



VNR Vignana Jyothi Institute of Engineering and Technology

(Affiliated to J.N.T.U, Hyderabad)

Bachupally(v), Hyderabad, Telangana, India.

AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT

A course project submitted in complete requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

Submitted by

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CERTIFICATE

This is certify that,

K.SRUJANA(19071A04M1),K.SHIVANI(19071A04M2),K.THIRUMALES H(19071A04M3),L.YASHASWI(19071A04M4) have completed their course project work at ECE Department of VNR VJIET, Hyderabad entitled '**AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT**' in complete fulfillment of the requirements for the award of B. Tech degree during the academic year 2019-2020. This work is carried out under my supervision and has not been submitted to any other

University/Institute forward of any degree/diploma.

RAMA DEVI

Dr. Y. Padma Sai

Assistant Professor

Professor and Head

ECE Department

ECE Department

VNRVJIET

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DECLARATION

This is to certify that our project report titled '**AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT**' submitted to Vallurupalli Nageswara Rao Institute of Engineering and Technology in complete fulfillment of requirement for the award of Bachelor of Technology in Electronics and Communication Engineering is a bonafide report to the work carried out by us under the guidance and supervision of J. Ramana Kumari and P. Suresh Babu, Assistant Professors, Department of Electronics and Communication Engineering, Vallurupalli Nageswara Rao Institute of Engineering and Technology. To the best of our knowledge, this has not been submitted in any form to other university or institution for the award of any degree or diploma.

ACKNOWLEDGEMENT

Over a span of two years, VN RVJIET has helped us transform ourselves from mere amateurs in the field of Electronics into skilled engineers capable of handling any given situation in real time. We are highly indebted to the institute for everything that it has given us. We would like to express our gratitude towards the principal of our institute, **Dr. Challa Dhanunjaya Naidu** and the Head of the Electronics and Communication & Engineering Department, **Dr. Y. Padma Sai** for their kind co-operation and encouragement which helped us complete the project in the stipulated time. Although we have spent a lot of time and put in a lot effort into this project, it would not have been possible without the motivating support and help of our project guidance of **RAMA DEVI**. We thank them for their guidance, constant supervision and for providing necessary information to complete this project. Our thanks and appreciations also go to all the faculty members, staff members of VN RVJIET, and all our friends who have helped us put this project together.

INDEX

| Table of contents | PageNo |
|--------------------------------------|---------------|
| Abstract | 7 |
| Introduction | 8-9 |
| Model Circuit Diagram | 10 |
| Circuit Operation | 10 |
| Circuit | 11 |
| Simulation Results | 11-12 |
| Literature Survey & Reference Papers | 13 |

ABSTRACT

Some of the common problems of the era is lack of time and emergency and rushing towards the work. In this routine, we forget the little basic things like turning off lights after living the room and turning off the headlights of the car. Even though it is a small mistake the energy loss is not low.

We can use a timer circuit, that can be used to prevent the car headlights from shutting off as soon as the ignition is turned OFF. Also, the headlights can be allowed to remain illuminated for some preset delay, once the driver locks the car ignition and walks off towards his destination which may be his home or office.

This allows the owner to see the path and enter the destination comfortably with visible illumination from the headlights. Subsequently, when the delay period elapses the timer circuit switches off the headlights. Our Electronic Circuit Saves the battery energy while the car ignition is switched off. It reduces the need of checking whether the car headlight is turn off or not and it also allows us to set timer for turning off the head light i.e. varying the time for turning off the lamps/car headlight. We use 555 timer **IC(IC555)**, transistors, capacitors, resistors and diodes to make the circuit and we operate IC555 in mono stable mode to generate Single pulse When the timer gets an indication from the input of trigger button of IC555. We also use an NPN transistor and relay. We use relay to avoid mechanical on/off the switch. We build and operate the circuit in **Multisim software tool**.

INTRODUCTION

In our project we implemented Automatic car headlight turnoff circuit using IC555 timer. It is exclusively an application-based project used to delay the off timing of car headlight ON timing to illuminate dark pathways and need of checking the car headlights Whether it is turnoff or not. This electronic circuit saves the battery energy while the car ignition switch is turned OFF. It reduces the need for checking whether the headlights are ON/OFF. We can also vary the time for turn OFF the lamps by varying the potentiometer connected to the timer IC.

