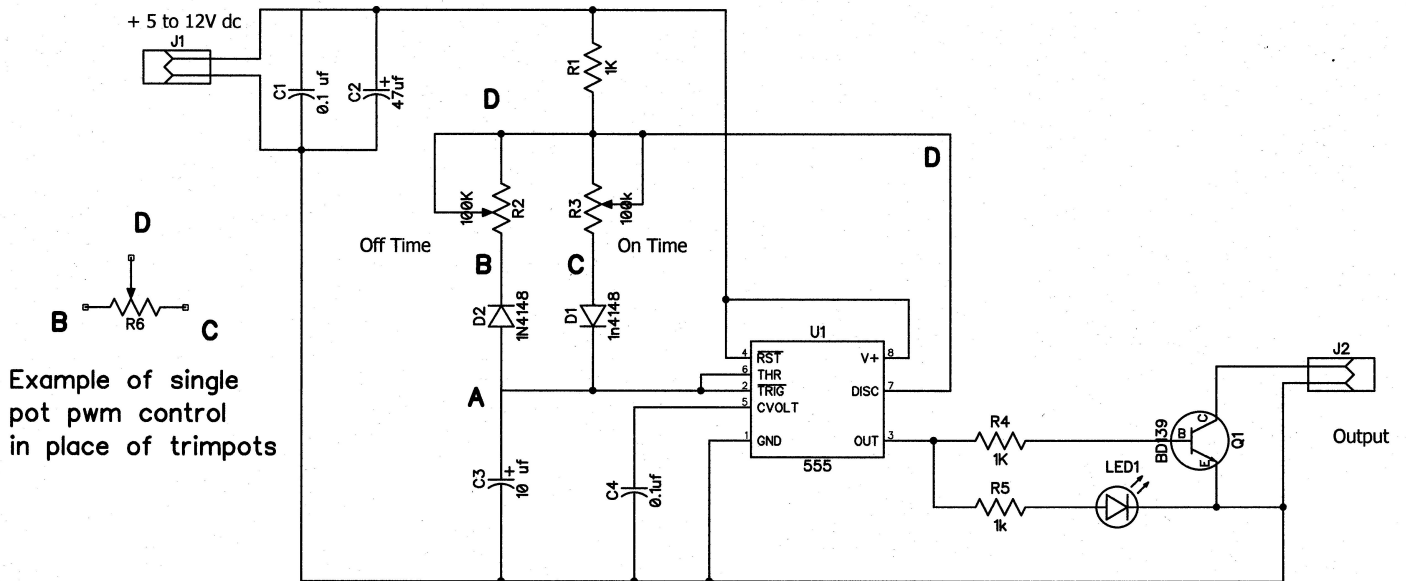
For any other modes of operations, either or both of these traces can be cut with a sharp knife or dremel tool if required to access any of these pins separately.



Example schematic showing use of both R2 and R3 to independently control on and off time



**Example schematic showing use of single potentiometer
Remove R2 and R3, replace with R6 to vary on and off time from 0 to 100%**

