300 ELECTRONIC PROJECTS

FOR INVENTORS

ARSATH NATHEEM S

300

ELECTRONIC MINI PROJECTS

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WHY I WROTE THIS BOOK

I wrote this book because electronic projects play a vital role in improving skill as well as in increasing career opportunities for a student. Making a project will expose the practical side of a scholar. Project based learning will lead to cooperating education and make a deeper impact on the student. it also creates the knowledge part more enjoyable as students are able to grasp more while learning it in a group. Therefore, let us focus on good projects related to different sectors of electronics and Communication that will enhance one's skills. Project work allows graduates to think out of the case owed to the creative levels of imagination. Right from selecting a topic from an area of interest, this project work involves finding creative solutions to several project associated problems and many technical challenges. Project works at all times make developments to the existing system, and therefore, it ultimately enables students to think socially with an innovative practical mindset and thought. An electronic engineer should implement his knowledge to develop society

"Tell me and I forget, teach me and I may remember, involve me and I learn**"** -- Benjamin Franklin

WHY YOU SHOULD READ THIS BOOK

The book includes 300 exciting projects in comprehensive functional description and electronic circuits for innovators, engineering students and electronics lover, this book is written for all the people who love innovation. It is the huge collection of ideas to do some innovative project, to create something new. I believe this Book will be helpful for the students for their mini project, also includes functioning basics in case of electronic components i.e., Resistors, Capacitors, Diodes, Transformers, Transistors, LEDs, Variable Resistors, ICs, PCB, Arduino and Raspberry Pi . This book for scholars and hobbyists to learn basic electronics through practical presentable circuits. A handy guide for college and school science fair projects or for creation personal hobby, Design new panels and make new circuit designs.

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Introduction

An overview to electronic components which is used to make more innovative projects There are numerous basic electrical and electronic components are normally found in numerous circuits of peripherals such as hard-disk, mother boards, etc. Several circuits are designed with numerous components like resistors, capacitors, transistors, inductors, transformers, fuses and switches etc. Therefore, this book offers a quick info concerning different types of electronic and electrical components that are utilized in various electronic and electrical projects, embedded systems. Let you will see each and every part in detail with diagrams. Resistors, inductors, transformers

Basic Electronic Components

Major Electrical and Electronic Components

The major electrical and electronic components utilized in electrical and electronic projects like resistors, capacitors, transistors, integrated circuits (IC), switches, relays, motors, etc. In many circuits, these components are used to build the innovative projects.

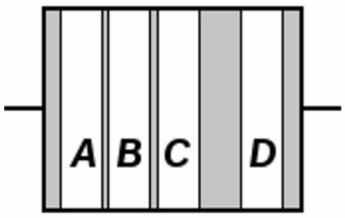
Resistors

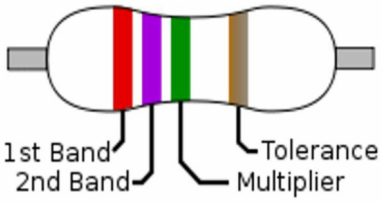
A resistor impedes the movement of electricity over a circuit, resistors have a conventional value.

Since voltage, current and resistance are associated over Ohm's law, resistors are a simple technique to control voltage and current in your circuit.

Resistor color codes

1st band =	1st number
2nd band =	2nd number
3rd band =	# of zeros / multiplier
4th band =	tolerance





Color Code Number: (BBROYGBVGW)

Tolerance: Gold = within 5%

Black:	0
Brown:	1
Red:	2
Orange:	3
Yellow:	4
Green:	5
Blue:	6
Violet:	7
Gray:	8
White:	9

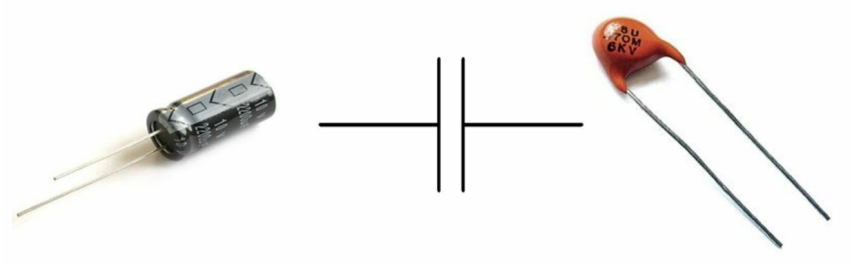
Unit

- To Identifying your units is significant
- Kilo & Mega are basic in resistors
- Milli, micro, nano & pico can be utilized in additional components

K (kilo) = 1,000
M (mega) = 1,000,000
M (milli) = 1/1,000
u (micro) = 1/1,000,000
n (nano) = 1/1,000,000,000 (one trillionth)
p (pico) = 1/ 1,000,000,000,000 (one quadrillionth)

Capacitors

- A capacitor is used to stores electrical energy. here pool of electrons is obtainable for electronic components to usage.



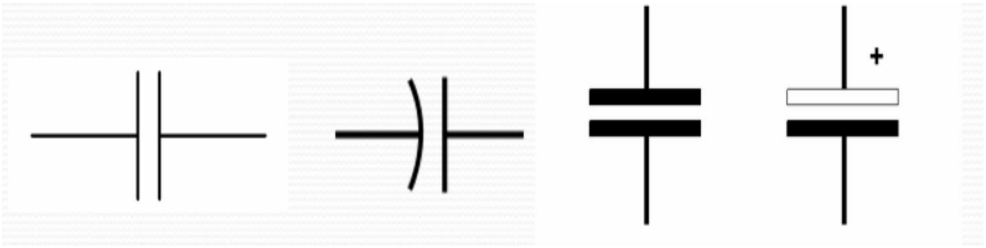
Capacitance is measured in the unit of Farads. The mini capacitors typically used in electronics are often determined in micro-farads and nano-farads. Some capacitors are polarized. Have to know the different length of terminals on one of the capacitors.

Polarity of capacitors

- The smaller terminal goes on the -ive side.
- 

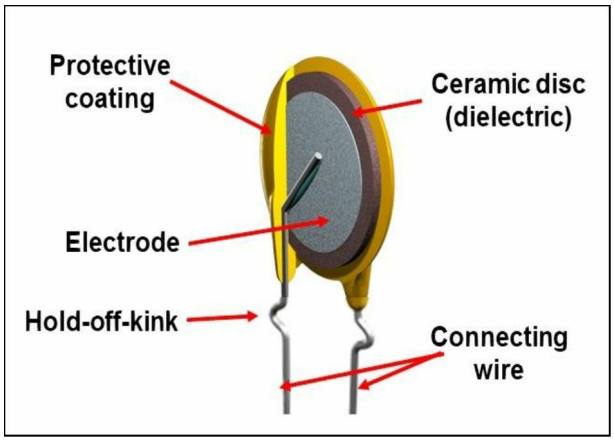
The strip is on the -ive terminal sideways of the capacitor.

The panel is noted for +ive or -ive.



Applications of capacitors

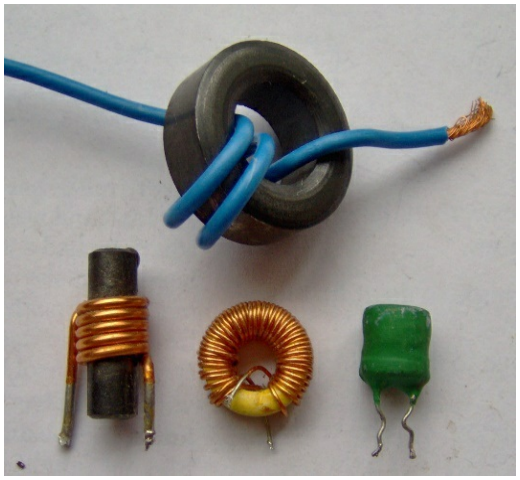
- Capacitors can pass a ***pool of electrons*** for instant use.
- If a component wants an instantaneous supply of electrons, the capacitor can pass those electrons.



Capacitors can ***smooth out a signal*** - remove the waves or spikes in DC voltage. The capacitor can attract the peaks and fill in the vales of a waved signal.

Inductors

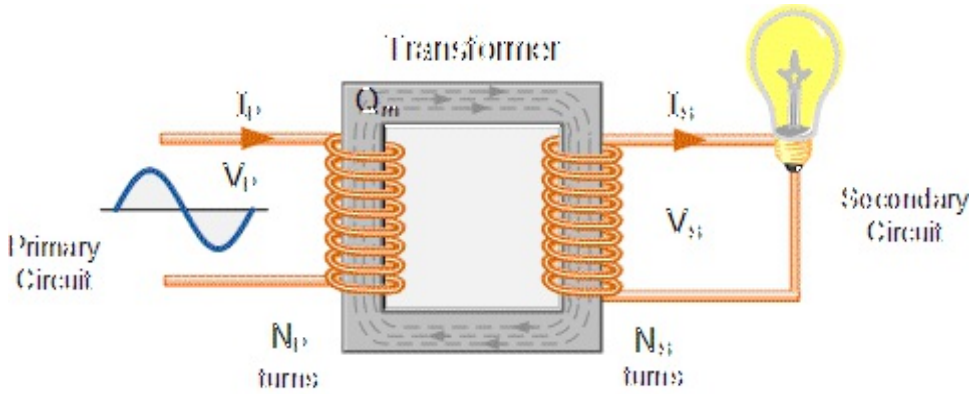
An inductor is a passive electronic component which is stores energy as a magnetic field. In its minimum tough form, an inductor includes of a wire loop or coil. The inductance is straight proportional to the amount of turns in the coil. Inductance similarly relies upon the distance of the coil and on the kind of material about which the coil is wound.



An inductor, similarly called a coil, choke or reactor, is a passive two-terminal electrical component which stores the current in a magnetic-field once electric current pass through it. An inductor usually includes of an insulated wire twisted into a coil about a center.

Transformer

A transformer is a static-electrical device which exchanges electrical current among at minimum two circuits over electromagnetic acceptance. A changing current in one coil of the transformer makes an opposing magnetic field, that thusly prompts a shifting electromotive force (emf) or "voltage" in a instant coil. Energy can be exchanged among the two coils, without a metallic suggestion between the two circuits.



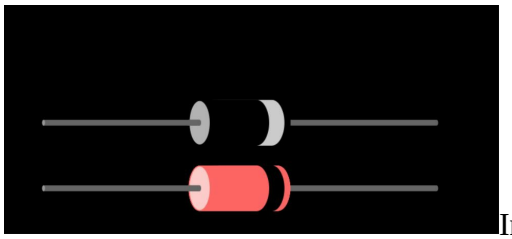
Faraday's law of inductance found in 1831 portrayed this influence. Transformers are utilized to increment or lessening the rotating voltages in electric energy applications.

Diode

- A diode is a one-way controller (or gate) for electricity. Diode is a component by an irregular transfer characteristic.
- A diode has little (preferably zero) resistance in one way, and high (preferably infinite) resistance in the other way.

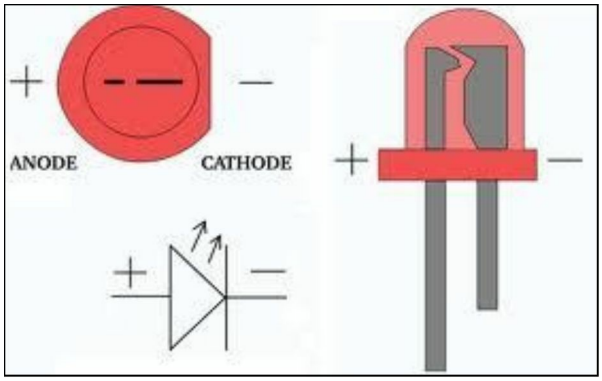
- Diodes will protect your electronics

Diode circuit protection

 In a DPDT switch, if polarization is incorrect, the motor will run backwards. In an electronic circuit, if the polarization is incorrect, you can fry your components.

A diode in your scheme will assistance to avoid problems.

Light emitting diode (LED)

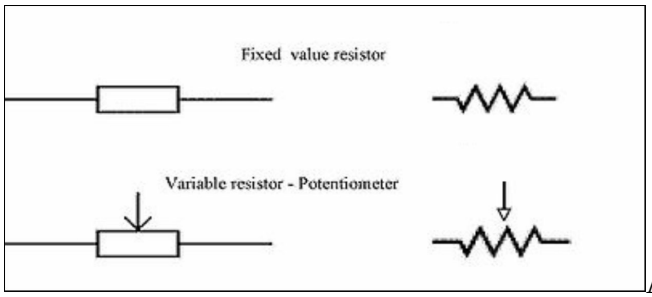


A light emitting diode (LED) is a semiconductor light source. Once electricity is flow through the diode, it produces light.

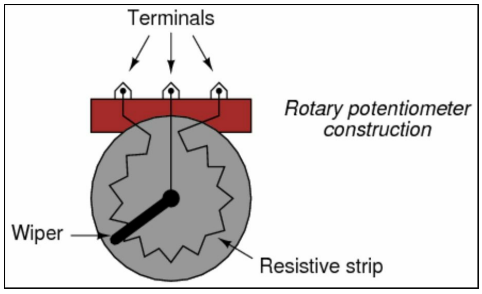
Variable resistor (Potentiometer)

A potentiometer is a variable resistor. As you physically turn a dial, the resistance variations.

How a variable resistor works



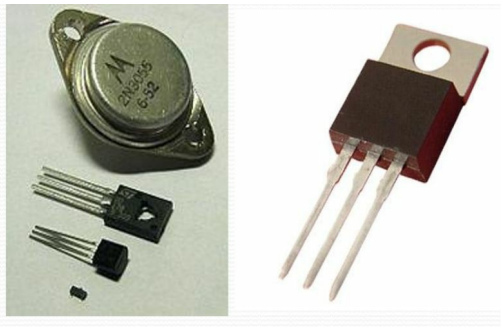
As the dial or wiper turns, electricity essential go through more or less of the resistive strip.



In sequence, the variation in resistance means a variation in voltage, so as you turn the dial or wiper, you become a variation in voltage

Transistors

A transistor is a semiconductor device applicable to switch and amplify electrical power and electronic signals.



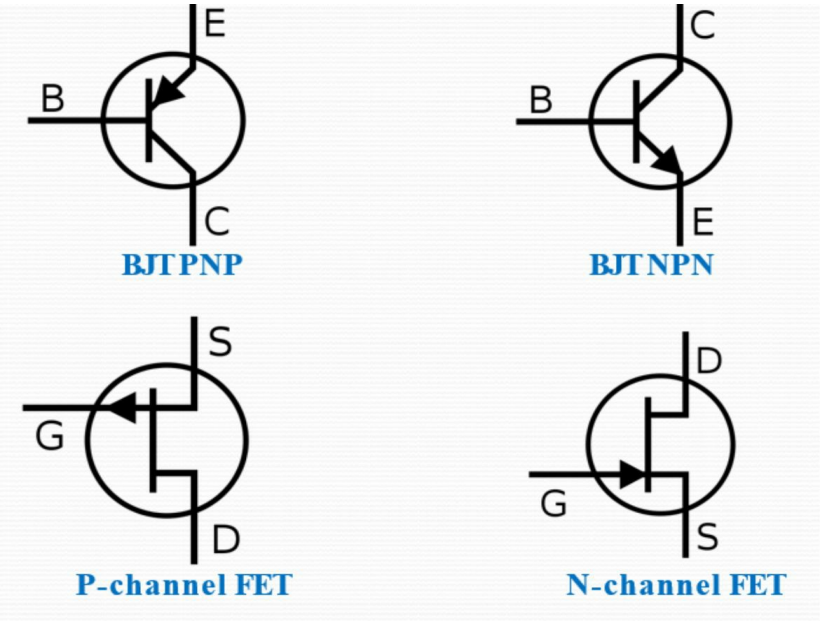
How a transistor works

- A voltage or current pass to one pair of the transistor's terminals variations the current over different pair of terminals.
- A transistor is combines of semiconductor material with at minimum three terminals, for assembly to an external circuit.

Transistors have 3 pins.

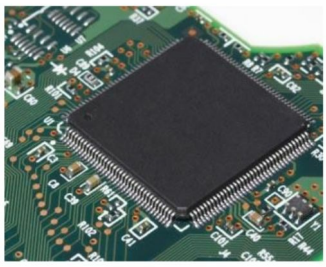
1. Collector
2. Emitter
3. [redacted]Base

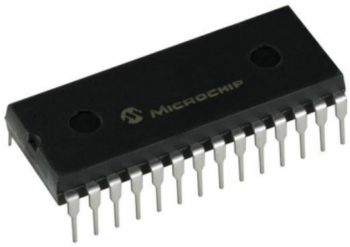
Schematic symbols



Integrated circuit (IC)

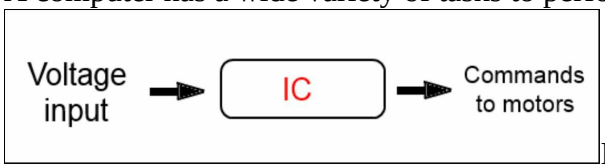
- An integrated circuit (IC) is a group of transistors which is the controller or ‘brain’ of an electronic circuit.
- An input is received, an output is sent out.





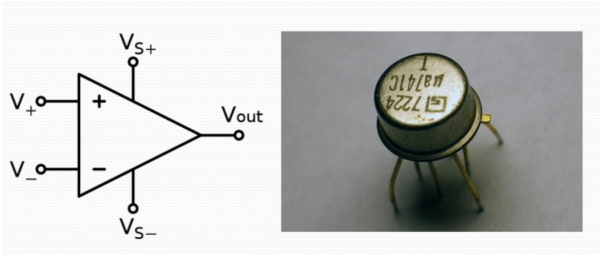
Current microprocessor ICs can have billions of transistors each square inch

What an IC can do for us?

- Billions of electronically measured on/off switches (transistors) is how the microprocessor in a digital computer 'thinks' and purposes.
- A computer has a wide variety of tasks to perform.
- 

But other ICs can fully simpler, separate jobs. For i.e., an IC can take a voltage input and output instructions to a motor.

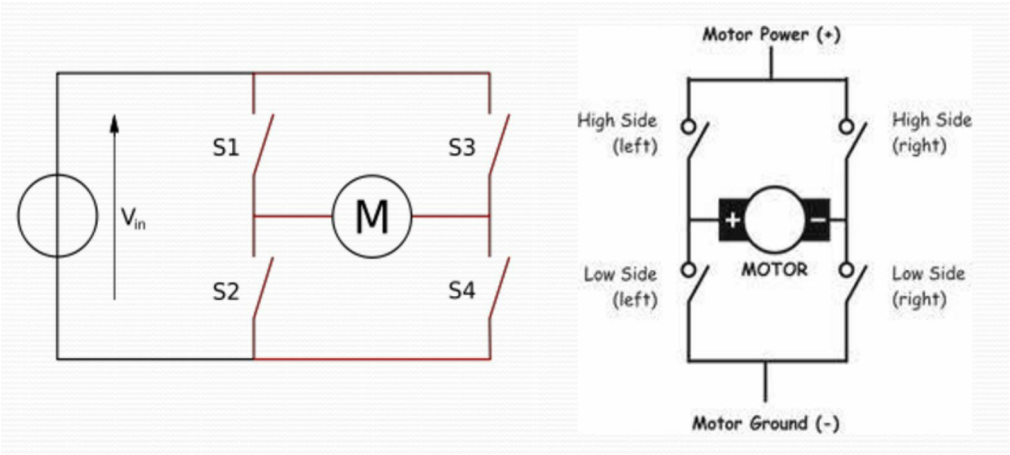
IC Terminology: Op-amp



An operational amplifier (op-amp) is a group of transistors inside the IC (Integrated Circuit). They frequently are the components doing the mathematical procedures.

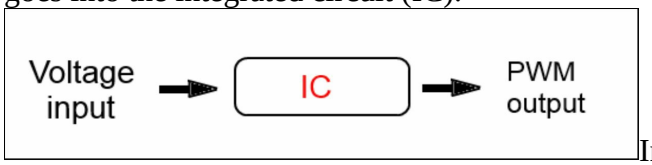
H-bridge

An electronic circuit which allows voltage to be applied across a load in any direction.



A DPDT switch also does this, but not electronically

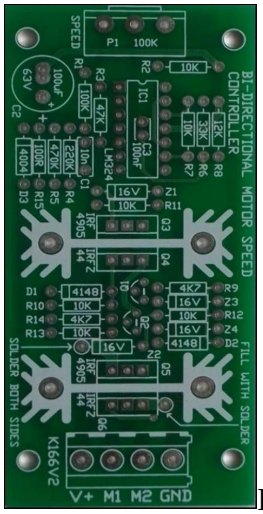
Varying voltage

- A potentiometer or variable resistor permits you to variation the voltage input which goes into the integrated circuit (IC).
- 

Integrated circuit can now output change of pulse widths to the transistors on the H-bridge.

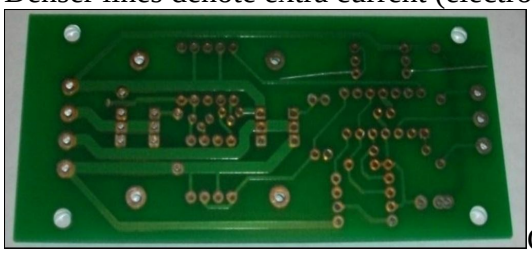
- This grouping of potentiometer, integrated circuit and PWM to the H-bridge *is* ***the key to speed controller.***

Printed Circuit Board (PCB)

- The ‘front’ side of the board will have printed component information, such as resistor and resistance, diode type and polarity, Components are attached to a printed circuit board.
- 

Holes go all the method over the board since one side to the other. Over hole soldering is needed to join components to the board.

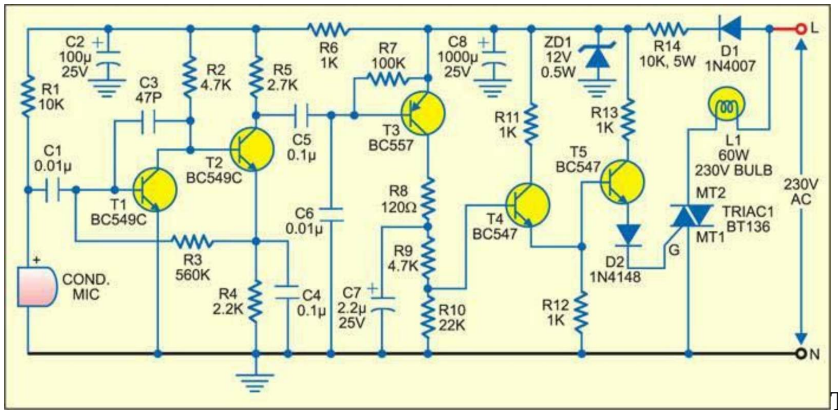
Backside of Circuit Board

- The ‘back’ side of the board will have lines indicating contacts between components. The lines on the back are alike to wires.
- Denser lines denote extra current (electrons) moving through.
- 
Components connect the lines**.**

Conclusion

- Confidently that wasn’t too confusing.
- The aim was to give you a simple understanding of how about of the electronic components of a motor speed controller work.
- Here’s lots of tools to help you with the basics.

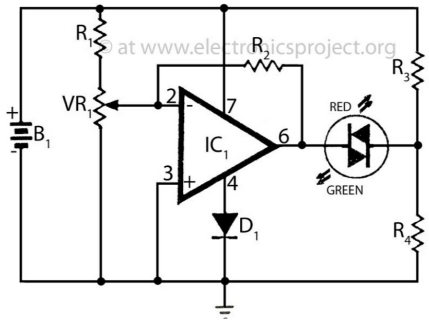
1. Sound-Operated Switch for Lamps



This is reasonable, completely transistorized switch is extremely touchy to sound signals and turns on a lamp when you clap inside 1.5 meters of the switch. One of its intriguing applications is in discotheques, where lights could be turned on or off in a state of harmony with the music beats or clapping.

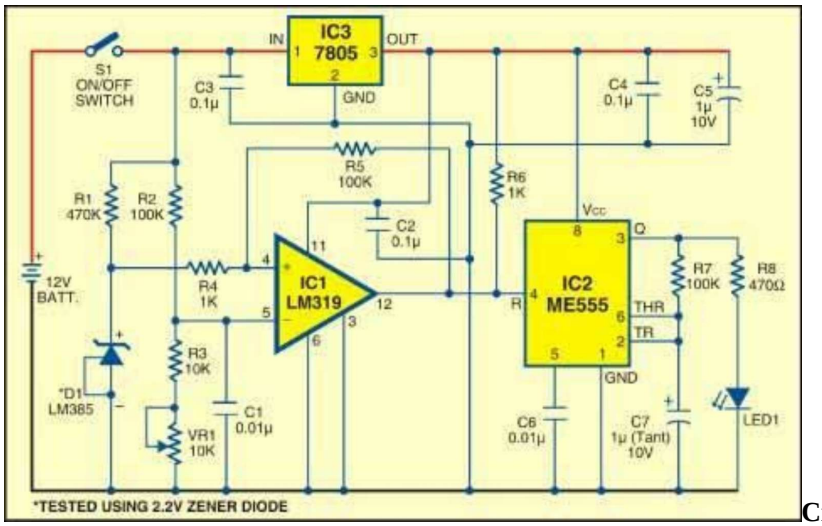
2. Battery-Low Indicator

Rechargeable batteries should not be discharged underneath a specific voltage level. This lower voltage limit depends upon the kind of the battery. Here's basic circuit can be used for 12V batteries to give a sign of the battery voltage falling underneath the preset value. The sign is as a gleaming LED



Another circuit

All rechargeable battery has their specific level of charging and discharging, they are probably going to get damage if the battery voltage exceeds that level. This is a basic circuit battery voltage monitor used to indicate the state of battery by monitor them.



Circuit description of battery voltage monitor

This circuit of battery voltage monitor will have fabricated and designed with op-amp IC LM709 configured as comparator. Where bi-shading LED is used as pointer and indicates three voltage level state of a 12V battery. Resistor R1 with potentiometer VR1 is utilized as potential driver of voltage monitor circuit.

At the point when voltage level rise over 13.5 volts, the output from IC1 goes low as a result LED begins to emit RED light. Similarly, when the voltage falls beneath a preset level (10V) the output goes high and the LED start to emit GREEN light. Resistors R3 and R4 is utilized as current limiter of LED.

NOTE: Adjust VR1 such that LED begins to emit GREEN light when 10V DC is connected.

PARTS LIST

Required Resistors (all ¼-watt, ± 5% Carbon)

R1 = 1 KΩ; R2 = 18 KΩ; R3, R4 = 680 Ω

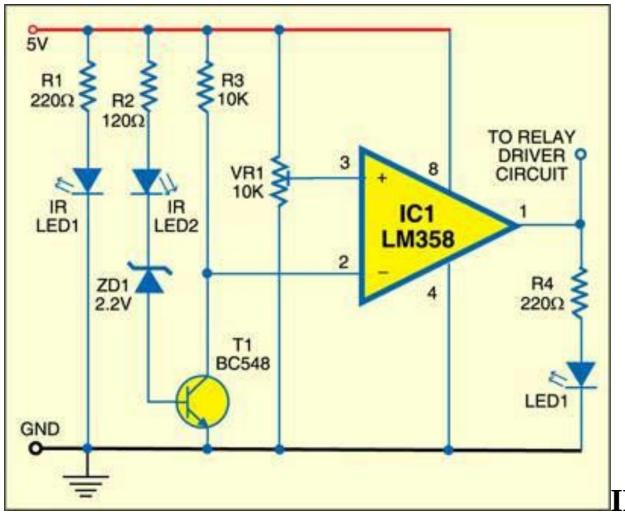
VR1 = 10 KΩ (Potentiometer)

Required Semiconductors

IC1 = LM709; D1 = 1N4003

Miscellaneous

B1 = 12V Battery; LED = Bi-color LED



3. IR sensors (infrared LEDs) to create an object-detection circuit

There are different applications of IR sensors, for example, burglar alarms, TV remote controllers and object counters. In this we have utilized IR sensors (infrared LEDs) to influence an object detection to circuit and likewise a proximity sensor for path-tracking robots. The fundamental thought is to transmit the IR light through an IR LED, which is then reflected by any obstacle ahead and detected by the receiving LED.

Another circuit

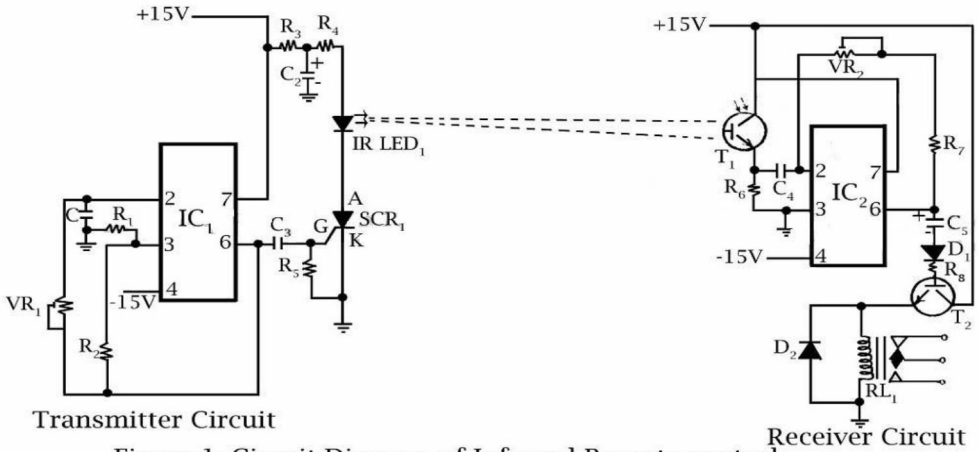


Figure 1: Circuit Diagram of Infrared Remote control

IR remote controller includes the transmitter and receiver segments. The scope of the transmitter can be increased up to 5 meters by utilizing convex lens. Circuit Portrayal of infrared (IR) remote controller

Transmitter area: - The transmitter circuit of infrared (IR) remote controller is worked around IC 741 (IC1) wired as frequency square wave oscillator. Gate pulse from stick no 6 of IC1 is given to gate of SCR1 to drive IR LED1. Variable resistor VR1 is utilized to differ the created frequencies.

Receiver segment: - The receiver circuit of infrared (IR) remote controller comprise an IC 741, photo transistor (T1) and medium power transistor (T2).

Photo transistor gets the transmitted signal and given to stick 2 of IC2 for amplification. The increased yield from stick 6 of IC2 is given to base of relay driver transistor (T2) through no polarized capacitor C5, diode D1 and resistor R8. Variable resistor VR1 is utilized to coordinate the transmitting and getting signal.

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1, R2 = 100 KΩ; R3, R5, R8 = 1 KΩ; R4 = 15 Ω; R6 = 22 KΩ; R7 = 10 MΩ; VR1 = 1 MΩ; VR2 = 2.2 MΩ

Capacitors

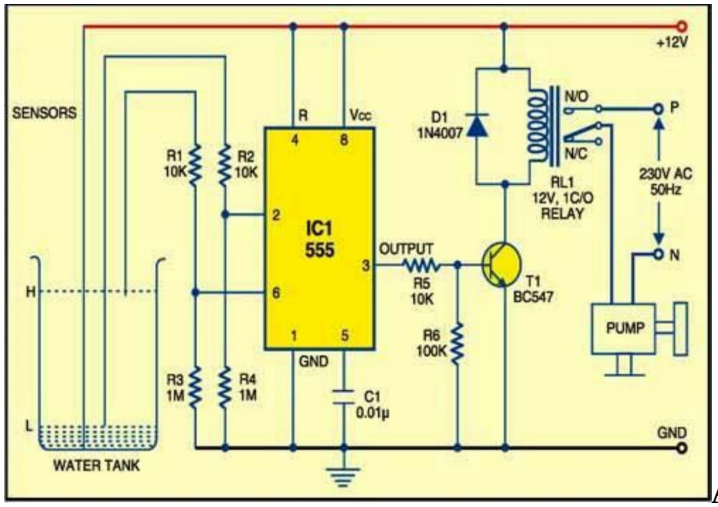
C1, C3, C4 = 0.1 µF; C2 = 1 µF/100V; C5 = 2.2
µF/16V

Semiconductors

IC1, IC2 = 741; SCR1 = SN050; T1 = photo transistor; T2 = SL100; D1, D2 = 1N4001

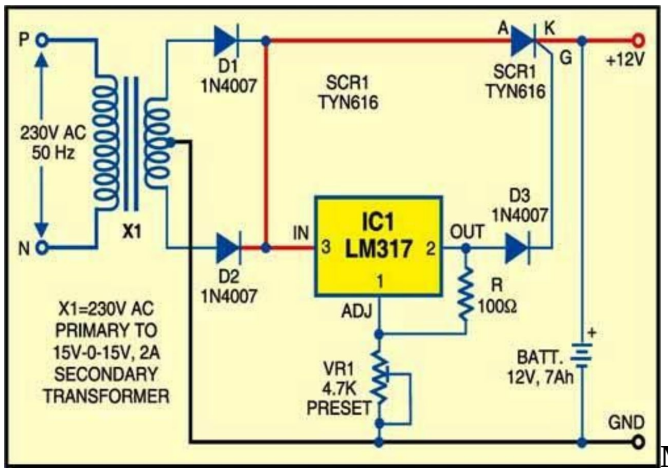
Miscellaneous

RL1 = 15V, 500Ω Relay; IR LED

4. 

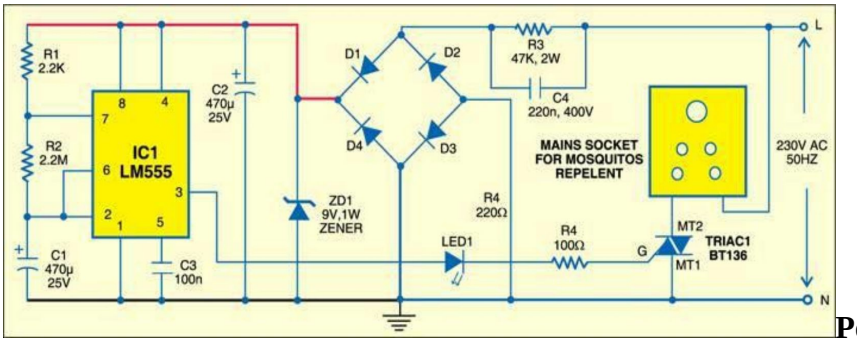
Another Water Pump Controller circuit

A water pump controller senses the level of water in a tank and drives the water pump. The circuit depicted here is built around timer IC1 (555). At the point when the water level of tank goes beneath the low level set apart by 'L' the voltage at pin 2 of IC1 turns out to be low. Thus, interior SR-flip-slump of IC1 resets and its yield goes high. This high yield pin 3 of IC1 drives relay driver transistor T1 (BC547) and empowers relay RL1. Water pump gets mains control supply through n/o contacts of the relay and is fueled on. It begins filling water in the tank

5. 

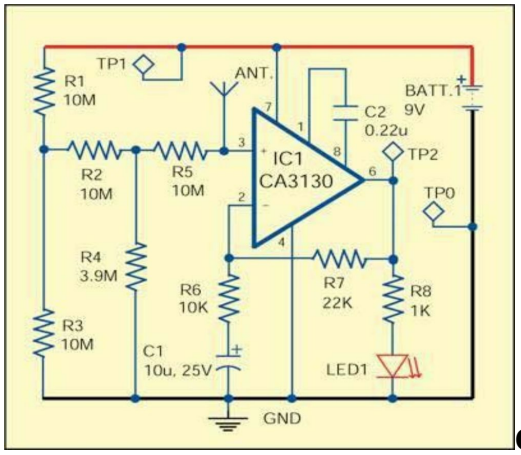
Micro Inverter

A basic low power inverter circuit is depicted here, which converts 12V DC into 230V Air conditioning. It can be utilized to power light loads like night lamps and cordless phones, however can be altered into a powerful inverter by including more MOSFETs. This circuit has two phases battery charger with cut-off, and battery level marker and inverter circuit. Charging circuit is worked around IC1 (LM317) as given circuit chart, when mains 230V Air conditioning is accessible, IC1 gives gate voltage to SCR1 (TYN616) through diode D3 (1N4007). SCR1 begins charging the battery. For yield voltage setting preset VR1 might be utilized.

6. 

Periodically on /off Mosquito repellents circuit

A portion of the mosquito repellents accessible in the market utilize a toxic liquid to produce poisonous vapors so as to repulse mosquitoes out of the room. Because of the persistent release of poisonous vapors into the room, after 12 pm the natural balance of the air composition for good health comes to or surpasses the critical level. For the most part, these vapors attack the brain through lungs and apply an anesthetic effect on mosquitoes as well as other living creatures by little or more noteworthy rate. Long introduction to these toxic vapors may cause neurological or related issues.



7. Cable Tester

Have you at any point wondered if a specific cable is delivering mains power supply to your gadget or not? This is a solution which assist you test cable continuity without requiring any physical contact with the exposed cable. This circuit practically detects AC signal frequencies and gives a LED sign if the cable is conducting. The circuit is exceedingly delicate and can detect signals from the surface of the cable itself and in this manner no immediate contact with the exposed cable is fundamental. The circuit can be utilized to test different cables, including modem, audio/video and dish reception apparatus cables to give some examples.

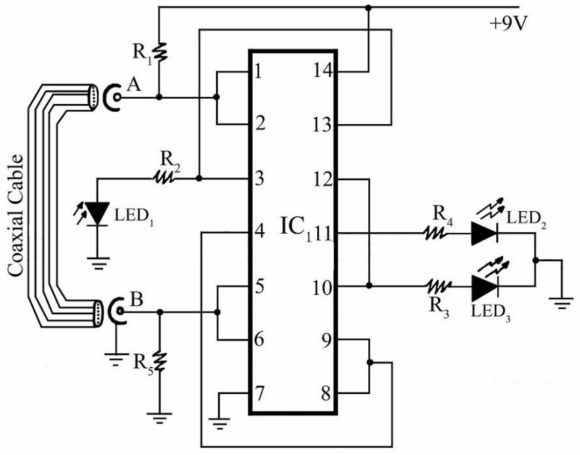


Figure 1: Circuit Diagram of Coaxial Cable Tester

Another Circuit

Co-axial cable is utilized as a transmission line for radio frequency signals. Be that as it may, at some point it is hard to detect transmitted signal from contribution to yield. Presently, this is a straightforward task 'Co-axial cable tester' by innovative gathering Dream lover technology utilizing four 2-input NOR door IC 4001. Testing of co-axial cable is passed by connecting to point An and B as appeared in circuit graph. Glowing LED1 show string of cable is inside joined; where glowing LED2 demonstrate the cable is open and glowing LED3 demonstrate cable is great. Short circuit of cable is shown by glowing two unique LEDs. Along these lines 'co-axial cable tester' is utilized to check whether

the cable is open, short circuit or great by glowing distinctive LEDs

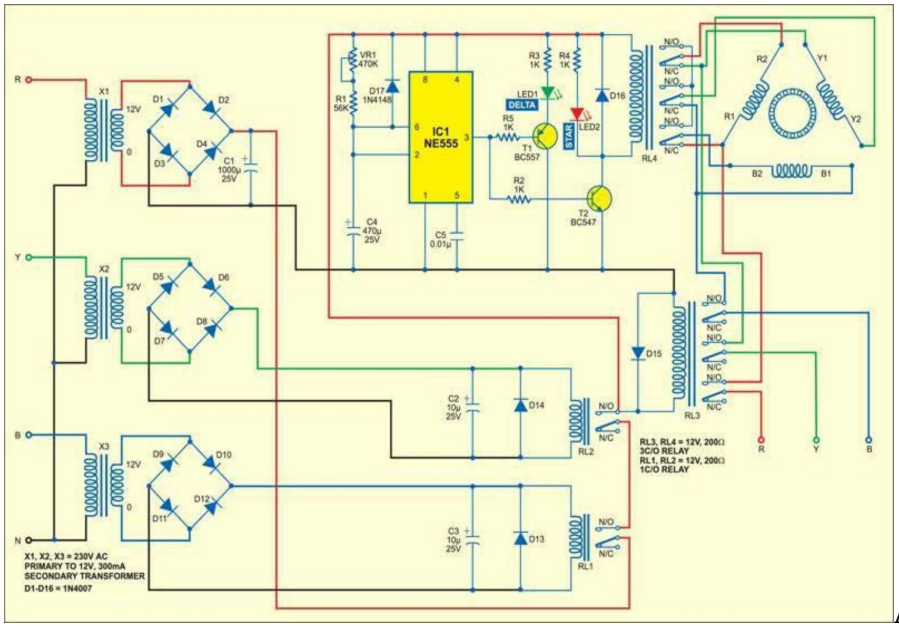
PARTS LIST

Required Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1 – R4 = 1 KΩ; R5 = 100 KΩ

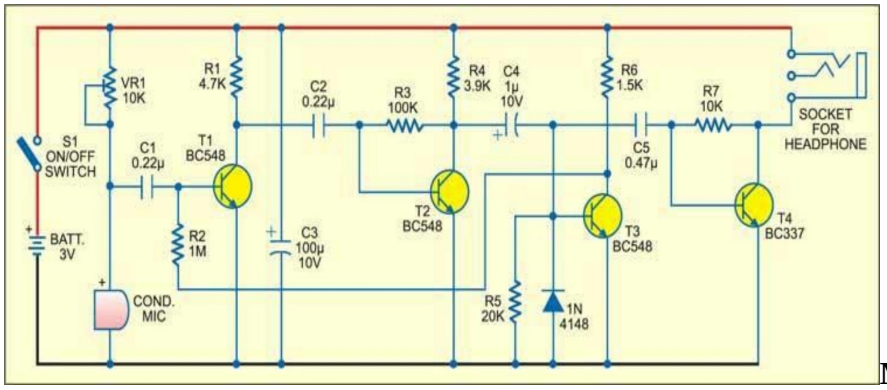
Required Semiconductors

IC1 = 4001 (quad 2-input NOR gate) LED1 = Red; LED2 = yellow; LED3 = Green

8. 

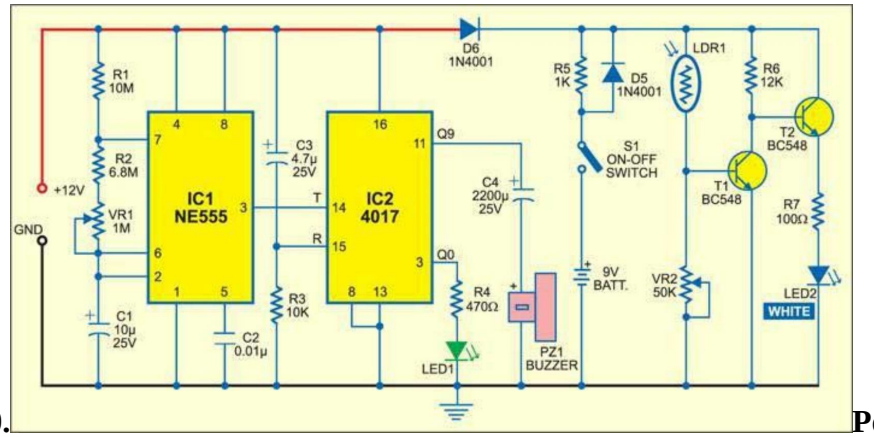
Automatic 3 Phase Induction Motor Starter

Starters for "3 phase squirrel cage" induction motors frequently utilize "star to delta" converters. The stator coils of the motor are associated in star setup at the season of power-on and changed to delta config when the motor reaches 3/fourth of its full speed, after the stator coils have created adequate back electromagnetic force (emf).

9. 

Multipurpose Listening Device

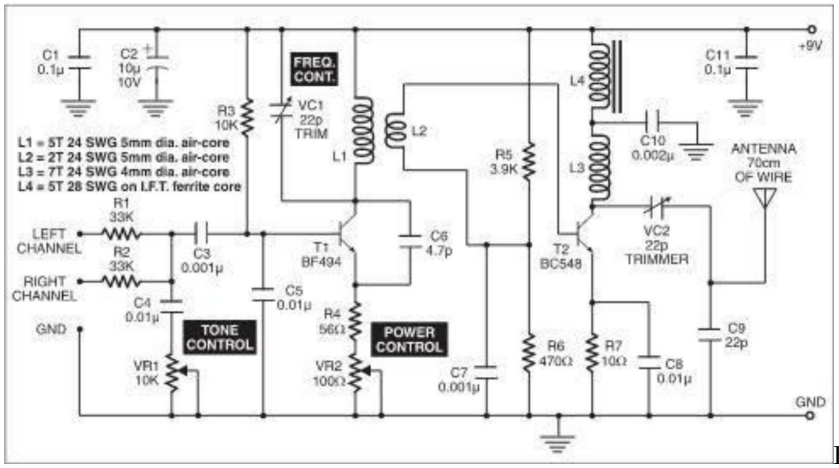
Here's circuit can detect exceptionally black out, remote sounds with a decent lucidity. It is utilized in meeting, conference Hall, cinema lobbies, address rooms in schools, and so on. The circuit can be housed in a little plastic box and kept in a shirt stash. It is particularly valuable for staring at the television programs at a low volume so as not to irritate other family individuals in the house.

10. 

Power-on Reminder with LED Lamp

Numerous a times equipment at workshops remain switched on unnoticed. In this situation, these may get harmed because of overheating. This is an extra device for the workbench power supply that helps you to remember the power-on status of the linked devices consistently by sounding a buzzer for around 20 seconds. It additionally has a white LED that gives sufficient light to find objects when mains come up short.

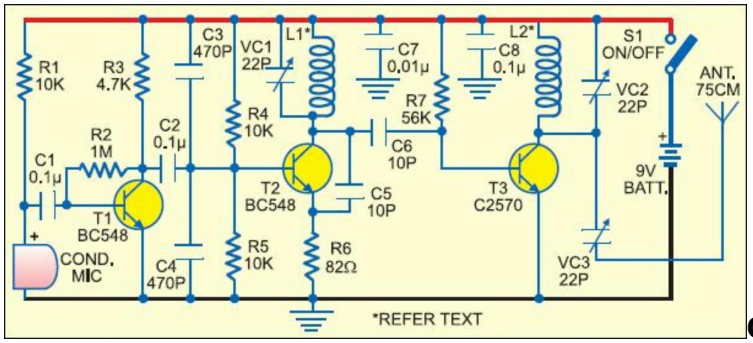
11.Quality FM Transmitter



Here's FM transmitter for your stereo or some other amplifier gives a decent signal strength up to a range of 500 meters with a power yield of around 200 mW. It will work off a 9V battery

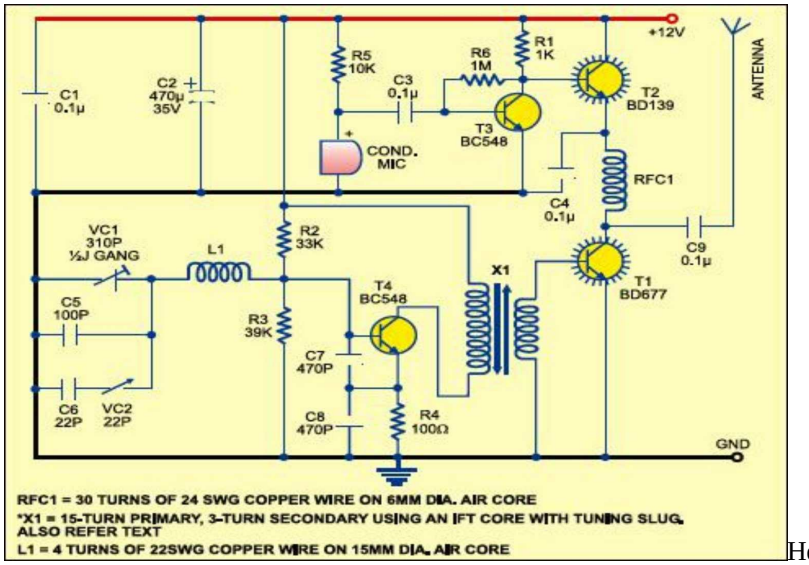
12.Medium-Power FM Transmitter

The Distance of this FM transmitter is close to 100 meters at 9V DC supply.



