

AUTOMATIC CAR HEADLIGHT TURN OFF CIRCUIT

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Abstract- A headlamp is a lamp attached to the front of a vehicle to illuminate the road ahead. Headlamps are also often called headlights, but in the most precise usage, headlamp is the term for the device itself and headlight is the term for the beam of light produced and distributed by the device. Headlamp performance has steadily improved throughout the automobile age, spurred by the great disparity between daytime and nighttime traffic fatalities. The headlight is capable of shutting select areas of the light depending on the position of oncoming traffic. It is quite helpful as it prevents the car from blinding drivers ahead.

An automatic headlight control circuit is disclosed which will serve to turn-on automobile lights in response to pulsed external signals such as ignition pulses. A delay circuit is provided which will cause the lights to be turned-off a predetermined period of time after the external signals to the control circuit have ceased. A delay of several minutes is accomplished using this circuit.

1. Introduction

A automatic headlight *control* circuit for a car allows one to illuminate the path on roads, and driveways, where there is no lighting. Also sometimes called a "Relay Delay", it keeps the headlights switched ON for a pre-set amount of time after switching OFF the ignition.

It is a very useful safety device if your driveway has no lights and you need to illuminate it until you are indoors..

This electronic circuit saves the battery energy while the car ignition switch is turned OFF. It reduces the need for checking whether the head lights are ON/OFF

2. Working principle

This circuit when set up in a car automatically turns off the headlight after a preset time after the ignition switch is turned off • When the ignition switch is to the ON position, current to the relay coil arrives via Diode D3 and the contacts RLA/1 close, providing power to both headlights and the timer circuit. Hence, when the ignition is ON the headlights operate as they normally would. When the ignition switch is to the OFF position, there is no longer any current to the relay coil via D3, and simultaneously C2 provides a negative going trigger pulse to pin 2, initiating a 50 second delay cycle, during which time the relay coil is energised via D2 and the relay contacts RLA/1 remain closed. After 50 seconds, the power to the relay coil discontinues and the contacts RLA/1 open cutting power to the whole circuit including the headlights and the timer IC itself. After the set time the light goes off.

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 doesn't conduct. The relay coil gets energized as it is connected to proper supply and headlights get switched on. When the ignition switch is turned OFF, a low logic pulse is given to the second pin of the timer so the output of the timer goes HIGH for time period which is set by the RC values. The relay coil will be energized and the lamp will glow, but for a certain minimum time period and then will be switched off.

3. Software requirements

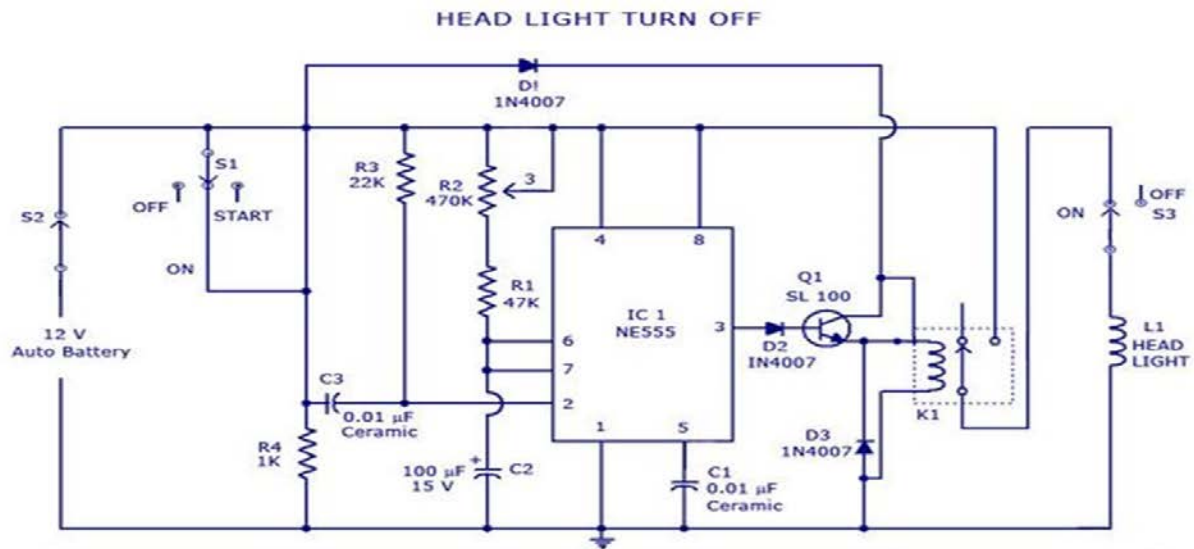
Kicad software

The KiCad suite has five main parts:

- KiCad – the project manager.
- Eeschema – the schematic capture editor.
- Pcbnew – the PCB layout program. It also has a 3D view.
- GerbView – the gerber viewer.
- Bitmap2Component – tool to convert images to footprints for PCB artwork.

we have used kicad project manager ,eeschema tool and pcb new for generating our circuit model