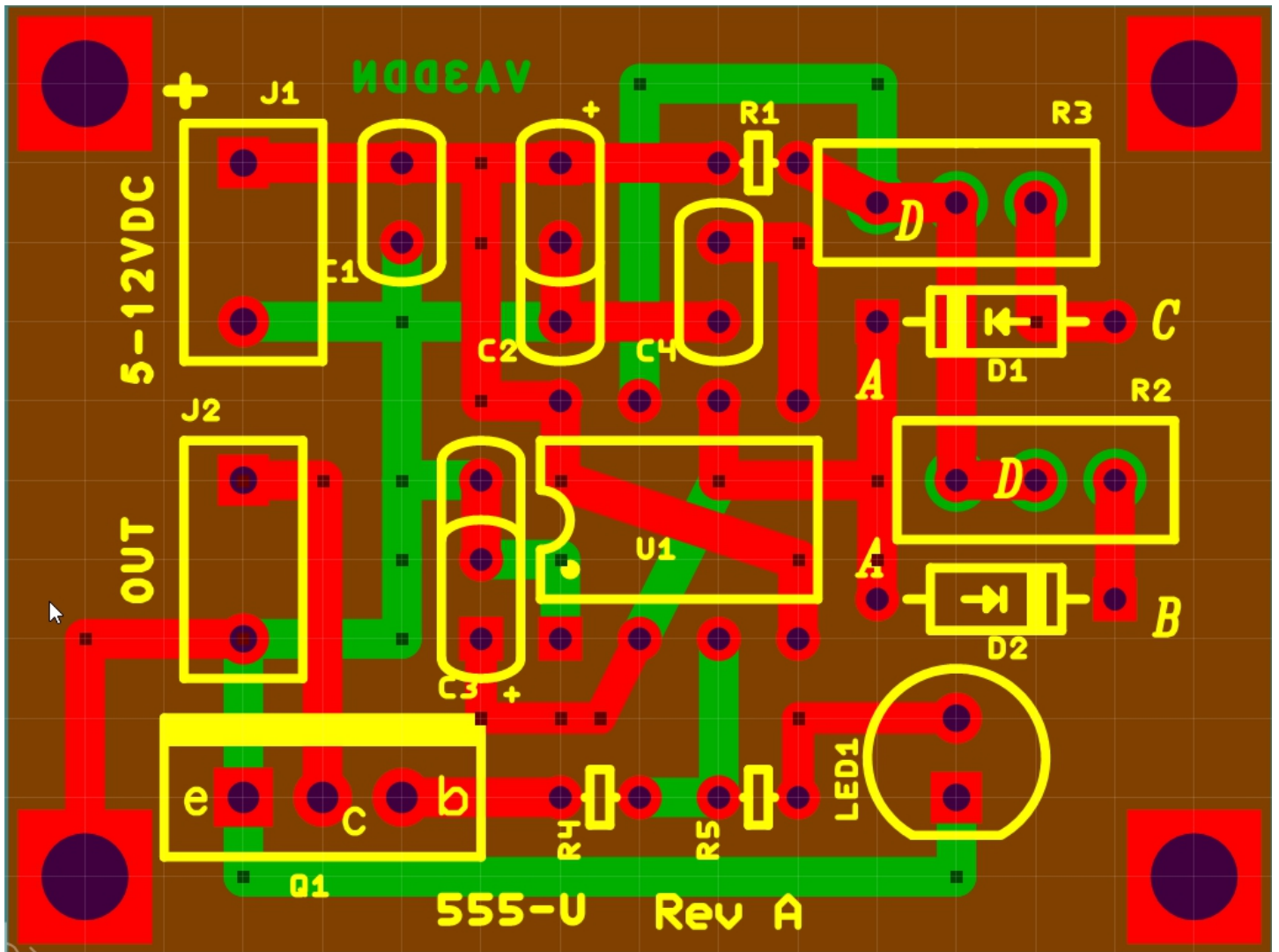


Note: If used, R6 must be mounted off the pcb. Use flying wires to connect R6 to points B,C,D.

Parts List

Qty	Reference	Description
2	C1, C4	0.1 μ F ceramic capacitor
1	C2	47 μ F 16v electrolytic or tantalum capacitor
1	C3	10 μ F 16v tantalum capacitor (see text)
2	D1, D2	1N4148 DO-35 (bend for 0.3 in hole spacing)
2	J1, J2	0.1" single in-line male header(or 0.2" terminal block)
1	LED1	LED T1 3/4 in (5 mm)
1	Q1	BD135, 139 or similar TO220 NPN
3	R1, R4, R5	Resistor 1/4w, 5%, 1k
2	R2, R3	trimpot, 100k, top adjust, Bourns 3296 style
1	R6	(optional) rotary potentiometer, 250K, with knob
1	U1	LM555 Timer DIP, or LMC555 cmos version (use of 8-pin IC socket is recommended)
1	PCB	Custom pcb, or diy stripboard, breadboard etc
Note: Part types and values shown are for reference as a starting point. Refer to LM555 datasheet or on-line information regarding choice of values and calculations		

PCB Artwork for top & bottom of pcb. (not to scale)



Yellow: top-side component layout, Red: top-side copper, Green bottom-side copper