Components Required:

| Component | Value |
|------------------|--------------------|
| R1 | 22KOhms |
| R2 | 1KOhms |
| VR1 | 470KOhms |
| R3 | 22KOhms |
| C1 | 100uF |
| C2 | 0.01uF |
| C3 | 0.01uF |
| Diodes(D1,D2,D3) | IN4007 |
| Timer(U1) | IC555 |
| S1 | SPDT Switch |
| K1 | 1 C Relay |
| Transistor(Q1) | SL100 |
| V1 | 12V (Auto battery) |
| X2 | Lamp(Headlight) |

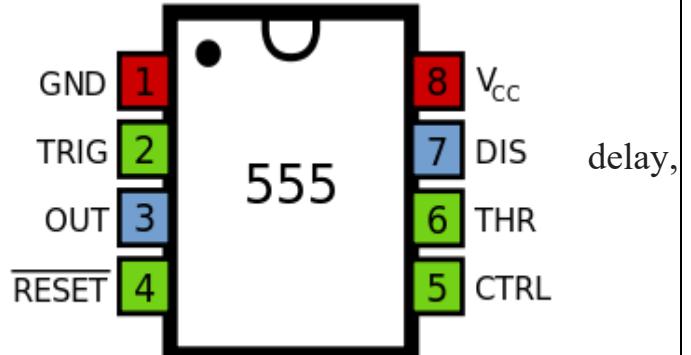
Specifications of components:

IC555:

- The **555 timer IC** is an integrated circuit (chip) used in a variety of timer, pulse generation, and oscillator applications.

The IC 555 timer is a one type of chip used in different applications like an oscillator, pulse generation, timer. The designing of IC 555 timers can be done by using various electrical and electronic components like transistors, resistors, diodes and a flip flop.

The operating range of this IC ranges from 4.5V -15V DC supply. The functional parts of the 555 timer IC include flip-flop, voltage divider and a comparator. The main function of this IC is to generate an accurate timing pulse.



- Different modes of Operation:

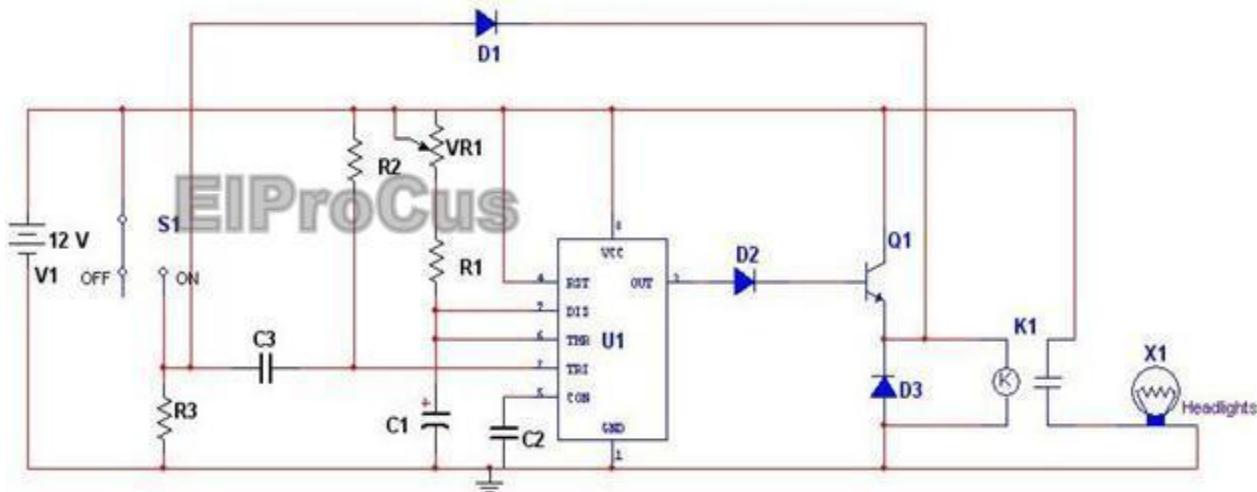
- 1.monostable mode
- 2.bistable mode
- 3.astable

In this circuit we use monostable mode of operation.

