

LED Fading Effect / LED Strobe

In general, generating an LED fade effect requires a microcontroller or another expensive circuit. We have built this low-cost LED fading board using an inexpensive 555 Timer. The 555 timer is used as an astable multivibrator, which generates low-frequency pulses, further, this pulse train is feed to the base of BJT transistor TIP122 with a series resistor along with a high-value electrolytic capacitor. The combination of resistor R5 and capacitor C6 at the base of Q1 gradually increases and decreases the base voltage which provides soft ON/OFF (Ramp) to the load. The circuit can drive a load up to 18W without heatsink.

An onboard potentiometer is provided to adjust the frequency of flash. Connector CN1 DC is for 12V Input, Connector CN2 is provided to connect the LED. This circuit also can be used as a LED Strobe Light and covert a regular 12V LED Light into a Flashing Strobe Light with few changes of components.

This circuit can be used as a high-power LED Strobe with the following modifications:

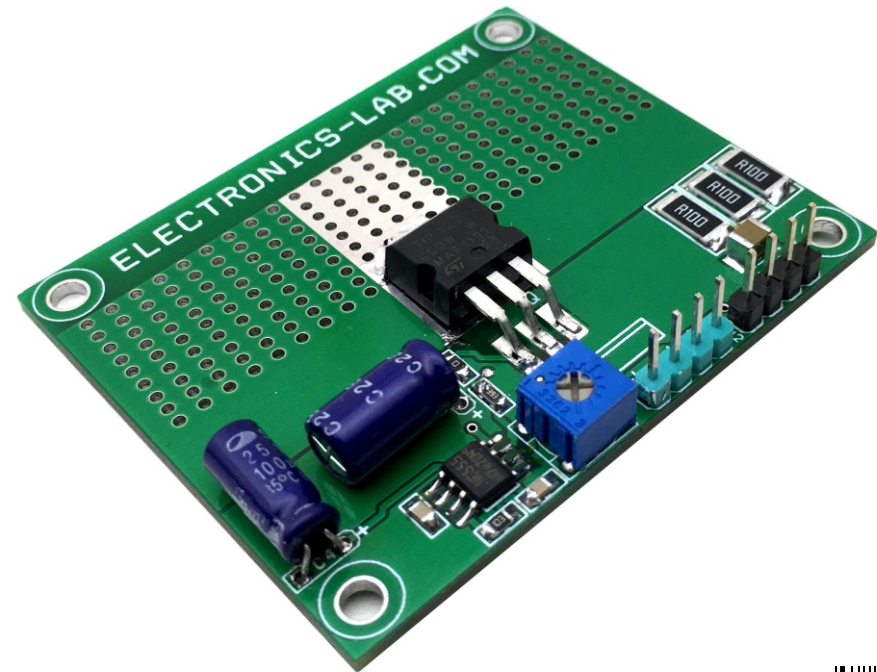
- Do Not Populate C6
- Use R5 2K2 Ohms SMD Size 0805
- Use R6 0 Ohms

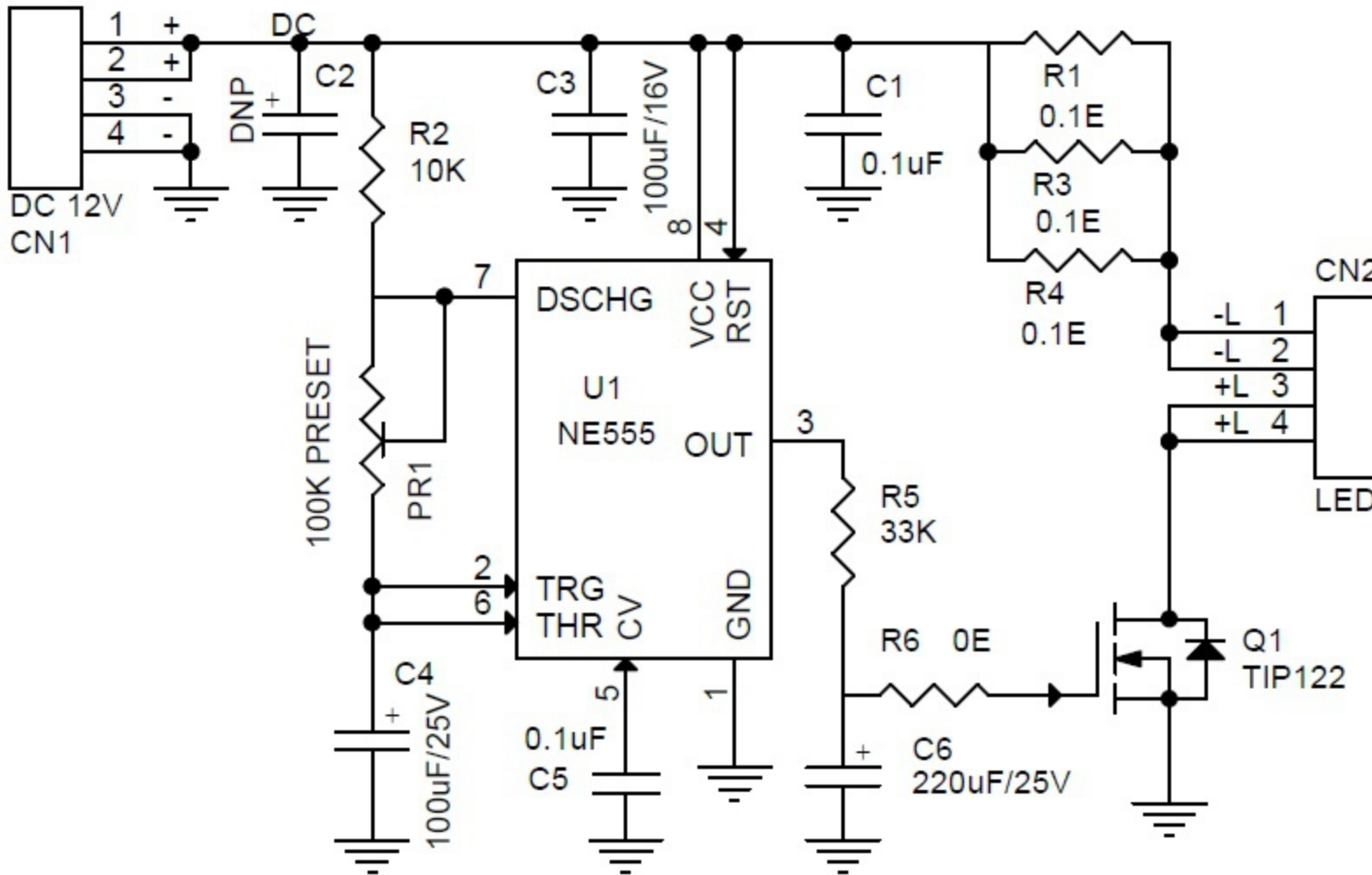
Note 1: This circuit can drive 12V LED directly, thus use R1, R3, R4 at 0 Ohms, to drive bare LED choose appropriate series resistor R1, R3, and R4 as per LED load current requirement.