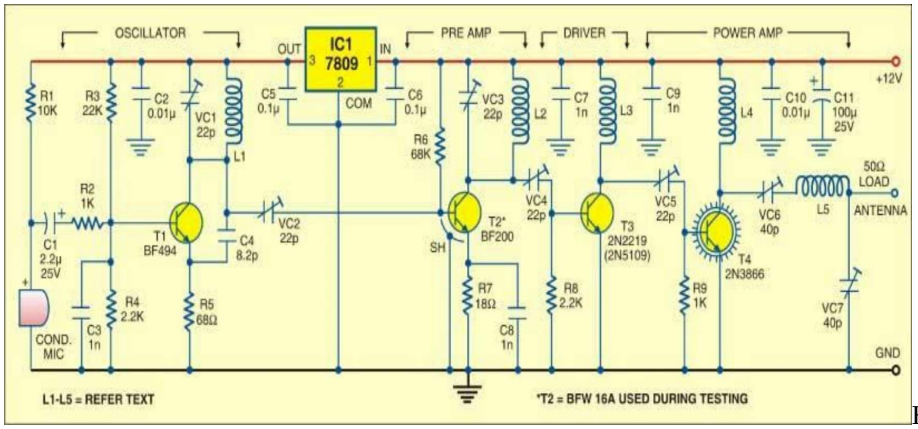
Circuit Diagram of Medium-Power FM Transmitter

13.Simple Short-Wave Transmitter



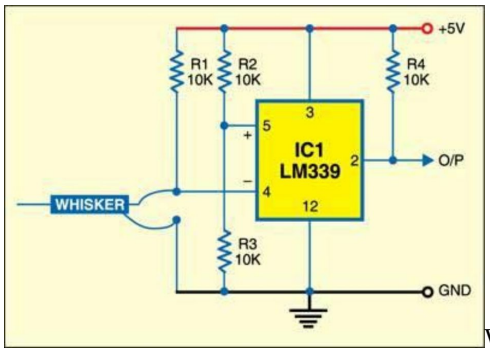
Here's cost efficient "short wave" transmitter is tunable from 10 to 15 MHz with the assistance of ½ J gang condenser VC1, which decides the carrier frequency of the transmitter in junction with inductor L1. The frequency trimming should be possible with VC2. The carrier is amplified by transistor T4 and coupled to RF amplifier transistor T1 (BD677) via transformer X1.

14.Four-Stage FM Transmitter



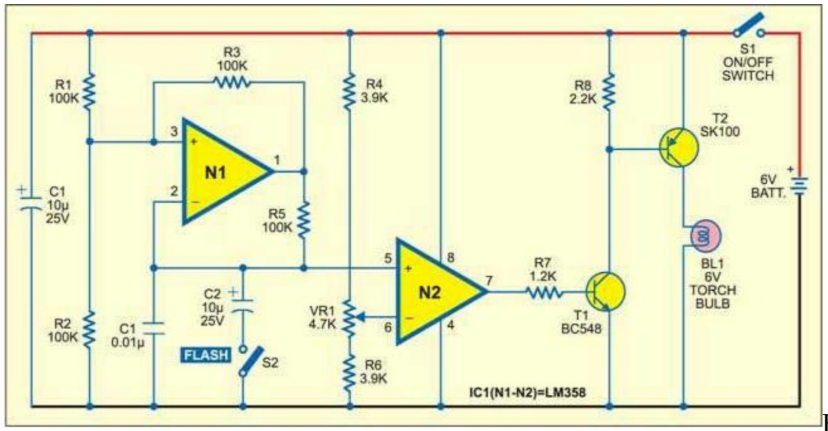
Here's FM transmitter circuit utilized four radio frequency stages: a VHF oscillator make close to transistor BF494 (T1), a preamplifier built near transistor BF200 (T2), a driver built close to transistor 2N2219 (T3) and a power amplifier make close to transistor 2N3866 (T4). A condenser microphone is associated at the input of the oscillator.

15.Whisker for Robots

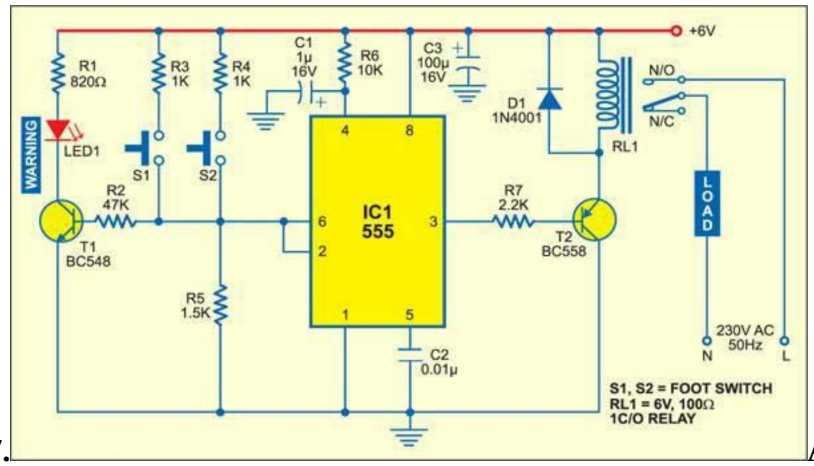


Whiskers for robots are basic switch compose sensors which work like a mammal's whiskers detecting close-by objects in the earth. Whenever irritated, the sensor sends a pulse to the robot to demonstrate that an obstacle is there.

16.Farmhouse Lantern-Cum-Flasher

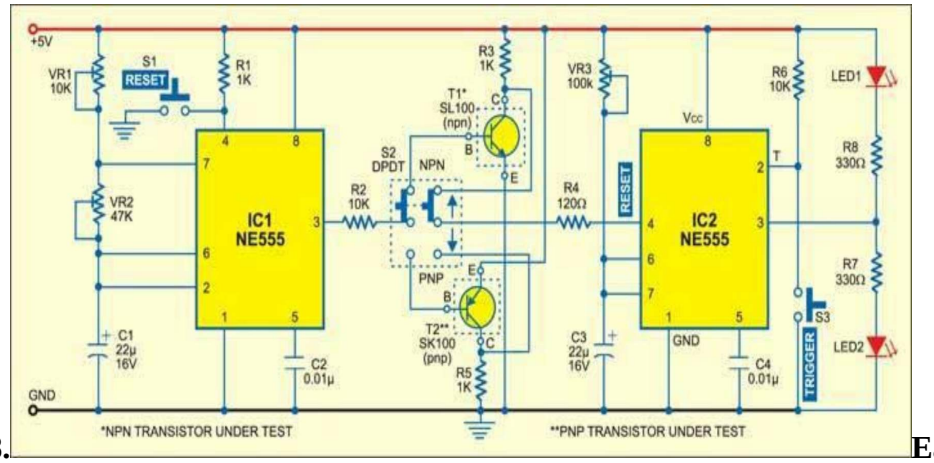


Here's circuit utilizes a double op-amp IC LM358 and two transistors. It can be controlled by a 6V support free rechargeable battery or a lead-corrosive accumulator write battery. It has two modes of operation: flasher mode and dimmer mode. The dimmer mode assist saves the battery control, while in flasher mode the lantern can be utilized and prevent that.

17. 

Accurate Foot-Switch

Certain automated controls require accurate switching operations. Such as in the event of a foot-switch for exact drilling work, even a little error in switching may cause impressive loss. This minimal effort however accurate foot-operated switch can keep that.

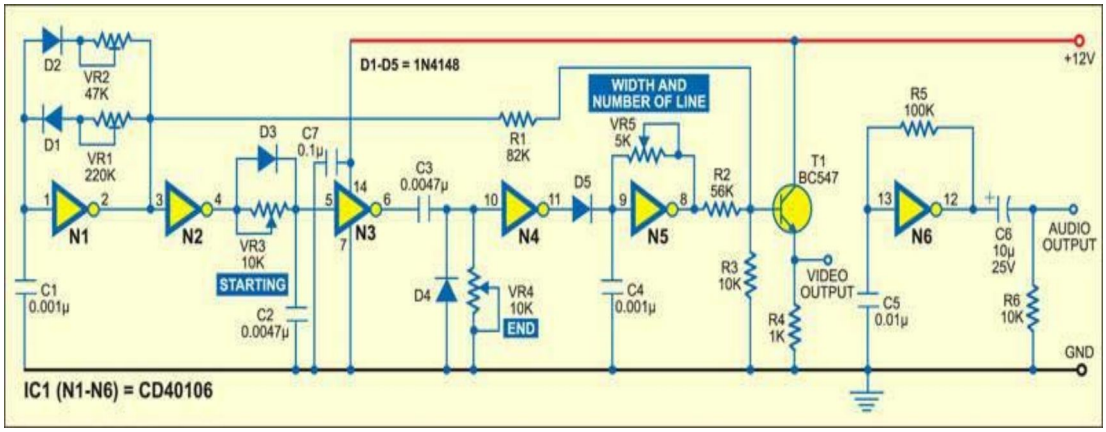


18. Easy Transistor Tester

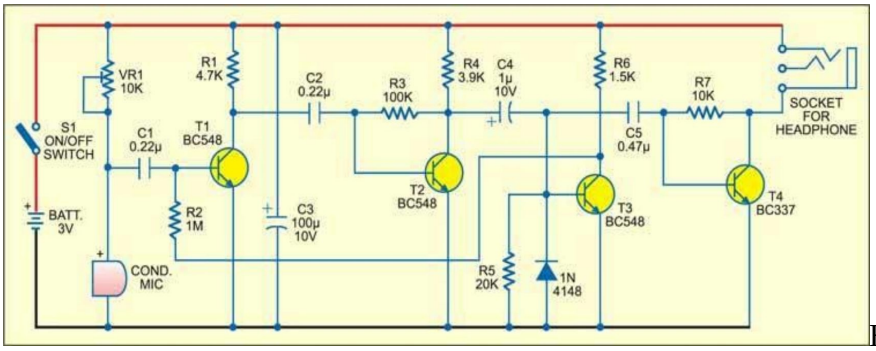
Utilizing this circuit, see if a given transistor is great or terrible before soldering it. You can likewise distinguish NPN and PNP types effectively. The tester gives LED indication of the pin-outs and in addition the working states of the transistors.

19.TV Pattern Generator

Here's single IC TV pattern generator is helpful for blame finding in TV sets. You can remedy the arrangement of the timing circuits of the TV set with the assistance of this circuit. The vertical stripes (bars) created by the pattern generator on the TV screen enable you to adjust the vertical scanning synchronization circuit of the receiver.



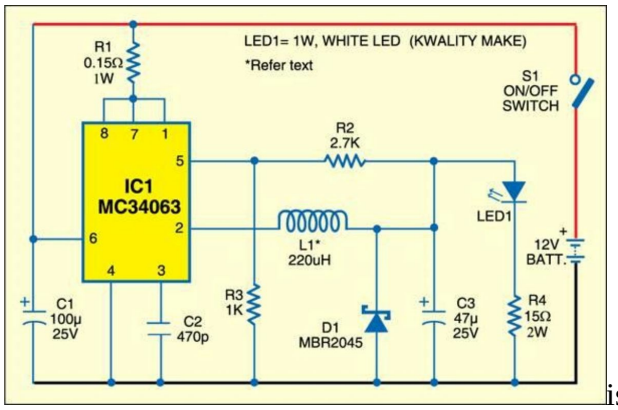
20.Multipurpose Listening Device



Here's circuit can senses very faint, remote sounds with a decent clarity. It is helpful in extensive meeting halls, auditoria, film corridors, address rooms in schools, and so on. The circuit can be housed in a little plastic box and kept in a shirt take. It is particularly helpful for sitting in front of the television programs at a low volume so as not to irritate other family individuals in the house.

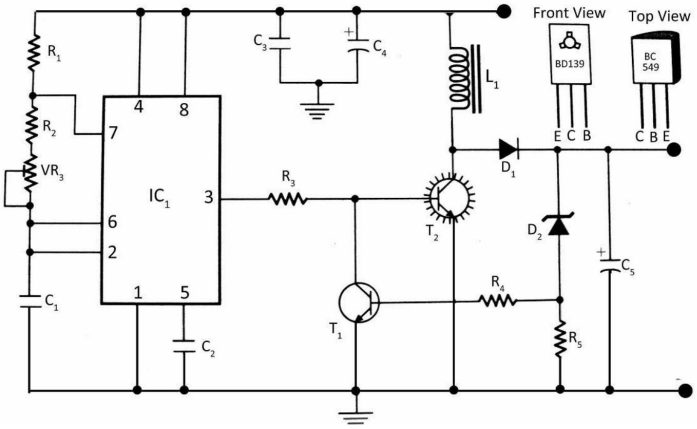
21.DC-DC Converter

This Basic circuit gives you a chance to run a 1W LED from the battery of your auto. IC MC34063 is utilized here as a buck converter. It is a monolithic switching regulator sub-system expected for use as a DC-DC converter. The device comprises of an internal temperature compensated reference, a comparator, a controlled duty-cycle oscillator with an active current limit circuit, a driver and a high-current output switch. These capacities are contained in a 8-stick double in-line package. Another significant preferred standpoint of the switching regulator



is that it permits expanded application flexibility of the output voltage

Another circuit



Conversion of AC to AC is very basic as in contrast with DC to DC converter since it just infers a transformer which converts AC starting with one voltage level then onto the next voltage level. Be that as it may, conversion of DC to DC is very dull work without transformer and more power misfortunes. Here is basic, minimal effort, high precision circuit which converts 6-V DC to 12-V DC without utilizing transformer and simple to build with few parts. Circuit portrayal of DC to DC conversion

The circuit of DC to DC conversion is work with an extremely famous IC LM555 utilized as multi vibrator temperament which produce required frequency run from 2 to 10 kHz to drive power transistor T2. Here potentiometer VR1 is utilized to modify output frequency given to transistor T2 by means of resistor R3. A Zener diode in this circuit is utilized as voltage regulator which directs voltage to 12 volts.

Here Inductor L1 of 100 turns, 24 SWG enameled copper wire injured on a 40mm dia. toroidal ferrite center and capacitor C5 is utilized for vitality stockpiling. Transistor T1 is utilized to control output control with the assistance of resistor R4 R5.

PARTS LIST

Required Resistors (all ¼-watt, ± 5% Carbon) R1, R2, R5 = 10 KΩ; R3, R4 = 220 Ω 1/2-watt; VR1 = 47KΩ

Capacitors

C1 = 0.0047 µF; C¬2 = 0.01 µF; C3 = 0.1 µF; C4 = 470 µF/25V; C5 = 2200 µF/35V

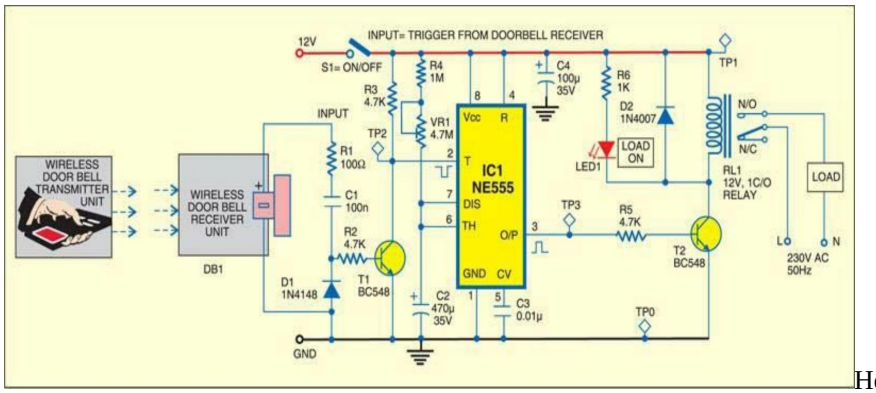
Required Semiconductors

D1 = 1N4007; D2 = Zener 12V, 500mA ½-watt; T1 = BC549; T2 = BD139; IC1 =NE555 timer IC

Miscellaneous

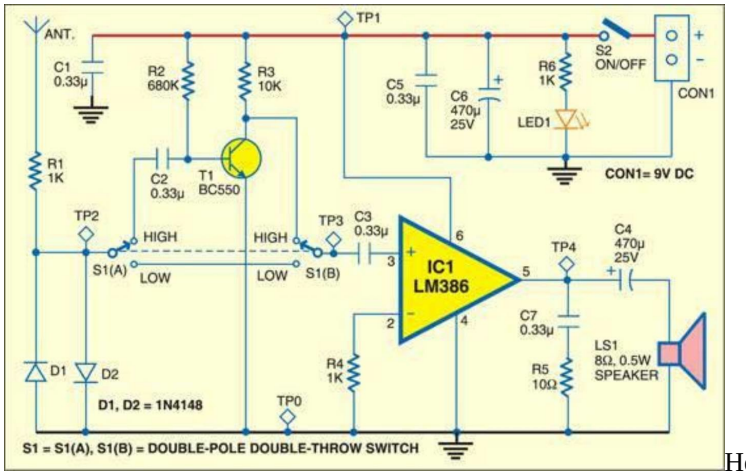
L1 = 100 Turns, 24 SWG insulated copper wire on 40mm Dia. toroidal core

22.Remote Control using Wireless Doorbell



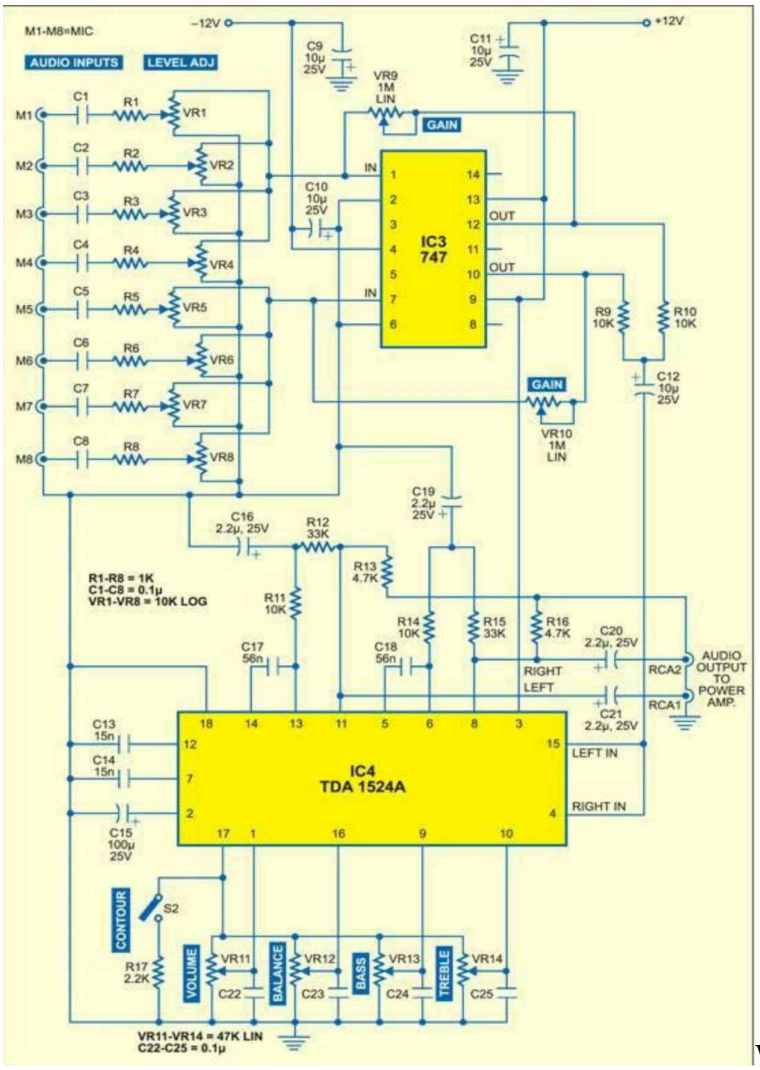
Here's circuit lets you wirelessly control an apparatus from a remote place by using a wireless doorbell. The machine is activated by the signal from the transmitter of the wireless doorbell and turns off consequently after the preset time period.

23.RF Signal Detector



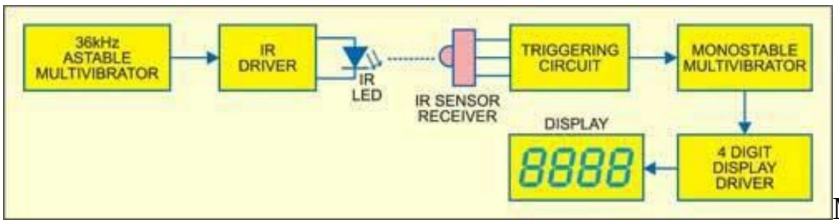
Here's basic circuit can be utilized to trace the nearness of RF signals and electromagnetic noise in your local location, office or shop. It can be a helpful instrument while testing or outlining RF circuits. It can likewise be utilized to distinguish electrical noise in your premises.

24.Audio Mixer with Multiple Controls

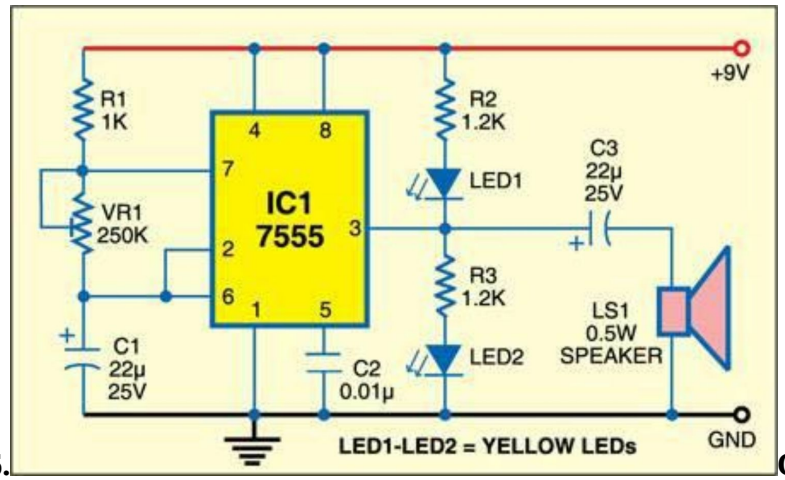


When recording sound from a few orchestral instruments being played by various musicians using a solitary microphone, the best way to modify the sound balance is to change the situation of the musicians with respect to the microphone. When recording direct to stereo ace tape, it's urgent to ensure that every one of the voices and instruments sound just before you hit the record button.

25.Infrared Interruption Counter

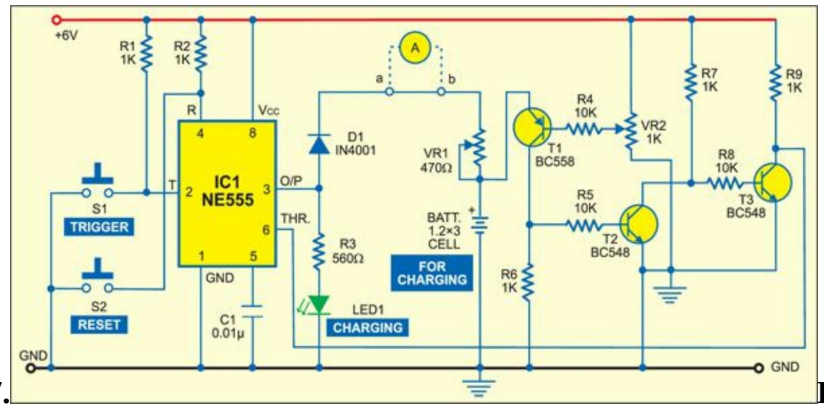


Most optical interruption counters make utilization of a light bulb with light-dependent resistor (LDR) or customary phototransistor as the sensor. These interruption counters work palatably in darkness just and can't be utilized outside on account of the odds of false tallying because of light detected from other light sources like sun, light globule, and so forth.



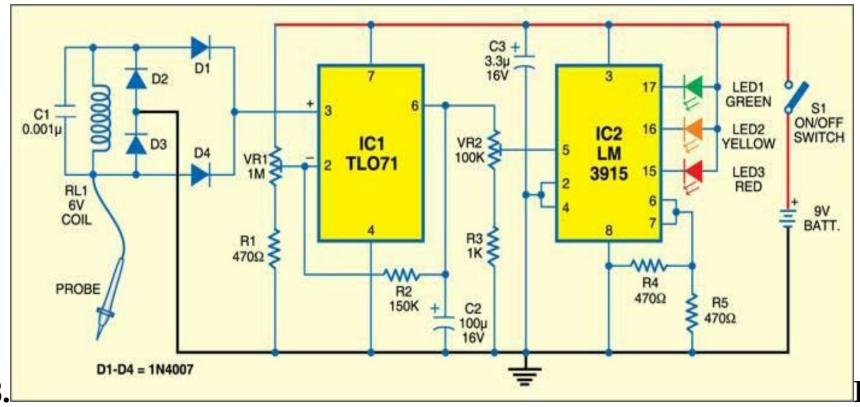
26. Clock Tick-Tock Sound Generator and LED Pendulum

Wooden-case, battery-perform wall clocks with pendulums are accessible in the market. Some even have tolls. What is missing is the tick-tock sound of old mechanical pendulum clocks.

27. 

Battery Charger with Automatic Switch-off

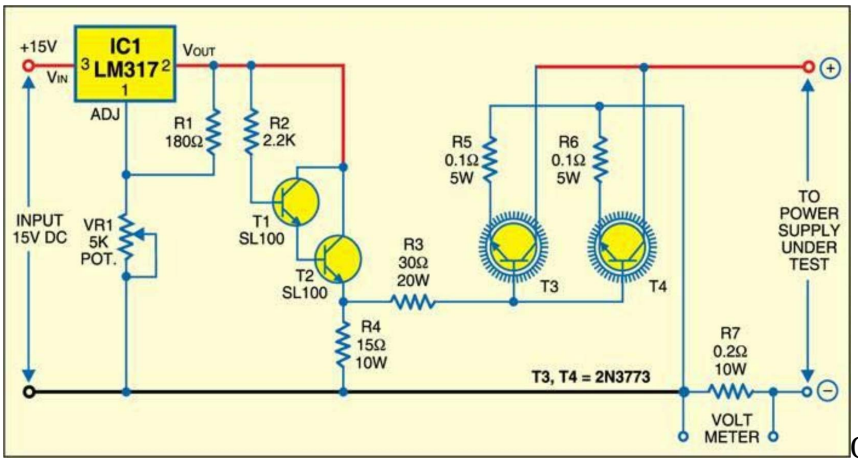
Here's smart charger automatically switches off once your rechargeable batteries achieve the full charge.

28. 

Earth Leakage Tester

Earth leakage from electrical wiring is a significant issue, particularly amid rainy season. Pipelines are more defenseless against earth leakage and may cause an unforeseen electric shock. Electrical machines or defective wiring might be the wellspring of leakage current through the wet wall ordinary air conditioning tester can't distinguish the earth leakage if current isn't sufficiently high to switch on a neon lamp.

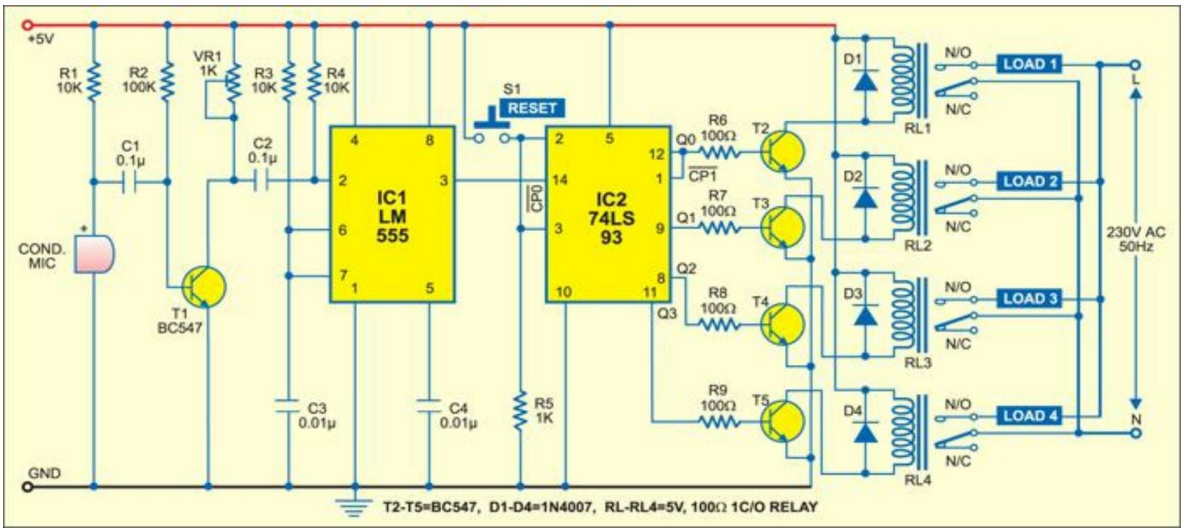
29.Controllable Electronic Load Circuit for DC Power Supply



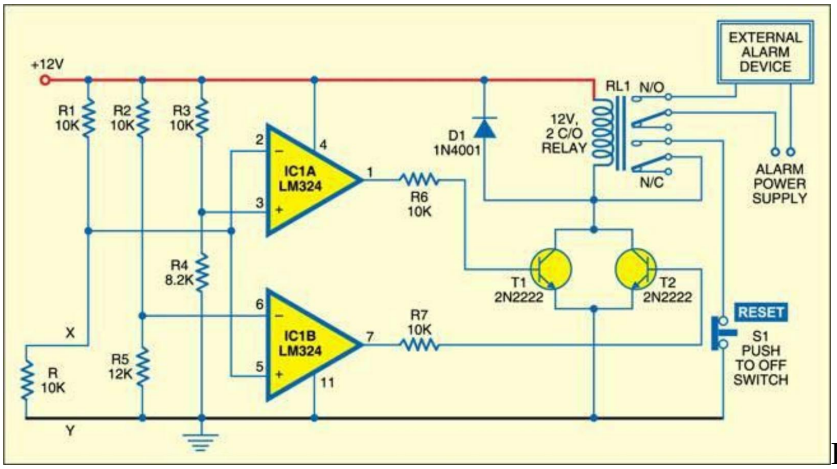
On the off chance that you are occupied with testing voltage-regulated power supplies under loaded conditions, here is a basic electronic load circuit controllable from a solitary 2-12V, 200mA power supply. The variable power supply is produced from regulator LM317.

30.16-Way Clap-Operated Switch

Control your home devices without get out your bed. You simply need to clap in the region of the microphone utilized as a part of this circuit, which you can keep by the bedside. You can switch on/off up to four diverse electrical appliances like television, fan, light, and so forth in 16 distinctive ways.


+5V
R1 10K
R2 100K
VR1 1K
R3 10K
R4 10K
C1 0.1µ
C2 0.1µ
COND. MIC
T1 BC547
IC1 LM 555
IC2 74LS 93
S1
RESET
CP0
CP1
Q0
Q1
Q2
Q3
R6 100Ω
R7 100Ω
R8 100Ω
R9 100Ω
T2
T3
T4
T5
C3 0.01µ
C4 0.01µ
R5 1K
GND
D1
D2
D3
D4
RL1
RL2
RL3
RL4
N/O
N/C
LOAD 1
LOAD 2
LOAD 3
LOAD 4
L
N
230V AC 50Hz
T2-T5=BC547, D1-D4=1N4007, RL-RL4=5V, 100Ω 1C/O RELAY

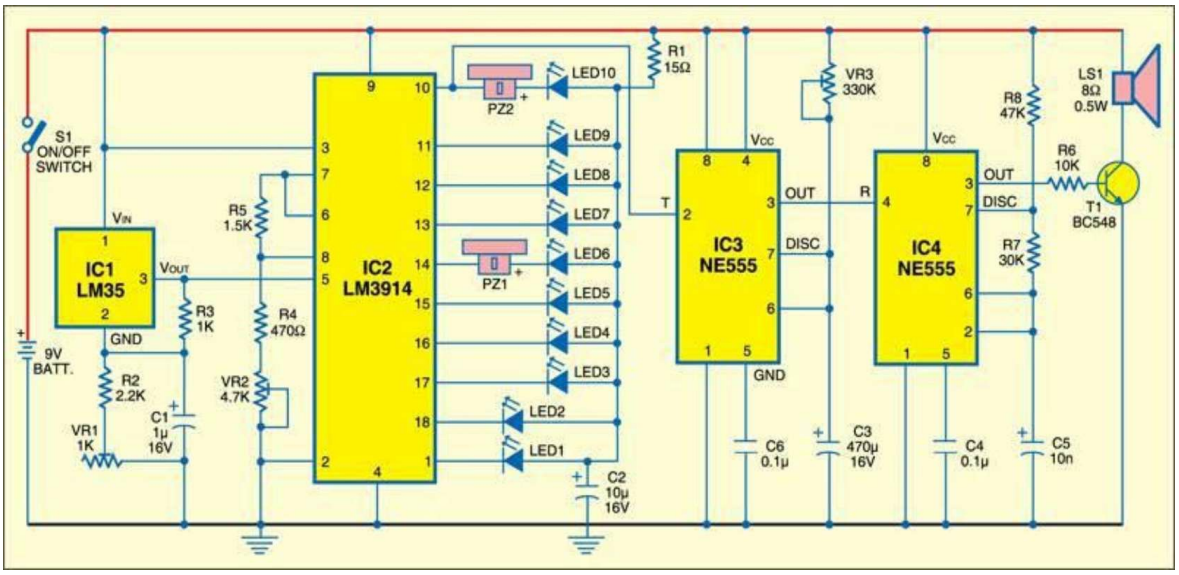
31.Smart Loop Burglar Alarm



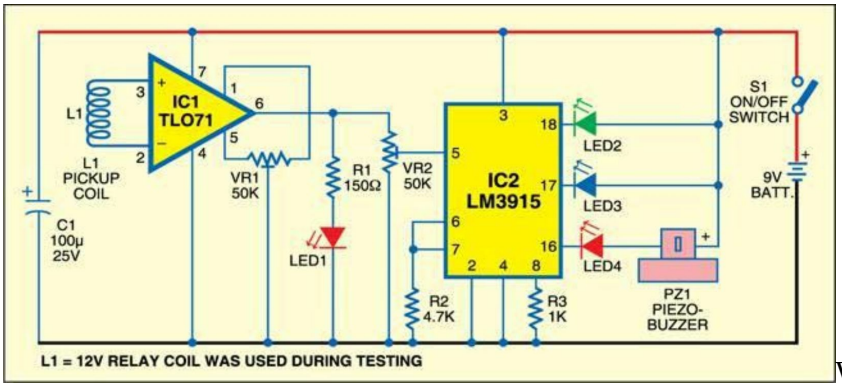
Basic loop burglar alarms sound at whatever point the loop breaks. Imagine a scenario where a cunning thief comes to know about the working of this alarm. He may basically short the loop by utilizing some other conductor and after that cut the shorted bit of the loop with no issue. This the circuit of a smart loop burglar alarm that beats this downside by utilizing a sensing resistor (R) on top of it. The sensing resistor must be kept inside the territory to be secured (say, a room).

32.Temperature-Tolerance Checking System

The greater part of Equipment and machines utilized as a part of enterprises and research labs have a temperature-tolerance restrain. These cannot be subjected to too high nor too low a temperature for their appropriate working. Be that as it may, they have to work precisely as they are constantly utilized as a part of basic applications.

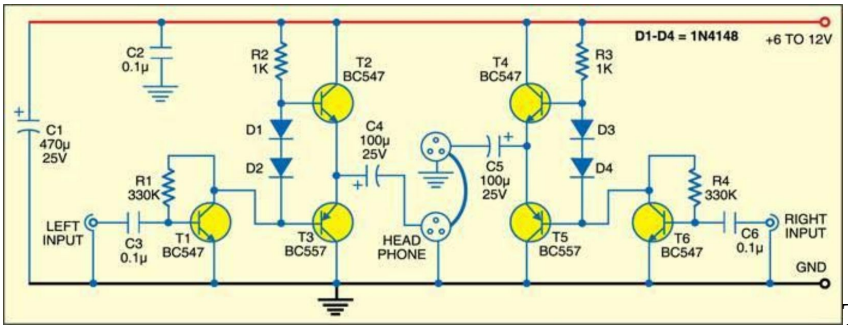


33.Radiation Sensor

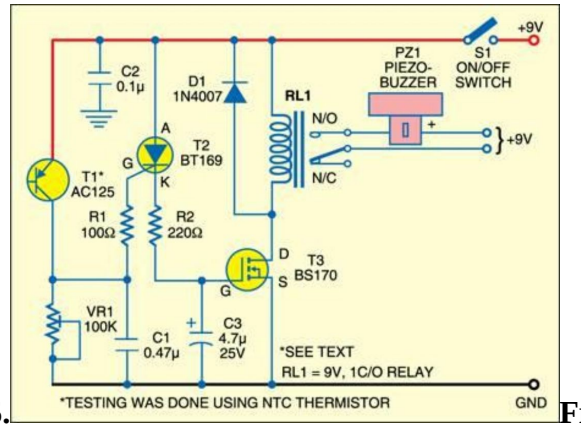


When you take a shot at a PC or stare at the TV, your body is immersed in an "electronic smog" exuding from the device. For example, in CRT-based monitors, the spot of electrons that breadth the screen generates pulsed electromagnetic radiation (PEMR). A portion of this vitality escapes as radiations in low-recurrence and greatly low-recurrence vitality.

34.Stereo Headphone Amplifier



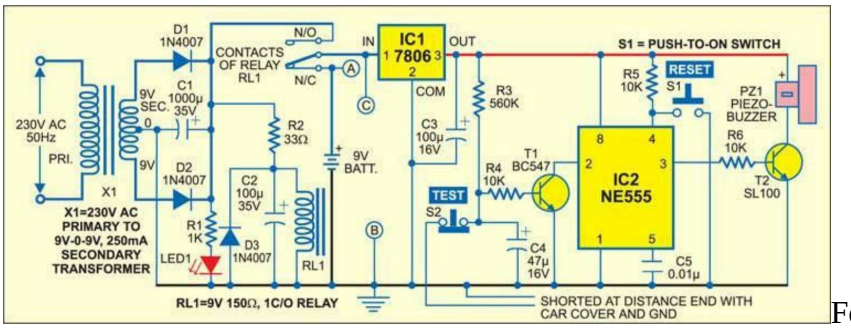
This is a high cost circuit for a stereo amplifier to drive a low-impedance headphone set. The circuit utilizes a couple of modest transistors (BC547 and BC557) and passive components like resistors, diodes and capacitors. It utilizes one preamplifier arrange and npn-pnp push-pull stage to drive headphone.



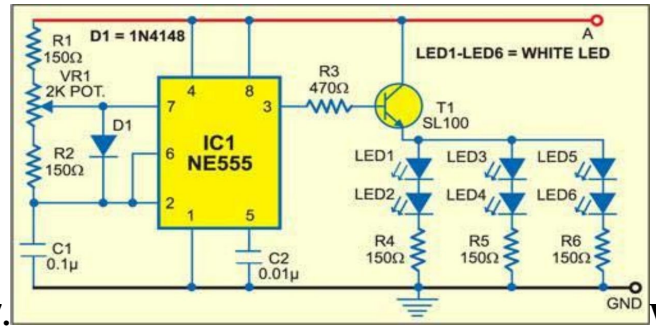
35. Freezer Monitor Alarm

All things put away in a deep freezer will defrost if, for reasons unknown, the temperature inside the freezer ascends to the defrost point. Be that as it may, a freezer monitor alarm can caution you of the rising temperature before the defrost point is come to.

36.Inexpensive car Protection Unit

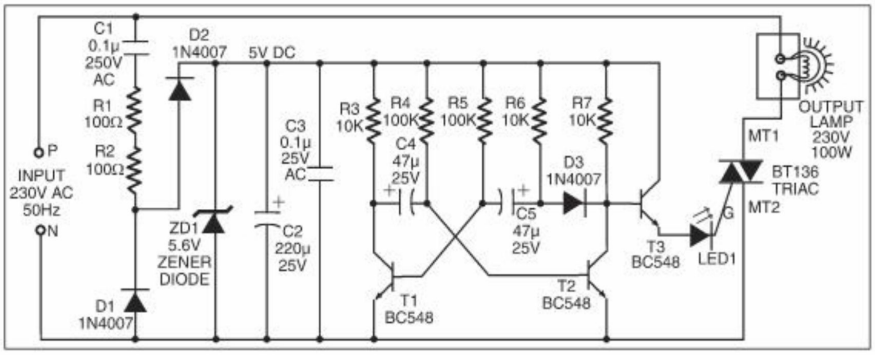


For car protection, specially designed units are accessible however they are expensive. This circuit to ensure car stereo, and so on from pilferage that costs less and requires no modifications in the car however a decent car cover.



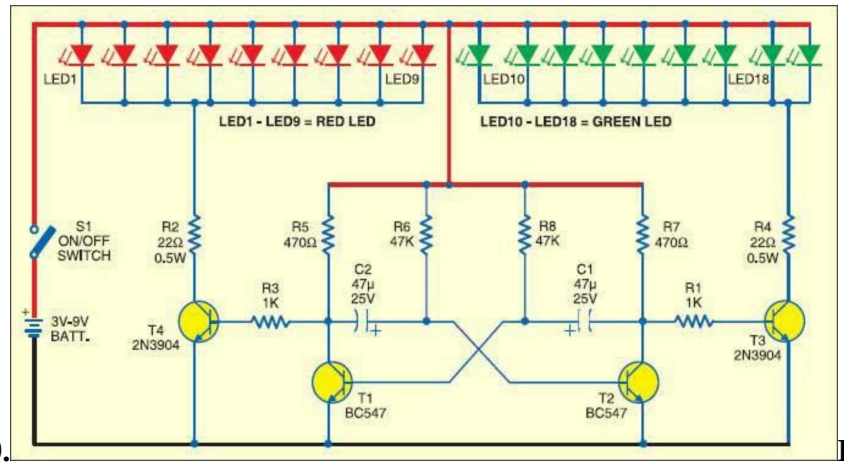
37. White LED-Based Emergency Lamp and Turning Indicator

White LEDs are supplanting the regular incandescent and fluorescent bulbs because of their high-power efficiency and low operating voltage. These can be used ideally for emergency lamp and vehicle turning sign. The circuits for the reason for existing are given here.

38. 

Mains-Operated Christmas Star

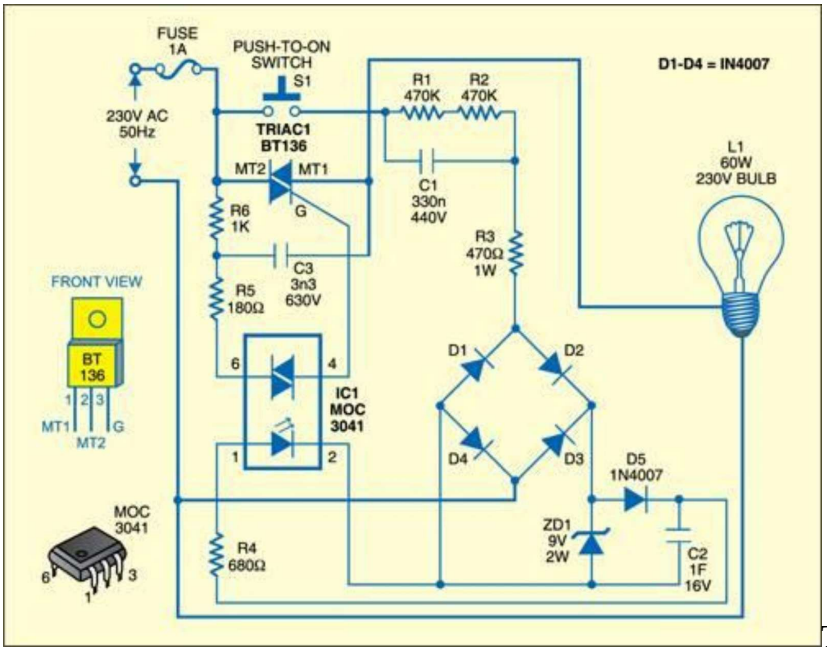
This is a cost productive circuit of Christmas star that can be effortlessly built even by an amateur. The primary favorable position of this circuit is that it doesn't require any step-down transformer or ICs.



39. LED Lighting for Christmas

Utilizing light effects for decoration on merry Christmas events is an ordinary practice. Architects are thinking of assortments of electronic circuits to fill the creative thinking of people.

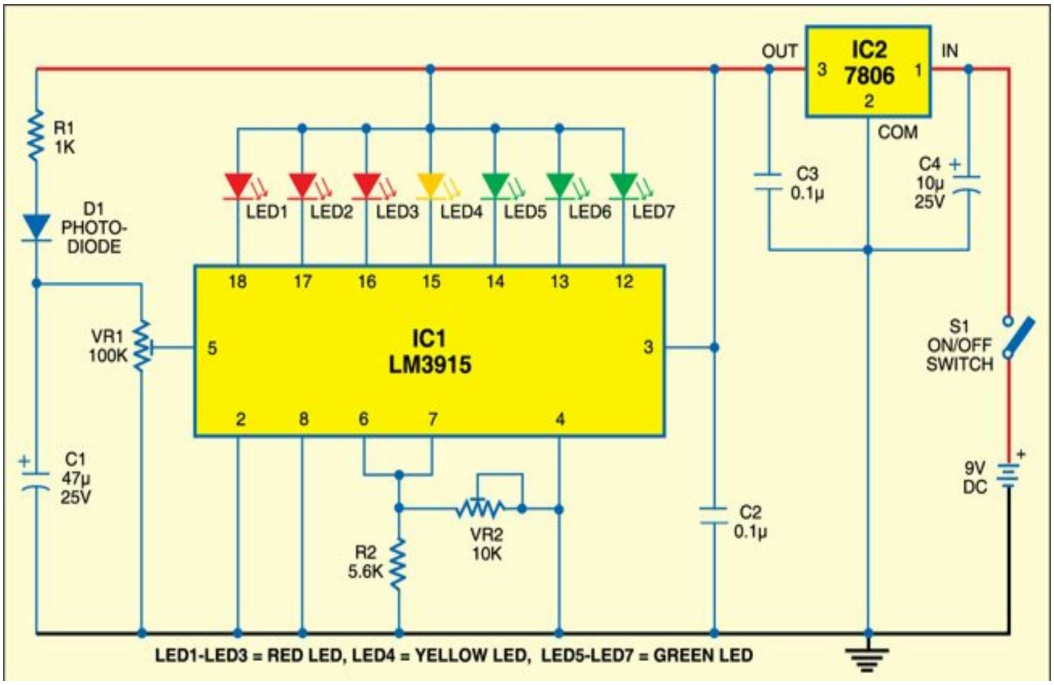
40.Bedroom Light



This circuit enables you enough time to achieve your bed and rests before the bedroom lamp switches off consequently. You can locate various applications for this circuit. The circuit draws no power when it is latent.