MONOSTABLE MODE:

In this mode, the circuit generates only single pulse when the timer gets an indication from i/p of the trigger button. Pulse duration can be depends on the values of the resistor and capacitor If an activating pulse is applied to the i/p of the circuit through a push button, then the capacitor gets charge and the timer circuit extends a high pulse, then it remains high until capacitor totally discharges. If it is necessary to enhance the time delay, then higher rate of capacitor and resistor are required.

MODEL CIRCUIT DIAGRAM



CIRCUIT OPERATION

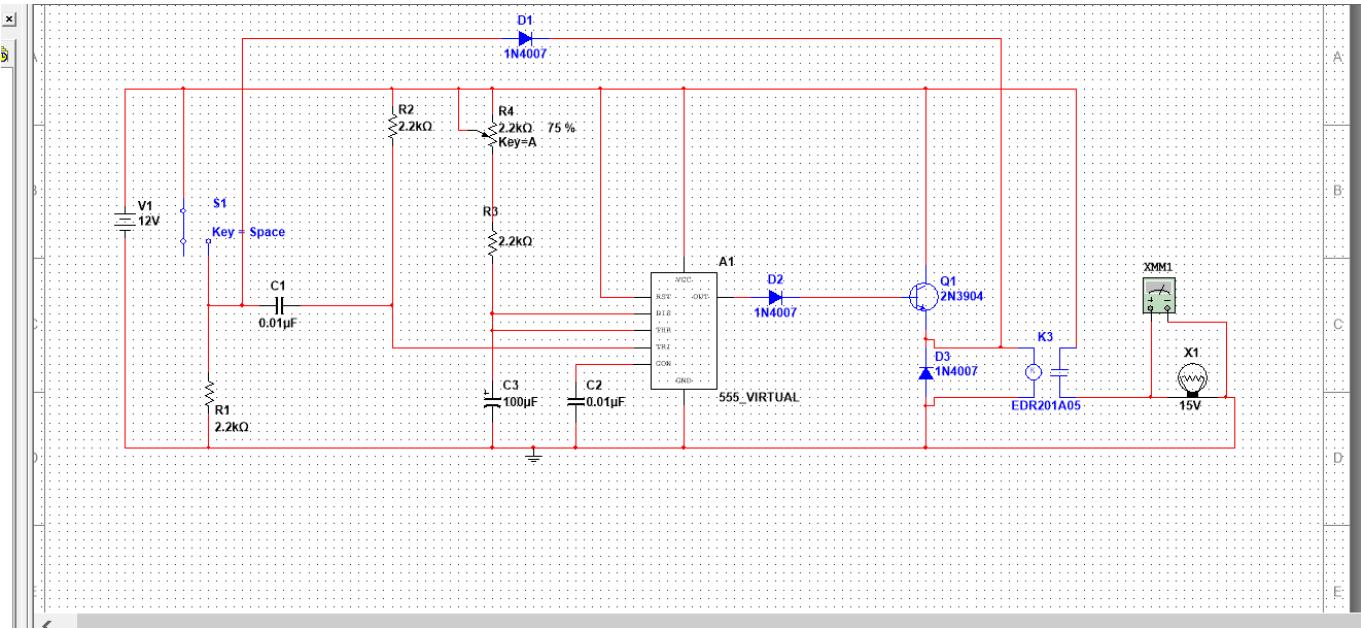
Circuit Connection

This circuit mainly comprises of 555 timer IC, NPN transistor and the relay. Timer IC is connected in the monostable mode of operation. In this mode, timer requires a trigger input to generate the pulse with a certain time period. The output from the timer IC is connected to an NPN transistor. The collector of this transistor is connected to one terminal of a relay coil. Relay is used to control the ON/OFF periods of the lamp.