4. Circuit diagram



5. Implementation details

a. The project manager

Manages both pcb and schematics files done for project

b. Eeschema

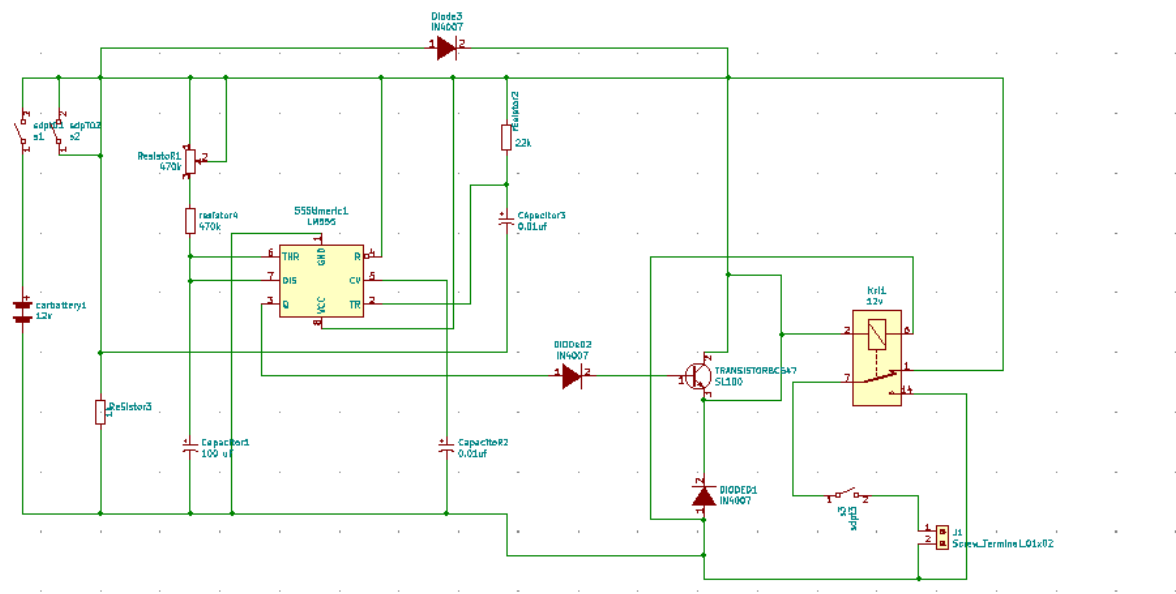
KiCad software includes a Schematic Editor, where one can create designs using the official library for schematic symbols and a builtin schematic symbol editor. After adding the required symbols and connecting them by drawing wires between, we may set values for each component just to serve as a reminder. The schematic is then annotated and best-fit footprints are added to each component from the available footprint libraries. The footprint is what will be printed onto the board for each component. The Electrical Rules Check (ERC) helps in finding the errors which may be present in the design. After resolving all the errors and warnings shown after ERC, we proceed to the PCB Layout designing

c. Pcb layout

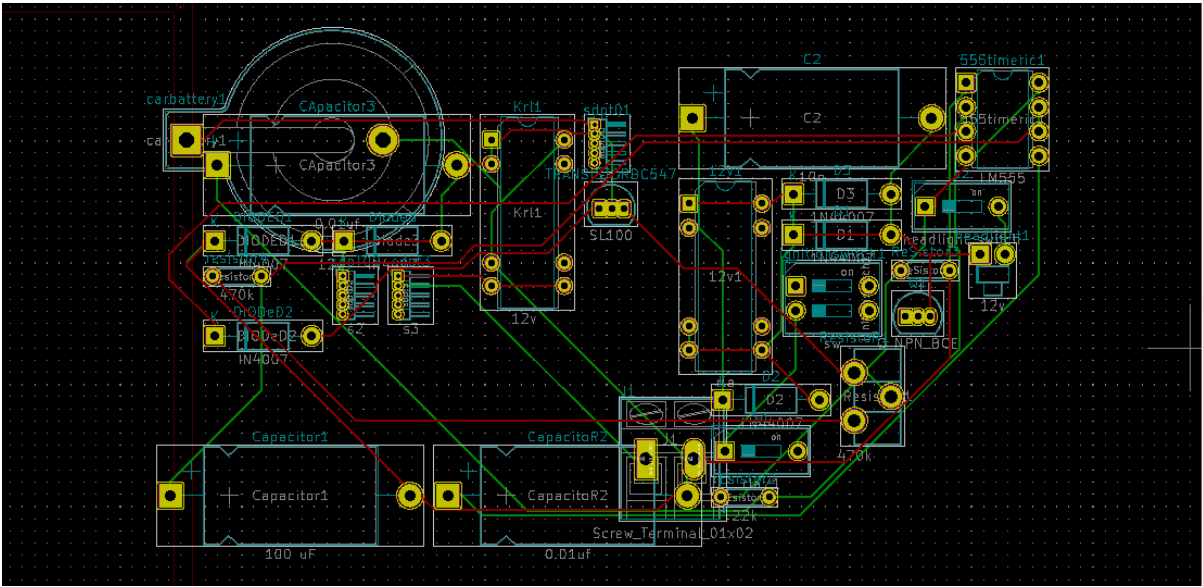
KiCad allows to create PCB layouts with a wide array of tools from KiCad schematics. The PCB board is updated from the Schematic thereby adding all the components in the schematic to the PCB board. White straight lines in the layout called Air-wires depict the existing connections between the components as shown in the schematic. The components are placed according to convenience without the air-wires crossing. Tracks are drawn between the components to connect them and finally we draw an outline for the entire layout.

6. Experimentation results

a. Schematic layout of circuit(eeschema)



b. Pcb layout of circuit



7. conclusion

This simple circuit automatic headlight switch turn on vehicle head light when reaching dark tunnel or during night time, by fixing this circuit driver can concentrate on driving without any think about headlight of vehicle. It is a very useful safety device if your driveway has no lights and you need to illuminate it until you are indoors. People often think that you forgot to turn OFF your headlights; however, the headlights and the associated circuit automatically switch OFF after a delay of 50 seconds.

8. references

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