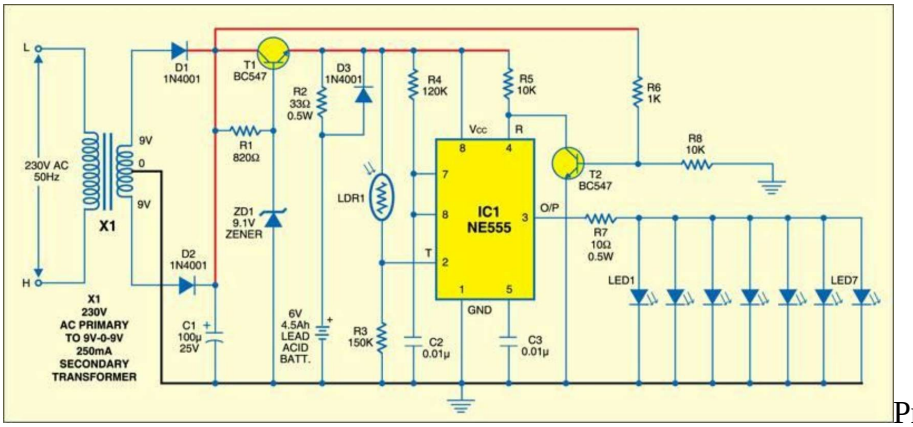
41.Photometer

An illuminance of 100 to 1000 lux is required for reading and doing close work without eye-strain. Specular illumination or brilliant sunlight gives 50,000 lux, while twilight or dim light gives just 10 lux. Reading and close work under a fluorescent lamp is better since it can give a flux of 4400 lumens as opposed to



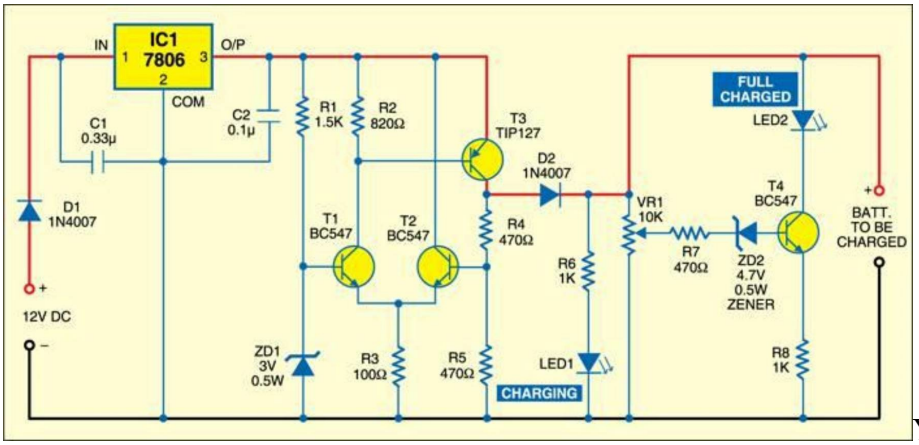
1600 lumens of a tungsten lamp. In the event that the eyes are presented to dim light for a long time, dark adaptation will create and there will be extreme eye-strain.

42.Smart Emergency Light



Presently you require not fear dark room once power breaks down. This is a white LED-based emergency light that automatically turns on once mains power supply comes up short.

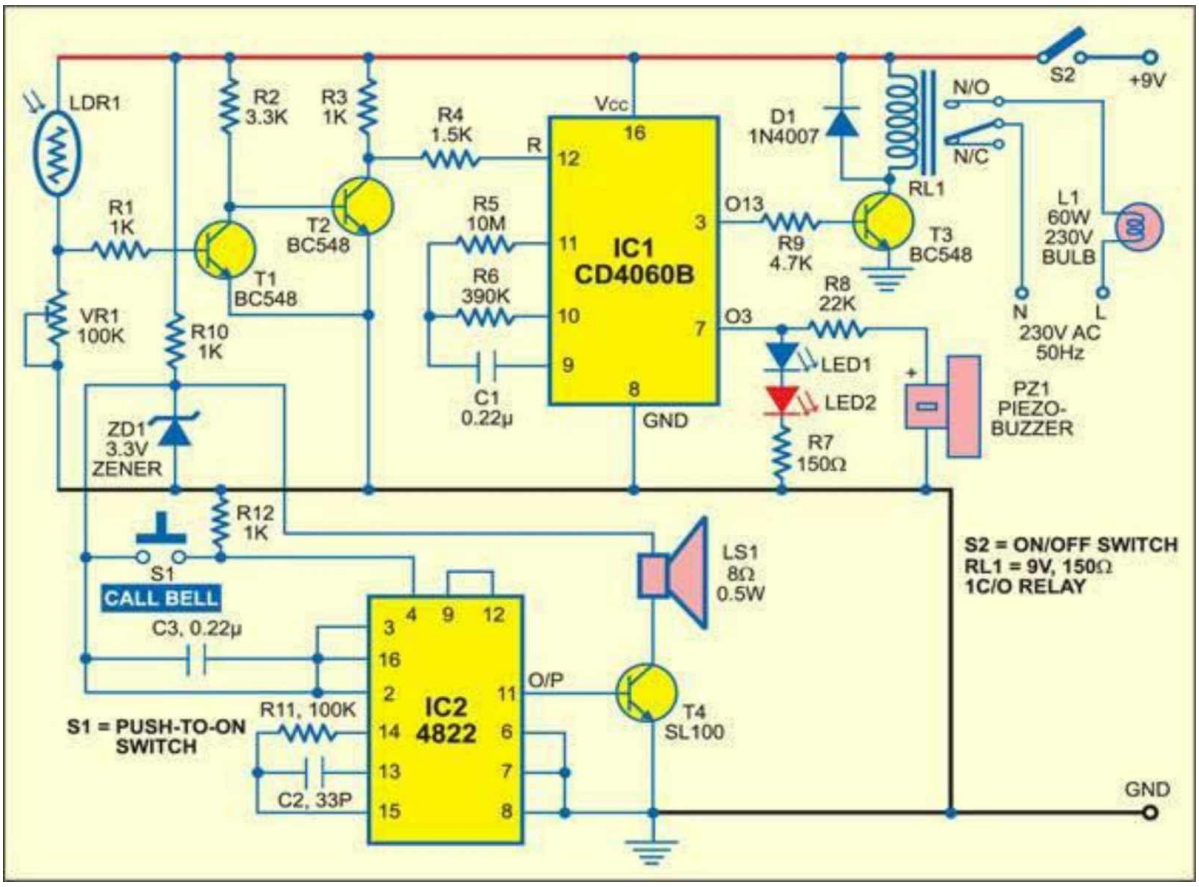
43.Digital Camera Adaptor



You need not be disappointed next time once your digital camera shows low battery indication amid an excursion trip. Simply plug this digital camera adaptor into the cigarette lighter outlet of your car and interface the camera to it. The adaptor will interface the DC source and the camera battery to give adequate charging current to renew the battery in 60 minutes. The Lithium ion or NiMH battery of the digital camera can be immediately charged with an ostensible voltage of 5V and 300mA to 1A current.

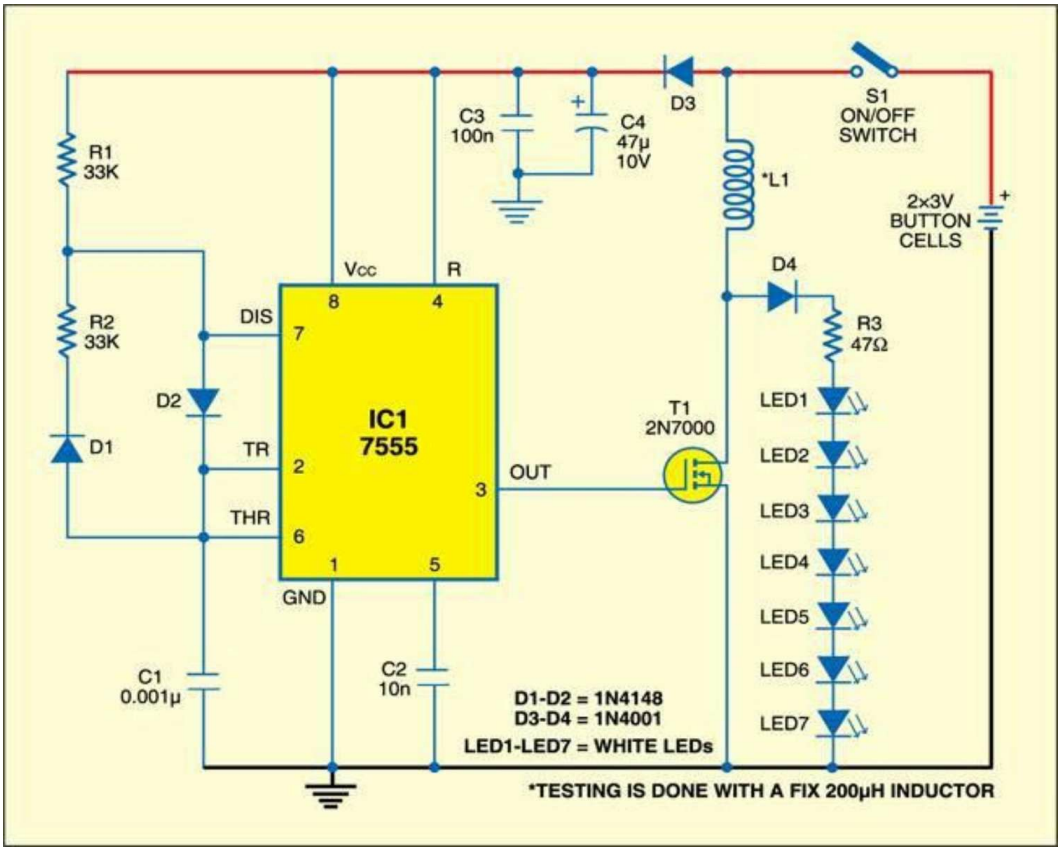
44.Mock Alarm with Call Bell

This is a completely programmed mock alarm to avert any gatecrasher to your house. The alarm winds up dynamic at sunset and remains 'on' till morning. The flashing light-emitting diodes (LEDs) and beeps from the unit mimic the functioning of a complex alarm framework. Additionally, the circuit turns on and off a lamp frequently at an interim of 30 minutes for the duration of the night. It additionally has a call bell office.


LDR1
R1
1K
VR1
100K
R2
3.3K
R3
1K
R4
1.5K
R5
10M
R6
390K
C1
0.22µ
R10
1K
ZD1
3.3V
ZENER
T1
BC548
T2
BC548
Vcc
R
IC1
CD4060B
GND
D1
1N4007
RL1
N/O
N/C
S2
+9V
O13
R9
4.7K
T3
BC548
L1
60W
230V
BULB
N
L
230V AC
50Hz
O3
R8
22K
LED1
LED2
R7
150Ω
PZ1
PIEZO-
BUZZER
R12
1K
S1
CALL BELL
C3, 0.22µ
R11, 100K
C2, 33P
IC2
4822
O/P
T4
SL100
LS1
8Ω
0.5W
S1 = PUSH-TO-ON
SWITCH
S2 = ON/OFF SWITCH
RL1 = 9V, 150Ω
1C/O RELAY
GND

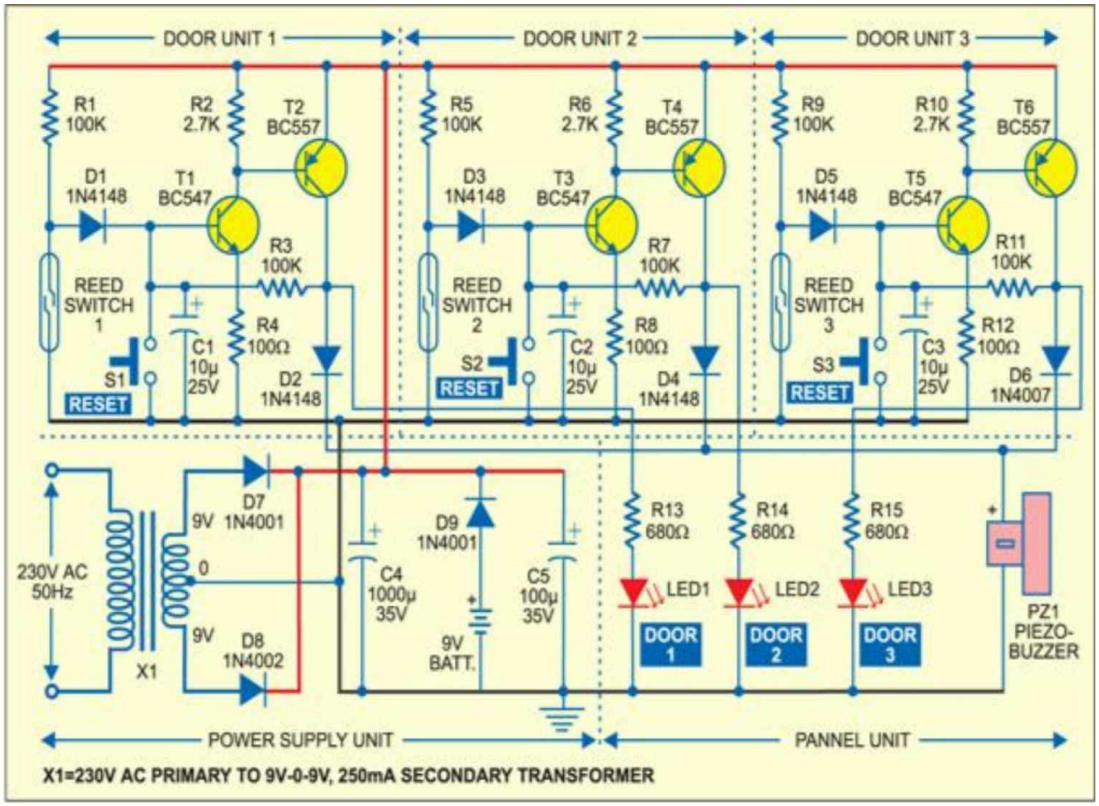
45.Pocket-Size Reading Lamp

Here's small reading light combines the white LEDs are super-splendid, lithium points of interest of lithium button cells and white LEDs. While cells are little in size and keep going long.

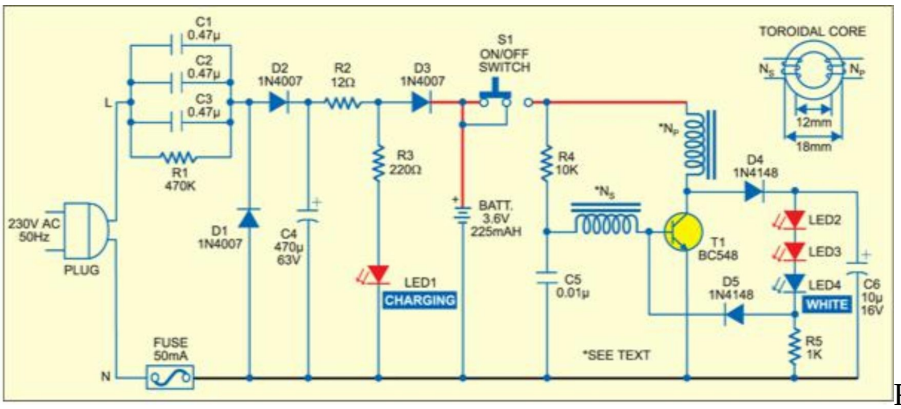

R1
33K
R2
33K
D1
D2
C1
0.001µ
C3
100n
C4
47µ
10V
D3
S1
ON/OFF
SWITCH
*L1
2×3V
BUTTON
CELLS
D4
R3
47Ω
Vcc
R
8
4
DIS
7
IC1
7555
TR
2
THR
6
OUT
3
1
5
GND
C2
10n
T1
2N7000
LED1
LED2
LED3
LED4
LED5
LED6
LED7
D1-D2 = 1N4148
D3-D4 = 1N4001
LED1-LED7 = WHITE LEDs
*TESTING IS DONE WITH A FIX 200µH INDUCTOR

46.Multidoor Opening Alarm with Indicator

Here's door-opening alarm alerts you of intruders. You able to use it for up-to 3 doors.

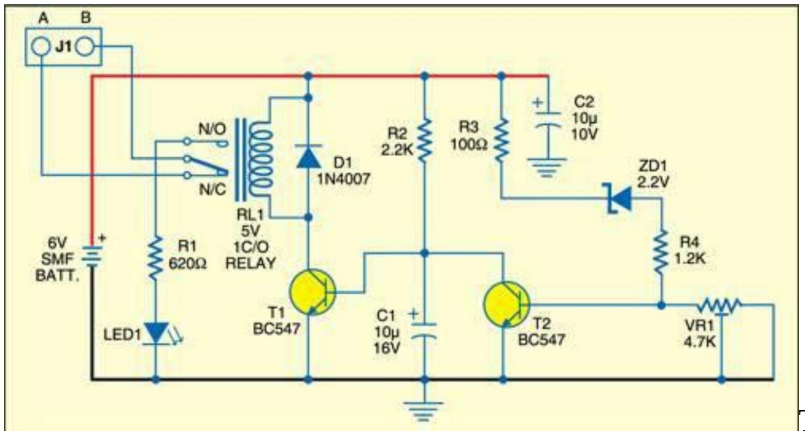

DOOR UNIT 1
DOOR UNIT 2
DOOR UNIT 3
R1 100K
R2 2.7K
T2 BC557
D1 1N4148
T1 BC547
R3 100K
REED SWITCH 1
S1
RESET
C1 10µ 25V
R4 100Ω
D2 1N4148
R5 100K
R6 2.7K
T4 BC557
D3 1N4148
T3 BC547
R7 100K
REED SWITCH 2
S2
RESET
C2 10µ 25V
R8 100Ω
D4 1N4148
R9 100K
R10 2.7K
T6 BC557
D5 1N4148
T5 BC547
R11 100K
REED SWITCH 3
S3
RESET
C3 10µ 25V
R12 100Ω
D6 1N4007
230V AC 50Hz
X1
9V
0
9V
D7 1N4001
D8 1N4002
C4 1000µ 35V
D9 1N4001
9V BATT.
C5 100µ 35V
R13 680Ω
R14 680Ω
R15 680Ω
LED1
LED2
LED3
DOOR 1
DOOR 2
DOOR 3
PZ1 PIEZO-BUZZER
POWER SUPPLY UNIT
PANNEL UNIT
X1=230V AC PRIMARY TO 9V-0-9V, 250mA SECONDARY TRANSFORMER

47.Rechargeable Torch Based on white LED



Rechargeable torches don't come without issues. You have to supplant the bulbs and charge the batteries every now and again. The average brilliant light-emitting diode (LED) based torch, for example, consumes around 2 watts. This id rechargeable white LED-based torch that consumes only 300 mW and has 60 for every penny longer assistance life than an average radiant torch

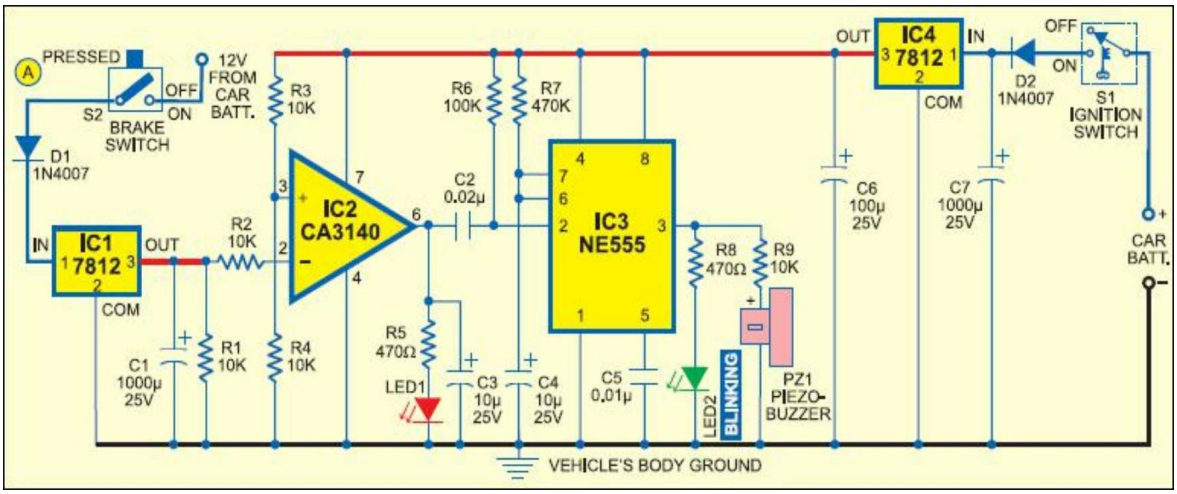
48.SMF Battery Guard



The emergency light is a programmed framework in which a rechargeable battery-worked light source turns on as soon as the mains power fails. At the point when the mains supply continues, the lamp turns off.

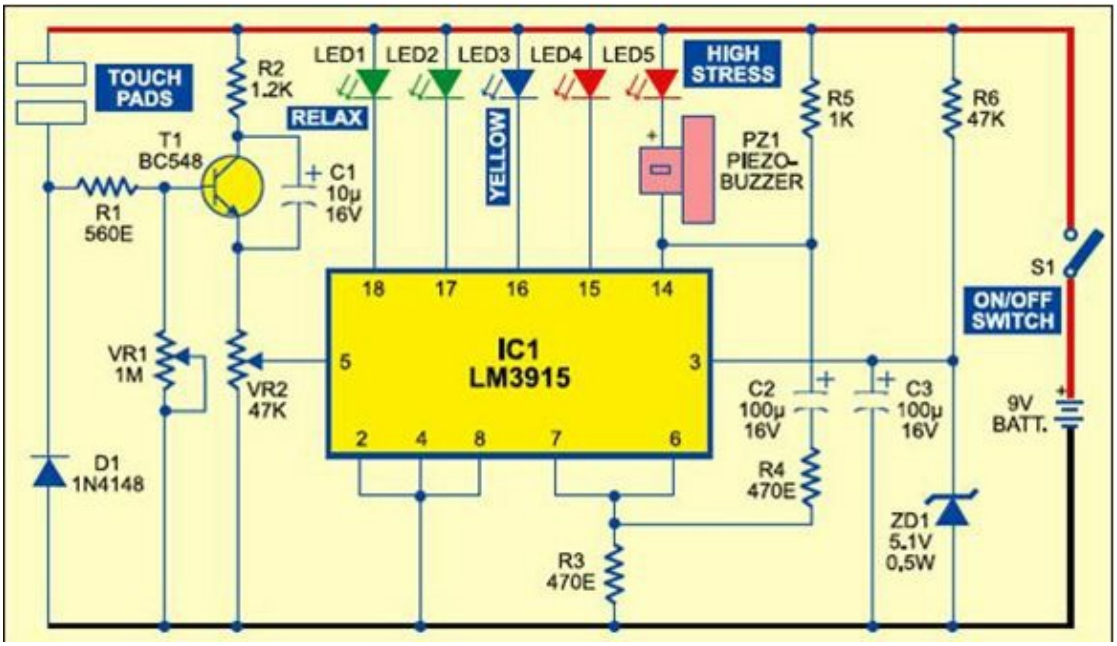
49.Brake Failure Indicator

Would you like to get an early warning of brake failure while driving? This is a brake failure indicator circuit that constantly monitors the condition of the brake and gives an audio-visual indication. At the point once the brake is connected, the green LED glowing and the piezo buzzer beeps for around one second if the brake framework is unblemished. On the off chance that the brake fails, the red LED gleams and the buzzer quits beeping.

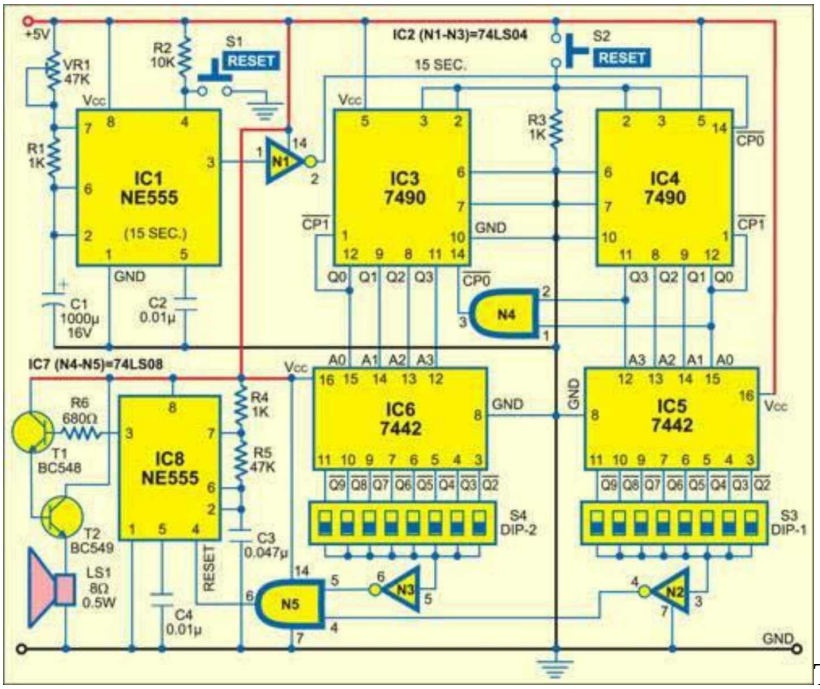

PRESSED
A
S2
BRAKE SWITCH
OFF
ON
12V FROM CAR BATT.
D1 1N4007
IC1 7812
IN
OUT
COM
R1 10K
C1 1000µ 25V
R2 10K
R3 10K
R4 10K
IC2 CA3140
R5 470Ω
LED1
C2 0.02µ
C3 10µ 25V
R6 100K
R7 470K
C4 10µ 25V
IC3 NE555
C5 0.01µ
R8 470Ω
R9 10K
LED2
BLINKING
PZ1 PIEZO-BUZZER
OUT
IC4 7812
IN
COM
C6 100µ 25V
C7 1000µ 25V
D2 1N4007
OFF
ON
S1 IGNITION SWITCH
CAR BATT.
VEHICLE'S BODY GROUND

50.Stress Meter

This stress monitor gives you a chance to assess your emotional pain. In the event that the stress is high, it gives visual indication through a light-emitting diode (LED) display along with a warning beep. The contraption is sufficiently little to be worn around the wrist.



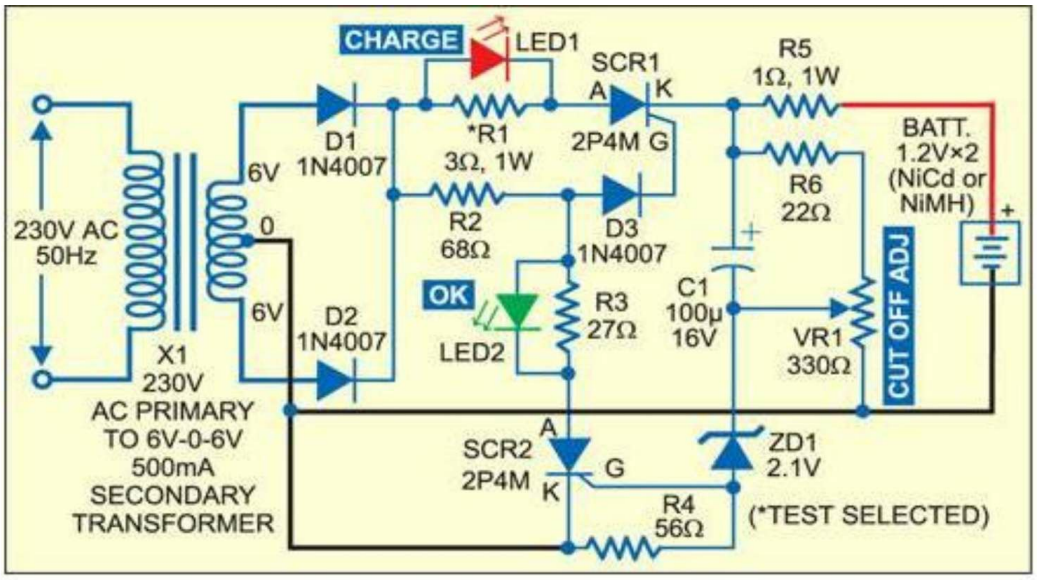
51.Timer for Geyser



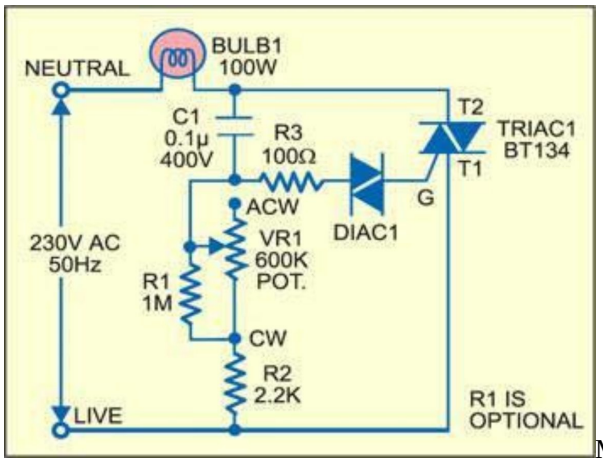
This timer circuit for geyser sounds an alarm after the set timing of 22 minutes once the water is warmed up.

52.Multicell Charger

Utilizing this charger, you can securely charge up to two bits of Ni-Cd disc cells or Ni-MH cells. The circuit is smaller, economical and easy-to-utilize

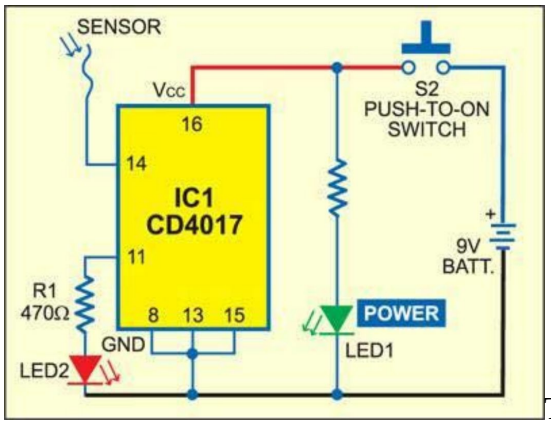

CHARGE
LED1
SCR1
A
K
2P4M
G
R5
1Ω, 1W
BATT.
1.2V×2
(NiCd or
NiMH)
+
D1
1N4007
*R1
3Ω, 1W
R6
22Ω
230V AC
50Hz
6V
0
6V
R2
68Ω
D3
1N4007
OK
LED2
R3
27Ω
C1
100µ
16V
VR1
330Ω
CUT OFF ADJ
D2
1N4007
X1
230V
AC PRIMARY
TO 6V-0-6V
500mA
SECONDARY
TRANSFORMER
SCR2
2P4M
A
G
K
ZD1
2.1V
R4
56Ω
(*TEST SELECTED)

53.Light Dimmer that Doubles as



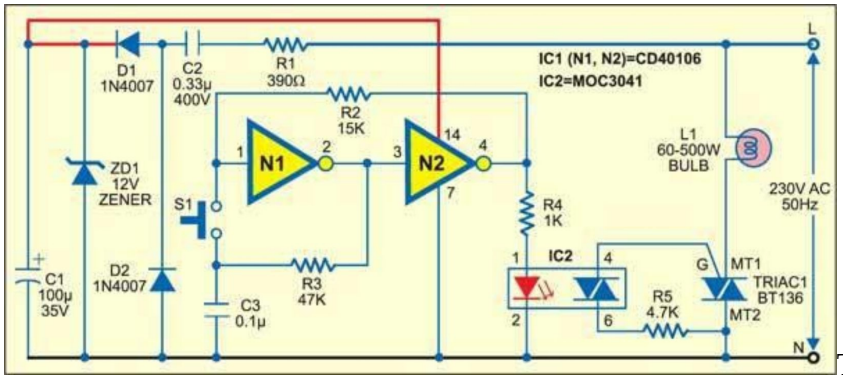
Measure AC mains voltage without utilizing a multimeter. You should simply to slightly change the light dimmer fitted at the base of a table lamp for use as a voltmeter. At the point once, the dimmer is swung anticlockwise to a point where the filament sparkle is simply unmistakable, that point can be utilized as the reference point for measuring the voltage.

54.220V Live Wire Scanner



This basic circuit gives you a chance to filter a 220V live wire. The clock input of the IC is connected to a wire, which goes about as the sensor. Here, we have utilized 10cm length of 22SWG wire as the sensor.

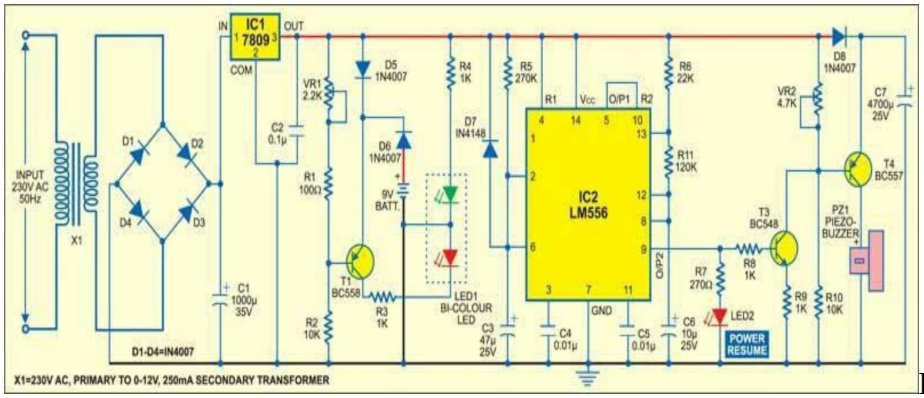
55.Smart Switch



To switch on the mains voltage, either a mechanical switch or a relay offers a simple solution. Nonetheless, the relay and its related components occupy a great deal of space and can't be obliged in a standard switch box.

The smart switch circuit, appeared here, offers a superior option. It is only an on/off controller and utilizations an electronic circuit that carries on like a typical switch. A level pushbutton control gives a aesthetic look to your switch panel.

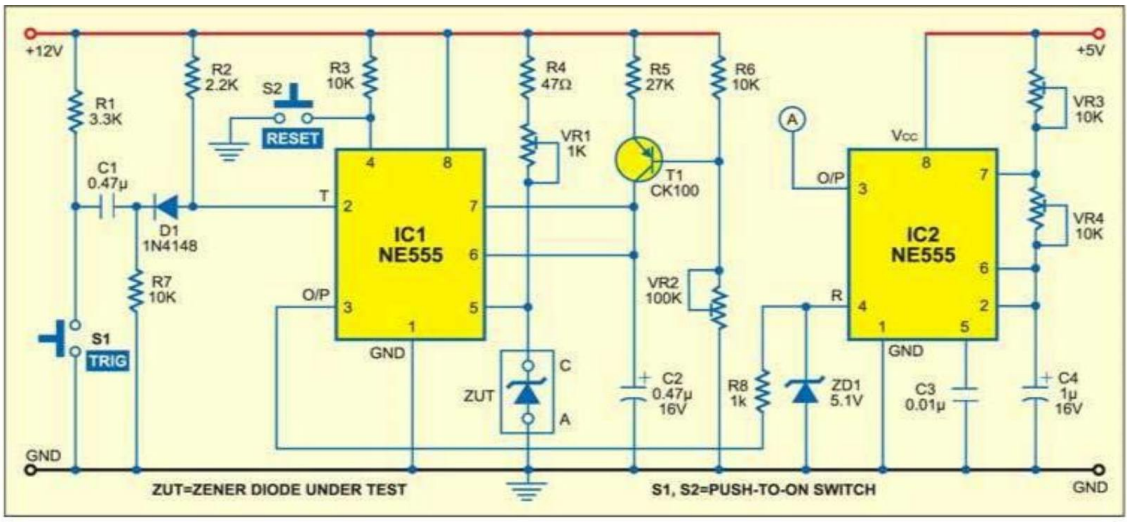
56.Power Failure and Resumption Alarm



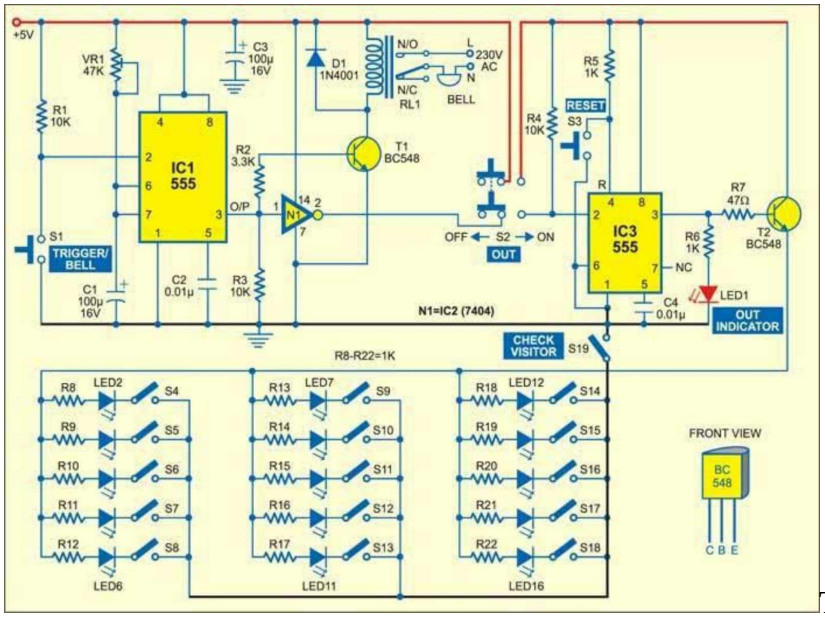
Here's circuit gives audio-visual sign of the failure and resumption of mains power. The circuit is built around double timer IC LM556. At the point when mains are available the bicolor LED glows in green shading, and when mains come up short it turns red.

57.Zener Value Evaluator

Utilizing this simple circuit and a known-value Zener diode, you can discover the breakdown voltage value of any zener diode. The circuit is isolated into two segments: zener evaluator and show unit. Controlled 12V and 5V are required to power the zener evaluator segment, while the show segment works off just 5V. Associate +5V, point An and ground of the zener evaluator segment to the separate terminals of the show area.

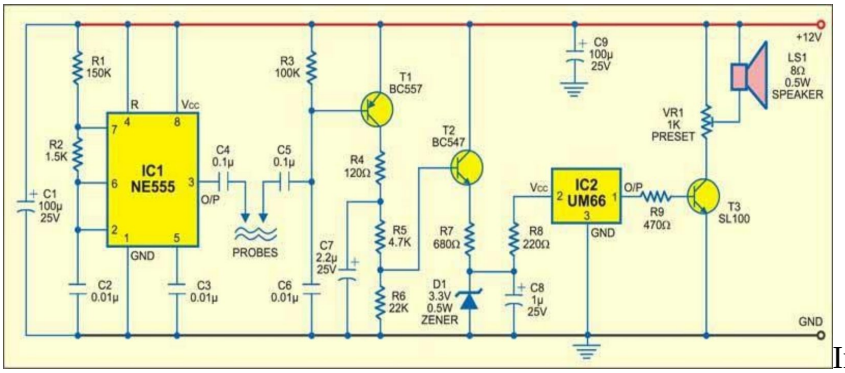

+12V
R1
3.3K
R2
2.2K
S2
RESET
R3
10K
R4
47Ω
VR1
1K
R5
27K
R6
10K
T1
CK100
+5V
VR3
10K
C1
0.47µ
D1
1N4148
T
IC1
NE555
O/P
R7
10K
S1
TRIG
GND
VR2
100K
ZUT
C
A
C2
0.47µ
16V
R8
1k
ZD1
5.1V
A
Vcc
O/P
IC2
NE555
R
GND
C3
0.01µ
VR4
10K
C4
1µ
16V
GND
ZUT=ZENER DIODE UNDER TEST
S1, S2=PUSH-TO-ON SWITCH
GND

58.Doorbell-Cum-Visitor Indicator



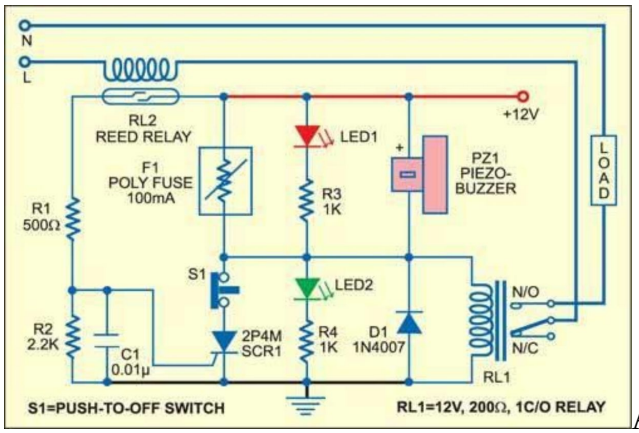
This doorbell circuit can likewise give distinguishing proof of the visitor to your home in your absence. When your home, you can utilize it essentially as a typical doorbell.

59.Liquid-Level Alarm



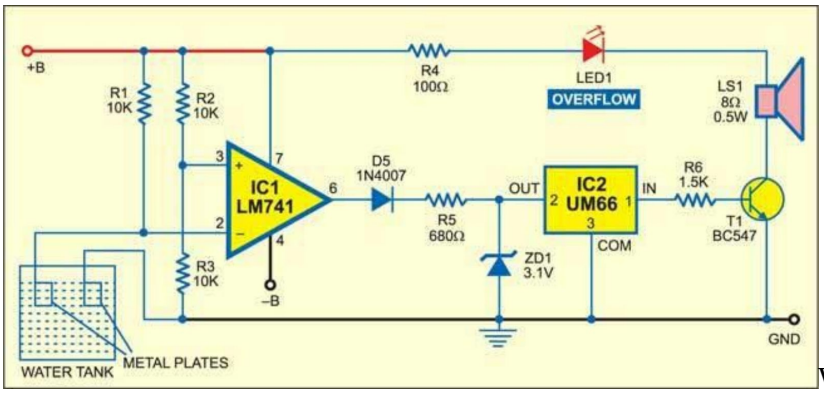
In water-level controllers for tanks, a DC current is flowing through the metallic tests fitted in the water tank to sense the water level. This causes electrolysis and corrosion of tests, inhibiting the conduction of current and corrupting its execution. As an outcome, tests must be supplanted consistently to keep up legitimate current flow.

60.Electronic Fuse



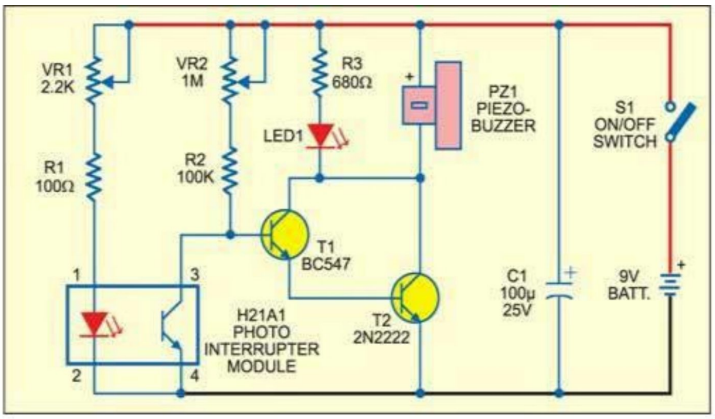
A flat out need of each electronics lab is a workbench power supply. This power supply ought to be controlled and protected against short circuit.

61.Water-Tank Overflow Indicator



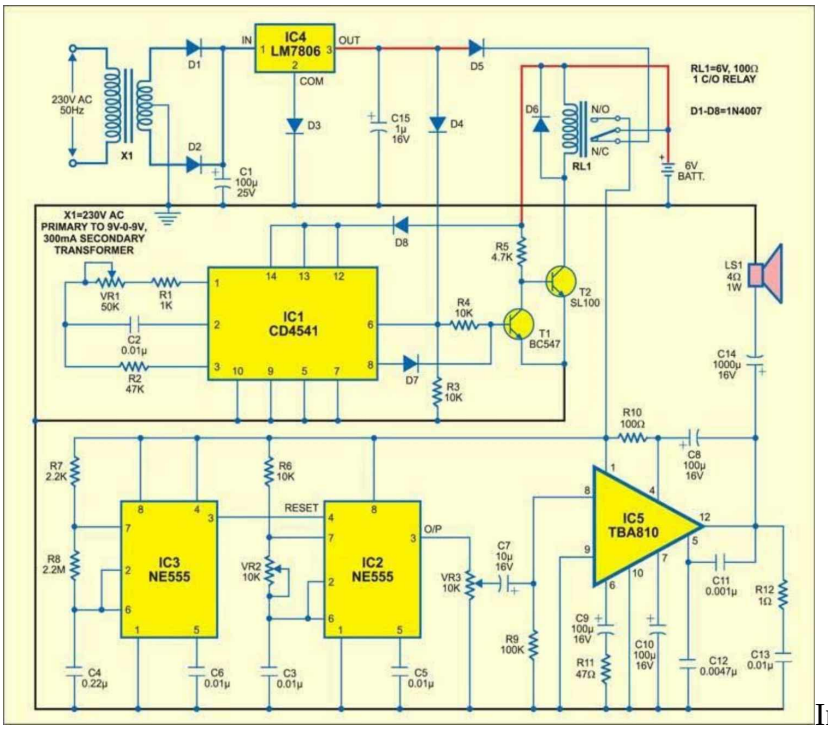
Water is an imperative yet rare natural resource. To forestall water wastage, this water-tank overflow indicator proves to be useful. It gives audio too visual alarm at whatever point the water tank overflows.

62.Simple Smoke Detector



Here's simple smoke detector is exceedingly sensitive yet economical. It utilizes a Darlington-pair amplifier utilizing two npn transistors and an infrared photo-interrupter module as the sensor. The circuit gives audio-visual alarm at whatever point thick smoke is available in the environment.

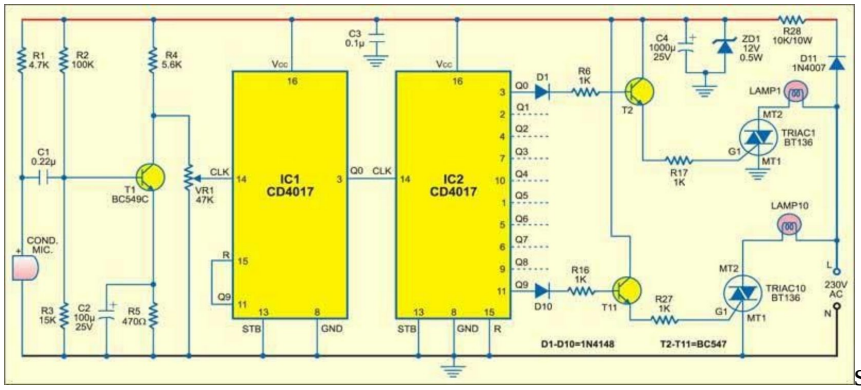
63.Remote Emergency Alarm for Unmanned Lifts



In unmanned lifts or lifts, sudden power disappointment can't be distinguished from the remote operating room, and this can demonstrate perilous for the lift users. Here is a simple circuit that sounds an alarm in the remote lift/lift control room in case of power disappointment. The circuit works off a 6V DC battery.