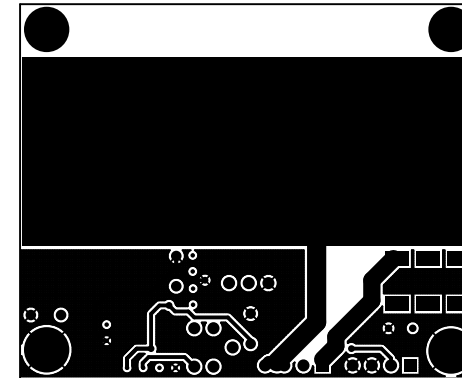
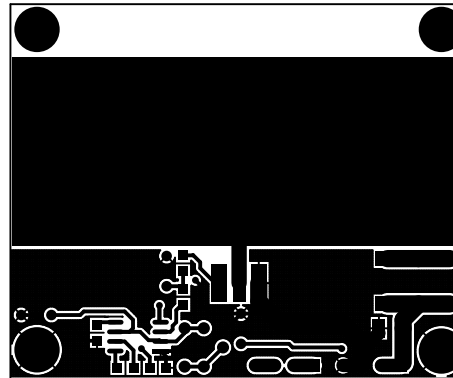
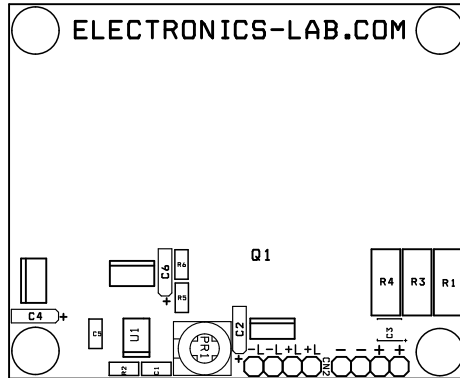
Note 2: The circuit is built for low-frequency operation, to use as a high-frequency flasher choose C4 10uF /25V or lower capacitance.

Features

- Operating Supply 12V DC
- Load 1.5A Continues (Max)
- Frequency 1Hz to 5Hz Adjustable (Approx.)
- Header Connector for Power Supply and LED
- Large Thermal Area on PCB provided for heat decapitation
- PCB Dimensions 60.48MM X 49.53MM







BOM				
SR.	QNTY.	REF.	DESC.	VENDOR/DIGIKEY/MOUSER
1	1	CN1	4 PIN MALE HEADER 2.54MM PITCH	DIGIKEY S1011EC-40-ND
2	1	CN2	4 PIN MALE HEADER 2.54MM PITCH	DIGIKEY S1011EC-40-ND
3	2	C1,C5	0.1uF/50V SMD SIZE 0805	YAGEO
4	1	C2	DNP	OMIT
5	1	C3	100uF/16V SMD SIZE 1210	YAGEO
6	1	C4	100uF/25V OR 16V ELECTROLYTIC	DIGIKEY 493-13451-1-ND
7	1	C6	220uF/16V OR 25V ELECTROLYTIC	DIGIKEY 732-8797-1-ND
8	1	PR1	100K PRESET	DIGIKEY 3362P-104LF-ND
9	1	Q1	TIP122	DIGIKEY 497-2543-5-ND
10	3	R1,R3,R4	0.1E OR 0E 5% SMD SIZE 2512	YAGEO
11	1	R2	10K 5% SMD SIZE 0805	YAGEO
12	1	R5	33K 5% SMD SIZE 0805	YAGEO
13	1	R6	0E SMD SIZE 0805	YAGEO
14	1	U1	NE555 SOIC8	DIGIKEY 296-6501-1-ND