Circuit Diagram and Its Operation

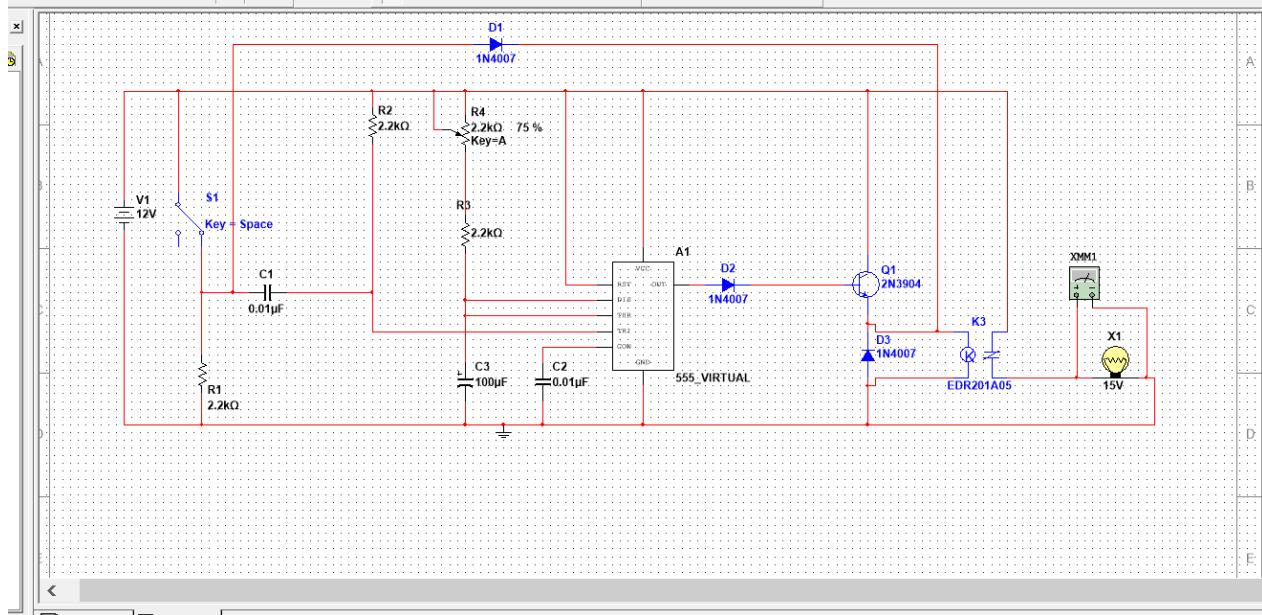
An ignition switch acts as a triggering pulse to the timer. When the ignition is switched ON, a high logic signal is fed to the trigger pin of the timer and the timer doesn't produce any output. The diode, as well as the transistor, don't conduct. The relay coil gets energized as it is connected to proper supply and headlights get switched on.

CIRCUIT:

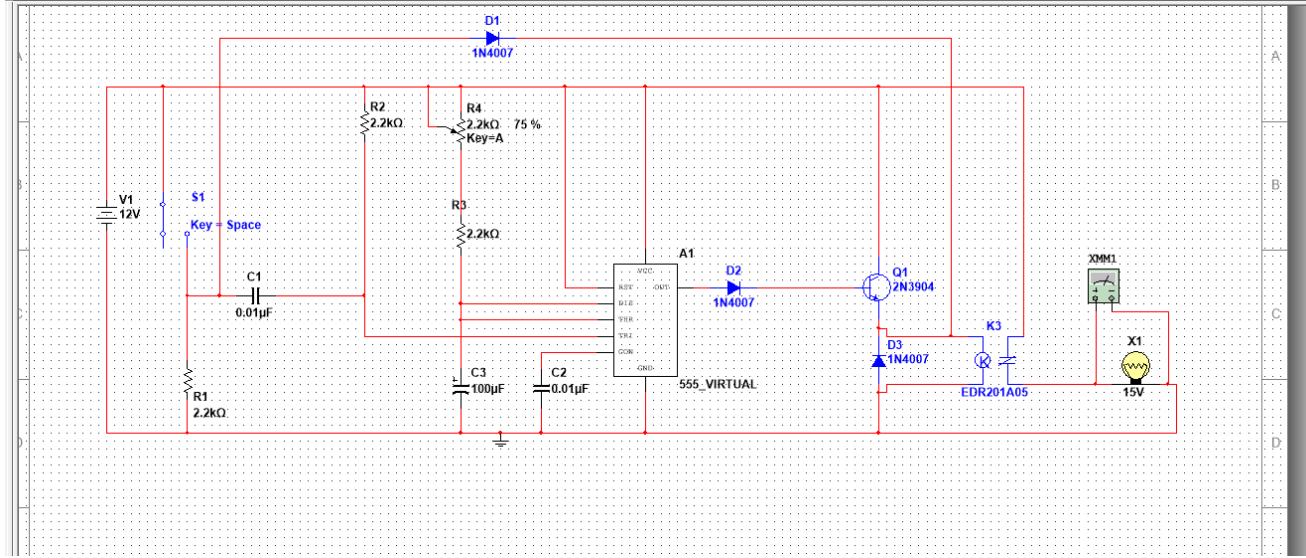


SIMULATION RESULTS:

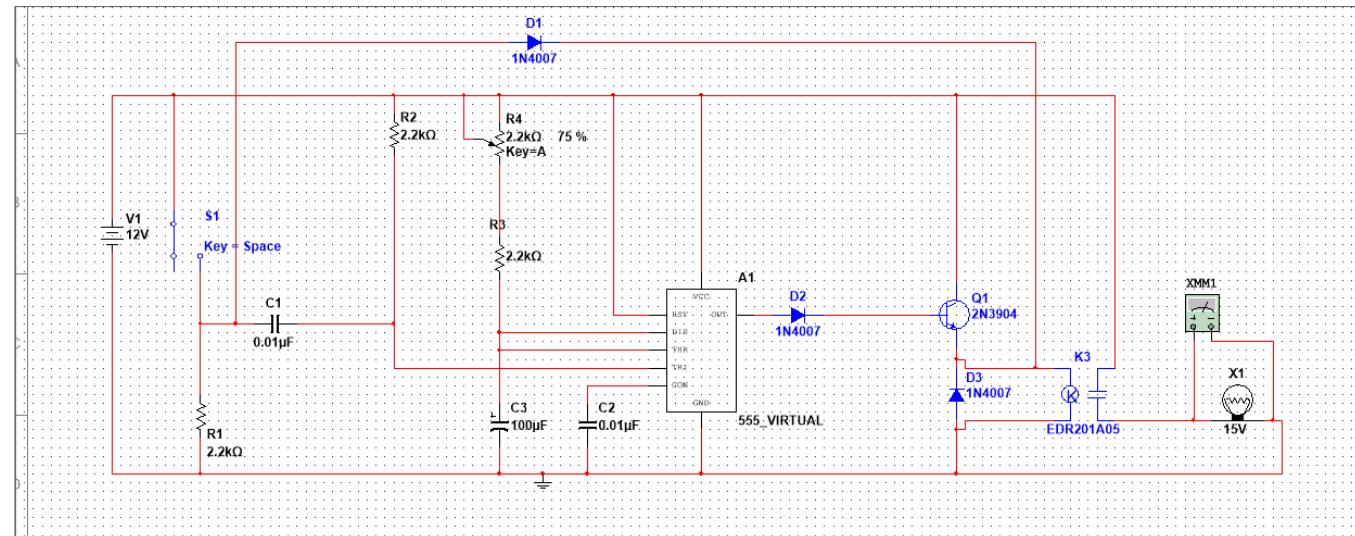
- Stage 1: headlight will be turned on when we close the switch



- Stage 2: Headlight will be remain in on state even though we open the switch



- Stage 3: After particular time period headlight will be turned off automatically



Reference papers:

- Real Time Simulation of Working of Timer IC 555 using its Internal Block Diagram,
Dattaraj Vidyasagar Department of Electronics, Lecturer, Shri R.L.T.
College of Science, Akola.
- Design of Resistor-Capacitor Timer Switch for Home Application International Research
Journal of Engineering and Technology (IRJET)
Anuj Goyal¹, Aanjan Patodia², Pranav Nelge³ Department of Mechanical Engineering,
Vishwakarma Institute of Technology, Maharashtra, India.
- [Automatic Delayed Turn Off Car Headlights \(circuits-diy.com\)](#)
- [10 Best Timer Circuits using IC 555 | Homemade Circuit Projects \(homemade-circuits.com\)](#)
- [Automatic Car/Vehicle Head Lights Turn Off Circuit \(circuitstoday.com\)](#)