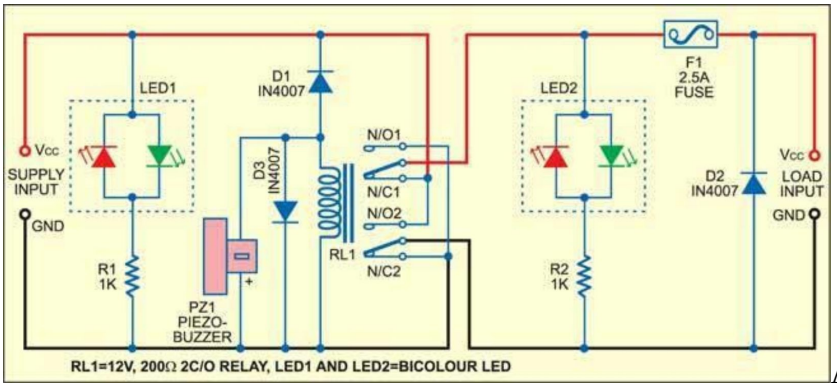
64.Audio-Controlled Running Light

Here's mains-worked audio-controlled running light can be utilized as a part of discotheques. The lamps shine in running arrangement according to the sound of music. Of the ten AC lamps, just a single light forever gleams if there is no



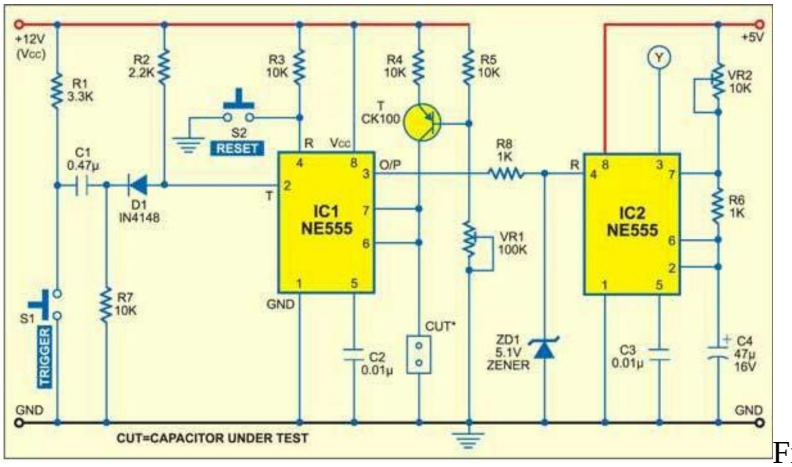
stable. At the point when music is played, light begins 'running' through the lamps.

65.Power Supply Reversal Corrector-Cum-Preventer



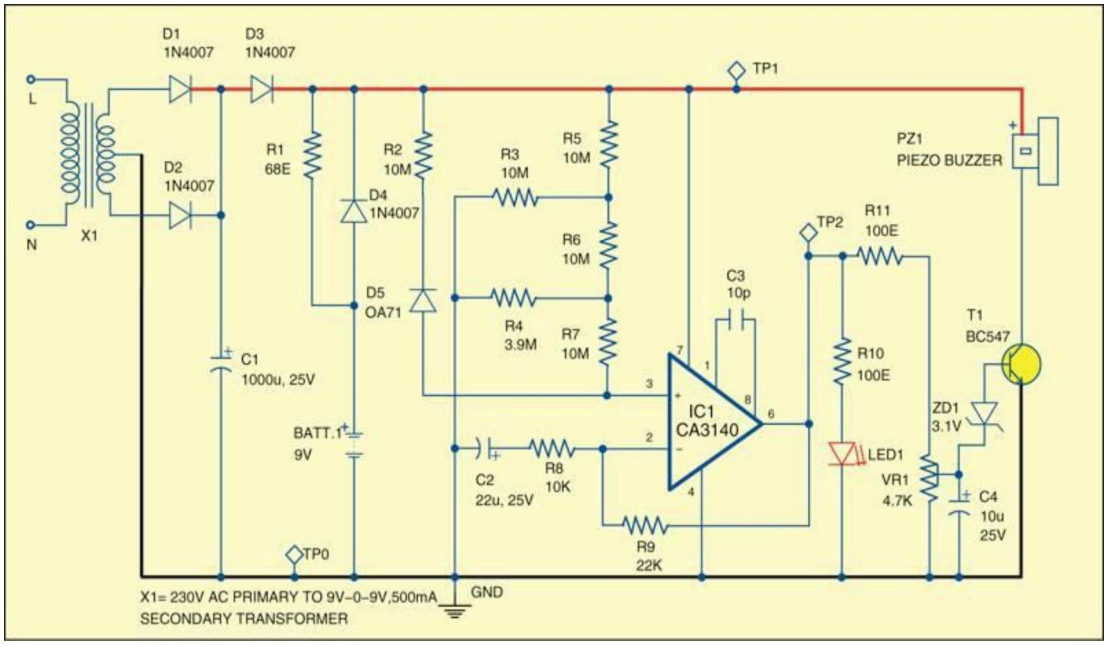
At the point when power-supply polarities of an electronic device are accidentally traded, the device runs the risk of harm. The threat can be dodged by adding this little circuit to the power supply area of the device. The circuit will immediately remedy the traded poles of the power supply and warn of the error by raising an alar m accompanied with a visual sign.

66.Capacitor Evaluator



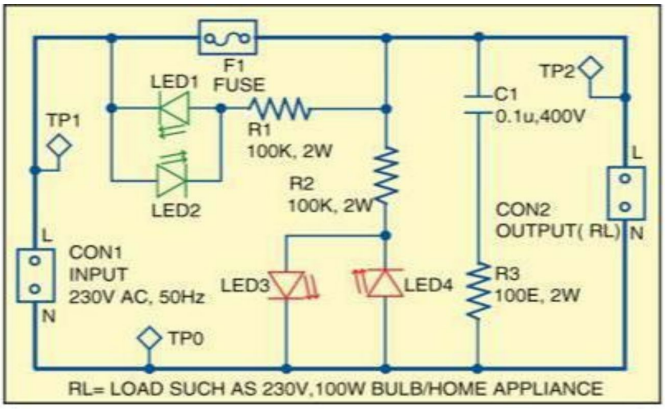
From using this circuit and a known-value capacitor, you able to find out the value of any capacitor.

67.Signal Diode-Based Fire alarm



A basic signal diode can be utilized to assemble a profoundly sensitive fire alarm. Silicon diodes like OA71 and 1N34 react to infrared radiation and heat from fire by producing reverse current across their terminals. In reverse-bias mode, this impact is more significant. Typically, for each degree ascend in temperature, the diode creates 2 mV. This characteristic is misused in this circuit to detect fire. The circuit can recognize fire from a separation of up to around 30 cm.

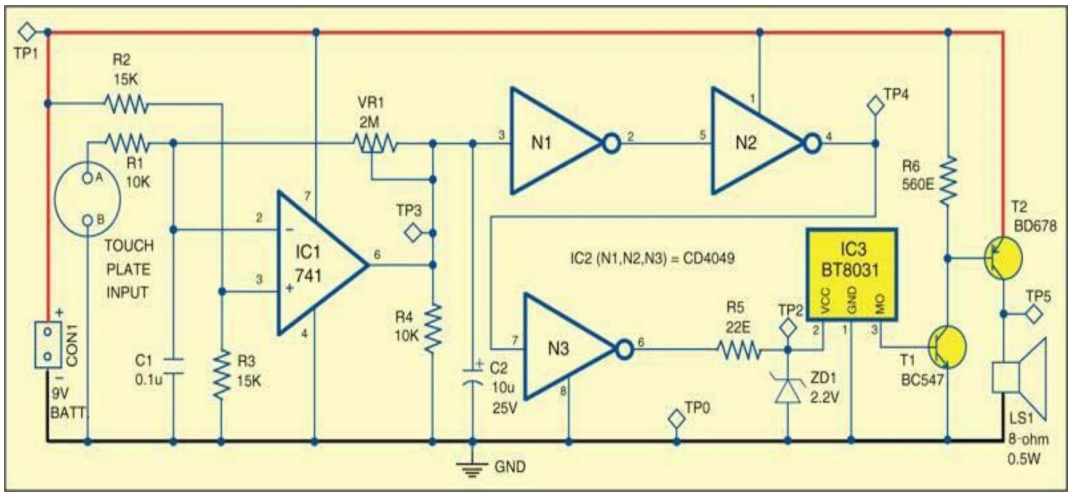
68.Blown-Fuse Indicator for AC load



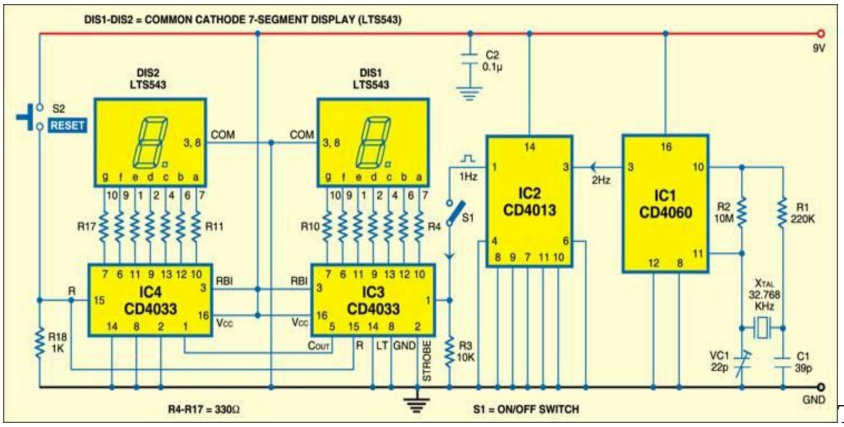
Here's basic circuit to monitor the condition of fuse and mains power supply is exceptionally helpful for AC-powered apparatuses. Some of the time these apparatuses all of a sudden quit working and we don't have any piece of information what has turned out badly. The issue can be simple to the point that it can be rectified just by replacing the fuse. This circuit distinguishes such issues.

69.Ding Dong Touch Bell

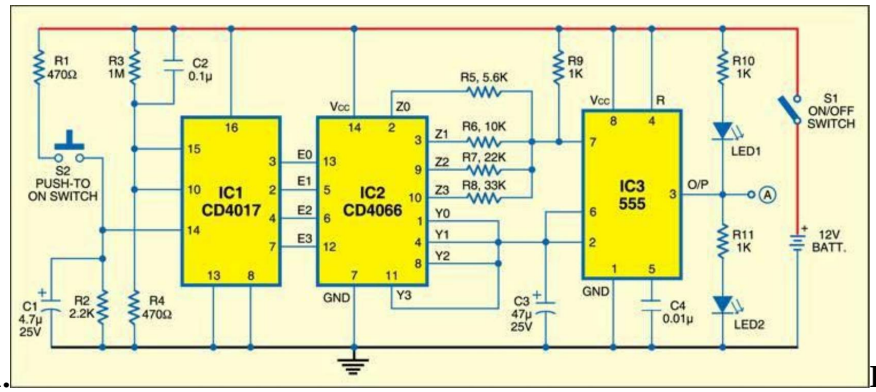
"Ding Dong bell" is a well-known nursery rhyme. Shake-speare utilized the expression "ding dong bell" in a few plays. Today, ding dong is a well-known ringtone utilized as a part of mobile phones and door bells. This is a basic ding dong tone generator circuit worked around a dedicated simple IC.



70.Low-cost Stopwatch

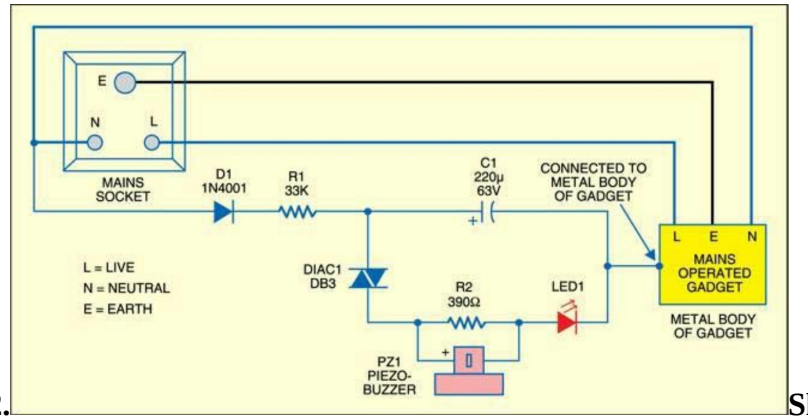


This is a basic circuit of a stopwatch that can count up to 99 seconds. The circuit utilizes CD4060, CD4013, CD4033, LTS543 and some discrete components. A crystal-controlled oscillator creates 1Hz heartbeats. A 32.768kHz scaled down crystal is utilized for the reason.



71. Digitally Adjustable Dancing Lights

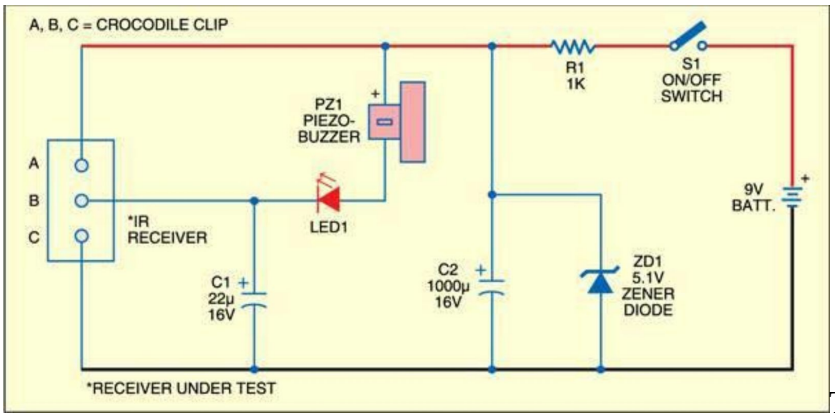
You may have run over a few sorts of adjustable dancing lights (flickering LEDs). A large portion of them utilize presets "variable resistors" to change the rate of switching. Being a mechanical segment, the preset effectively destroys with utilize and furthermore presents noise in the circuit. The circuit exhibited here chooses distinctive estimations of resistors to control the frequency of an astable multivibrator utilizing clock IC 555.



72. Shock-Hazard Warning

Electrical leakage can cause lethal shocks. Yet, such an unfortunate situation can be avoided with this shock-hazard warning system. It utilizes minimal number of components and does not require any separate power supply

73.IR Receiver Module Tester

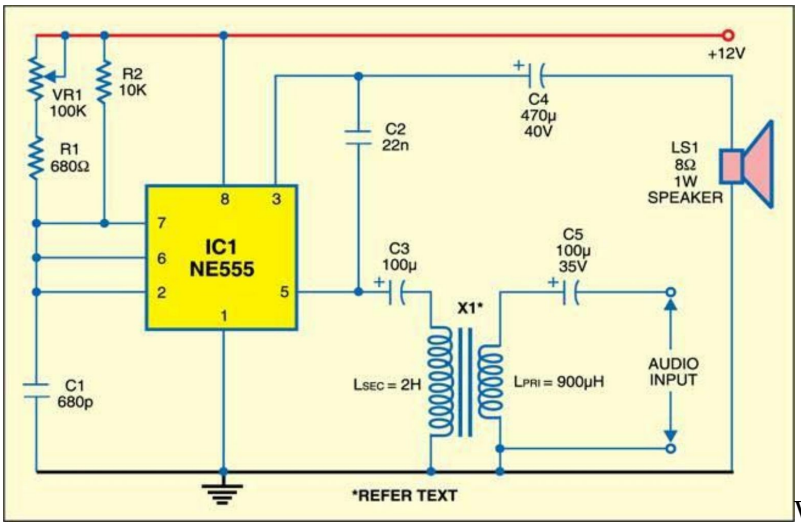


This is a tester for on-board testing of IR receiver modules utilized for remote control of Televisions and VCD players. The circuit is exceptionally basic and can also function as a remote tester.

74.555 Timer PWM Audio Amplifier

The universal 555 timer IC handles audio signals in its own pulse-width modulation (PWM) way. Here, the 555 IC works in astable mode. The switching frequency can be varied from 65 kHz to 188 kHz. Selection of PWM frequency relies upon the amplitude of the input signal as well as the load impedance. By adjusting VR1, you can guarantee comfortable listening with low audio distortion.

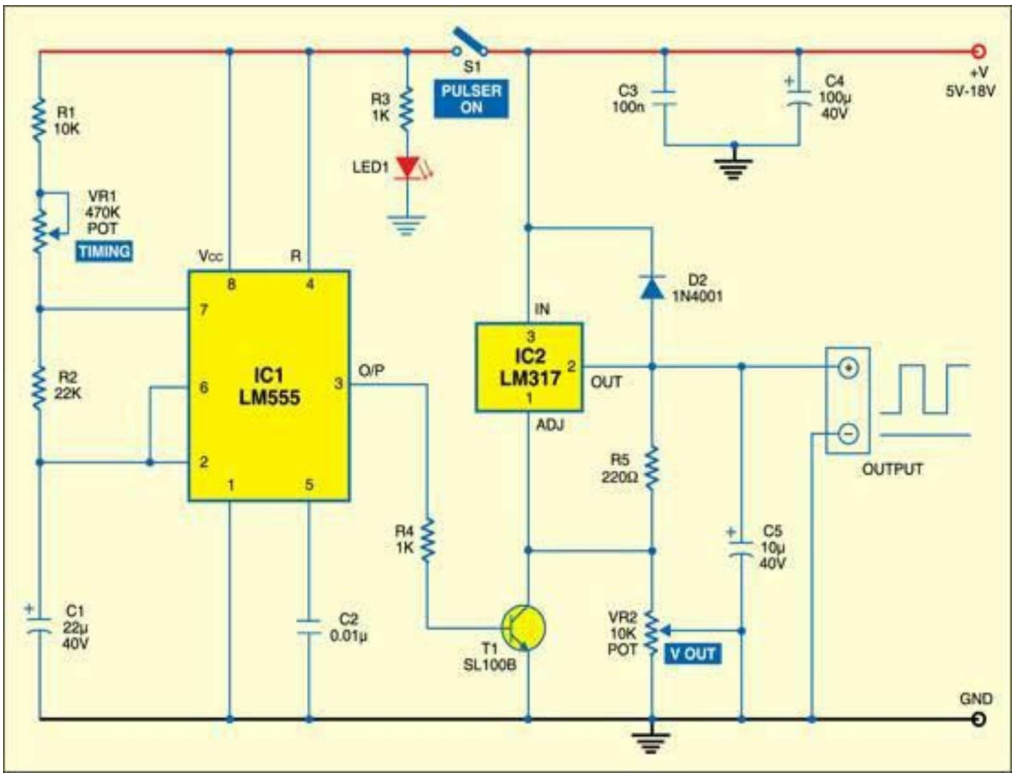
75.Musical Water Shower

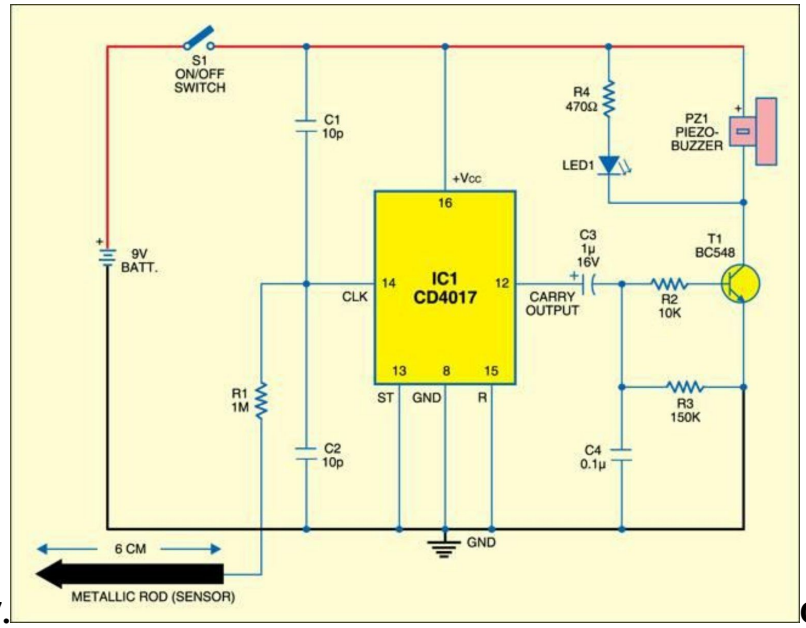


Won't it be pleasant to have music playing out of sight all the while when you take a shower? This easy circuit does likewise. It plays distinctive tunes repeatedly for as long as your shower is turned on. The music starts as soon as water leaves the shower. The music stops once you turn the shower 'off' and water stops leaving it.

76.Power Pulser

The idea behind this multipurpose power pulser is exceptionally easy. As appeared in the circuit, it utilizes a low-frequency oscillator to drive a voltage regulator. Timer chip LM555 (IC1) is wired as an astable multivibrator. Components R1 and R2, VR1 and C1 create the free-running frequency. You can adjust it to some degree by varying potentiometer VR1. The yield of IC1 at stick 3 controls the switching on/off of adjustable voltage regulator LM317T (IC2) through npn transistor SL100B (T1)

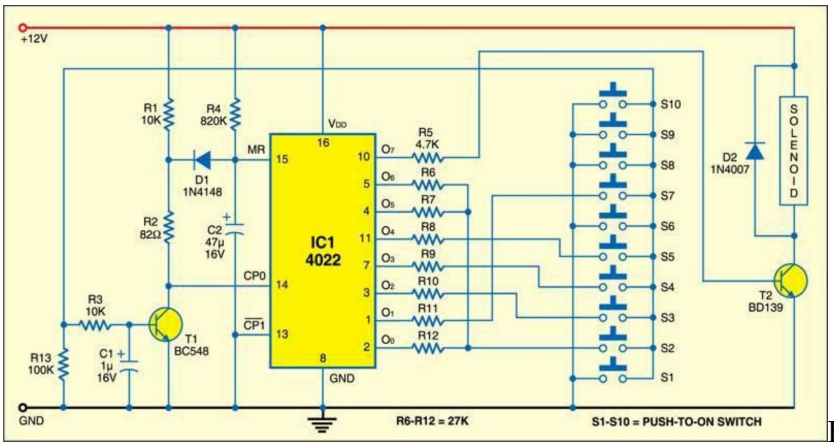




77. Continuity Tester with A Chirping Sound

Today, there's a party at your home. And you are busy identifying faults in the decorative lights hanging over the boundaries of your home. You want to complete the job before night. In any case, daylight adds to your frustration by making it hard to observe whether the neon bulb inside the tester is glowing or not.

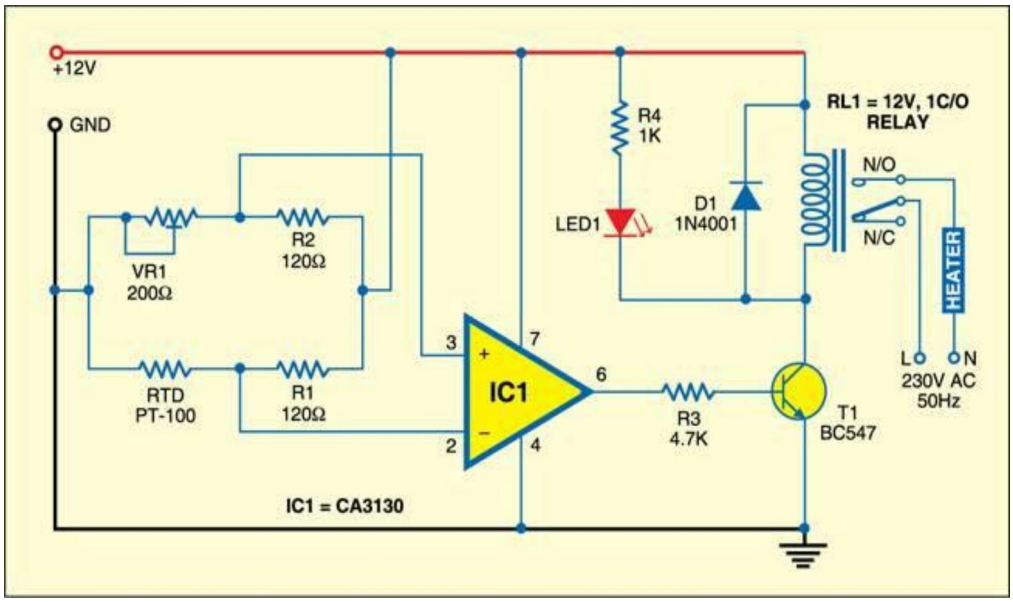
78.Electronic Combination Lock



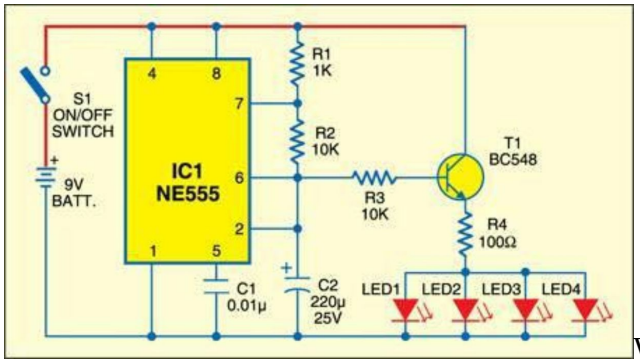
Here's 7-digit combines lock can be easily hard-wired for any combines that you choose. The circuit uses a 4-bit, divide-by-8 Johnson counter (IC1), ten pushbutton switches and npn transistor T1.

79.Heat Control Unit

Here's circuit will turn the heater ‘on’ once the temperature of water falls below the lower limit set by you and turn it ‘off’ when the temperature increases above the higher limit.

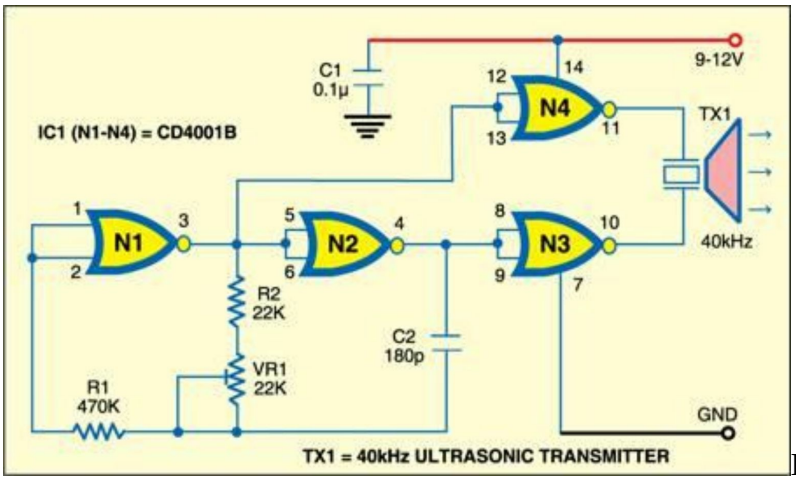

+12V
GND
R4
1K
LED1
D1
1N4001
RL1 = 12V, 1C/O
RELAY
N/O
N/C
HEATER
L
N
230V AC
50Hz
VR1
200Ω
R2
120Ω
RTD
PT-100
R1
120Ω
3
2
7
4
6
IC1
R3
4.7K
T1
BC547
IC1 = CA3130

80.Electronic Heart



With this electronic heart glowing on and off, you are sure to steal the heart of that special someone. The circuit uses an NE555 timer wired in astable multivibrator mode. Its frequency of oscillations is determined by resistors R1 and R2 and capacitor C2. Here the frequency is approximately 0.2 Hz. Each period lasts for just a little over 4 seconds.

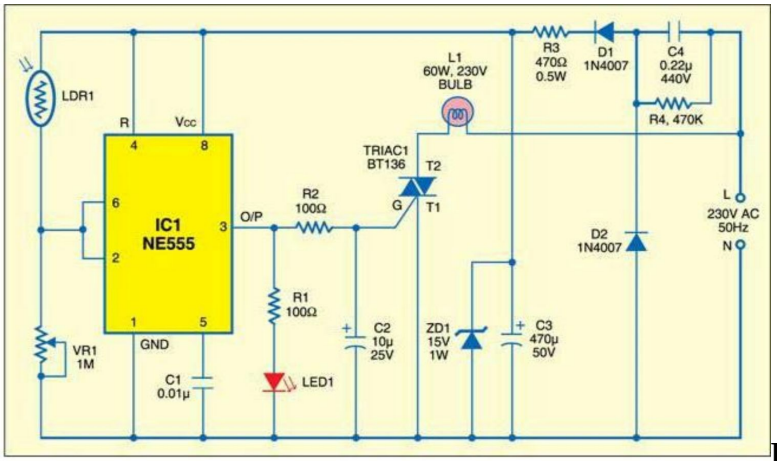
81.Ultrasonic Sound Beam Burglar Alarm



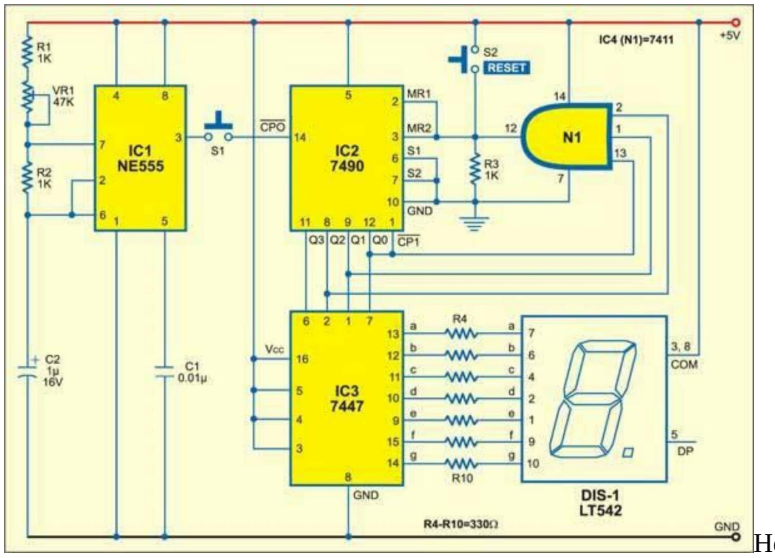
Here's unique burglar alarm makes utilization of the undetectable, inaudible ultrasonic sound beam to identify movements. Ultrasonic transducers work at greatest efficiency when driven at 40kHz recurrence. So a ultrasonic transmitter and receiver pair working at 40 kHz is utilized to control the buzzer or the relay.

82.Sunset Lamp

LDR-based automatic lights flicker because of the adjustment in light intensity at day break and nightfall. So compact fluorescent lamps (CFLs) are inadmissible in such circuits as flickering may harm the electronic circuits within these lamps. The circuit portrayed here can take care of the issue and switch on the lamp in a split second when the light intensity reduces below a preset level.

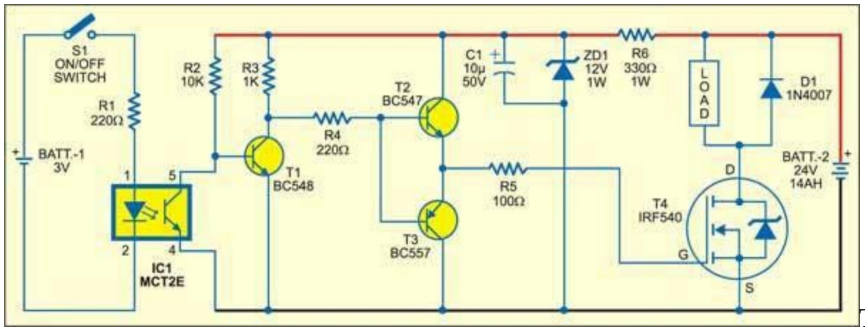


83. Electronic Dice



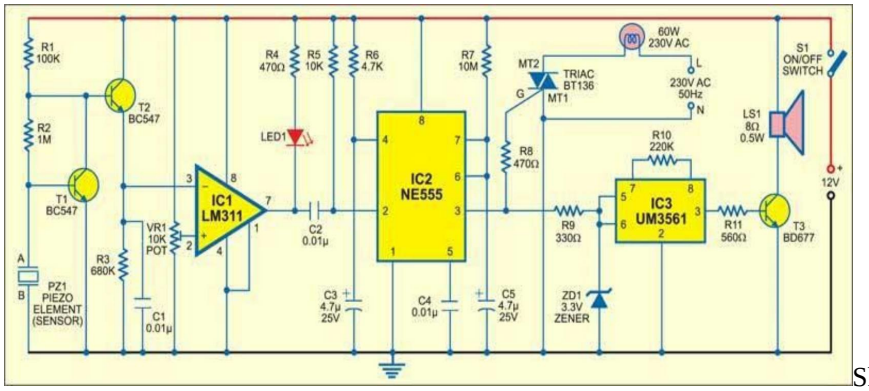
Here's electronic dice has no possibility of wear and tear however every one of the highlights of a wooden or plastic dice utilized for Ludo game.

84.Solid-state Relay



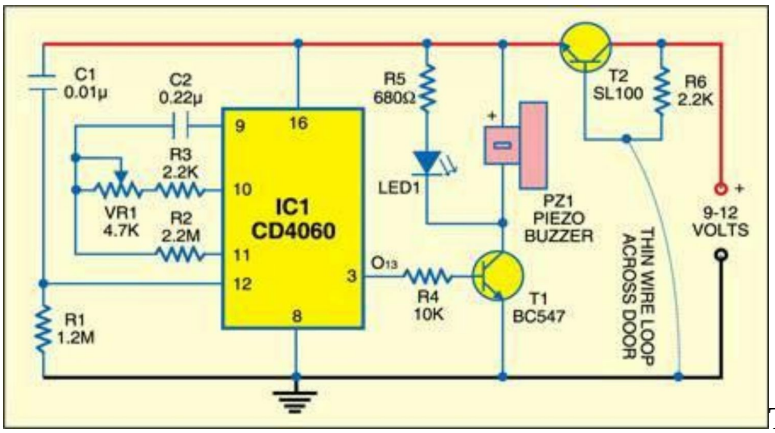
The basic function of a relay is to switch on power to a load utilizing an electrically isolated, low-power control signal. Up to this point, electromechanical relays have been the components of choice to play out this function. The advances made in the semiconductor technology have brought about the development of solid-state relays.

85.Car Porch Guard



Shield your exorbitant vehicle from theft utilizing this electronic safety system. The system instantly switches on the porch lamp and sounds a loud alarm when it identifies any attempt of approaching theft.

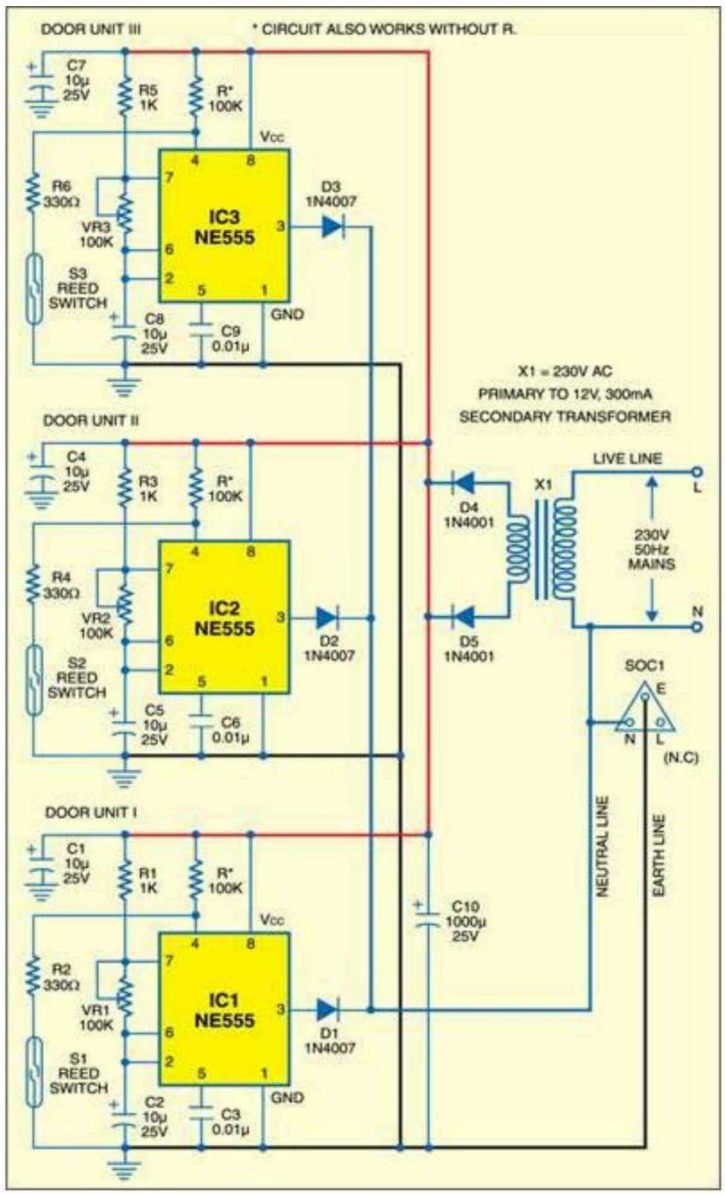
86.Wire-Break Alarm with Delay



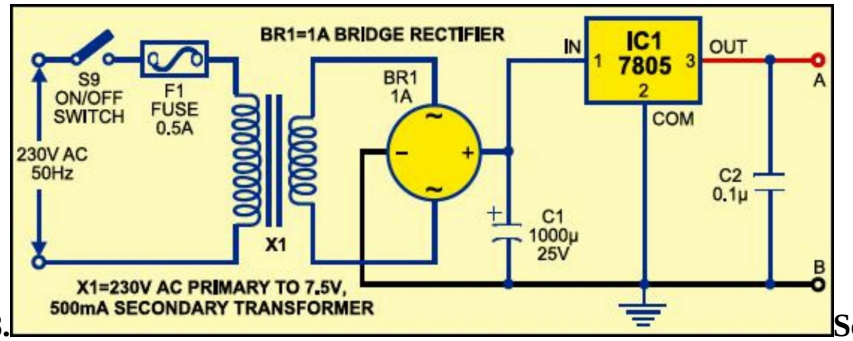
This is a basic circuit of wire-break alarm that activates after a delay of 15 to 30 seconds. At the point when the thin-wire loop running over the entrance door is broken, the alarm sounds after a delay of 15 to 30 seconds, the time frame set through VR1. Subsequently the inhabitants get sufficient time to lock the room all things considered and get the cheat.

87.Cordless Multidoor Alarm

Obstruct the attempt of burglary by identifying interruption with this alarm circuit. Every door is secured by a different circuit built around an autonomous 555 timer IC in conjunction with reed switch magnet. All the three units are powered from a solitary power source. The buzzer can be plugged into the earth line of a socket in any room of a similar building having appropriate earth line association. There is no need of laying external wires up to the buzzer unit from various rooms.

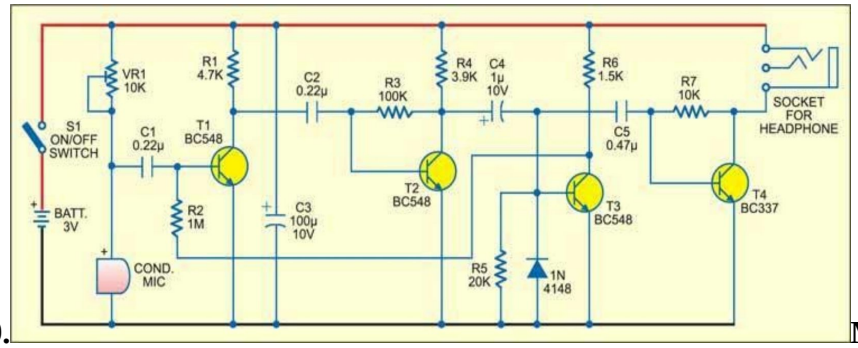


Circuits Diagram of Cordless Multidoor Alarm



88. School/College Quiz Buzzer

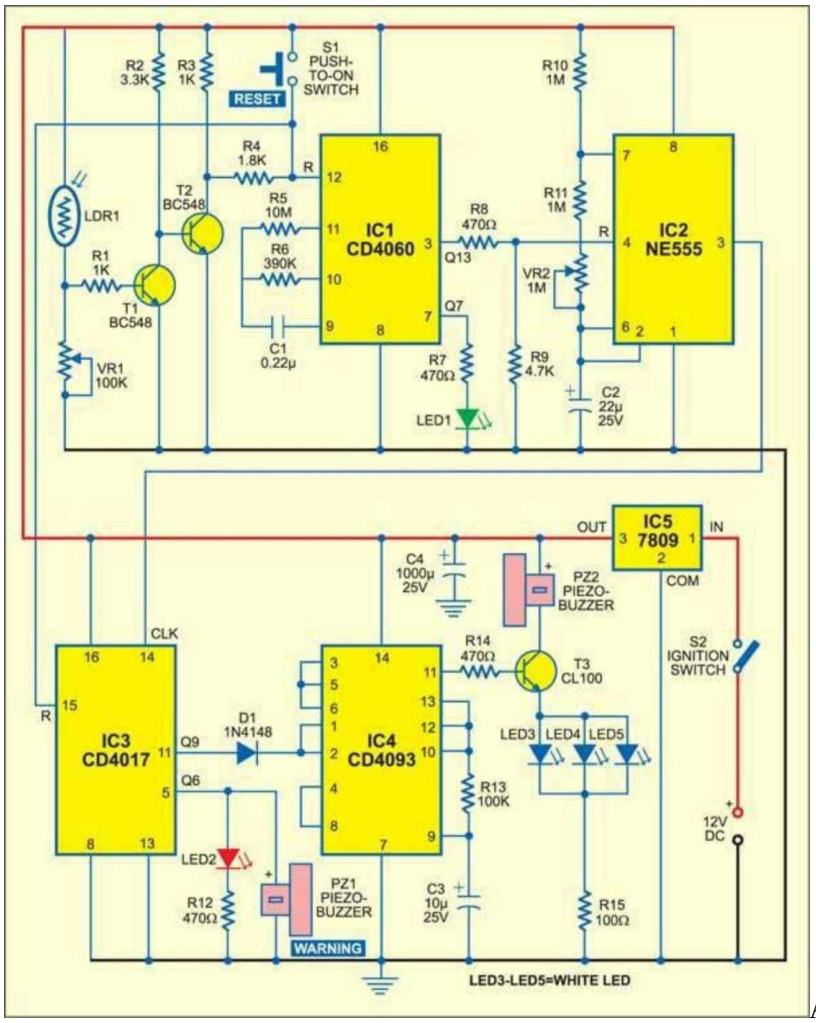
Manual buzzers utilized for quiz competitions in schools and colleges make a great deal of confusion in recognizing the first respondent. In spite of the fact that there are circuits utilizing PCs and discrete ICs, they are either excessively costly or limited, making it impossible to just a couple of number of players.

89. 

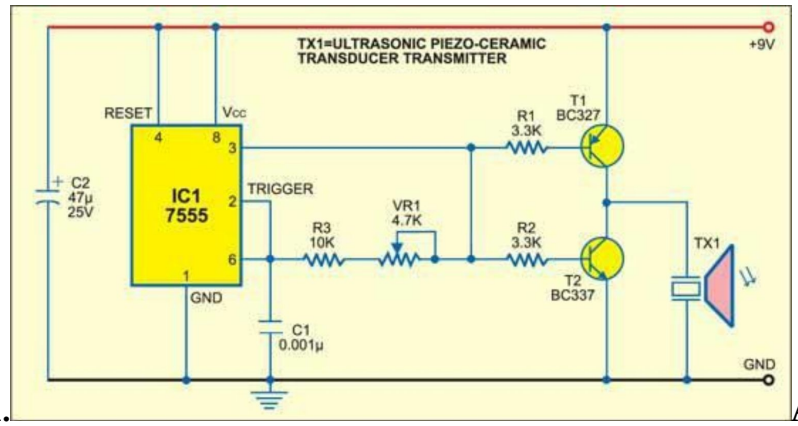
Multipurpose listening device

Here's circuit can recognize extremely black out, remote sounds with a decent clarity. It is valuable in substantial gathering corridors, auditoria, film lobbies, address rooms in colleges, and so on. The circuit can be housed in a little plastic box and kept in a shirt take. It is particularly helpful for watching television programs at a low volume so as not to disturb other family individuals in the house.

90.Anti-Sleep Alarm



A large portion of the accidents on highways amid night happen because of drivers' poor vision caused by the persistent presentation of their eyes to the bright light from the head lamps of approaching vehicles. The poor vision is because of exhaustion of the visual pigment in the eyes, which prompts sleep to reestablish the pigment.



91. Another Ultrasonic Proximity Detector circuit

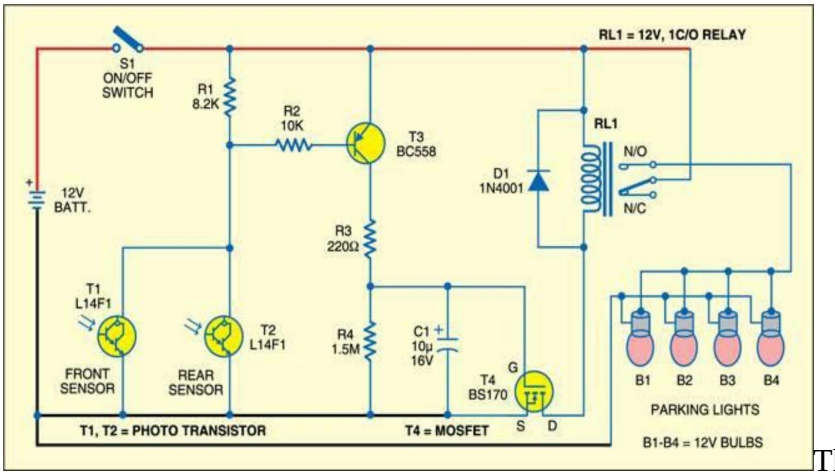
This ultrasonic proximity detector involving independent, battery-controlled transmitter and receiver segments makes utilization of a couple of coordinated ultrasonic piezo-ceramic transducers operating at around 40 kHz each. This circuit can be utilized as a part of exhibitions to switch on prerecorded sound/video messages automatically when a guest manifesting enthusiasm for an item draws close to a displayed item

Fig. 1 demonstrates the transmitter circuit. It contains CMOS timer IC 7555 (IC1) arranged as an astable multivibrator, which might be tuned to the frequency of the ultrasonic piezoceramic transmitter's resounding frequency of around 40 kHz utilizing preset VR1. A correlative match of transistors T1 and T2 is utilized for driving and buffering the transducer while it draws spikes of current from IC1 circuit to manage motions and in this way evades any harm.

The receiver front-end (allude Fig. 2) is intended to give a high gain to the reflected swoon ultrasonic frequency signals recognized by the ultrasonic transducer. The amplifiers built around N1 and N2, separately, give AC voltage gain of around 80 each. These two phases ought to have a high open-circuit gain, wide bandwidth and low bias current separated from being fit for single-supply operation. Quad op-amp LM324 is utilized here because of its minimal effort. For higher efficiency, you may utilize single op-amps, for example, CA3130 or CA3140.

92.Automatic Parking Light for Cars

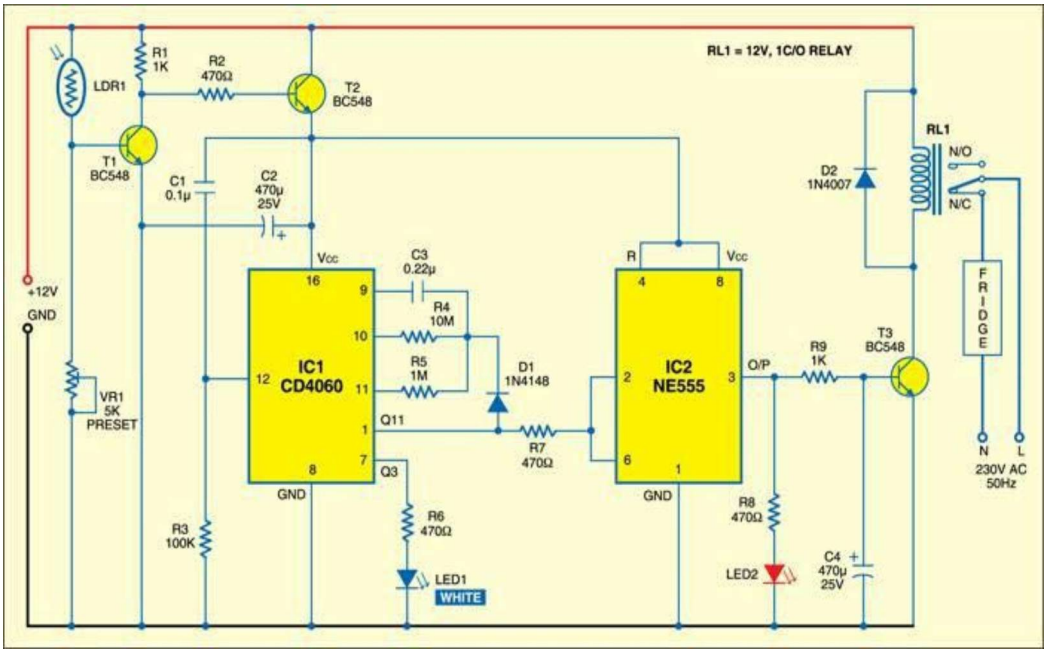
At night, parking lights make your stopped car visible to motorists so they don't crush into your car. Be that as it may, these lights empty significant power from your car's battery.



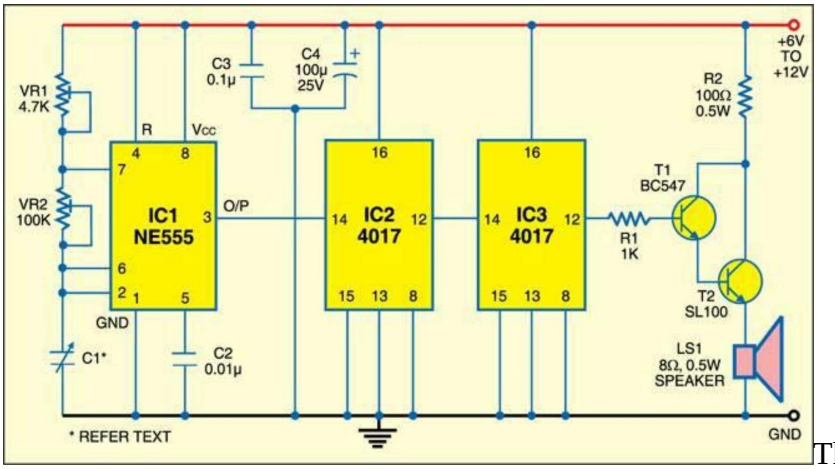
This is basic, automatic parking light system that works with zero standby current. The circuit is intended to turn on the parking lights automatically for 30 seconds when a moving toward vehicle's light is recognized from the back or front side. This automatic element gives safety at night to a stopped vehicle.

93.Peak Hour Timer

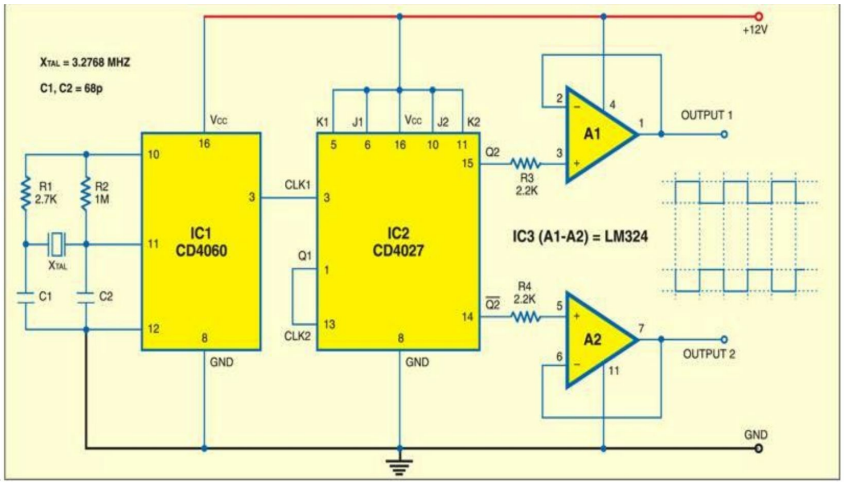
Electrical appliances like refrigerators and AC and cooling systems expend overwhelming current if the line voltage drops amid the peak hours between 6 pm and 9 pm. On the off chance that there is no low-voltage cut-off in these devices, it will cause wastage of current and warming of the appliances. Over-warming may, thusly, reduce the efficiency of the compressors of these appliances



94.Pressure-Sensitive Alarm



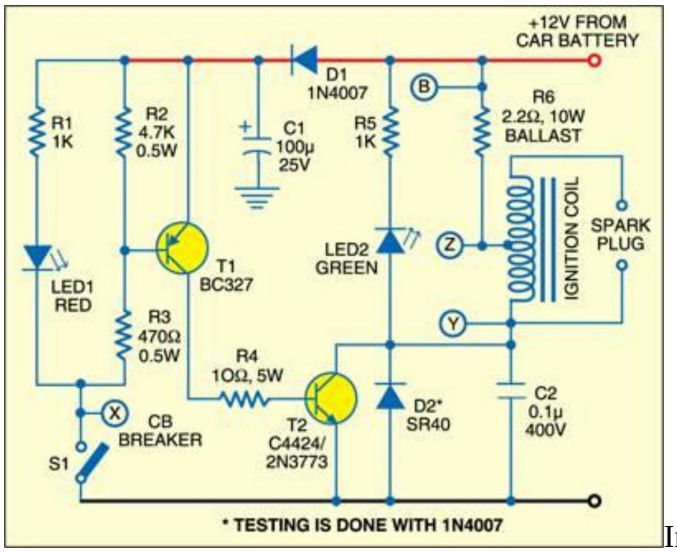
This is a cost effective, pressure-sensitive burglar alarm. The alarm utilizes a home-made pressure sensor, that fills in as a variable capacitor utilizing two copper-clad sheets and a bit of wipe in the middle of them.

95. 

Crystal-Based 50Hz Generator

This is a basic oscillator circuit that generates 50Hz frequency utilizing a crystal. It produces rotating 50Hz pulses with 50 for each penny duty cycle, which can be utilized as a part of inverter circuits. It includes a 14-organize counter and oscillator (CD4060), double J-K flip-slump (CD4027), operational amplifier (LM324) and a couple of discrete segments.

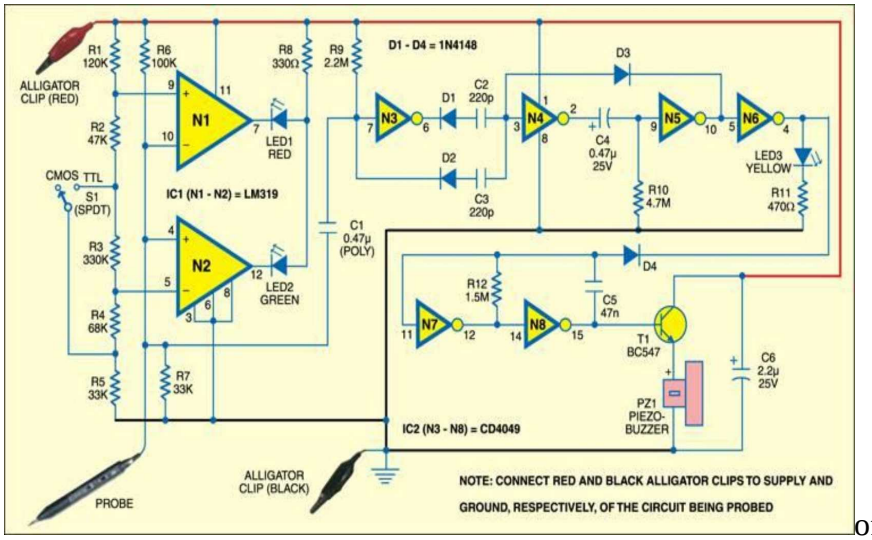
96.Ignition for Old Cars



In older carbureted cars, the Contact-Breaker (CB) point ignition system is utilized to flame the spark plugs. You can change over the ignition system of your car from CB-point-cum-condenser write into electronic utilizing transistorized exchanging.

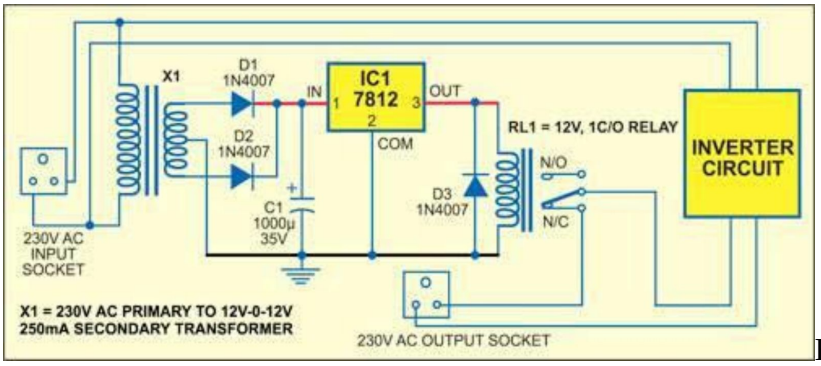
97.Versatile CMOS/TTL Logic and Clock Probe

For blame diagnosis of any logic circuit, you require a probe that can test the logic level or existence of clock action. The circuit appeared here can be utilized to test CMOS and TTL logic circuits for logic states and additionally for the presence of clock action from a couple of hertz to in excess of 10 MHz, anytime



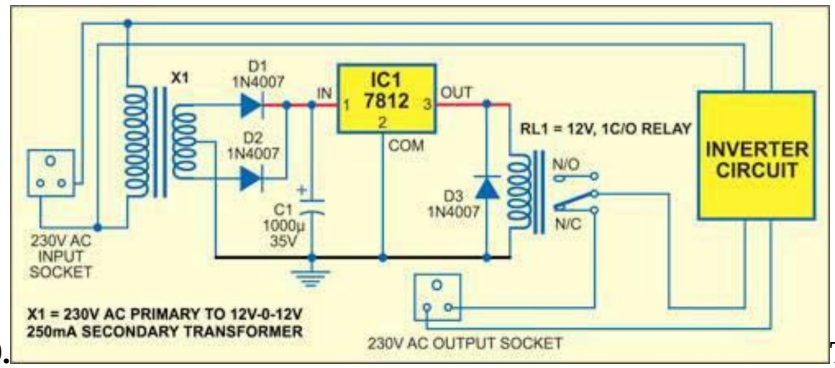
of the logic circuit.

98.Ultrasonic Proximity Detector



Here's ultrasonic proximity detector containing autonomous, battery-powered transmitter and receiver areas makes utilization of a pair of coordinated ultrasonic piezoceramic transducers working at around 40 kHz each.

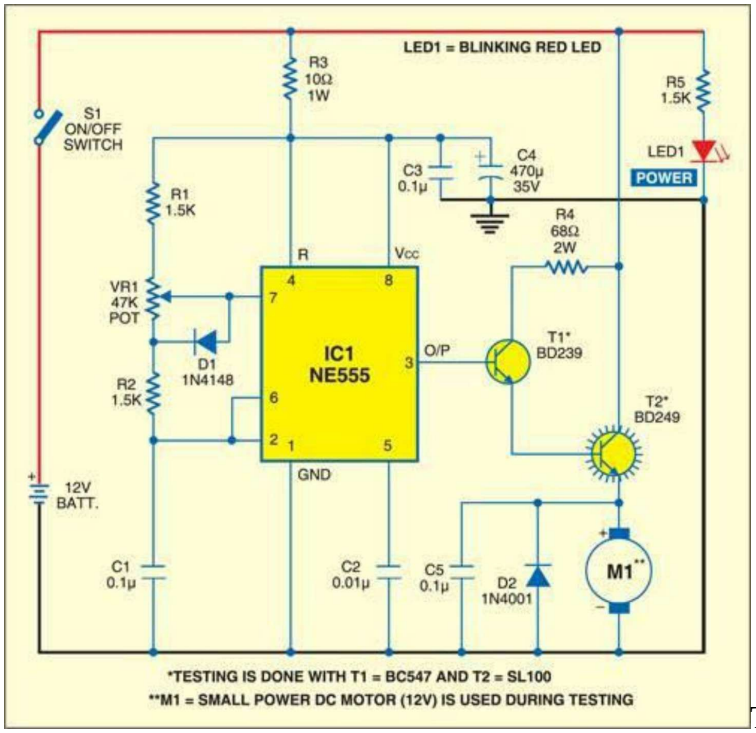
This circuit can be utilized as a part of shows to switch on pre-recorded audio/video messages automatically when a guest manifesting enthusiasm for an item draws close to a displayed item.

99. 

Turn Your Old Inverter into An Emergency Power System

An inverter turned into emergency power system, which turns on when the mains supply fizzles, and all the more importantly doesn't turn on when the main supply is accessible.

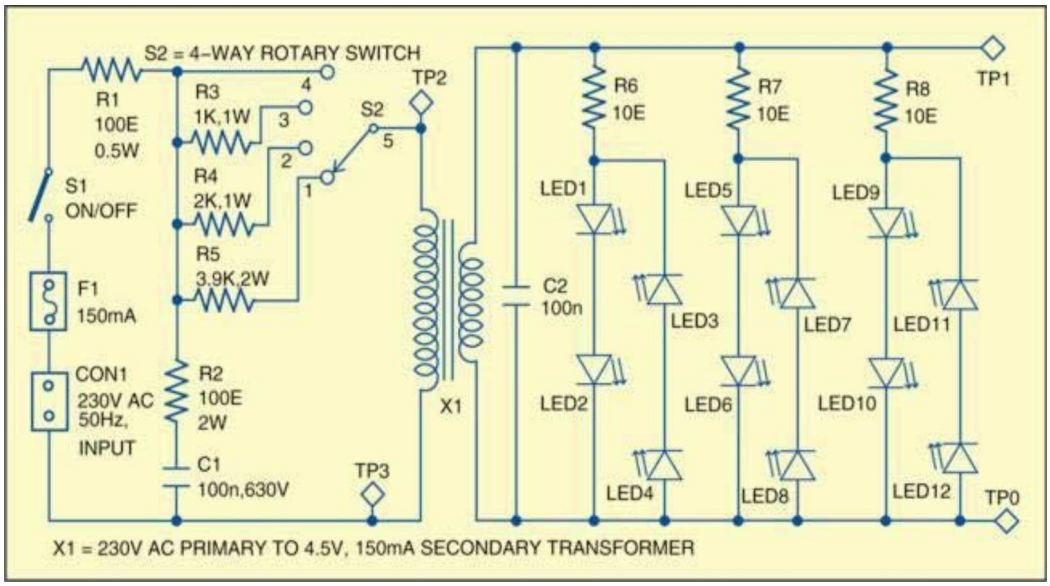
100. Speed Controller for DC Motor



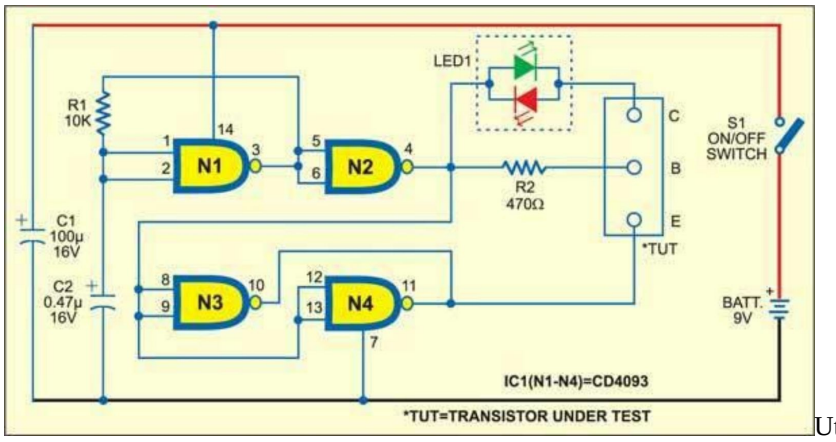
This is a basic circuit to control the speed of a DC motor. It can be arranged to control the breadth rate of autos' windscreen wiper.

101. AC-Powered Led Lamps Without rectifiers

Commonly, LED lamps require rectifier when associated with the AC mains power supply. Electrical isolation of the LED lamps from the mains is likewise required as a rule. However, rectifiers make a switching noise and likewise add to their cost. Introduced here is a easy circuit for LED lamps that doesn't require the utilization of rectifiers.

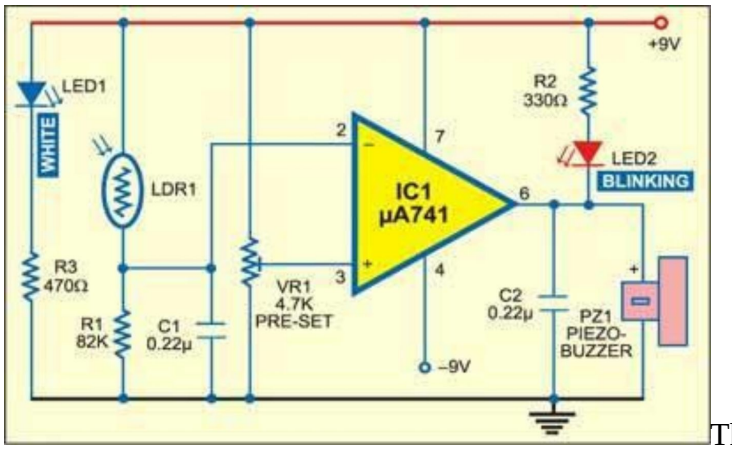


102. Easy Transistor Tester



Utilizing this circuit, see if a given transistor is great or terrible before soldering it. You can likewise recognize PNP and NPN writes effectively. The tester gives LED sign of the pin-outs and additionally the working states of the transistors.

103. Door Guard

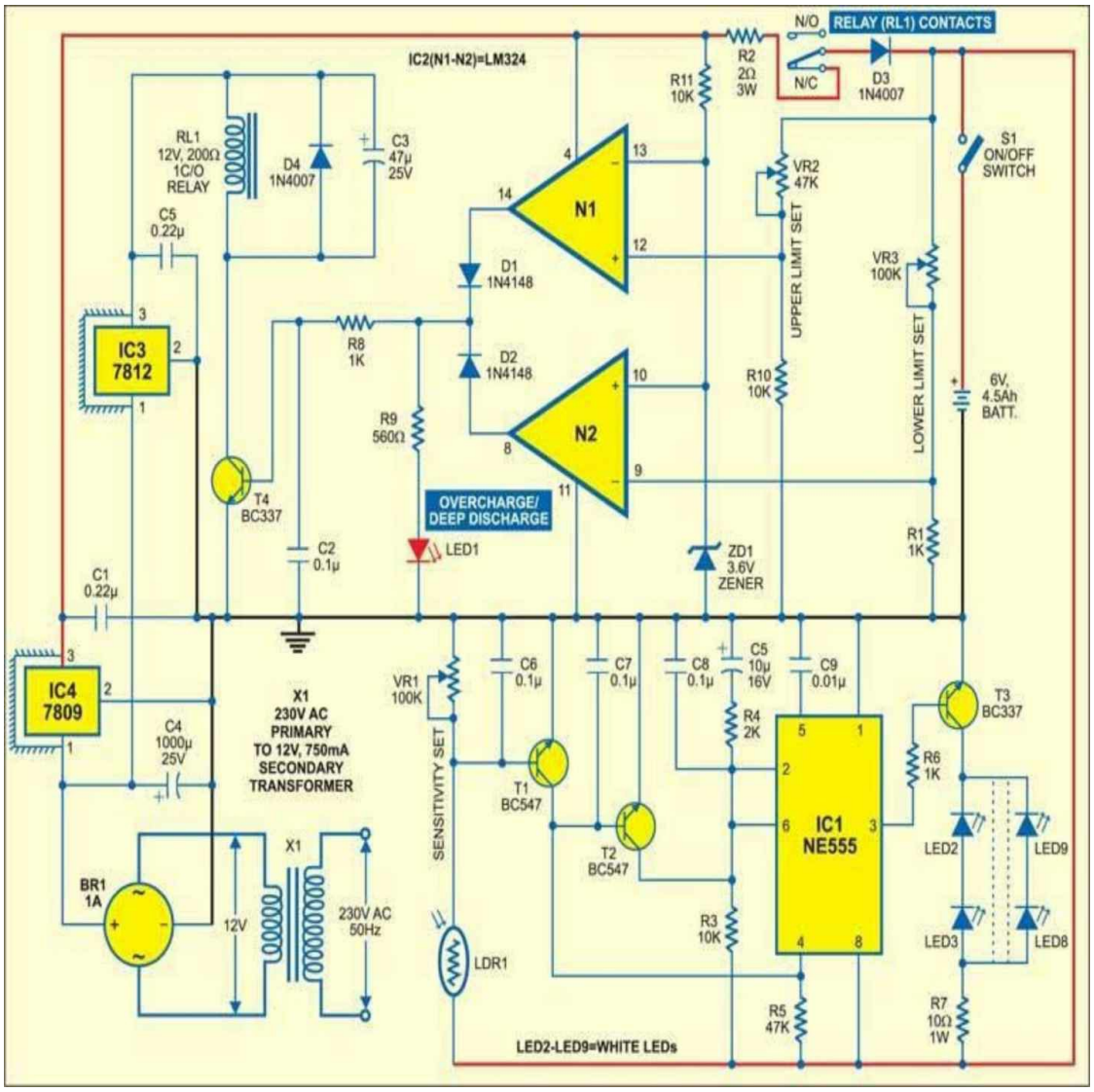


This door guard utilizes operational amplifier µA741 and a light dependent resistor (LDR). Operational amplifier µA741 is utilized as a sensitive voltage comparator. Preset VR1 gives reference voltage to the non-inverting terminal (pin 3) of µA741. LDR1 and resistor R1 are associated with inverting pin 2 of IC1. LED1 and LDR1 are installed at opposite sides of section with the end goal that light from LED1 falls on LDR1.

104. Low-cost Night Lamp

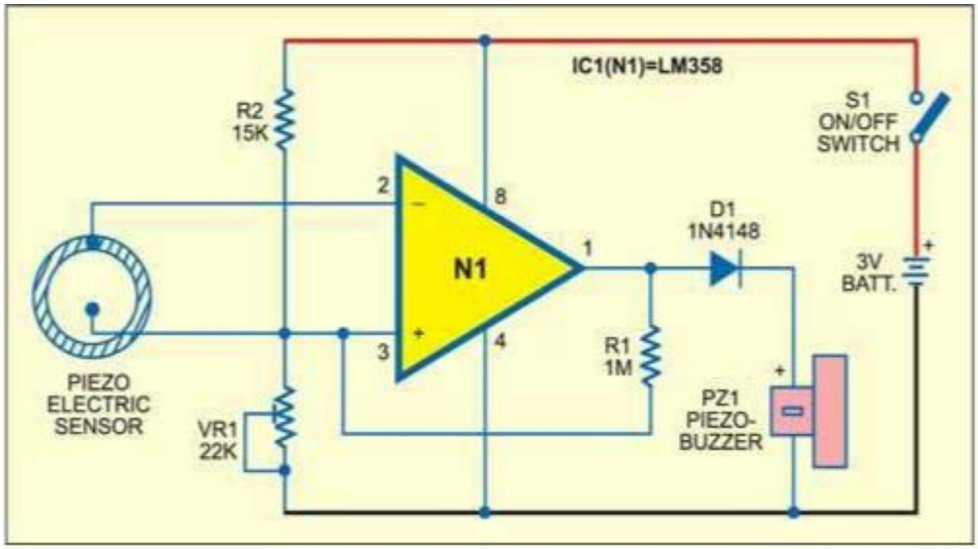
This is easy, cost effective night lamp naturally ON at night and OFF in the daytime. It consolidates battery charging circuit with security against over-charging and deep-discharge.

Circuits diagram Of Low-cost Night Lamp

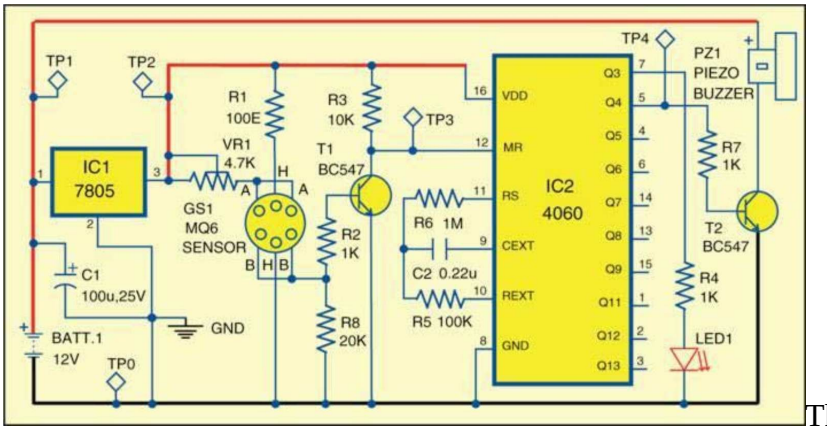


105. Briefcase Alarm

Here's miniature alarm unit shields your resources from theft by sounding an alarm once someone endeavors to get your briefcase. It is a battery-operated device that can be covered up in a corner inside the briefcase. The circuit utilizes couple of components and is easy to fabricate.

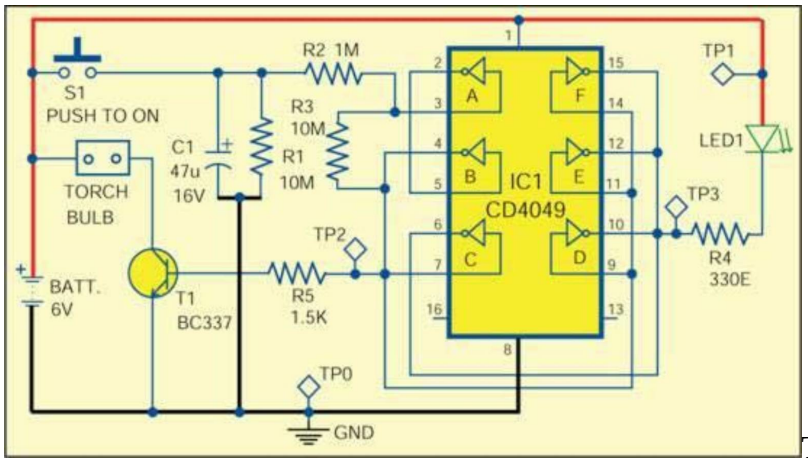


106. Sensitive LPG Leakage Alarm



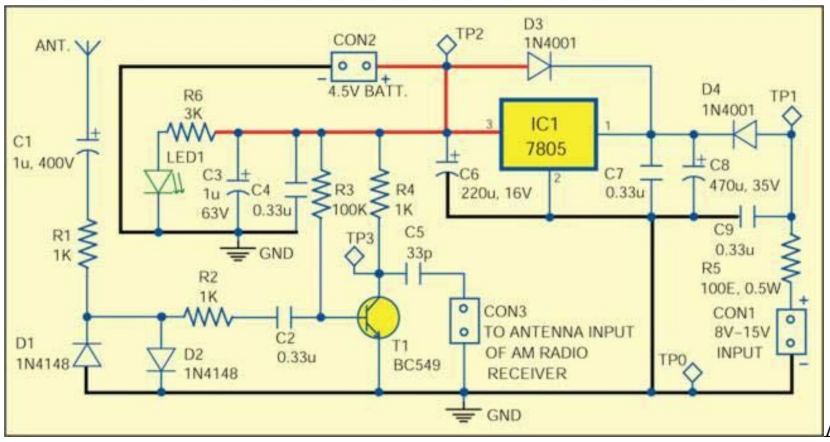
This is an ultra-sensitive LPG sensor that produces loud beeps when it senses any gas leakage. It identifies vapors of liquefied petroleum gas anyplace in the vicinity of 200 and 10,000 ppm and drives a piezo buzzer to get consideration for prompt action. The buzzer beeps until the concentration of gas in the air declines to a safe level. The circuit utilizes a MQ6 gas sensor, which is intended to sense LPG, propane and isobutane gases.

107. Cupboard light



This is an essential circuit that can briefly illuminate your cupboard or other such normally dark places where mains connection is either impractical or not beneficial. The circuit is only a battery-operated light with inbuilt auto close off.

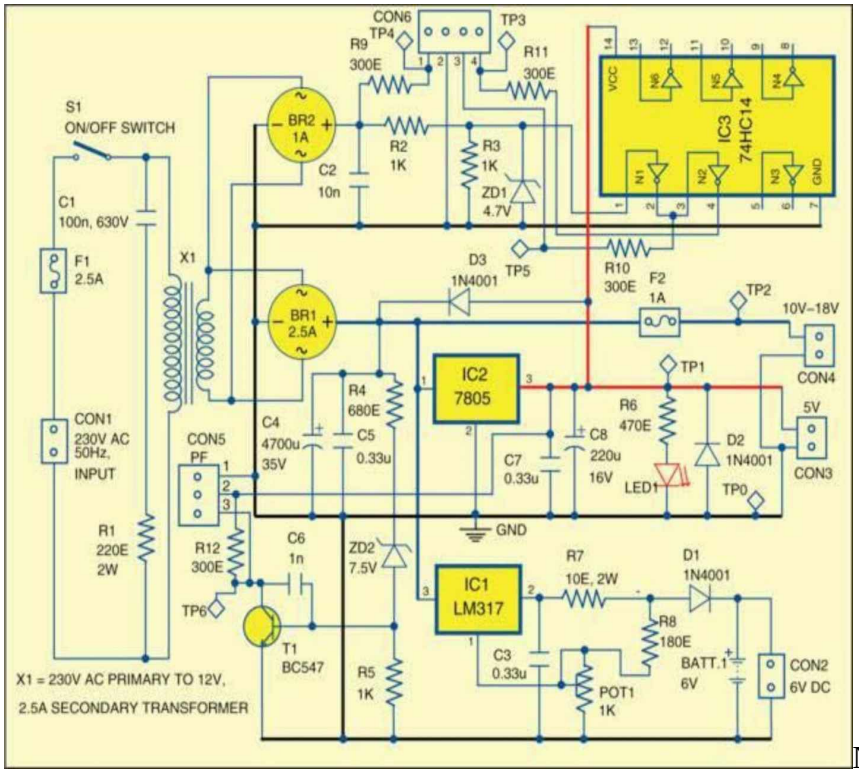
108. Simple Antenna Preamplifier for AM Radios



AM radios regularly require long (10-30m) outdoor antennae. On the off chance that you have no option yet to utilize a moderately short antenna,

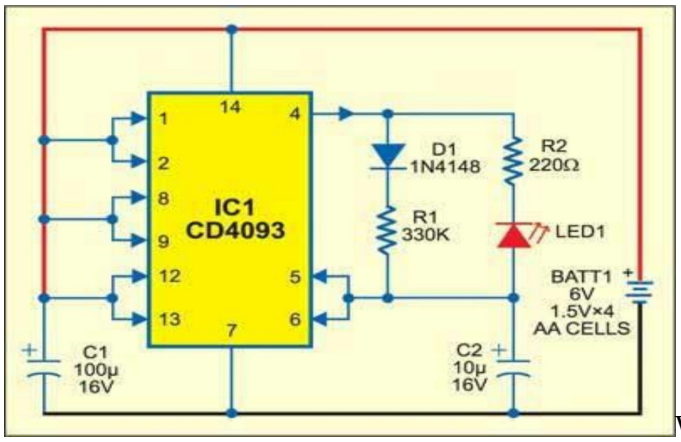
you can enhance the AM gathering by including the proposed low-noise antenna preamplifier for AM signals. Its operation range is 150-1700 kHz, covering the long-wave (LW) and medium-wave (MW) ranges.

109. Multifunction Power Supply



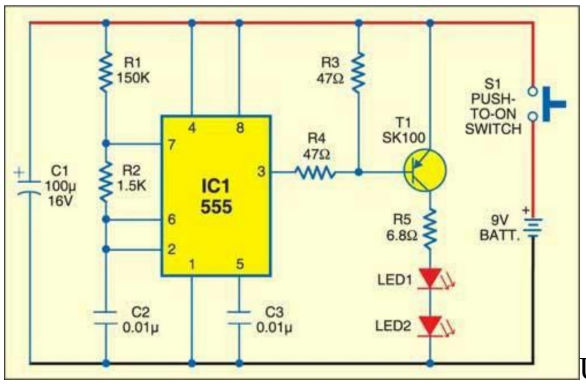
Numerous embedded systems nowadays require +5V power supply with some extraordinary capacities, for example, power-fail detection, zero-crossing signals for mains power supply and probability to keep up the charging of inherent batteries.

110. Micro-Power Flasher



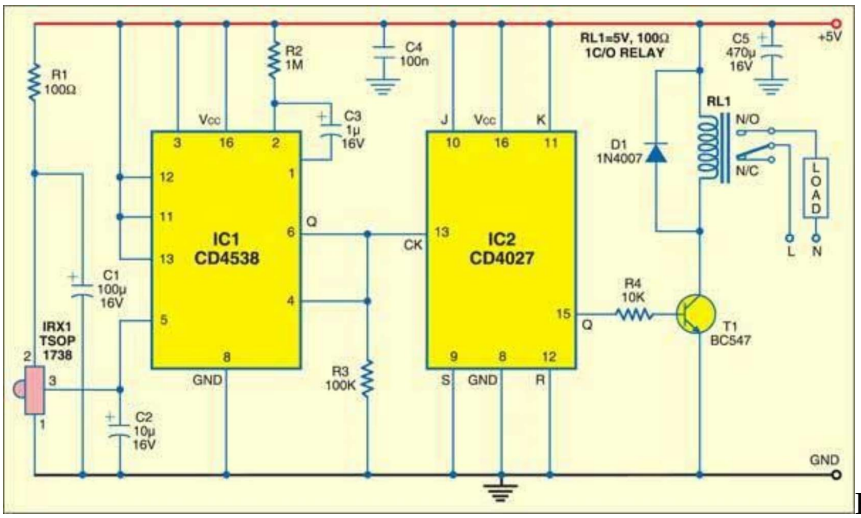
With this micro-power flasher, you can puzzle the gatecrashers endeavoring to break into your home. The unit persistently emits flashing light both amid day and night giving the feeling that the inhabitants of the house are available inside. The circuit can run off four 1.5V AA-measure cells consistently for a long period

111. Optical Remote on/off Switch



Utilizing this optical remote control, you can switch on/off any electrical or electronic load. Like any remote-control system, it has a small transmitter unit and a receiver unit to activate the relay.

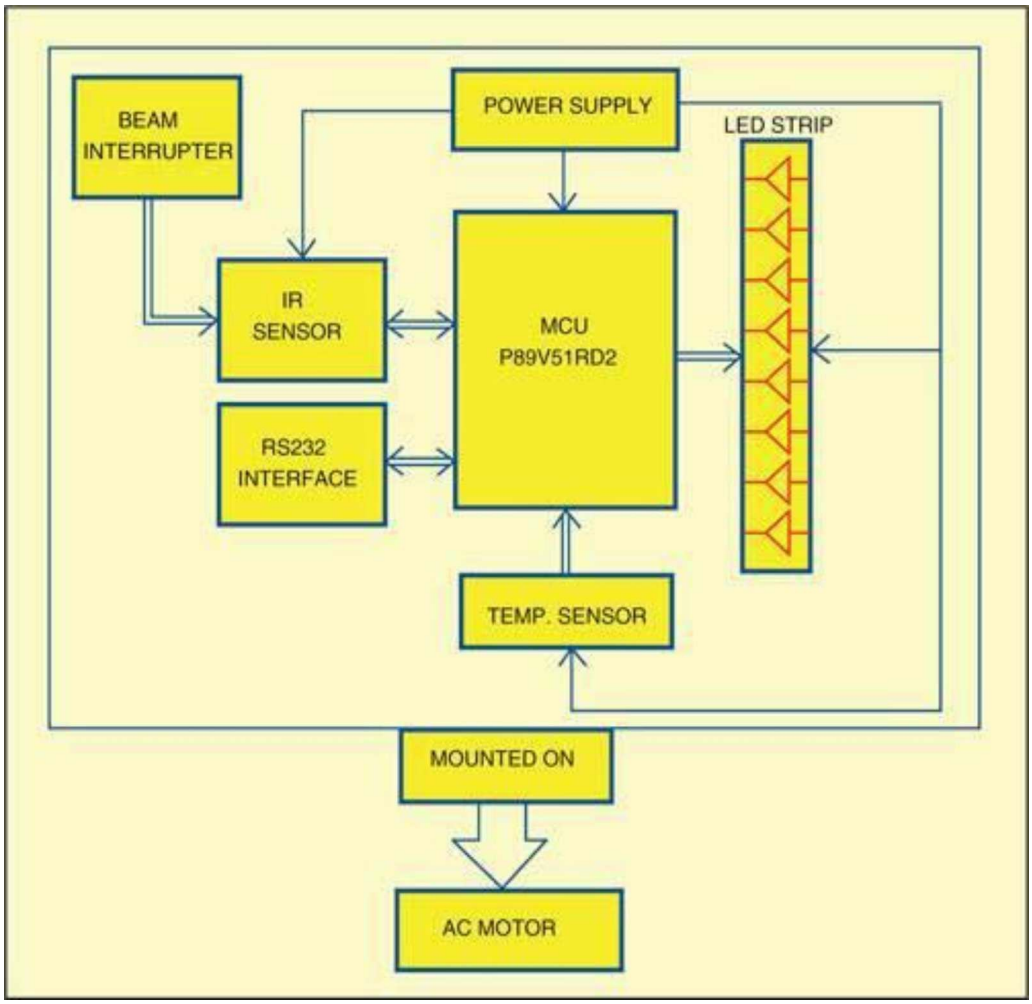
112. Infrared Toggle Switch



Here's infrared toggle switch can be controlled by any television/VCR remote working at 38kHz frequency. The circuit utilizes promptly accessible, low-cost components and can be assembled on a little Veroboard.

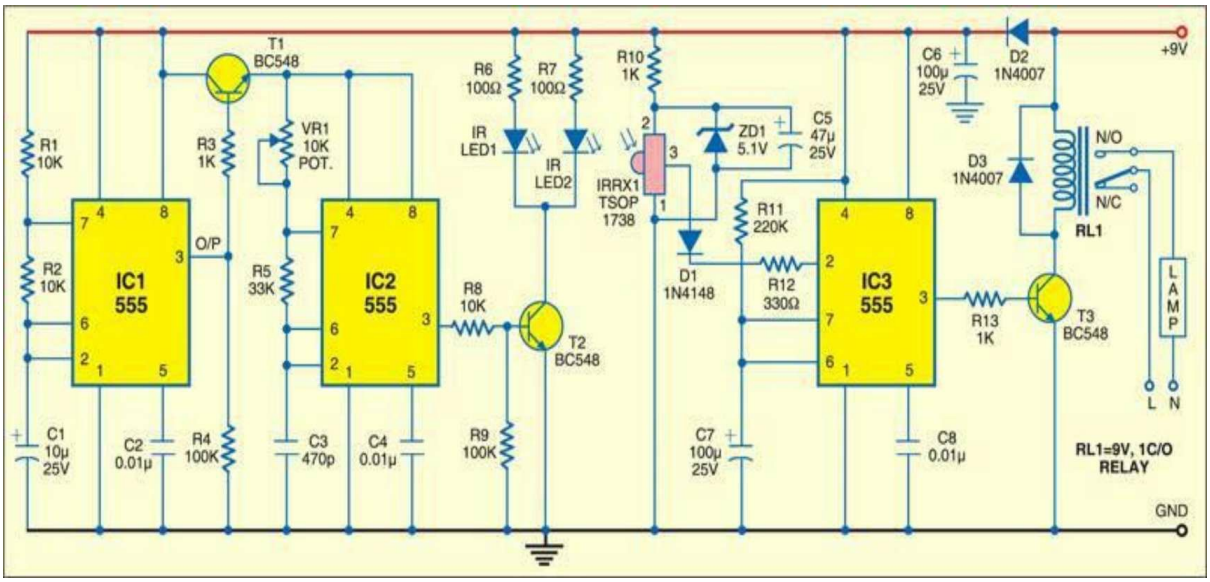
113. Contactless Telephone Ringer

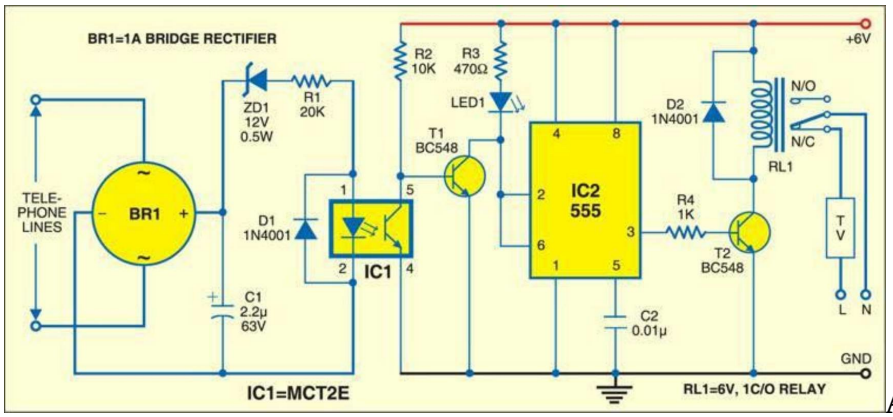
Here's a completely transistorized, basic circuit designed as a contactless telephone ringer gives an indication of approaching telephone call at a remote site like kitchen or room in the building. It is actualized by winding at least five turns of a short hookup insulated wire around one of the wires of a twin telephone cable.


BEAM
INTERRUPTER
POWER SUPPLY
LED STRIP
IR
SENSOR
MCU
P89V51RD2
RS232
INTERFACE
TEMP. SENSOR
MOUNTED ON
AC MOTOR

114. Automatic Wash Basin Mirror Lamp Controller

In eateries, auditoria and even homes, numerous a times we forget to switch off the wash basin mirror lamp after utilize. The circuit given here automatically switches on the wash basin mirror lamp at whatever point you remain in front of it and switch off the same after you move out, consequently sparing power.

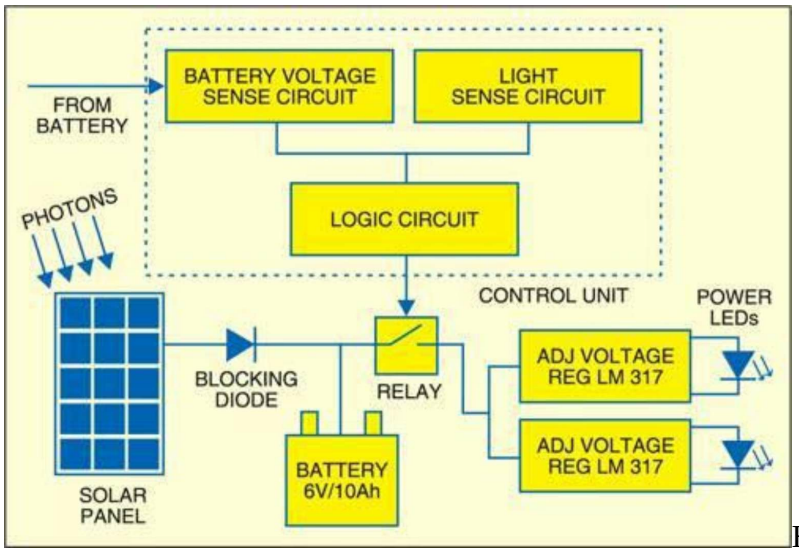

+9V
T1
BC548
R1
10K
R2
10K
R3
1K
VR1
10K
POT.
IC1
555
O/P
R5
33K
IC2
555
R6
100Ω
R7
100Ω
IR
LED1
IR
LED2
R8
10K
T2
BC548
R9
100K
R10
1K
IRRX1
TSOP
1738
ZD1
5.1V
C5
47µ
25V
D1
1N4148
R11
220K
R12
330Ω
IC3
555
C6
100µ
25V
D2
1N4007
D3
1N4007
N/O
N/C
RL1
R13
1K
T3
BC548
LAMP
L
N
C1
10µ
25V
C2
0.01µ
R4
100K
C3
470p
C4
0.01µ
C7
100µ
25V
C8
0.01µ
RL1=9V, 1C/O
RELAY
GND

115. 

Auto Muting During Telephonic Conversation

Telephone conversation can be made aggravation free utilizing this easy circuit. When you lift the telephone handset to converse, the television, music system or whatever other machine that might cause unsettling influence gets switched off. It turns on when you put the handset back on the support.

116. Solar-Powered Pedestal Lighting System

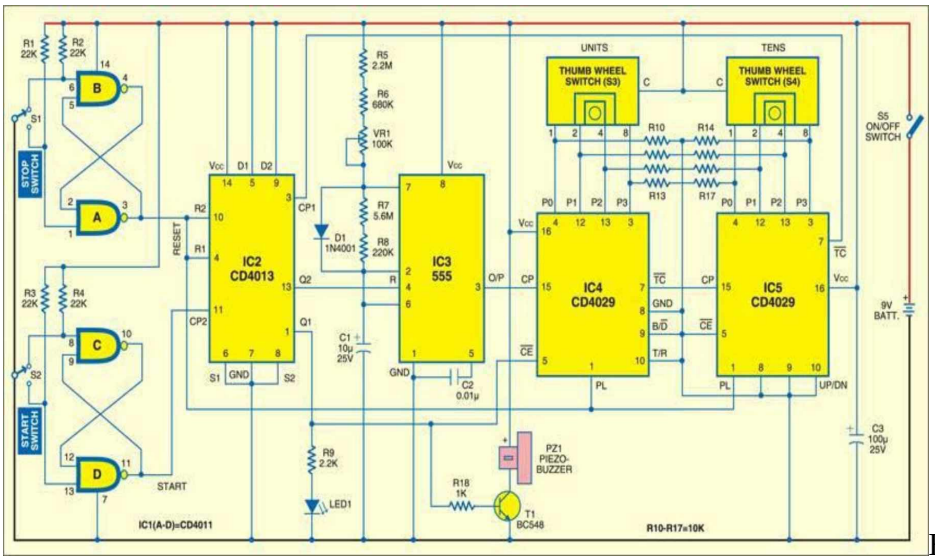


Here's solar-powered pedestal lighting system utilizes power LEDs for lighting. Solar power is first converted into DC electricity by a solar photovoltaic cell and used to charge a storage battery. The solar power stored in the battery is used during the evening for pedestal lighting utilizing power LEDs.

117. LED Illumination for Refrigerators

The radiant lamp gave inside the refrigerators glows at whatever point we open the door. It experiences a few cons. These problems could be overwhelmed by utilizing a dispersed array of LEDs with battery backup, which gives shadow less light and cool operation.

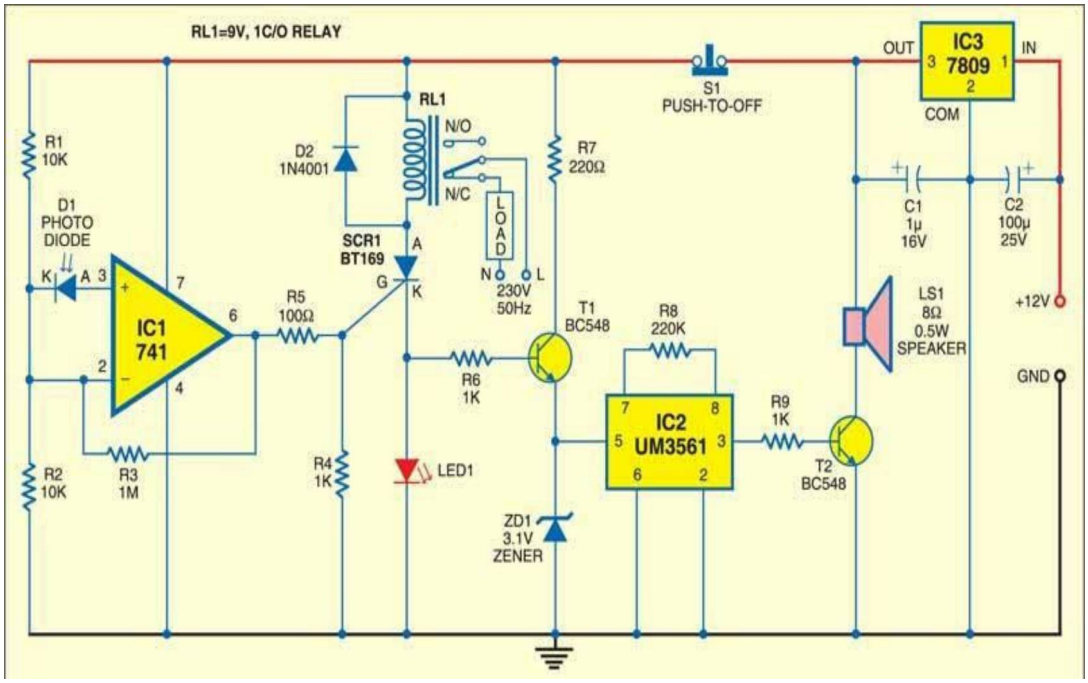
118. Electronic Reminder

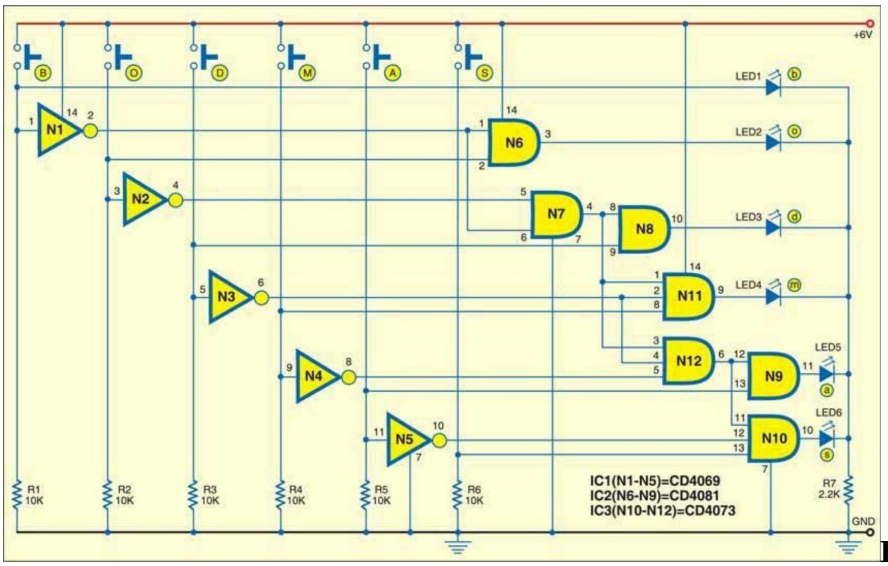


Here's a simple-to-make electronic alarm will remind you of an important task after a preset time. It is especially helpful for housewives and occupied professionals. You should simply set the time in minute swith the assistance of two thumbwheel switches (S3 and S4) and press and discharge begin switch. Absolutely after the time set by you is finished, there is an audio and in addition visual indication to remind you that the time you set has passed. The device is portable and works off a 9V battery.

119. Photodiode-Based Fire Detector

This ultra-sensitive fire sensor ensures your electronic devices like PC and television set. It utilizes a photodiode as the fire sensor and sounds an alarm quickly on sensing a spark or fire in the power supply section of the device and in a split-second cut off the power supply. The circuit misuses the photovoltaic property of the photodiodes to detect the fire.

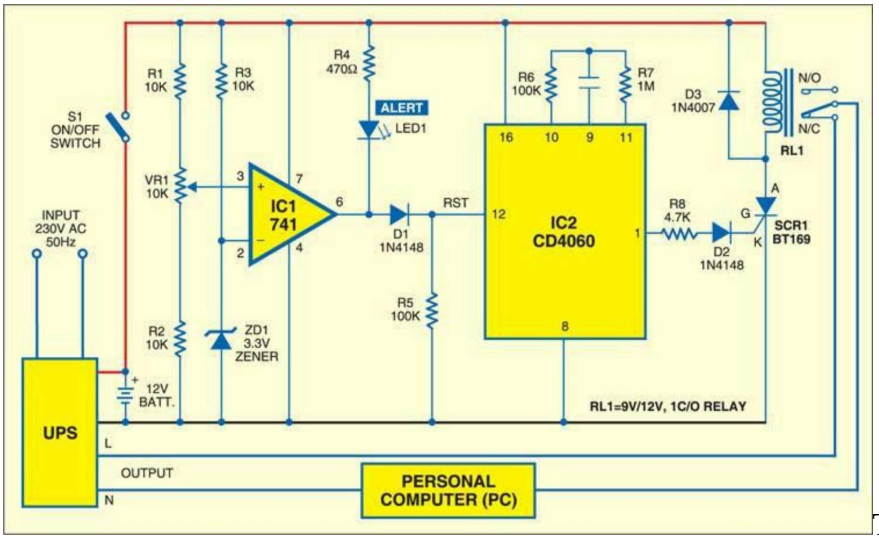

RL1=9V, 1C/O RELAY
S1
PUSH-TO-OFF
IC3
7809
OUT
IN
COM
RL1
N/O
N/C
D2
1N4001
R7
220Ω
R1
10K
D1
PHOTO
DIODE
SCR1
BT169
LOAD
230V
50Hz
C1
1µ
16V
C2
100µ
25V
+12V
GND
IC1
741
R5
100Ω
T1
BC548
R8
220K
LS1
8Ω
0.5W
SPEAKER
R6
1K
IC2
UM3561
R9
1K
T2
BC548
R2
10K
R3
1M
R4
1K
LED1
ZD1
3.1V
ZENER

120. 

BODMAS Rule

The term 'BODMAS' is a stand for 'bracket,' 'of', 'division,' 'multiplication,' 'addition' and 'subtraction' and the 'BODMAS rule' is a mnemonic for the pecking order of different arithmetical operators. A mathematical expression may include various operators, however only one of them must be done first. The request of priority, as we are natural from school days, follows: 'Bracket' followed by 'of,' 'division,' 'multiplication,' 'addition' and afterward 'subtraction' in a specific order.

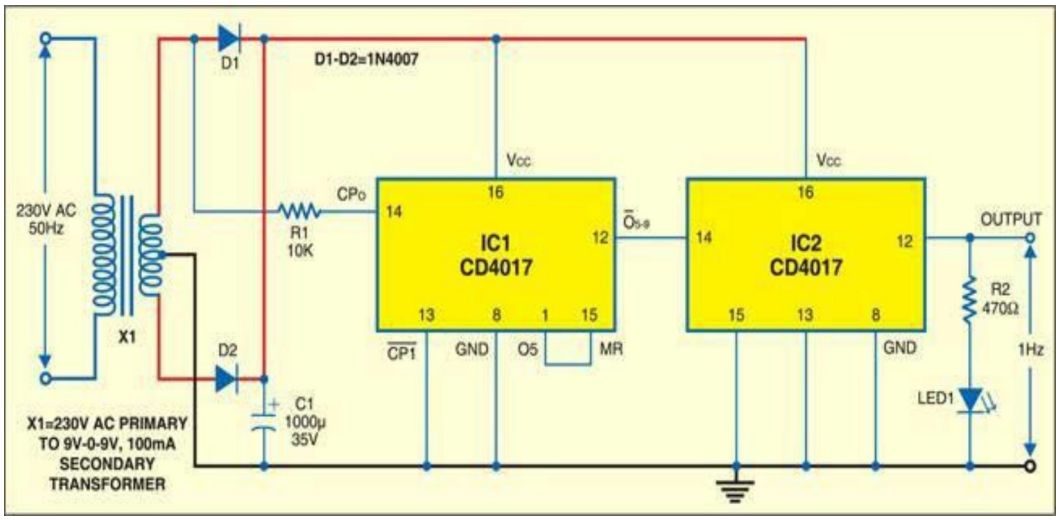
121. Circuit for UPS to Hibernate PC



The vast majority of the low-energy consume UPS systems accessible in the market don't have the office to shutdown the computer before they turn off automatically because of low battery. Some of them have the office however they require programming for the same.

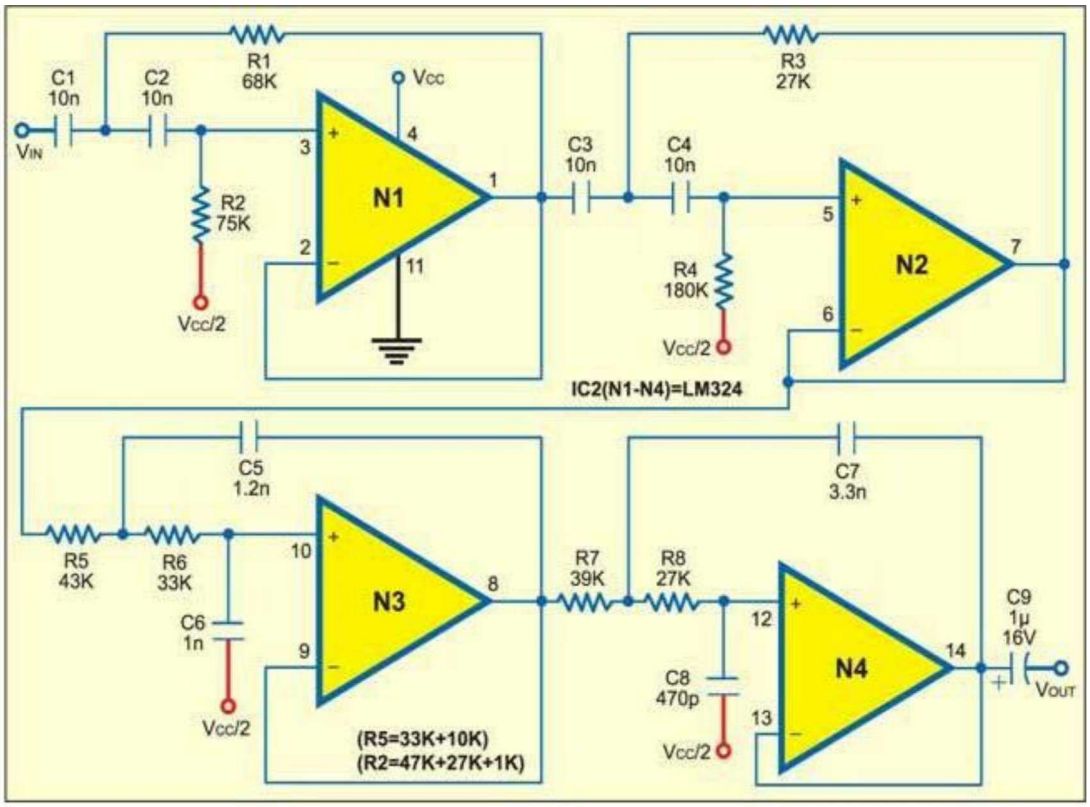
122. Accurate 1Hz Generator

Accurate 1Hz square wave pulses are required in stopwatches and other digital circuits. This is a low-cost, broadly useful 1Hz signal generator without utilizing a crystal oscillator.

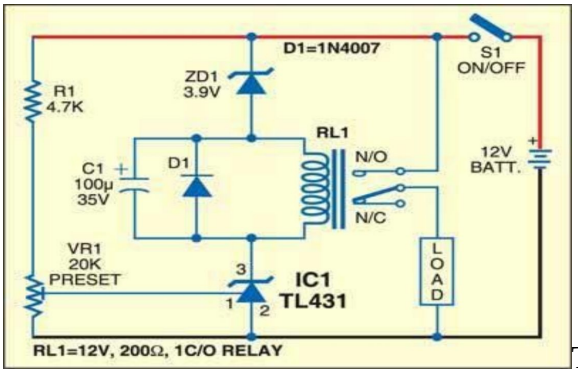


123. A Fourth-Order Speech Filter

Human speech generally involves an audio spectrum of 300 to 3400 Hz. There is a prerequisite, especially in telephone circuits, to limit the frequency response to this range. The 'Digital Speech Security System' distributed in EFY Electronics Projects Vol. 19 also utilizes a similar filter. Be that as it may, it utilizes dedicated filter ICs, which, other than being expensive, are not easily available. This circuit will demonstrate quite valuable for the specified undertaking as well as various other speech circuits.

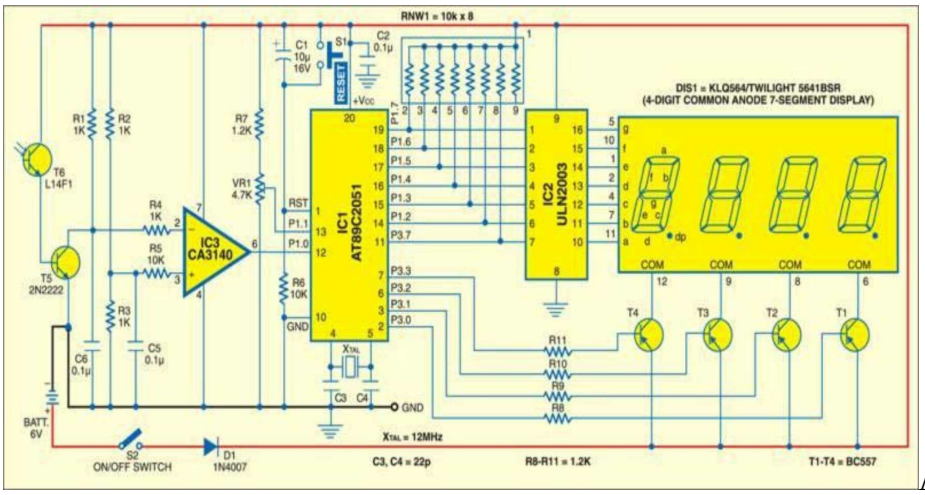

C1
10n
C2
10n
R1
68K
Vcc
VIN
3
4
N1
1
2
11
R2
75K
Vcc/2
C3
10n
C4
10n
R3
27K
5
N2
7
6
R4
180K
Vcc/2
IC2(N1-N4)=LM324
C5
1.2n
C7
3.3n
R5
43K
R6
33K
10
N3
8
R7
39K
R8
27K
12
N4
14
C9
1µ
16V
VOUT
C6
1n
9
C8
470p
13
Vcc/2
Vcc/2
(R5=33K+10K)
(R2=47K+27K+1K)

124. Smart Battery Protector Using a Shunt Regulator



The life expectancy of a battery dramatically decreases when it is discharged beneath the minimum suggested battery voltage. You should disconnect the load before discharging is finished. Else, it can damage the battery or abbreviate its life. This basic circuit outperforms the usual for battery safety. It utilizes shunt regulator IC TL431 for its effortlessness and marvelous working.

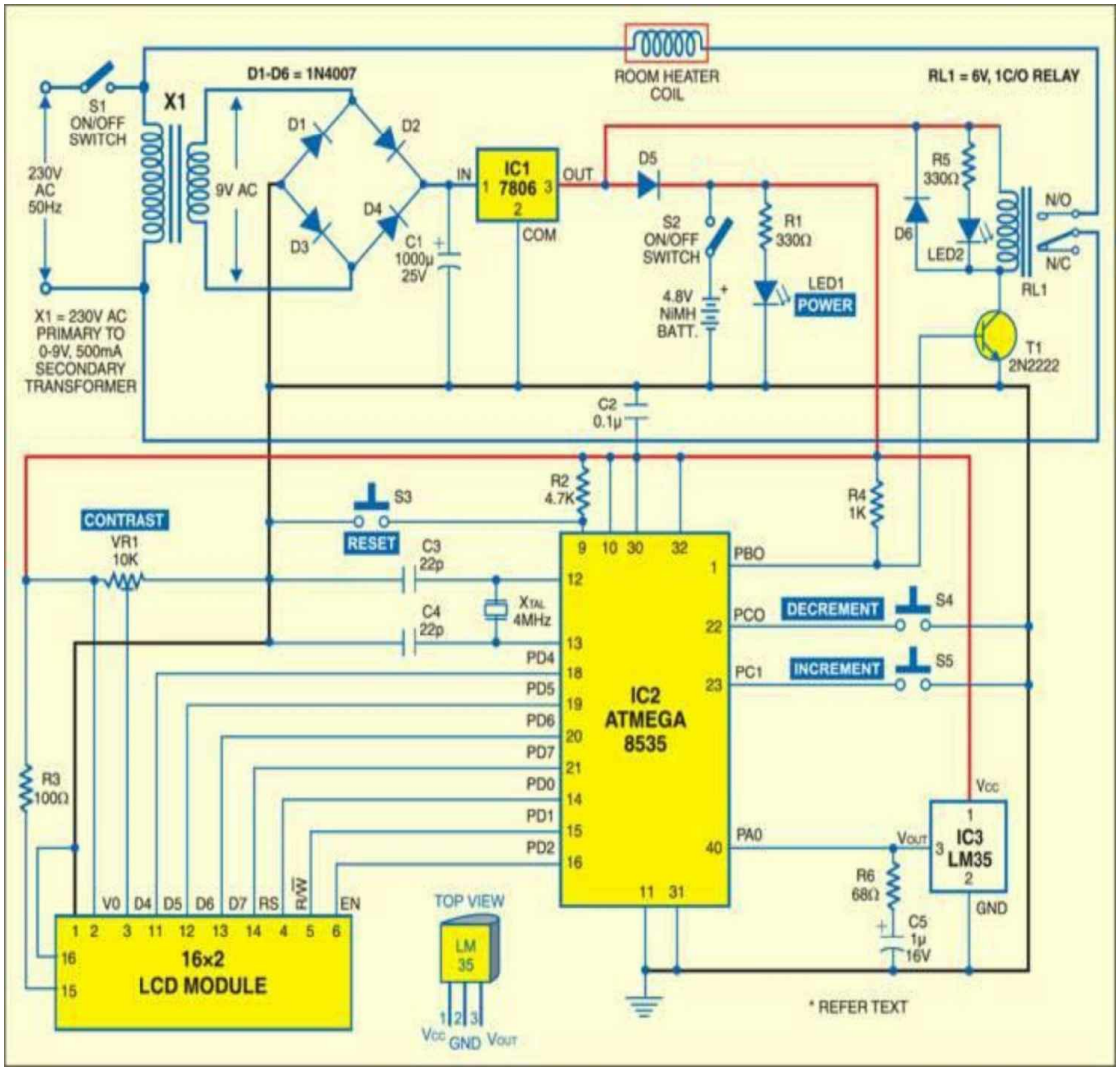
125. Microcontroller-Based Tachometer

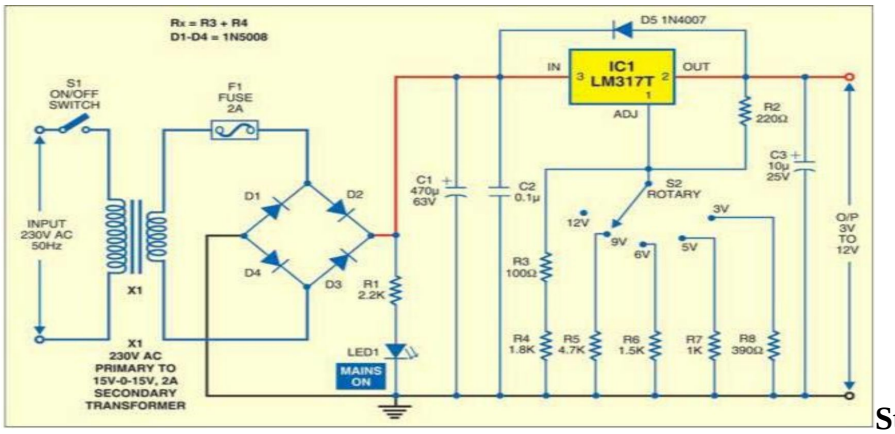


A tachometer is only a basic electronic digital transducer. Normally, it is utilized for measuring the speed of a rotating shaft. The quantity of cycles per minute (rpm) is valuable information for understanding any rotational system. i.e., there is an ideal speed for drilling a particular-measure opening in a particular metal piece; there is an ideal sanding disk speed that relies upon the material being done. You may also want to measure the speed of fans you utilize.

126. Temperature Indicator-CUM-Controller

This is a simple-to-construct temperature indicator-cum-controller that can be interfaced with a heater's coil to maintain the ambient room temperature. The controller is based on Atmega8535 microcontroller, which makes it powerful and faster, and utilizes a LCD module to display and two keys to increase or decrease the set values.

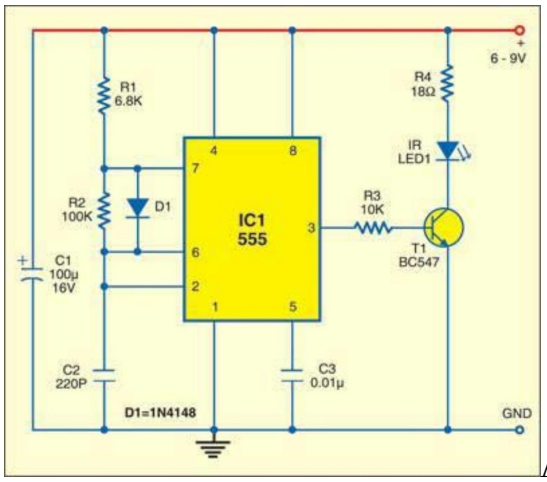

ROOM HEATER COIL
RL1 = 6V, 1C/O RELAY
D1-D6 = 1N4007
S1 ON/OFF SWITCH
X1
230V AC 50Hz
9V AC
D1
D2
D3
D4
C1 1000µ 25V
IC1 7806
IN
OUT
COM
D5
S2 ON/OFF SWITCH
4.8V NiMH BATT.
R1 330Ω
LED1 POWER
R5 330Ω
D6
LED2
N/O
N/C
RL1
T1 2N2222
X1 = 230V AC PRIMARY TO 0-9V, 500mA SECONDARY TRANSFORMER
C2 0.1µ
R2 4.7K
R4 1K
S3
RESET
CONTRAST
VR1 10K
C3 22p
C4 22p
XTAL 4MHz
IC2 ATMEGA 8535
PBO
PCO
DECREMENT
S4
PC1
INCREMENT
S5
PD4
PD5
PD6
PD7
PD0
PD1
PD2
PA0
R3 100Ω
Vcc
IC3 LM35
VOUT
GND
R6 68Ω
C5 1µ 16V
V0 D4 D5 D6 D7 RS R/W EN
16×2 LCD MODULE
TOP VIEW
LM 35
Vcc GND VOUT
* REFER TEXT

127. 

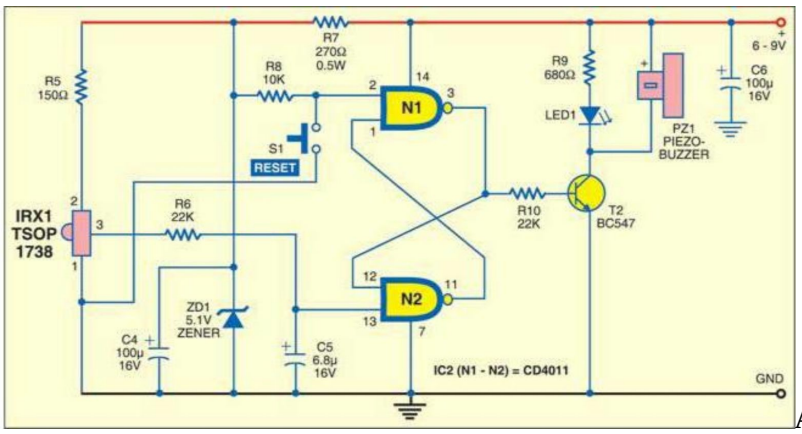
Stabilized Power Supply for Prototyping

Here's stabilized power supply circuit may be specifically connected to 230V AC mains to determine output voltages of 3V to 12V DC for association with the prototyping board.

128. Infrared Burglar Alarm

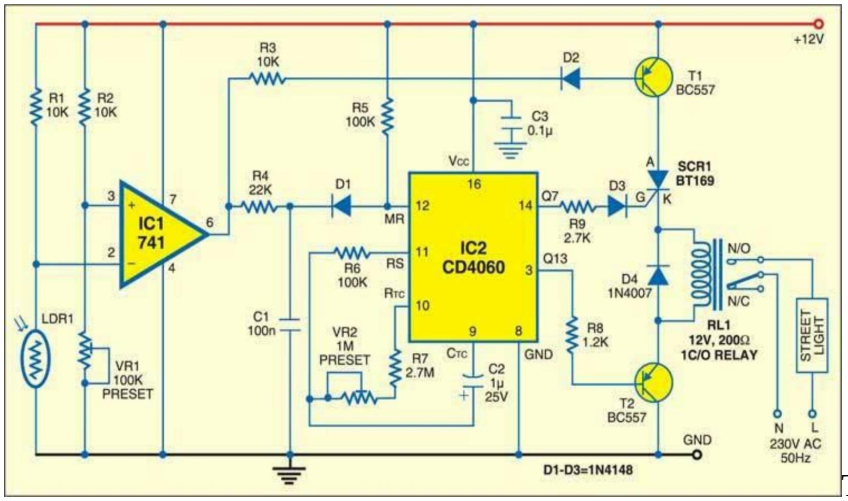


A special feature of this infrared burglar alarm is latching operation. Also, the circuit is profoundly sensitive. The circuit includes transmitter and receiver parts. At whatever point IR beam between the transmitter and the receiver is intruded on, the alarm circuit is triggered and the buzzer sounds persistently. It can be reset just by squeezing the reset button.



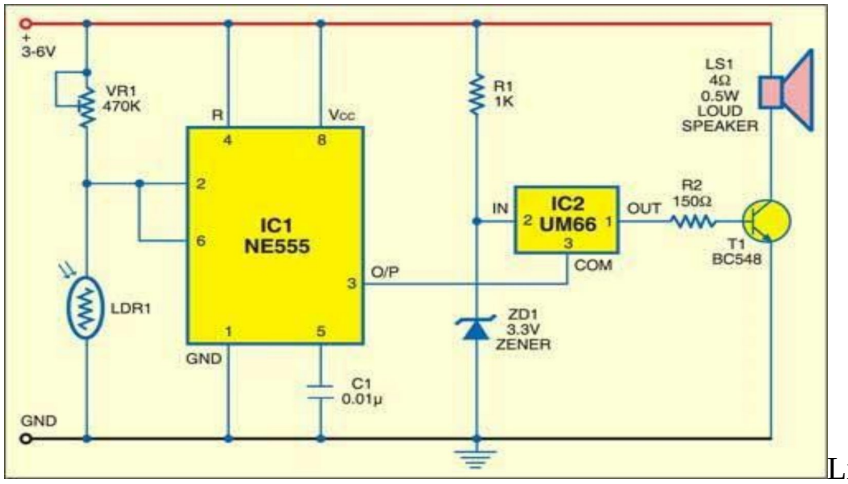
Another circuit

129. Street Light Controller



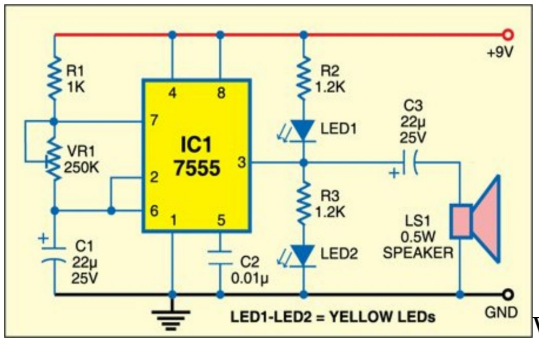
Two of the issues ordinarily associated with street lights are false triggering because of slight variation in the intensity of ambient light and no influence over switching action. This is a simple switching circuit for street lights that conquers these issues.

130. Light-Operated Doorbell

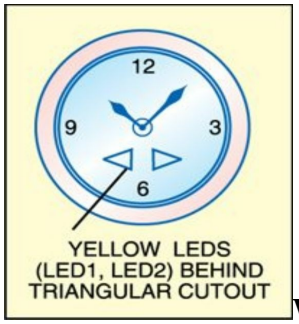


Light-reliant switches are utilized as a part of automatic hand-dryers and flushers in restroom. This is a simple light-operated switch that works in normal light also. You can affix it on the main door of your home to fill in as an automatic doorbell or a criminal alarm. The bell rings as soon as somebody's shadow falls on the sensor of this gadget.

131. Clock Tick-Tock Sound Generator & LED Pendulum.

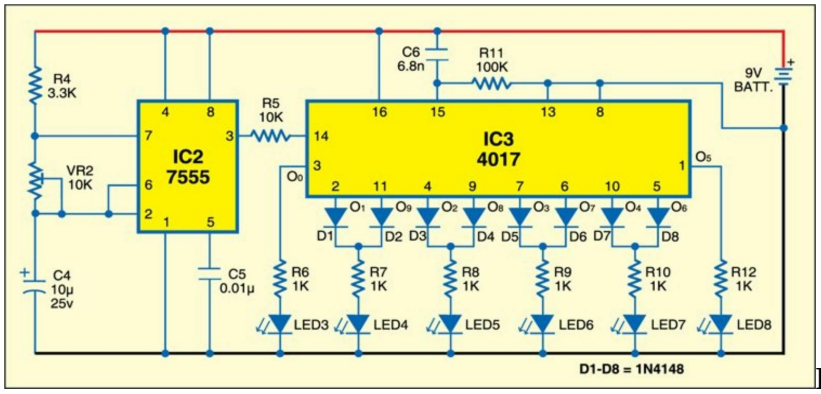


Wooden-case, battery-operated wall clocks with pendulums are accessible in the market. Some even have tolls. What is missing is the tick-tock sound of old mechanical pendulum clocks.



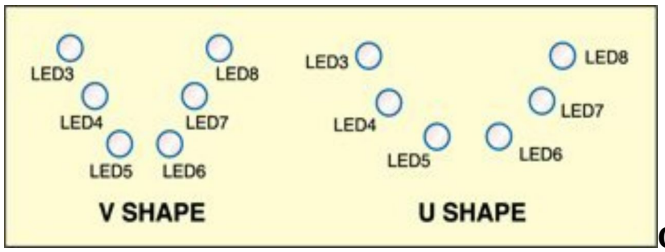
Wooden clock design

Shown above is the circuit of a tick-tock sound generator. It is built around timer IC 7555 (IC1) wired as an astable multivibrator. Resistor R1, preset VR1 and capacitor C1 create frequencies that can be differed with the help of preset VR1. At yield pin 3 of IC1, a little speaker is associated through capacitor C3 that delivers the tick-tock sound. At pin 3 of IC1, two yellow LEDs are likewise associated on the clock face to flash in time with sound (see Fig. 2). Adjust preset VR1 with the end goal that ticking sound nearly takes after the tick-tock of old pendulum clocks. Yellow LEDs (LED1 and LED2) coordinate well with the wooden clock.



LED pendulum circuit

Shown underneath is the circuit for the LED pendulum. It utilizes another timer 7555 wired in a astable mode and its clock beat at pin 3 is encouraged to clock pin 14 of decade counter 4017 (IC3). The yields of IC3 are associated with the help of switching diode 1N4148 to such an extent that the six LEDs (LED3 through LED8) flash in arrangement in one direction first and afterward in invert grouping. The speed of flashing of LEDs can be adjusted with the help of 10-kilo-ohm preset VR2. Capacitor C6 (6.8nF) and resistor R11 (100-kilo-ohm) are utilized to reset the decade counter.

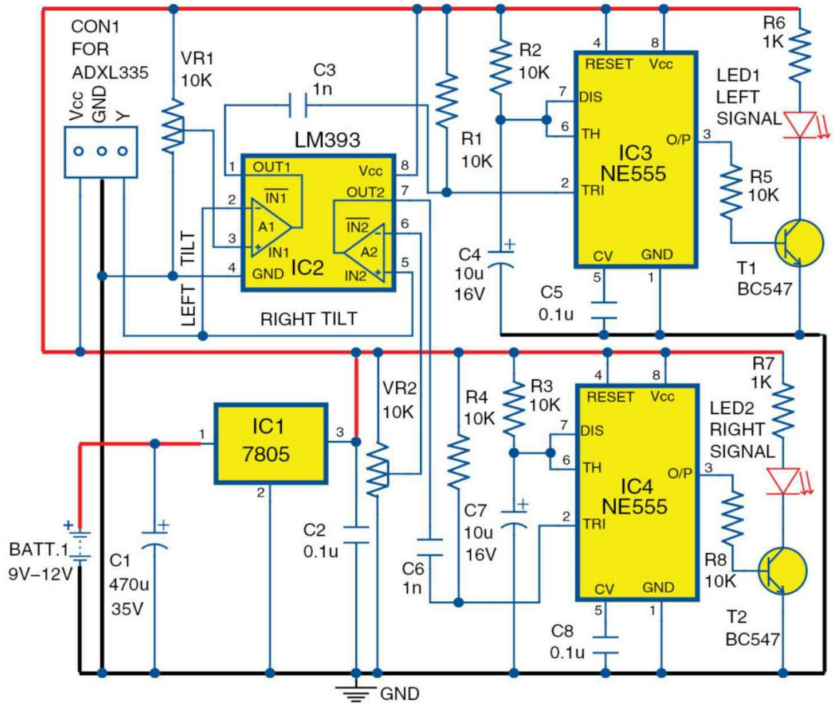


Construction and testing

Fig. Design of LEDs on LED pendulum

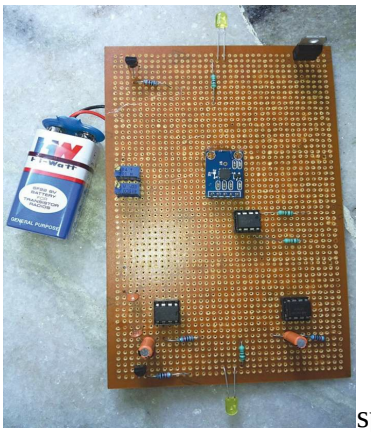
Assemble the circuit on a general-purpose PCB and encase in a reasonable bureau. Mount the LEDs either in 'V' shape or 'U' shape on the front panel of the bureau (as shown in Fig. 4).

132. Automatic Bike Turning Indicator



The automatic bike turning signal system in light of a microcontroller (MCU) accessible in the market is expensive and difficult to program. Here is a basic and inexpensive circuit that you can fabricate yourself. The circuit is utilized to indicate left or right turns for a bike or two-wheeler. Two identical circuits are required, one for left and one for right. The creator's prototype is appeared in Fig. 1, and the accelerometer sensor utilized as a part of the project

Circuit outline of the bike turn indicator is appeared in the circuit consists of ADXL335 accelerometer sensor, voltage regulator 7805 (IC1), LM393 comparator IC (IC2), two NE555 timer ICs (IC3 and IC4) and a couple of different components. ADXL335 is a little, thin, low-control, finish 3-axis (X, Y and Z directions) accelerometer with signal-molded voltage yields. Just Y direction of ADXL335 is utilized as a part of this project. The device measures increasing speed with a minimum full-scale scope of ±3 volts. It can quantify static quickening of gravity in tilt-detecting

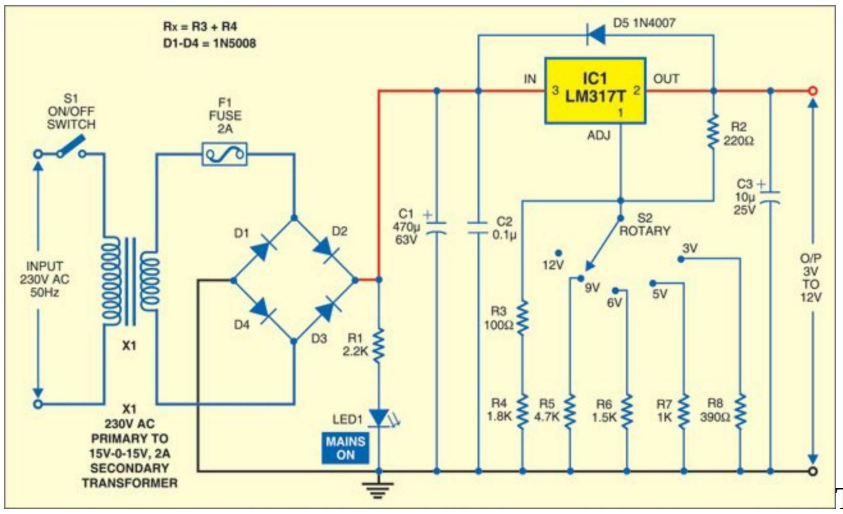
applications, and also dynamic increasing 

speed coming about because of motion, stun or vibration.

Fig Prototype of Automatic Bike Turning Indicator

Dual comparator LM393 is a 8-stick IC with pins 1, 2 and 3 framing one comparator and pins 5, 6 and 7, another comparator. The two comparators are utilized to monitor left turn and right turn indicator signals. Two NE555 timer ICs (IC3 and IC4) arranged in a monostable multivibrator are utilized; one for left signal and the other for right signal. Here, 9V-12V battery is changed over to +5V DC utilizing voltage regulator IC (IC1).

133. Stabilized Power Supply for Prototyping



This stabilized power supply circuit might be directly associated with 230V AC mains to infer output voltages of 3V to 12V DC for association with the prototyping board.

230V AC mains input is down changed over to 15V AC by step-down transformer X1, whose optional winding can bolster a current of 2 amperes. A bridge rectifier changes over the AC to pulsating DC with a peak voltage level of 21V (15×1.4142). LED1 illuminates to indicate the accessibility of output from the rectifier. Resistor R1 (2.2-kilo-ohm) restrains the current through LED1 to a protected an incentive beneath 10 Mama. The output from the bridge rectifier is smoothed by 470µF capacitor C1. Capacitor C2 bypasses high frequency ripple.

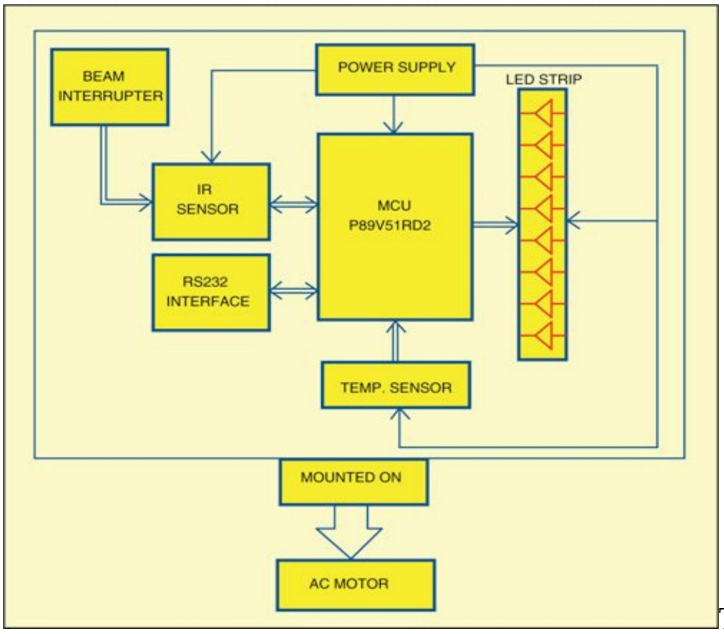
A customizable, LM317T series 3-terminal, positive-voltage regulator is utilized at the output of the rectifier area for control. It is fit for supplying more than 1.5A more than 1.2V to 37V output voltage go. Nonetheless, here it has been utilized to supply discrete voltages in steps of 3V, 5V, 6V, 9V and 12V with the assistance of 5-way rotary switch S2, which gets distinctive resistor esteems between Adj stick of the regulator and ground, while R2 (between Adj stick and output stick) is a settled resistor of 220 ohms. The output voltage (Vo) is given by the connection: where 'Rx' is the opposition associated between Adj stick of the regulator and ground.

Output Voltage vs Equivalent Series Resistance Rx

Output voltage	12V	9V	6V	5V	3V
Series equivalent resistor Rx (ohms)	1900	1353	838	655	323

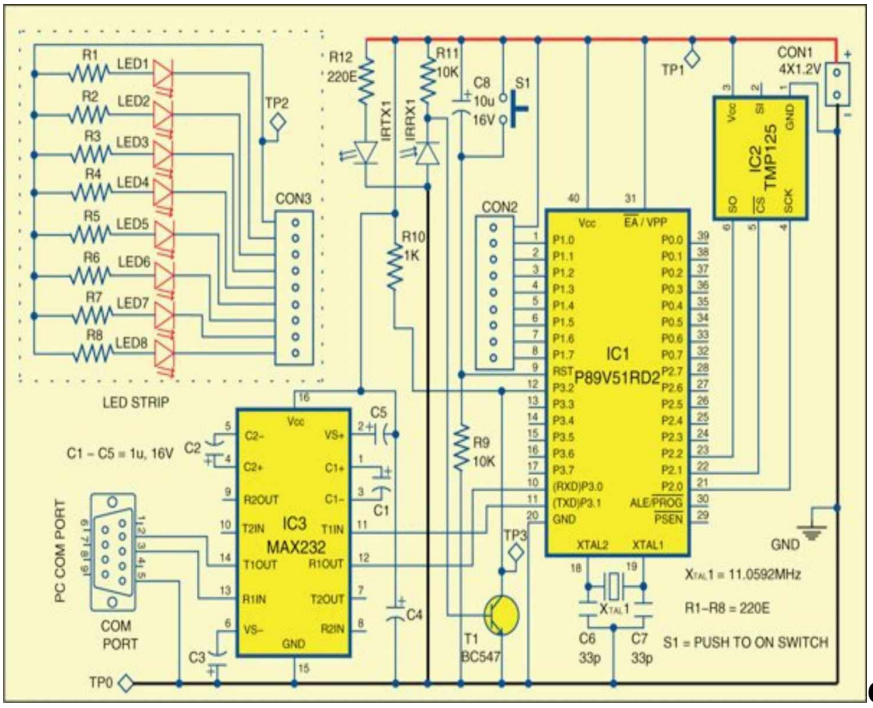
In 12V position ('off' position of the switch), the estimation of Rx is R3+R4=1900 ohms, while in different positions it is the series equivalent of 1900 ohms in shunt with another opposition chose by the rotary switch. The table demonstrates the equivalent series opposition in different places of the rotary switch.

134. Propeller Message Display with Temperature Indicator



The basic idea of this project originates from the idea of persistence of vision. This marvel is identified with vision ability of the human eye, where an afterimage is thought to persist for roughly 1/25th of a second. So, in the event that somebody is watching pictures at a rate of 25 every second, they seem to shape a ceaseless picture. In this display, the LED strip moves so fast that one can see a matrix of LEDs. The season of a solitary rotation is divided into a few shorter eras amid which every individual LED is kept on/off to display distinctive characters. Temperature detected by the temperature IC is sent to the controller through SPI transport.

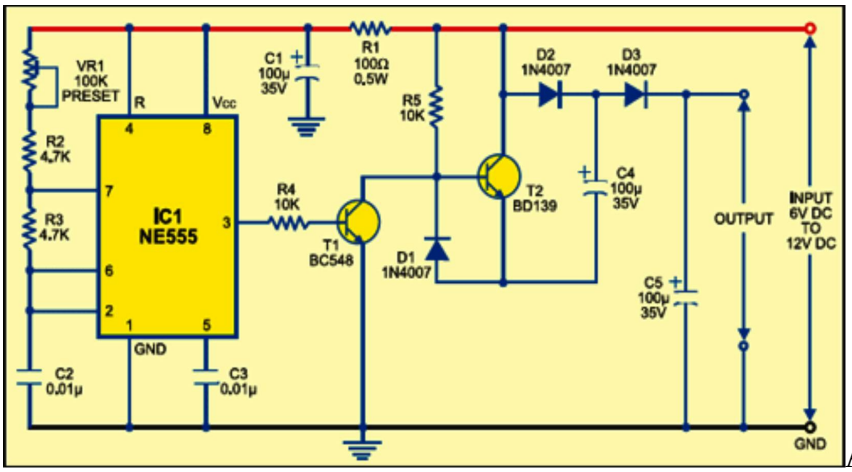
Demonstrates block diagram of the propeller display with temperature indicator. The LED strip is mounted vertically with the end goal that when the motor rotates, the strip likewise rotates in a circular design making a true 360-degree display. The message to be displayed is sent through RS232 interface utilizing hyper-terminal. The message is displayed for 30 seconds and afterward the display changes to current temperature that is brought from the temperature sensor. Interrupts are created by the IR sensor-bar interrupter gathering.



Circuit and working

Fig. 3 demonstrates the circuit of the propeller display. The circuit is built around microcontroller P89V51RD2 (IC1), temperature sensor TMP125 (IC2), MAX232 (IC3) and a couple of discrete segments. Port pins P1.0 through P1.7 are associated with CON2, which additionally should be associated with CON3 of the LED strip containing LED1 through LED8. These LEDs frame a circular display when rotated very fast.

135. Low Power Voltage Doubler



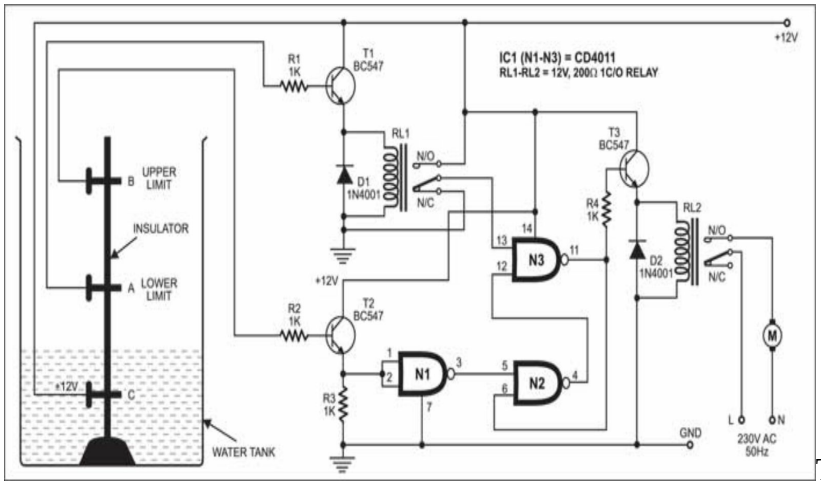
All smaller than expected electronic devices work off batteries. Some of them require higher than the standard battery voltages to work efficiently. In the event that the battery of that specific voltage is inaccessible, we are compelled to connect extra cells in series to step up the DC voltage. Along these lines, the genuine significance of scaling down is lost. A straightforward method to overcome this issue is to employ a voltage doubler, if the device under thought can work at a little current.

Here we present a low power voltage doubler circuit that can be promptly utilized with devices that demand higher voltage than that of a standard battery however low working current to work with. The circuit is very straightforward as it utilizes just a couple of components. However, the output efficiency is 75 to 85 percent along its working voltage range. The accessible battery voltage is relatively multiplied at the output of the circuit.

Here IC1 is wired as an astable multivibrator to generate rectangular heartbeats at around 10 kHz. This frequency and duty cycle of the beats can be fluctuated utilizing preset VR1. The beats are connected to switching transistors T1 and T2 for driving the output area, which is arranged as a voltage-doubling circuit. The multiplied voltage is accessible crosswise over capacitor C5.

136. Automatic water pump controller

This is an automatic water pump controller circuit which controls the water pump motor. The motor gets automatically switched on when water in the overhead tank (OHT) falls underneath the lower limit. Essentially, it gets switched off when the tank is topped off. Worked around just a single NAND gate IC (CD4011), the circuit is straightforward, smaller and economical. It works off a 12V DC power supply and expends next to no power.



The circuit can be separated into two sections: controller circuit and indicator circuit.

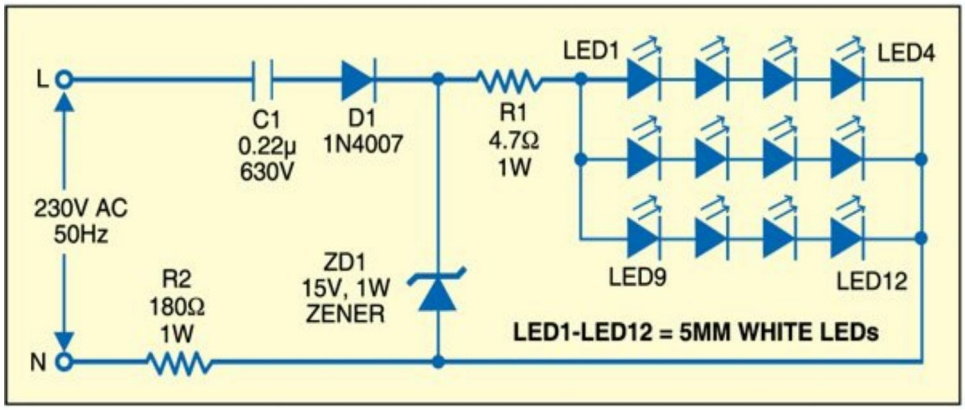
Water-level Indication by LEDs	
Level of water inside the tank	**Glowing of LEDs**
Full tank	LED1, LED2, LED3, LED4, LED5
¾ Tank	LED1, LED2, LED3, LED4
½ Tank	LED1, LED2, LED3
¼ Tank	LED1, LED2
Min. level	LED1

Fig. 1 demonstrates the controller circuit. Give us a chance to consider two reference probes 'An' and 'B' inside the tank, where 'An' is the lower-limit test and 'B' is the maximum limit test. The 12V DC power supply is given to test C, which is the limit for least water dependably put away in the tank.

The lower limit 'An' is associated with the base of transistor T1 (BC547), the collector of which is associated with the 12V power supply and the emitter is associated with relay RL1. Relay RL1 is associated with pin 13 of NAND gate N3. So also, the maximum limit test 'B' is associated with the base of transistor T2 (BC547), the collector of which is associated with the 12V power supply and the emitter is associated with pins 1 and 2 of NAND gate N1 and ground by means of resistor R3. The yield pin 4 of NAND gate N2 is associated with pin 12 of NAND gate N3. The yield of N3 is associated with input pin 6 of N2 and the base of transistor T3 through resistor R4. Relay RL2 associated with the emitter of transistor T3 is utilized to drive the motor.

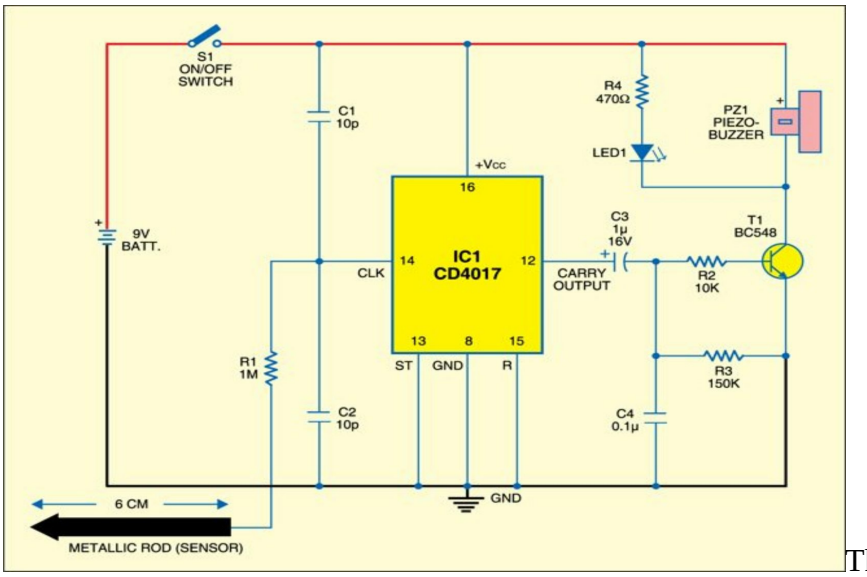
137. Night Lamps

Here are two-night lamp circuits utilizing LEDs. One could be utilized as a night-vision clock and alternate as a TV lamp. Both the circuits are AC worked and expend almost no power. These are likewise secured against mains changes. The night-vision lamp utilizes twelve LEDs organized in the circular example of a wall clock, while the TV lamp utilizes 24 LEDs in prism design.



Demonstrates the circuit of night-vision clock. Capacitor C1 (0.22µF) lessens the current as far as possible, diode D1 gives rectified DC to draw out the characteristic shade of white LEDs and the 15V Zener diode keeps up the voltage at a safe level. Resistor R2 secures the circuit against high inrush current, while resistor R1 is utilized for extra insurance of the LEDs

138. Continuity Tester with A Chirping Sound

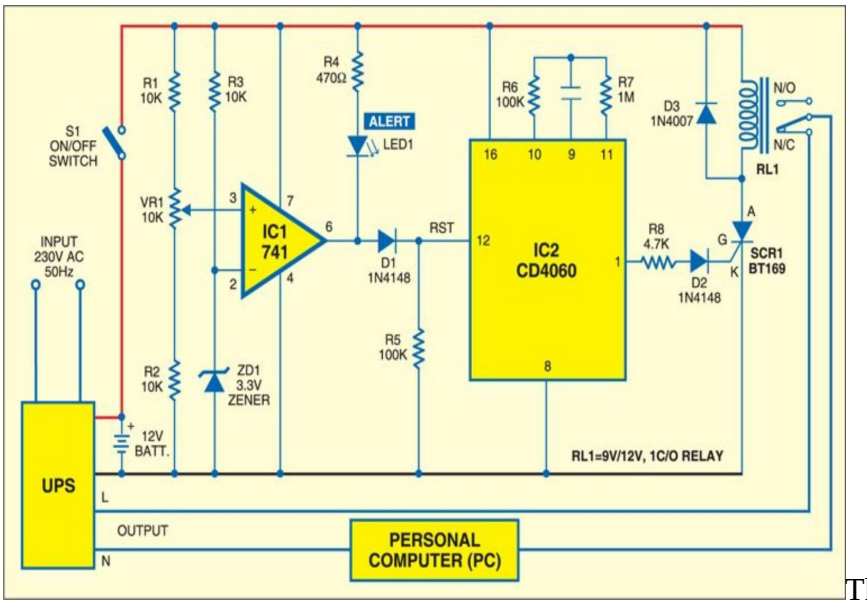


The live-wire scanner introduced here utilizations a LED as well as a piezo buzzer that creates a chirping sound like a bird on detecting the purpose of break in a wire inside the sheath.

The circuit contains a couple of discrete parts and a piezobuzzer wired around CMOS Johnson decade counter CD4017 (IC1). This decade counter/divider has ten decoded yields (Q0 through Q9) with an isolated (divideby-10) yield available at its pins 3, 2, 4, 7, 10, 1, 5, 6, 9 and 11, separately, and a carryout bit at stick 12. The tally of CD4017 advances by one at the positive edge of each information pulse at its stick 14. This decade grouping repeats after Q9 at stick 11 goes high Since the information impedance of a CMOS IC is to a great degree large and it is a voltage-controlled device, it can be activated easily with weak stray signals, for example, the electric field of a 220V live-wire. This circuit chips away at the same standard. The potential across clock input stick 14 of IC1, when associated with a small metallic strip, can swing to high and low logic levels regardless of whether live wire is 20 cm away from the metallic strip. This triggers the counter and a separation by-10 (50/10=5Hz) square wave yield is obtained at stick 12 of IC1. Presently, this high sensitivity of the clock info can be lessened to the coveted degree by associating a voltage divider made of passive segments of appropriate value, which, thusly, decreases the information impedance and henceforth the sensitivity. The device can react from a distance of up to 10 cm away from the live-wire. This configuration can be utilized to scan the wire for any breakage (discontinuity) inside the sheath

139. Circuit for UPS to Hybernate Computer (PC)

The greater part of the low-power UPS frameworks accessible in the market don't have the office to shut down the computer before they kill automatically because of low battery. Some of them have the office yet they require software for the same. Here we give an 'extra' circuit for UPS that will hybernate the computer automatically before UPS kills because of low battery voltage. It requires no empowering software.



The circuit comprises of comparator IC 741 (IC1) followed by a brief term positive heartbeat generator utilizing a 14-organize ripple-convey binary counter/divider and oscillator IC2. For the most part, the voltage at the non-inverting (positive) input terminal of IC1 is high contrasted with the inverting (negative) input, so the yield of the comparator is high. This high yield of IC1 is utilized to reset IC CD4060 (IC2), which is a 14-arrange ripple counter.

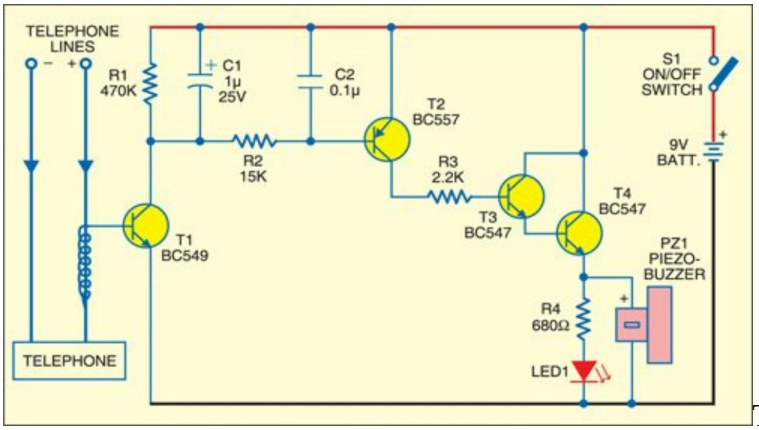
As the UPS battery voltage goes below the preset esteem, the non-inverting terminal voltage of comparator IC1 at stick 3 lessens. In this circuit, as the battery voltage goes below 9.5V, the voltage at stick 3 of IC1 decreases below 3.3V and the yield of the comparator at stick 6 goes low to illuminate LED1, indicating to the client that his computer is going to hybernate inside a preset time (around 3 minutes).

The low voltage level at stick 12 of IC2 empowers it to oscillate and the counter begins including, coming about a high yield at its stick 1 following 3 minutes. This high yield is utilized to flame SCR1, which invigorates relay RL1. The relay will de-stimulate just when the power supply for the circuit is turned off physically through S1.

The circuit is assembled on a little PCB and associated with the UPS battery terminals. The hybernation-enactment voltage of the circuit is set over the cut-off voltage of the UPS. (In the event that the cut-off voltage of the UPS is 9.5 volts, set the

hybernation-actuation voltage level as 10 volts.) The circuit is settled inside the UPS cabinet. Switch S1 and LED1 are wired up to be on the front board of the cabinet.

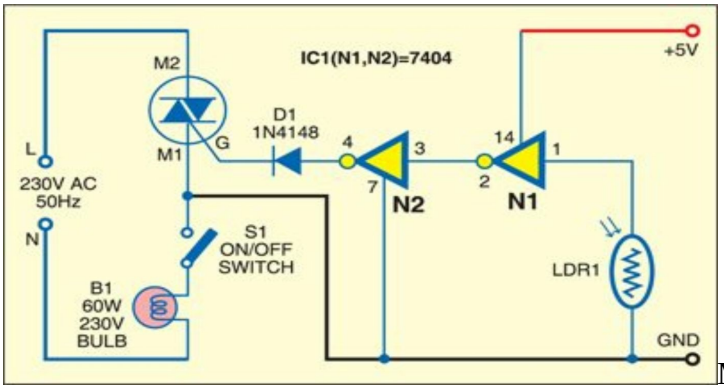
140. Contactless Telephone Ringer



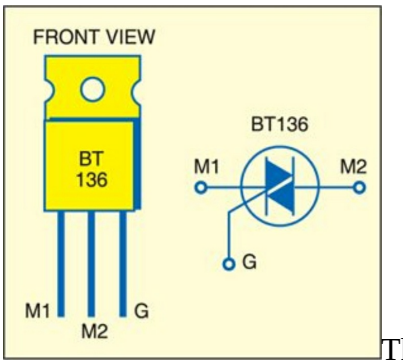
This completely transistorized, basic circuit planned as a contactless telephone ringer gives a sign of approaching telephone call at a remote site like kitchen or bedroom in the building. It is actualized by winding at least five turns of a short hookup insulated wire around one of the wires of a twin telephone cable.

At the point when your telephone rings, AC signal of around 60 Hz is produced in the telephone line. which causes fluctuating electric field around telephone cable and builds up a little instigated voltage on the hookup cable. This instigated voltage, when associated with the base of transistor T1, forward predispositions T1 and it directs as ring is going through the telephone cable. Therefore, transistors T2 through T4 likewise lead. Accordingly, the piezobuzzer sounds and LED1 shines, which demonstrates that the telephone is ringing. Amass the circuit on a broadly useful PCB and wind an insulated electric cable around one of the telephone wires. You can likewise associate the ringer and LED independently far from the telephone beneficiary's room for audio and visual sign. Utilize a 9V battery to control the circuit.

141. Automatic Dimness Controlled Lighting System



Make lamp automatically switch on around evening time and switch off in daytime utilizing this automatic control system. Automatic obscurity-controlled lighting system implies that at whatever point there is dimness, light source like globule or tube light glows automatically.

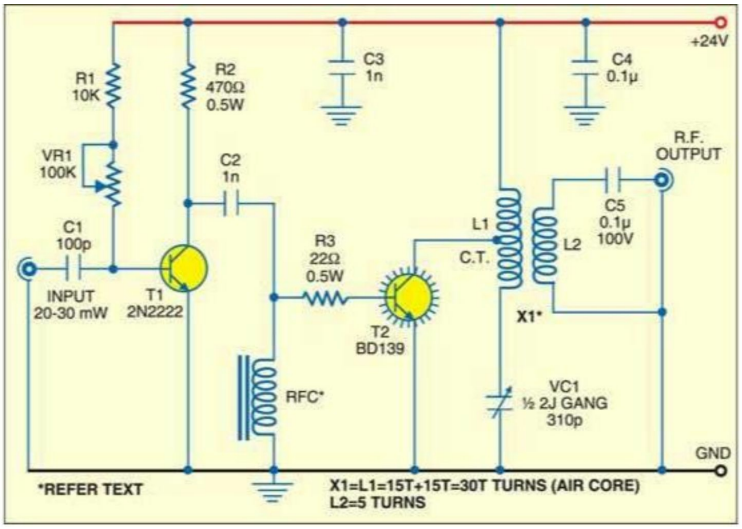


The circuit works off regulated 5V and utilizations triac BT136, NOT gate 7404 and light dependent resistor (LDR). Operation of the circuit is basic. Amid daytime, low resistance of LDR1 makes pin 1 of gate N1 low and its yield pin 2 goes high. This high yield is connected to enter pin 3 of gate N2. Accordingly, the yield of gate N2 goes low. Subsequently no gate signal is connected to triac BT136 (triac 1) and it acts as an open circuit and the globule does not glow.

During the evening, the high resistance of LDR1 makes pin 1 of gate N1 high and its yield pin 2 goes low. This low yield is connected to include pin 3 of gate N2. Accordingly, the yield of gate N2 goes high, which is connected to the gate of triac BT136 (triac 1) and it acts as a short out and the knob begin glowing.

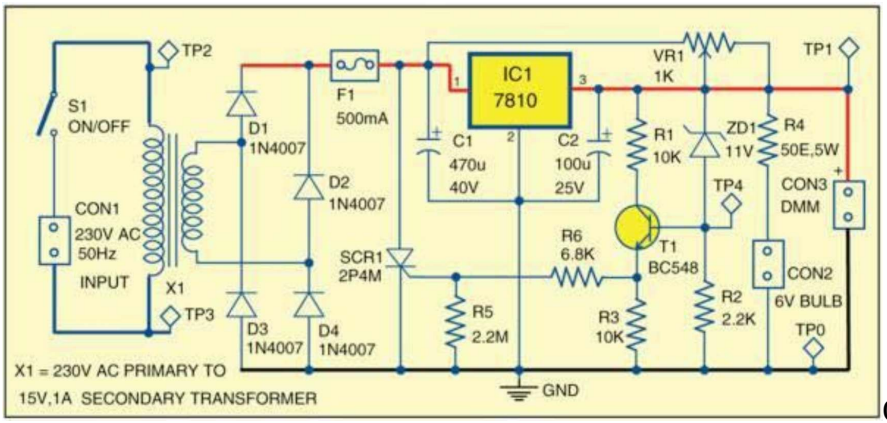
Collect the circuit on a general-purpose PCB and keep at a reasonable place. Keep LDR1 at such a place, to the point that enough light falls on it in day-time. You can likewise utilize this circuit as a street light controller.

142. Simple HF Power Amplifier



This is an inexpensive yet powerful RF power amplifier for the 40m (7MHz) band. The circuit acknowledges just 20-30mW RF power and amplifies it to the wattage level. So, its input can be specifically associated with a VFO and the output can be bolstered to an antenna.

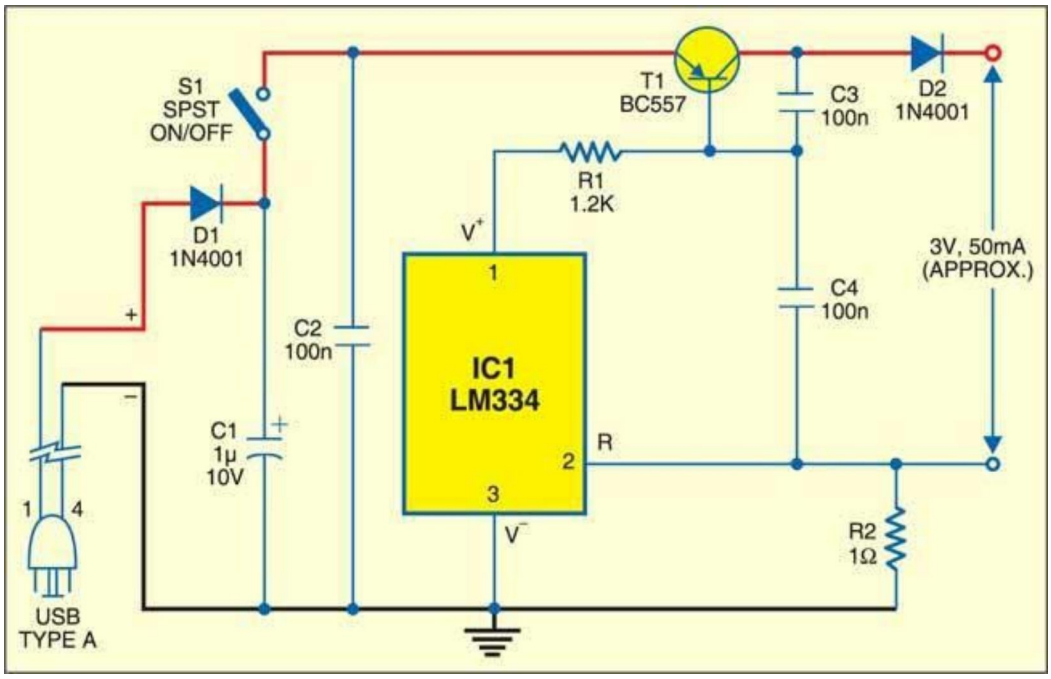
143. Demo Circuit for Over-Voltage Protection



Over-voltage protection circuits are utilized to protect voltage-sensitive loads. Voltage transients may happen because of various reasons, for example, transformer switching, stack switching, and short/open circuit in rectifier and regulator circuit. Such transients can influence legitimate working of an electronic circuit or even damage it. Subsequently it is important to utilize an over-voltage protection circuit to protect costly loads against every one of the wellsprings of voltage transients.

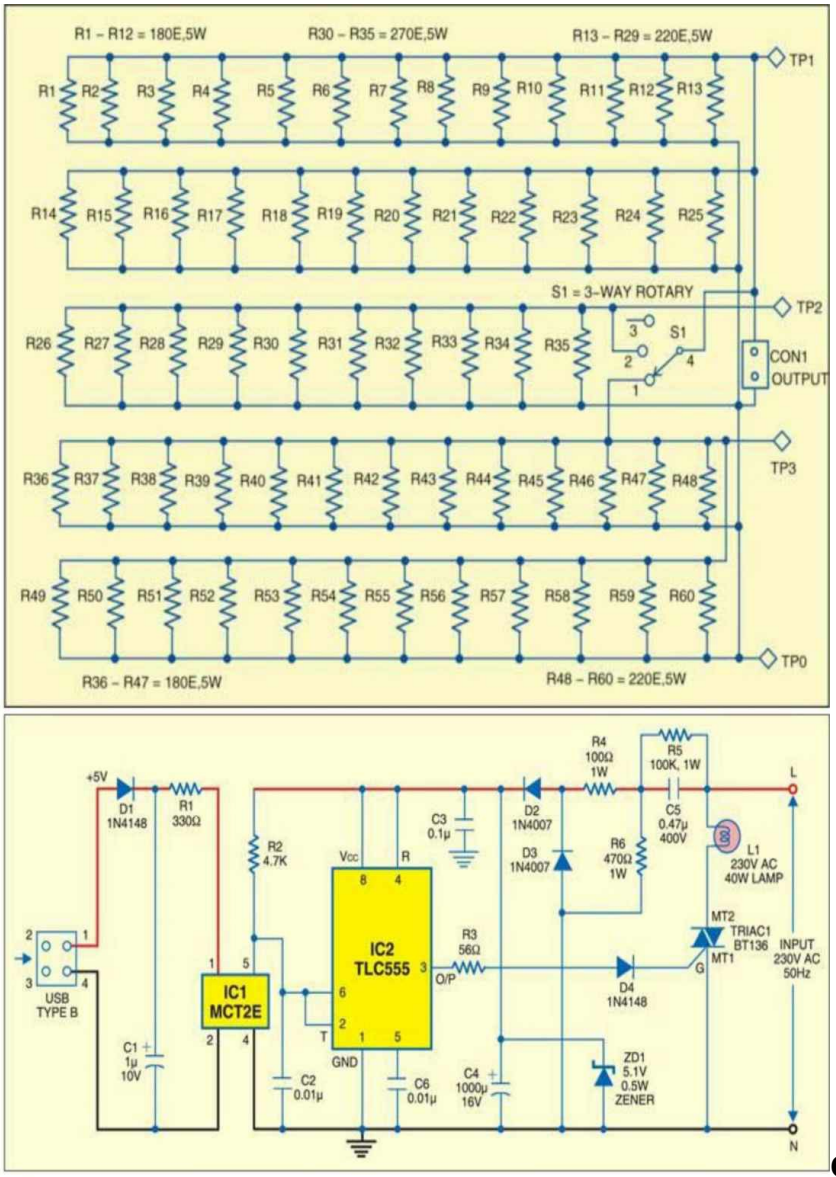
144. 3V PC Adaptor

Plug this circuit into the available USB output port of your PC to get 50mA, 3V DC. So, it can be utilized to recharge, for example, two NiCd cells (1.2Vx2) of a portable music player system.


S1
SPST
ON/OFF
D1
1N4001
+
−
C1
1µ
10V
C2
100n
T1
BC557
R1
1.2K
V+
1
IC1
LM334
2
R
3
V−
C3
100n
C4
100n
D2
1N4001
3V, 50mA
(APPROX.)
R2
1Ω
1
4
USB
TYPE A

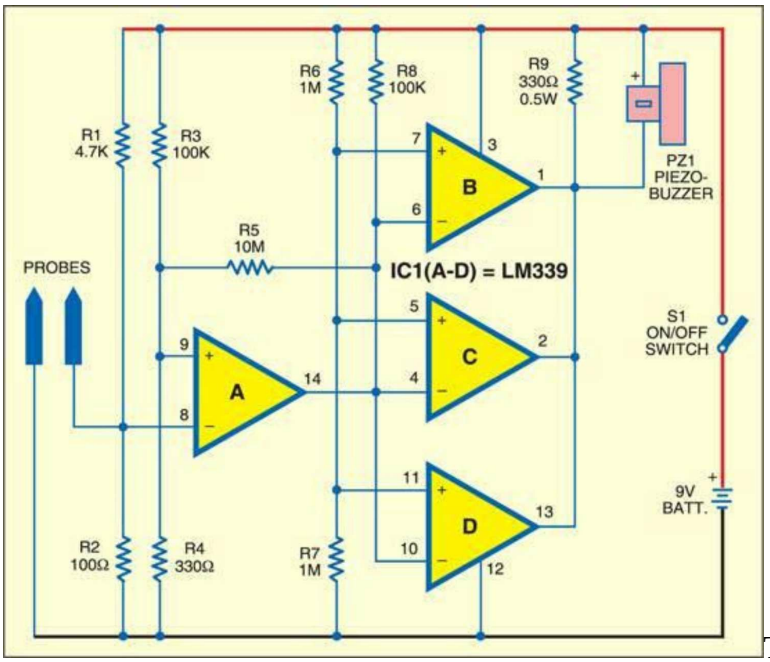
145. PC Table Lamp

Here's useful circuit is built around well-known timer IC TLC555. It activates an electric bulb when your PC is switched 'on'. When you are shutdown the PC, the lamp likewise automatically turns 'off.'



Circuit diagram of PC Table Lamp

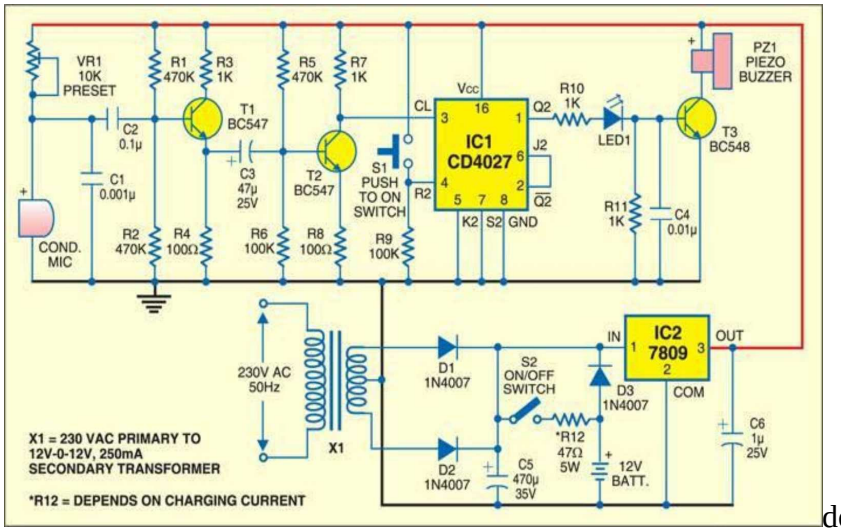
146. Audible Continuity Tester



This is a pretty easy, low-cost audible continuity tester that makes use of only one quad comparator IC LM339, some resistors and a piezobuzzer. The circuit including the comparator works off a single 9V battery. Just a single of the quad comparators is used in its real role, while the remaining three comparators, connected in parallel, are used for directly driving a medium-power piezobuzzer.

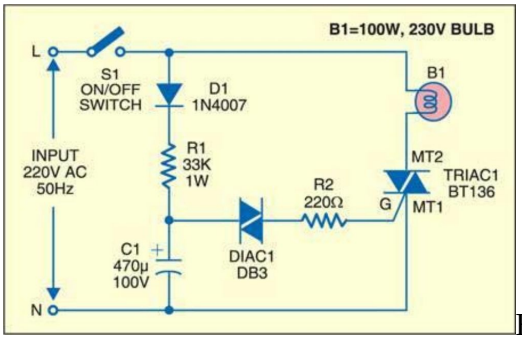
147. Anti-Theft Alarm

You can use this circuit to thwart burglary. It sounds an alarm when someone tries to intrude into your home or office by hitting, pushing or knocking the door. The sensor element is a condenser mic, which is fitted inside the house on the entrance door, preferably on the door frame. Hitting, pushing or knocking the door will generate some noise. This is detected by the mic and fed to the preamplifier section of the circuit, which is connected to the buzzer through Flip-Flop. In this manner the buzzer sounds when someone hits/thumps at the entrance



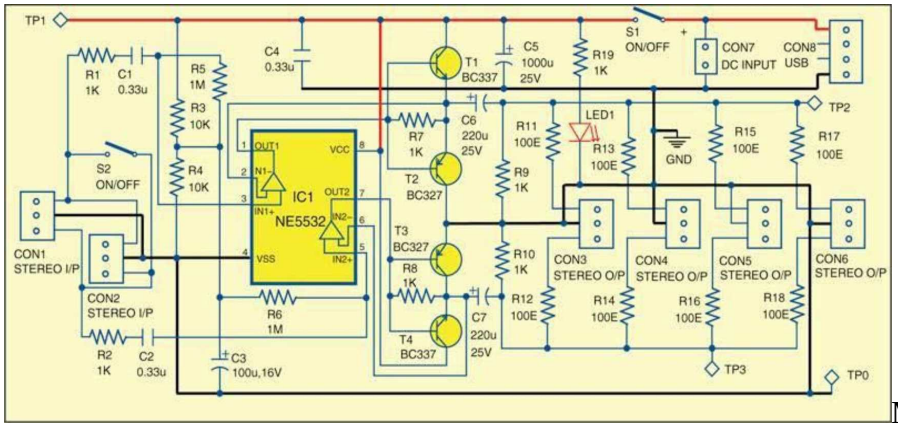
door.

148. DIAC-Controlled Flasher



Here's easy flasher finds different industrial applications as a high-voltage indicator or machine-'on' indicator. It flashes once every second to give a warning indication. It is basic to design and can be wired lead-to-lead without utilizing PCB. It is directly powered from 220V Air conditioning and can be enclosed in the mains box.

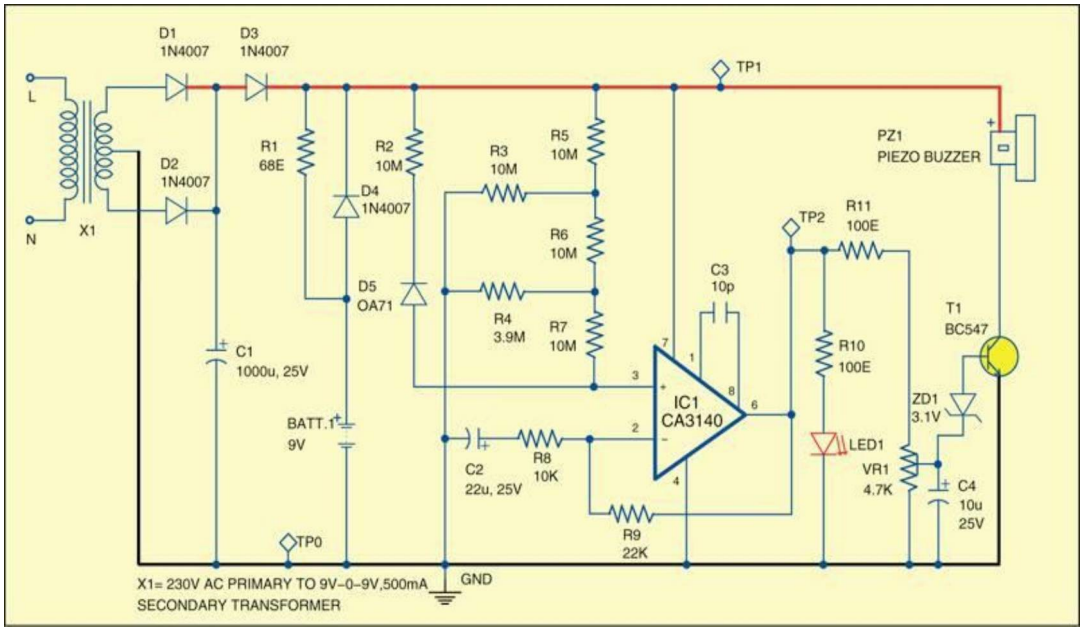
149. Stereo audio Distribution Buffer for headphones



Most audio signal sources have just a single stereo output, which means they can drive just a single pair of headphones with a resistance of around 32 ohms or a single line of 600 ohms. Be that as it may, sometimes several people are required to connect their headphones to a single audio signal source, for ie., for entertainment, e-learning and preparing, or at home. In these circumstances, use of powerful loudspeakers isn't desirable because other people in the room will get disturbed.

150. Signal Diode-Based Fire alarm

A basic signal diode can be used to assemble a highly sensitive fire alarm. Silicon diodes like OA71 and 1N34 respond to infrared radiation and heat from fire by generating reverse current over their terminals. In reverse-bias mode, this effect is more significant. Typically, for each degree rise in temperature, the diode generates 2 mV. This characteristic is exploited in this circuit to sense fire. The circuit can detect fire from a distance of up to around 30 cm.


D1
1N4007
D3
1N4007
TP1
L
N
X1
D2
1N4007
R1
68E
R2
10M
D4
1N4007
R3
10M
R5
10M
PZ1
PIEZO BUZZER
TP2
R11
100E
R6
10M
D5
OA71
C3
10p
R4
3.9M
R7
10M
T1
BC547
C1
1000u, 25V
IC1
CA3140
R10
100E
ZD1
3.1V
BATT.1
9V
LED1
C2
22u, 25V
R8
10K
VR1
4.7K
C4
10u
25V
R9
22K
TP0
GND
X1= 230V AC PRIMARY TO 9V–0–9V,500mA
SECONDARY TRANSFORMER

151. Wind sound Generator

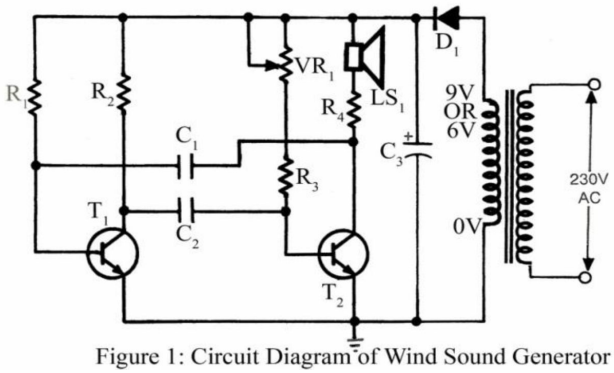
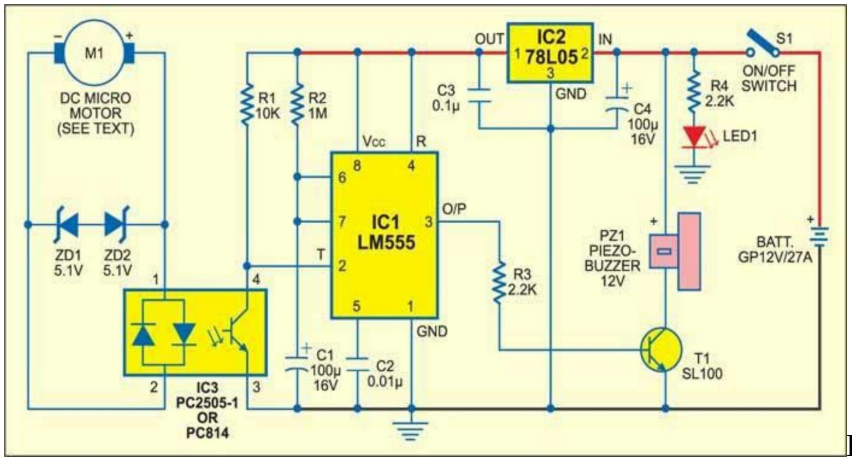


Figure 1: Circuit Diagram of Wind Sound Generator

Utilizing this simple circuit, one can generate the sound of wind. The circuit is basically an astable multivibrator work around two NPN transistors. By modifying the 1M potentiometer (VR1), the sound can be changed from that of wind to storm, sound of sea, murmur of escaping gas from a container through a little hole etc. A 9-Volt or 6-volt unregulated power supply is enough. How-ever, a battery might be used instead. The output sound will be somewhat changed. The prototype has been successful tested with the given power supply. Additionally, and 8-ohm, 5cm, low wattage speaker is recommended.

152. Bicycle Guard



Here's antitheft gadget for bicycles is modest and can be developed effortlessly utilizing a couple of components. At the heart of the circuit is a wheel rotation detector, acknowledged utilizing a DC micromotor. For the reason, you can utilize the micromotor (spindle engine) of a disposed of nearby CD deck mechanism. With a little ability and patience, you can without much of a stretch join a little metallic pulley covered with a rubber washer to the engine spindle. From that point, settle the unit in the back wheel of the cycle, similar to the current dynamo assembly.

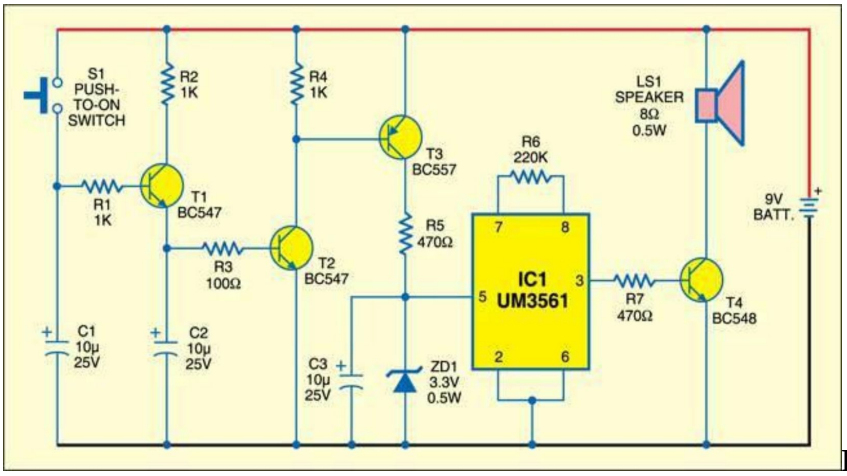
Power supply switch S1 ought to be kept 'on' when you are utilizing this bicycle guard. Once it is flipped towards 'on' position, the circuit gets power from the miniature 12V battery. Presently LED1 illuminates and resistor R4 limits the LED current. Next, the monostable built around IC1, which is CMOS adaptation of timer LM555, is powered through a low-current, fixed voltage regulator IC2 (78L05).

At first, when the bicycle is standing still, the monostable output at stick 3 of IC1 is low and the circuit is out of gear state. In case of a theft endeavor, forward or reverse rotation of the DC engine induces a little voltage at its DC input terminals and the inside LED of 4-stick Plunge Air conditioning input isolator optocoupler IC3 (PS2505-1 or PC814) glows. Subsequently, the inside transistor of IC3 leads and stick 2 of IC1 is pulled low by the opto-coupler and the monostable built around IC1 is triggered.

The output at stick 3 of IC1 currently drives piezo buzzer driver transistor T1 through resistor R3 and the signal begins sounding to alert you. In this circuit, the bell stays 'on' for around two minutes. You able to change this time by changing the estimations of resistor R2 and capacitor C1.

Zener diodes ZD1 and ZD2 (each 5.1V) go about as a protector for opto-coupler IC3. The exorbitant GP12V/27A battery is utilized here because of its minimized size and unwavering quality. 12V dynamic buzzers with piercing tone output might be utilized with this circuit. These are promptly accessible in the market.

Note. The particular opto-coupler is utilized here purposely, instead of a bridge rectifier, to build the circuit's recognition sensitivity. Never supplant the same with a DC optocoupler.

153. 

Panic Alarm

In the event that you feel undermined or require emergency assistance, just initiate this alarm. It will grab the eye of others for prompt help. The alarm will sound for three minutes and afterward stop. Particularly valuable for ladies voyaging alone, it is sufficiently little to take or convey in a handbag.

Another circuit

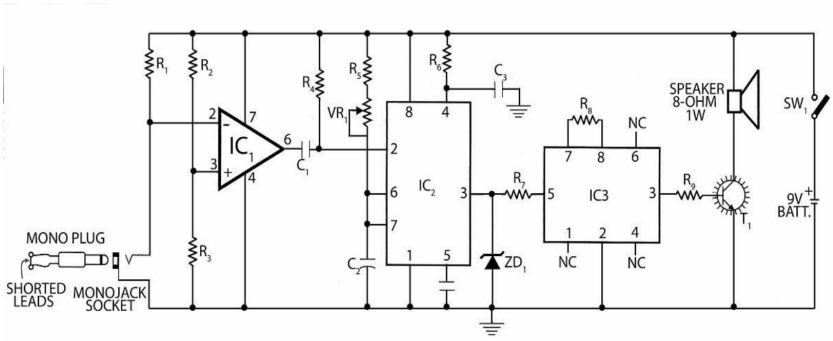


Figure 1: Circuit diagram of anti bag thief alarm

Here's is an exceptionally basic and in addition extremely valuable project anti-bag grabbing alarm, utilized as a part of bag or bag keeping in mind the end goal to keep from grabbing. The sound created by anti-bag grabbing alarm resembles police horn to get attention of individuals when somebody endeavor to grab your bag or bag.

The heart of this whole circuit anti-bag grabbing alarm is operational amplifier IC CA3140 (IC1), arranged as a comparator. The two inputs (inverting and non-inverting) is given to stick no 3 and 2 of operational amplifier individually and output is gotten from stick no 6. Here IC2 (timer IC NE555) is utilized as monostable multivibrator. The planning part of anti-bag grabbing alarm is R5, VR1, and capacitor C2 with the given an incentive in this circuit diagram lets the time of timer is around 1

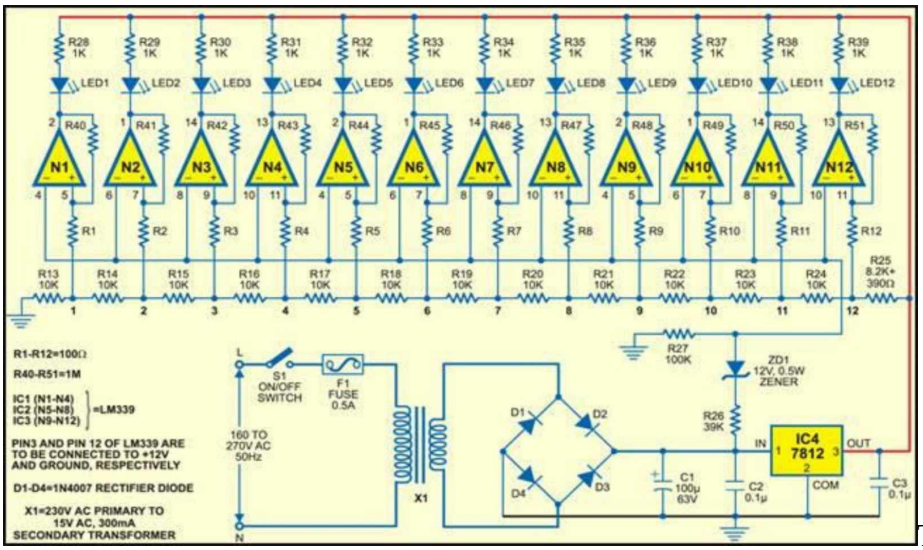
minute.

For audio area, IC3 is utilized as alarm tone generator with an inbuilt oscillator. At last the output is acquired from stick no 3 of IC3 and intensified by transistor T1 with a specific end goal to get want level and in conclusion bolstered to loudspeaker for output.

Components List

Resistors (all ¼-watt, ± 5% Carbon) R1, R2, R3 = 100 KΩ; R4, R6 = 10 KΩ; R5 = 10 MΩ; R7 = 330 Ω; R8 = 220 KΩ; R9 =1 KΩ

154. VISUAL AC MAINS VOLTAGE INDICATOR



Try not to be surprised on the off chance that somebody tells you that the mains voltage variance could be somewhere in the range of 160 volts to 270 volts. In spite of the fact that larger part of our electrical and electronics apparatuses have some kind of voltage adjustment internally built-in, more than 90 for every cent of the flaws in these machines happen because of these power changes.

Another circuit

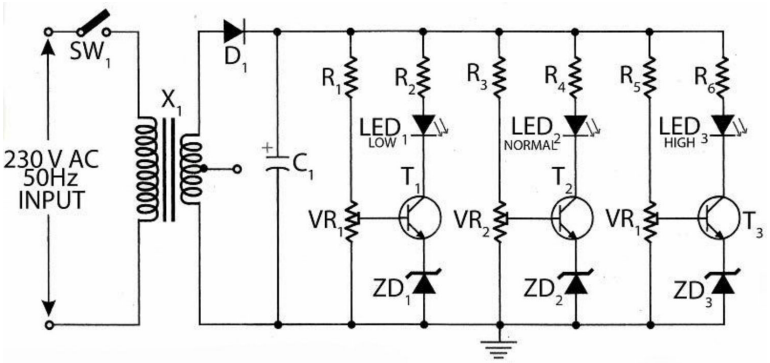


Figure 1: Circuit Diagram of Mains Voltage Indicator

This is a basic and extremely helpful circuit AC mains voltage indicator, indicates the voltage level of AC mains by 3 different LEDs. AC mains voltage indicator circuit can be made and assemble even by beginners.

Every one of the 3 LEDs of AC mains voltage indicator are associated between collectors of transistors T1, T2, T3 individually. This potentiometer VR1, VR2, and VR3 are utilized to change the base voltage of transistor T1, T2 and T3 individually. As appeared in circuit outline first AC mains is stepped down by 9V-0-9V transformer and afterward rectified by a signal diode D1 and smoothed by C1 which give yield 25V DC. This circuit is take a shot at the principle, when AC mains shift DC voltage likewise changes relatively and sensed by transistor T1 through T3.

For setting the low-level voltage, a manual AC voltage regulator (MVR) ought to be associated with the primary of transformer X1. Presently set AC voltage of MVR to around 175V and slowly potentiometer VR1 balanced until voltage across the base of transistor T1 reaches 9.7V and transistor begins conducting which glow LED1 and quit glowing when

the base voltage drops below the preset value. This procedure is rehashed for 200V and 230V in which LED2 and LED3 glows individually.

Presently interface this circuit to AC mains, if the voltage dip under 175 volts no LEDs glow. Initial, a high voltage (more than 230V) is indicated by every one of the three LEDs glows (LED1, LED2, LED3). Second, regularly voltage (200V-230V) is indicated by two LEDs (LED1 and LED2). Third, a low voltage (175V-200V) is

indicated by the glowing of LED1 as it were.

Components Required

Resistors (all ¼-watt, ± 5% Carbon) R1- R6= 1 KΩ; VR1 – VR3 = 10 KΩ Capacitor C1 = 220 µF/50V

Semiconductors

T1 – T3 = BC547 ZD1 – ZD3 = 9.1V Zener diode D1 = 1N4001 LED1 – LED3 = Simple LED

Miscellaneous

X1 = 230V AC primary to 9V-0-9V, 250mA secondary transformer SW1 = On/off switch

155. White / LF Noise Generator

Each musician today need a noise source, especially the individuals who practice with a group or utilize a synthesizer. The white noise generator gives an output to be encouraged to an amplifier. The white noise produced by the 12V Zener diode is opened up 200 times alongside the noise of the noisy 741 IC (IC1). The output

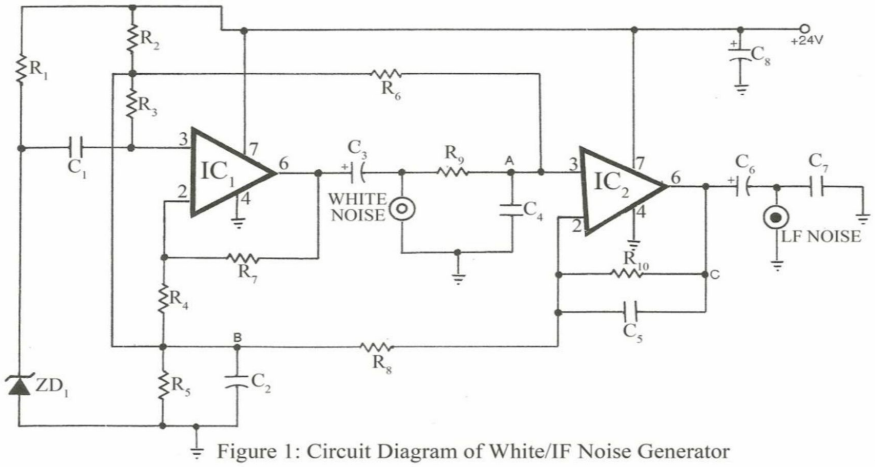


Figure 1: Circuit Diagram of White/IF Noise Generator

is along these lines extremely noisy with a lot of white noise.

The output of IC1 is given to a low pass filter which cuts off high frequencies. Point An is associated with amplifier IC2. The feedback network of IC2 incorporates a 0.15 µF capacitor which diminishes the gain at high frequencies. The 0.001 µF capacitor at the output of IC2 additionally stacks the output at high frequencies and lessen them. In this manner the resultant output has a lot of low recurrence (LF) noise. A little measure of white noise because of the IC itself is delivered at the output, however it can be disregarded. Point B is a counterfeit center point created for IC1 and IC2. Point C is associated with the capacitor which lessen the gain of IC2 at high frequencies.

Components Required

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1 = 470 KΩ; R2, R5, R8, R9 = 10 KΩ; R3, R6, R10 = 100 KΩ; R4 = 4.7 KΩ; R7 = 1 MΩ

Capacitors C1 = 0.47 µF; C2 = 100 µF/10v; C3, C6 = 1 µF/16v; C4 = 0.15 µF; C5 = 0.015 µF; C7 = 0.001 µF; C8 = 100 µF/25V

Semiconductors IC1, IC2 = 741, ZD1 = 12V 400mW

156. Traffic Light Controller

The circuit given here is substitute of old mechanical traffic light controllers which are not reliable. The circuit's timing and sequential operation are finished by two CMOS ICs (IC1 and IC2) while the real power switching is finished by triacs,

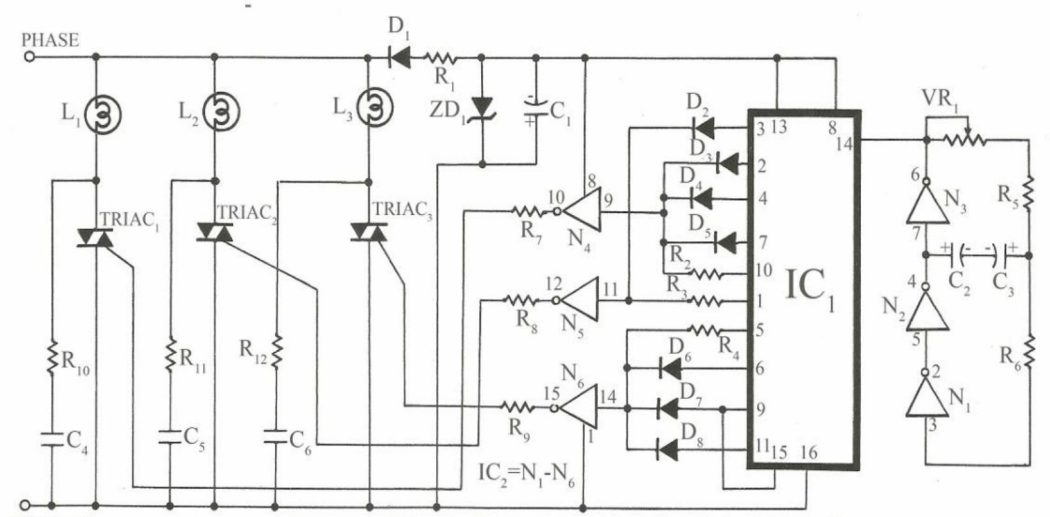


Figure 1: Circuit Diagram of Traffic Light Controller

A 10V negative power supply is gotten specifically from the mains my methods for D1, R1, D2, and C1. Gates N1 through N6 constitute IC2 while IC1 is a Johnson counter. N1 to N3 are wired as an astable multivibrator whose time period can be balanced between 1 sec and 10 secs with VR1. The decade outputs of IC1 are wired with the end goal that when Q0 and Q5 is high, the yield of N5 goes low. So also, the outputs of N4 and N6 turn out to be low when Q1 to Q4 and Q6 to Q9 turn out to be low individually. Since we have negative supply, a low yield of any of the detests N4 to N6 cause the separate triac to fire.

In this manner, the ratios of the time periods for the lamps in the sequence O: G:O: R are 1:4:1:4. Resistor R10 to R12 and capacitor C4 and C6 are totally necessary, these keep away from deceptive triggering of the triacs that may hamper traffic flow.

Components Required

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1 = 5 KΩ/5W; R2, R3, R4 = 22 KΩ; R5 = 100 KΩ; R6 = 1 MΩ; R7, R8, R9 = 1 KΩ; R10, R11, R12 = 100 Ω/1W; VR1 = 1 MΩ

Capacitors

C1 = 1000 µF/16V; C2, C3 = 22 µF/16V; C4, C5, C6 = 00.1 µF/400V Semiconductors

IC1 = CD4017; IC2(N1 – N6) = CD4049; D1 = BY12

157. Universal Battery Tester

To detect the battery whether it is working or not is extremely troublesome. For the most part voltmeter is utilized for checking motivation behind condition of battery. Presently, here is extremely basic circuit used to check the condition of battery.

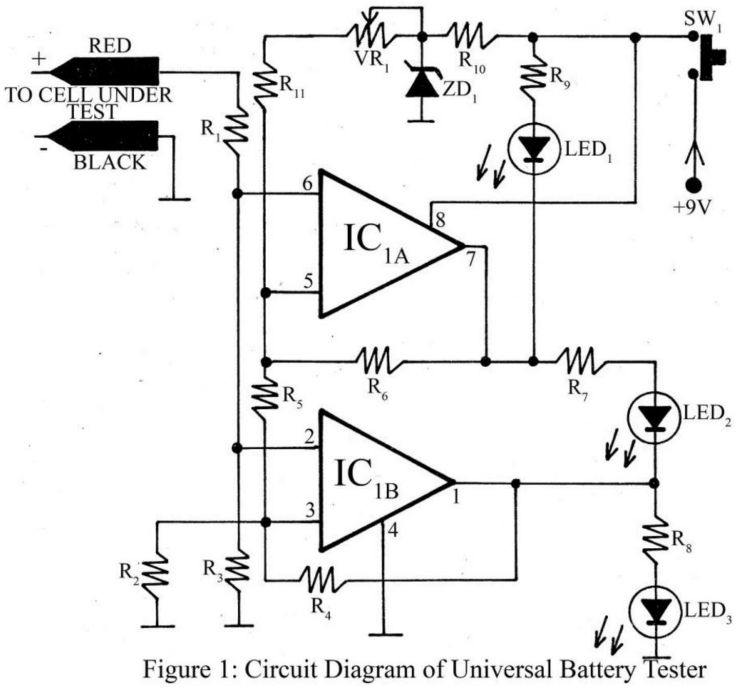


Figure 1: Circuit Diagram of Universal Battery Tester

Circuit Depiction

The whole circuit of universal battery tester is built around double comparator IC TL072 (IC1) trailed by another component. The two independent comparator is utilized here as operational amplifier. The inverting pin of these two operational amplifiers is sustained through potential divider network produced using resistor R1 and R3. Rest of the component is used to keep up threshold voltage.

State of LED

- Glowing RED LED: - Battery is fully charged
- Glowing GREEN LED: - Battery is usable
- Glowing RED LED: - Need charge or it is not usable.

Components Required

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1, R3 = 5.6 Ω; R2 = 3.3 KΩ; R4, R6 = 1 MΩ; R5, R7, R9 = 1 KΩ; R8, R10 = 820 Ω; R11 = 10

KΩ

Semiconductors

- IC1 = TL072CD; ZD1 = 3.3 V/500mW
- LED1 = RED LED
- LED2 = GREEN LED
- LED3 = YELLOW LED

Miscellaneous

SW1 = Push to on switch Two probes

158. Simple Pulse Generator

Here's circuit is utilized to give positive going pulses. The pulse width fluctuates from 10µs to 100 ms at the rate of 20 pulses for each second to 1 pulse for every second and balanced by a 1 MΩ potentiometer. Transistor T1 and T2 frame a relaxation oscillatory circuitry. The frequency of oscillation relies upon C1 and VR1. The pulse width is changed by a 47KΩ (VR2) potentiometer. Any required pulse width range is chosen by the switch SW1 underneath

Position of switch SW1 Pulse width

1 10 µs to 100 µs

2 100 µs to 1 ms

3 1 ms to 10 ms

4 10ms to 100 ms

Components List

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise) R1 = 33 Ω; R2 = 47 K Ω; R3 = 47 Ω; R4 = 33 Ω; R5 = 2.7 KΩ; R1 = 1 MΩ LOG; VR2 = 47 KΩ

LIN POT.

Capacitors C1 = 1 µF/16V; C2 = 0.0022 µF; C3 = 0.022 µF; C4 = 0.22 µF; C5 = 2.2 µF/16v

Semiconductors T1 = SL100; T2 = SK100; IC1 = 74121

Miscellaneous SW1 = 1 pole 4

159. Simple low/high voltage cut circuit

Presently, here is extremely basic low/high voltage cut circuit utilizing just two transistors.

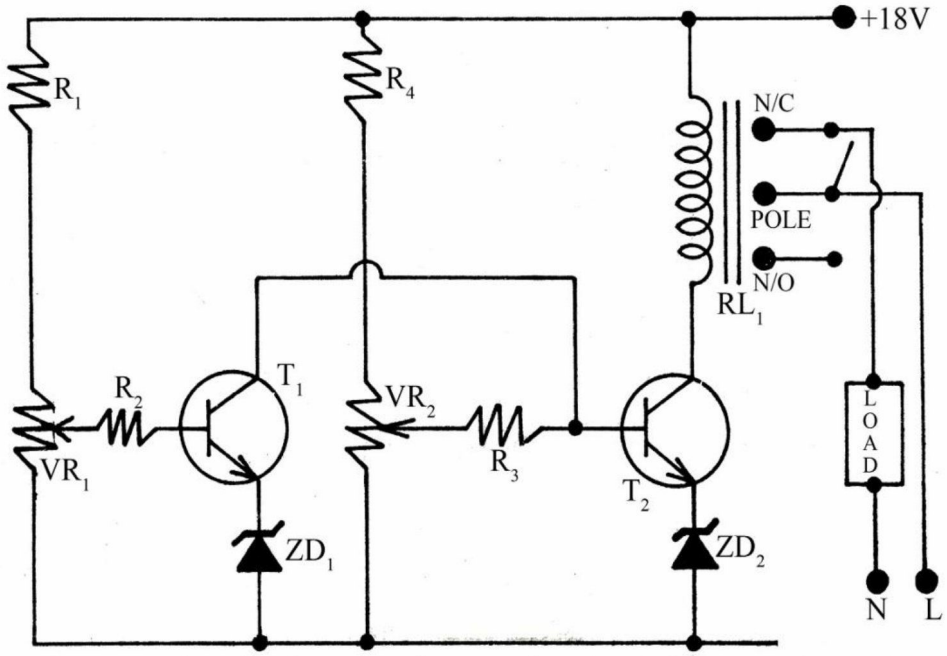


Figure 1: Circuit Diagram of Super Simple High Low Voltage Cut

The whole circuit is build utilizing just two transistor and not very many other components. The two transistors are utilized to drive relay. Transistor T1 and T2 cut the supply in high and low voltage separately. Variable resistor VR1 and VR2 is utilized to modify the high and low voltage. As we realize that when Zener diode is associated with emitter of transistor then it gets back bias voltage. The variable resistor VR1 and VR2 is adjusted to the point that it doesn't associate the transistor T2 and T1 in high and low voltage separately. The load is associated through relay RL1.

Component list

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1, R4 = 4.7 KΩ; R2, R3 = 220 Ω; VR1 = 10 KΩ; VR2 = 10 KΩ Semiconductors T1, T2 = BC148; ZD1, ZD2 = 5.6V

Miscellaneous RL1 = 18V/500Ω

160. Mini amplifier

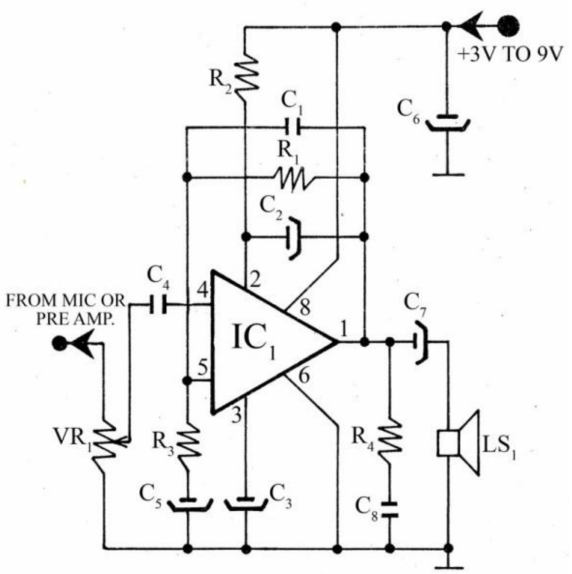


Figure 1: Circuit Diagram of Mini Amplifier

This is an easy project, mini amplifier built around LM1895 took after by passive components. The output of 10mW to 1W is gotten in this way, the circuit is called mini amplifier.

Circuit Description

The output from mike or pre-amplifier is sustained to pin no.4 through variable resistor VR1 and capacitor C4. Variable resistor VR1 is utilized to choose the intensity of signal. Capacitor C2 and C6 is utilized to filter and build up the supply, where capacitor C3 and C5 is utilized to bias the audio frequency. The output of amplifier IC is gotten at pin 1 where resistor R4 and capacitor C8 is utilized as feedback component. The output is given to loudspeaker through capacitor C7 with a specific end goal to deliver sound.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon unless stated otherwise)

R1 = 10 KΩ; R2 = 47Ω; R3 = 220Ω; R4 = 1Ω; VR1 = 50 KΩ

Capacitors

C1 = 470 pF; C2 = 220 µF/10V; C3 = 100 µF/10V; C4 = 0.1 µF; C5 = 10 µF/10V; C6, C7 = 470

µF/10V; C8 = 0.1 µF

Semiconductors

IC1 = LM1895N

Miscellaneous

LS1 = 4Ω/1W speaker

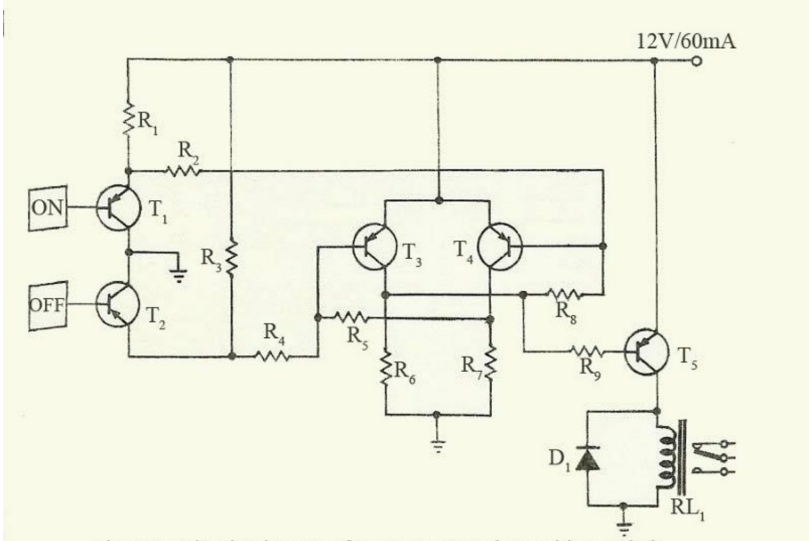


Figure 1. Circuit Diagram of Low-Cost Touch Sensitive Switch

161. Low-cost Touch Sensitive Switch

While experiment with a high gain transistor it might be seen the transistor gets saturated by simply touching its base. Here is a single, low-cost contact switch in light of this idea. The 50Hz murmur present in our body is the key of this circuit. BEL BC557B pnp transistor has been decided for this circuit. Every one of the transistors utilized as a part of this circuit are of pnp compose. The circuit is fundamentally a RS flip-flop shaped by T3 and T4. Set and reset inputs are buffered by T1 and T2. Set and Reset inputs are buffered by T1 and T2. On switching the power supply on the bases of T3 and T4 end up positive at the same time. Be that as it may, because of slight contrast in characteristics of T3 and T4 (since it isn't conceivable to make splendidly coordinated transistor) one of the transistor end up unsaturated. Transistor T5 is utilized as relay driver transistor.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1, R3, R6, R7, R9 = 10 KΩ R2, R4, R5, R8 = 220 KΩ

Semiconductors

T1 – T5 = BC557B D1 = 1N4001

Miscellaneous

RL1 = 12V/200Ω relay Touch plate

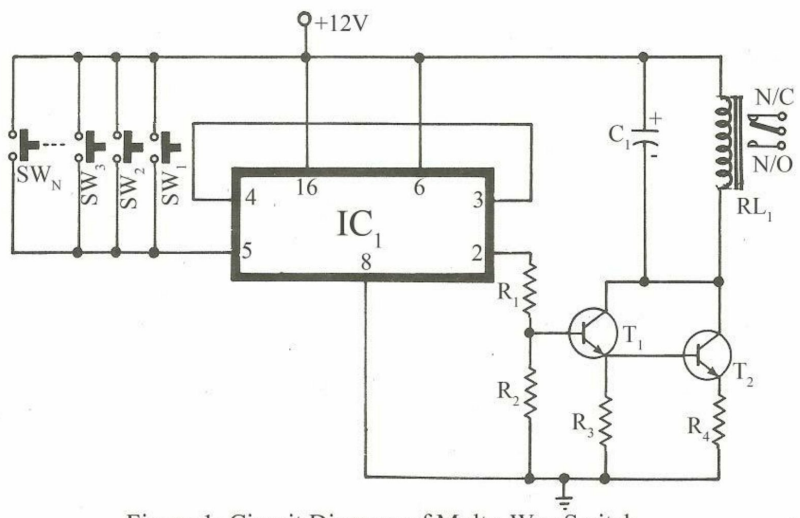


Figure 1: Circuit Diagram of Multy-Way Switch

162. **Multi-way Switch**

With this circuit you can control any of your electrical machines from any point with just two wires stretching out from the circuit to those points. One need not, for example, keep the entry lights on dependably since the openness of the switch can be given to each require point. It would thus be able to be utilized as a part of energy sparing device in long sections.

In this circuit, switches SW1, SW2, SW3… SWn are associated between the clock pin of IC CD4042A and the power supply. The Q output pin 3 of the FF is feedback to its D input pin 4. The output from pin 2 is associated with the base of Darlington pair amplifier shaped by BC107 and SL100, which drives the relay. The association with the machine can be through the N/O contact of the relay. The circuit is powered by 12V DC. The impedance of the relay utilized ought to be greater than 100-ohm. With this circuit you can undoubtedly make a three-way switch or switch with unlimited quantities of terminals where each can independently control the output. There is no compelling reason to associate a debouncing circuit between the switches and the IC.

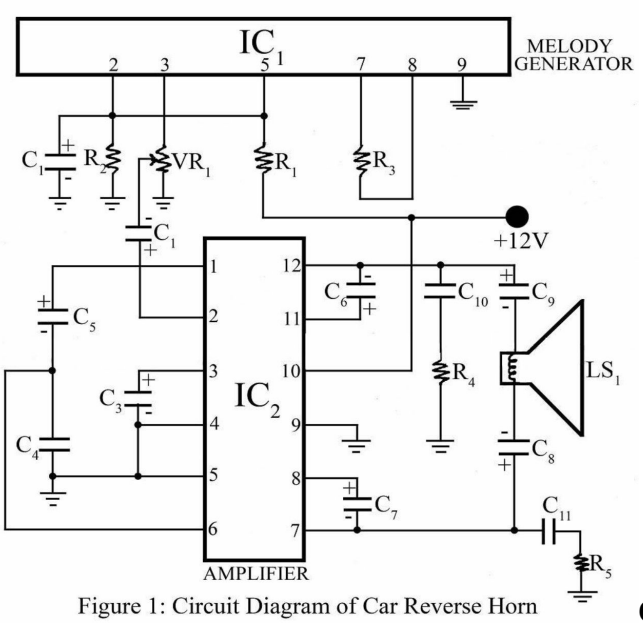


Figure 1: Circuit Diagram of Car Reverse Horn

163. Car Reverse Horn

This is an easy project "Car Reverse Horn", can be utilized as a part of car as reverse horn i.e. produce sound when car is moving in reverse direction.

Circuit Description

The heart of car reverse horn circuit is music generator IC CIC2877 (IC1) trailed by amplifier IC and couple of passive components. IC1 is produced using a ROM oscillator and a pre-amplifier which additionally generate sound. The generated sound output is accessible at pin 3 which is additionally associated with pin 2 of amplifier IC through potentiometer VR1. IC2 increase the generated sound up to wanted level and its output from pin 7 and 12 is given to amplifier through coupling capacitors C8 and C9 individually. The power supply ig given to the circuit from battery of car.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 1.5 KΩ, R2 = 1 KΩ, R3 = 120 KΩ, R4, R5 = 1 Ω

Capacitors

C1 = 10 µF/25V (electrolytic)

164. Direction Indicator

Direction indicator is extremely intriguing and in addition exceptionally useful task in any ceremony, party and so forth to indicate places like washroom. The other glowing LEDs in direction indicator make this venture more alluring.

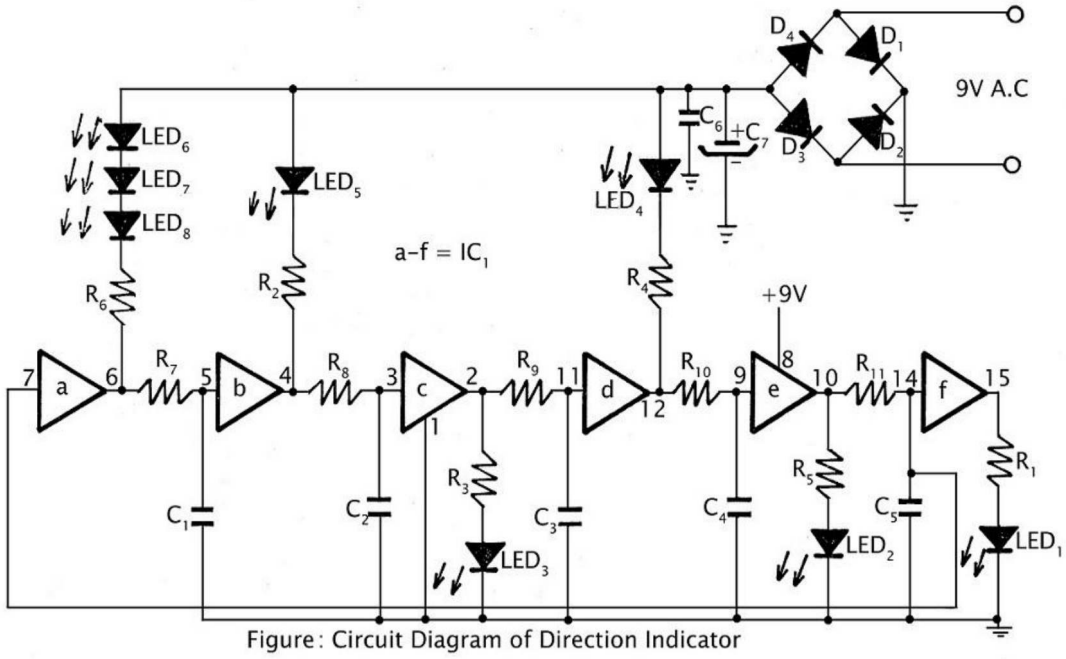


Figure: Circuit Diagram of Direction Indicator

The logic of direction indicator is anything but difficult to outline and fabricated around CMOS HEX inverter buffer CD4049 containing six free inverter (a-f) . For powerful utilization of this venture all LED must be of RED color.

Components list

Resistors (all ¼-watt, ± 5% Carbon)

R1 – R5 = 470 Ω; R6 = 330 Ω; R7 – R11 = 1 MΩ

Capacitors C1 – C6 = 100 KPF; C7 = 470 µF/16V

Semiconductors IC1 = CD4049; D1 – D4 1N4007

Miscellaneous LED1 – LED8 = RED color

165. Fridge Alert System

Here's is a basic circuit "Fridge Alert System" can be utilized as a part of fridge, indicating whether the temperature is more than pre-defined temperature. The plan of the circuit fridge alert system appeared here alert when temperature expanded then 50C.

Thermistor TH1 is utilized as temperature sensor, change their resistance at whatever point changes in encompassing temperature. IC1 CL7611 joined with thermistor to finish all the procedure of temperature. IC2 is utilized here to indicate the status of battery. Glowing LED1 indicate temperature is more than 50C.

PART LIST

Resistors (all ¼-watt, ± 5% Carbon) R1, R2 = 4.7 MΩ; R3 = 2.2 MΩ; R4 = 56 KΩ; R5 = 12 KΩ; R6 = 10 K; R7 = 270 Ω; R8 = 390Ω

Semiconductors

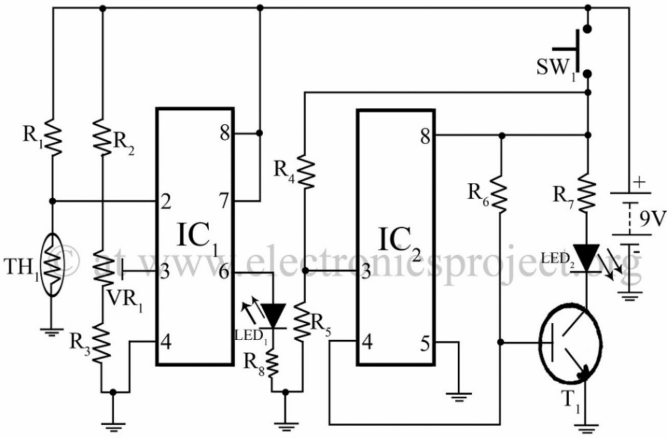


Figure 1: Circuit Diagram of Fridge Alert Syatem

IC1 = CL7611; IC2 = 8211; T1 = 2TX300; LED1 = RED; LED2 = Green MiscellaneousSW1 = Push-to-on switch; TH1 = GL16 thermistor

166. Electronics Motor Controller

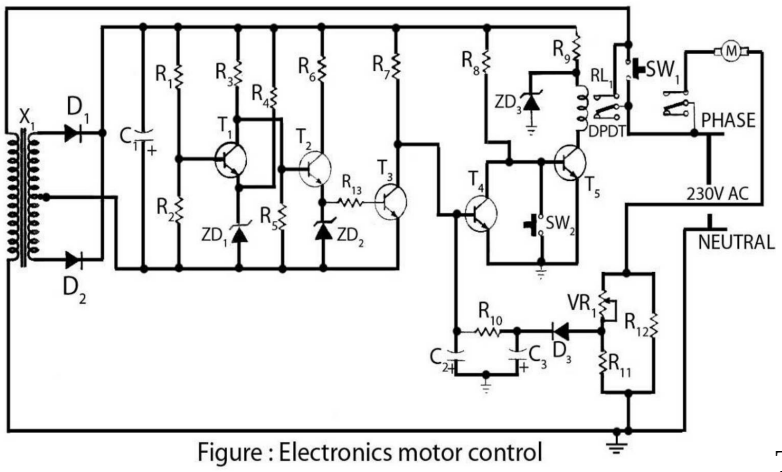


Figure : Electronics motor control

This is a circuit used to control motor more effectively than any electromechanically controlling gadget. The project appeared here is cheap and easy to build. It additionally overcome the problem of noise triggering and noise pulse.

Circuit Description

The power supply is given by pressing switch SW1 it shots the N/O contact of relay RL¬1 which offers supply to the circuit. The current through resistor R8 gives the base current to transistor T5. Where transistor T1, T2 and T3 from the over and under-voltage cut-offs. This transistor T4 on when over or under voltage is given to transistor T3.

For maintaining a strategic distance from noise capacitor C2 with resistor R10 frame a loss-pass filter and furthermore give adequate time delay. This resistor organizes (R11, R12, VR1) are utilized as current sensor. Where Diode D3 is as rectifier and capacitor C1 is utilized as noise filter of switching circuit

COMPONENTS REQUIRED

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 150 KΩ; R2 = 33 KΩ; R3 = 6.7 KΩ; R4 = 100 KΩ; R5 = 39 KΩ; R6 = 15 KΩ; R7 = 10 KΩ; R8 = 4.7 KΩ; R9 = 75 Ω/1W; R10, R13 = 47 KΩ; R11 = 470 Ω; R12 = 0.5 Ω; VR1 = 2.2 KΩ

Capacitors C1 = 1000 µF/25V; C2, C3 = 47 µF/10V

Semiconductors T1, T2, T3, T4 = BC148; T5 = SL100; D1, D2, D3 = 1N4001; ZD1, ZD2 = 3.1V; ZD3 = 9.1V

Miscellaneous SW1, SW2 = Push to on switch

X1 = 230 primary AC primary to 18-0-18, 500mA secondary transformer OR

(110 primary AC primary to 18-0-18, 500mA secondary transformer)

RL1 = 12V, 200 Ω Double pole double throw M = Motor

167. Simple Frequency Meter

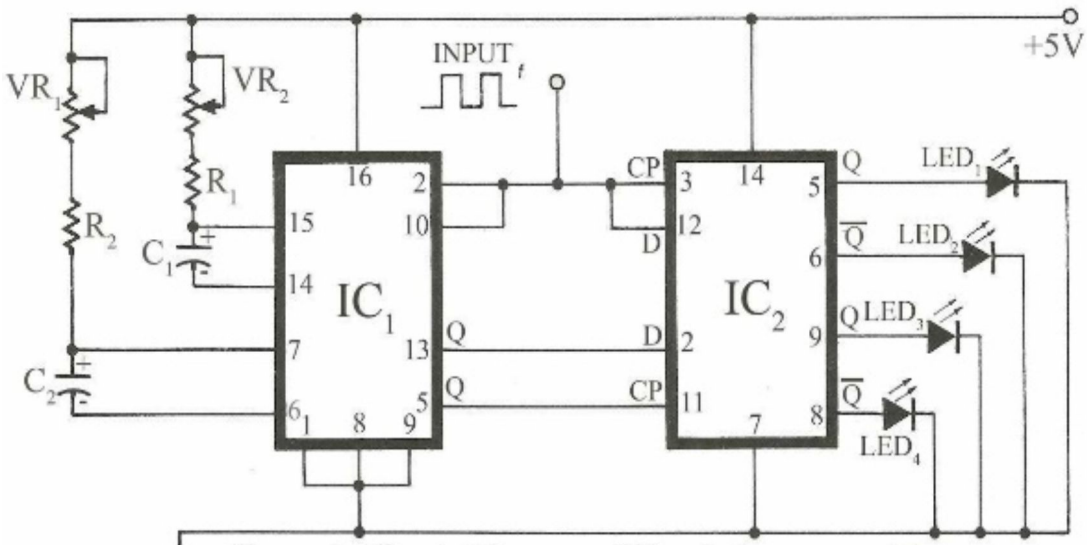


Figure 1: Circuit Diagram of Simple Frequency Meter

This is a fundamental frequency meter with which input frequency can be dictated by basically estimating the values of two resistors and a little bit of calculation. A retriggerable monostable multivibrator and a D flip-flop can shape a simple, yet reliable frequency comparator that contrasts an input frequency and a foreordained reference. To decide if an input frequency (f) falls between two known frequencies, f1 and f2, two one-shot/flip-flip mixes are utilized, as appeared.

Here both the one-shot and the flip-flop ICs are wired for positive-edge triggering. Each input pulse makes the monostable output go high for the period of its preset timing interim. The flip-flop is activated all the while; however, its output is controlled by the condition of its D input at the season of trigger threshold. In the event that the period of the input frequency is shorter than the preset timing of the monostable, a constant high level will be available at the D input, driving the flip-flop's Q output to stay high. On the off chance that the input frequency period winds up greater than that of the monostable, the flip-flop's Q output will go low.

VR1, VR2, and C1, C2 decide the estimation of the day and age of f1 and f2. Some regular values for estimating a range of input frequencies is given in Table.

One way to gauge the frequency is to increase f2 by diminishing the estimation of R2 until LED3 goes 'off' and LED4 goes 'on'. At that point R1 is diminish with the goal that LED1 goes 'on' and LED2 goes 'off'. Presently both LED1 and LED4 sparkle and the estimation of R1 and R2 are estimated. Frequencies f1 furthermore, f2 are computed by the formulae f1 =

1/(1.1R1C1) and f2 = 1/(1.1R2C2) furthermore, the input frequency 'f' falls in the middle of f1 and f2. On the off chance that f1<f f2<f It can be additionally noticed that the values of the resistors and the capacitors can be taken by one's application.

Components Required

Resistors (all ¼-watt, ± 5% Carbon unless expressed generally)

R1, R2 = 10 Ω; VR1, VR2 = 4.7 K Ω

Capacitors

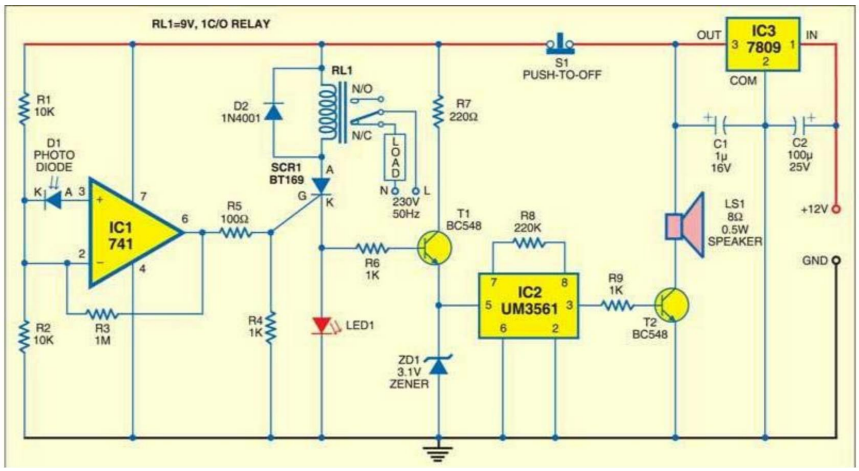
C1, C2 = 10 µF/10V

Semiconductors

IC1 = 74123, IC2 = 7474

LED1 – LED4 = various color LED</f</f

168. Musical AF/IF checker



There are a few signal generator circuits proposed by various engineers yet few are reliable over a range. The majority of the circuits are intended for a settled or constant recurrence range. This circuit produces music instead of 10 KHz oscillation. Music notes are modulated to 455 KHz. The modulated signal is utilized for checking and arrangement of IFTs at the time of adjusting of audio equipment.

The fundamental parts of the circuit are audio tone generator, RF oscillator and modulator. For audio tone generator the musical IC UM66 (IC1) utilized. This IC has 64-note ROM memory.

The oscillator area comprises of low-noise crystal oscillator. The crystal of 455 KHz utilized for recurrence control. There is no recurrence drift in the circuit as no tuned circuit is being utilized. In this way, the IFTs can be adjusted effectively.

The output area of the circuit is modulator which regulates the AF and RF signals. The modulated signal is taped from the output jack. The entire setup is encased in a little metal box. The output jack and switch SW1 are fitted on the front panel of the box.

At the point when switch SW1 is in position A, we can get the modulated IF signal from the jack. At the point when the switch is in position B, we get AF signal from the jack. For arrangement of 2-band radio we can replace the crystal with another crystal creating frequencies of 550 KHz, 1600 KHz, 600 KHz, 5MHz or 16 MHz and replace the IFT with a little ferrite core transformer (or an IFT without the tuning capacitor can likewise be utilized).

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon unless expressed generally)

R1 = 270 Ω; R2 = 220 Ω; R3, R7 = 10 K Ω; R4 = 470 K Ω; R5 = 4.7 K Ω; R6 = 1.2 K Ω; R8 = 220 K Ω; R9 = 1 K Ω

Capacitors C1 = 1 µF/16V; C2, C4 = 0.1 µF; C4 = 390 pF; C5 = 0.04 µF; C6 = 0.01 µF; C7 = 100 µF/16v

Semiconductor IC1 = UM66; T1, T2 = BF494B; D1 = 1N4148; ZD1 = 3V 400mW Random XTAL1 = 455 KHz SW1 = 1-shaft two-way switch IFT

169. Flashing Light with twilight switch

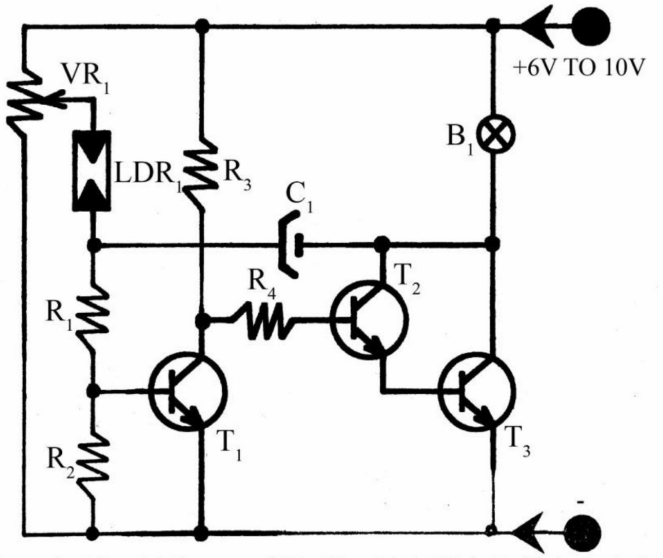


Figure 1 : Circuit Diagram of Flashing Light With Twilight Switch

Flashing light is most useful in order to indicate any obstruction or working in progress. The project automatic flashing light with twilight switch flash light in dark yet amid day it automatically turns off itself.

Circuit Description

The circuit diagram of automatic flashing light with twilight switch is appeared below where LDR is utilized as sensor. Within the sight of light LDR offer low resistance and in dark it offers high resistance. At the point when there is absence light, LDR offer high resistances which kill the transistor T1. Because of this Darlington pair produced using transistor T2 and T3 is turn on which additionally glow light. The feedback from its yield is given to the linking of resistor R2 and LDR as appeared in circuit diagram. Because of feedback this circuit fills in as oscillator which function as flasher. Potentiometer VR1 is utilized to alter the affectability of LDR.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon unless expressed generally)

R1 = 2.2 KΩ; R2, R3 = 1 KΩ; R4 = 3.3 KΩ; VR1 = 25 KΩ

Capacitors

C1 = 1 µF – 10 µF

Semiconductors

T1, T2 = BC547B; T3 = BEL187-P

Incidental LDR, B1 = 3V to 10V knob

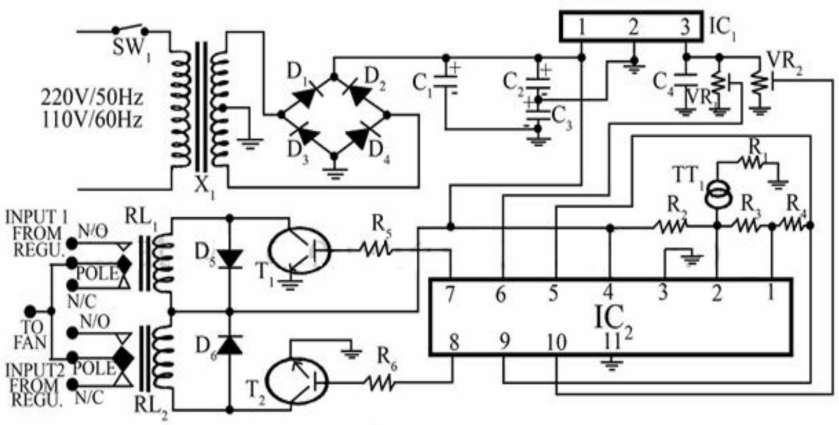


Figure : Circuit Diagram of Automatic Temperature Controlled Fan

170. Automatic Temperature Controlled Fan

The circuit of automatic temperature-controlled fan is work around temperature transducer AD590 took after by op-amp LM324. AD590 is a temperature transducer, change temperature into comparing voltage. The yield of transducer is given to stick 2 of IC2 LM324. The two-reference voltage is given to stick 6 and stick 10 through potentiometer VR1 and VR2 individually. The estimation of these potentiometer is settled according to operating temperature (i.e. RL1 stimulated when temperature is over 300C and RL2 empowered when temperature is beneath 230C). The yield is taken from stick 7 and stick 8 which additionally given to base of transistor T1 and T2 through resistor R5 and R6 separately. Transistor T1 and T2 is utilized as hand-off driver transistor. The two input is given from two diverse phases of regulator.

Power supply Circuit: - The primary AC voltage is step-down to 12 – 0 – 12 by utilizing transformer X1 which additionally rectified utilizing bridge rectifier (D1 through D4). The rectified yield is filtered utilizing capacitor and given to input stick 1 of voltage regulator IC 7812 (IC1). The controlled yield is taken from stick 3 of IC1 where stick 2 is grounded.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 100 KΩ; R2 = 56 KΩ; R3 = 39 KΩ; R4, R5, R6 = 1 KΩ; VR1, VR2 = 10 KΩ (Preset)

Capacitors

C1 = 1000 µF/40V; C2, C3 = 1000 µF/25V; C4 = 0.1 µF Semiconductors

IC1 = LM7812 (12V regulator IC), IC2 = LM324 (operational amplifier)

T1, T2 = SL100, D1 – D6 = 1N4001 (rectifier diode)

Miscellaneous

TT1 = AD590 (temperature transducer) RL1, RL2 = 12V 200Ω

171. Sound Operated Light

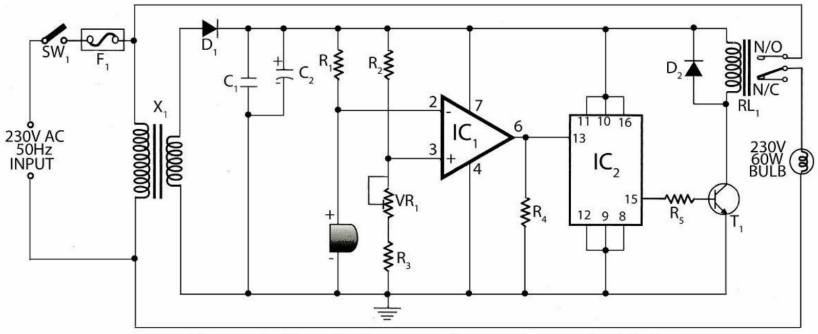


Figure 1: Circuit diagram of sound operated light

While living in rent or in college hostel the issue like stealing is often in absent time. This is the circuit of simple and low-cost sound operated light to overcome this sort of issue which can turn on the light when somebody claps or attempts to open your door or even embeds a key in the door bolt. The switching of light is on the other hand, for example, light on by one sound pulse and off by another. It is additionally called applaud operated light or clap switch.

Circuit Description of sound operated light

The whole circuit of sound operated light is composed and builds around an op-amp IC (IC1) and JK flip-flop IC (IC2). The sound originating from outside is detect by microphone and converts it to comparing electrical signal where sensitivity of sound is controlled by variable resistor VR1. The high estimation of reference voltage is given to stick 3 of IC1 keeping in mind the end goal to change the output voltage from stick 6. Here IC2 (JK flip-flop) is wired as a toggle flip-flop and its output is associated with relay driver transistor T1 through resistor R1 which stimulated the relay RL1 when sound is heard by microphone. The bulb from sound operated light is associated with AC source through relay contact as appeared in circuit outline.

COMPONENTS LIST

Resistors Required (all ¼-watt, ± 5% Carbon)

R1 = 22 KΩ; R2, R5 = 1 KΩ; R3 = 470 Ω; R4 = 10 KΩ; VR1 = 10 KΩ

Capacitors Required

C1 = 0.1 µF; C2 = 470 µF/35V

Semiconductors Required

IC1 = µA741 (operational amplifier); IC2 = CD4027; T1 = 2N2222; D1, D2 = 1N4001

Miscellaneous

X1 = 230V AC primary to 0-9V, 250 mA secondary transformer OR

(110V AC primary to 0-9V, 250 mA secondary transformer)

RL1 = 12V, 200Ω, 1C/O Relay

SW1 = ON/OFF Switch

F1 = Fuse, MIC = Condenser Microphone, Bulb 230V, 60W (110V, 60W)

172. Electronics Thermometer

Clinical thermometer is just utilized by doctor since it isn't to read. This is a circuit of electronics thermometer used to find vast range of temperature from - 200C to 1250C. This single circuit electronics thermometer can be utilized to gauge distinctive temperature. The wide range of temperature estimation made this circuit adaptable.

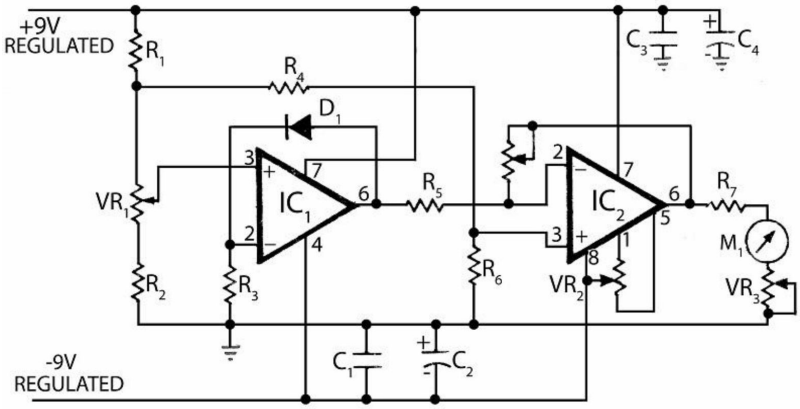


Figure 1: Circuit Diagram of Electronics Thermometer

Circuit Description of electronics thermometer,

This entire circuit "Electronics thermometer" is built and fabricated around silicon diode D1 (1N4148) and op-amp IC. Diode D1 is utilized as temperature sensor, temperature decided the estimation of voltmeter drop crosswise over diode i.e. at room temperature voltage drop is 0.7V and is decrease by around 2mV/0C. For temperature-to-voltage conversion in electronics thermometer an op-amp is utilized. The input voltage at non-inverting pin 3 of IC1 is settled by VR1, R1, and R2 where sensor diode D1 frames a feedback way. The yield of IC1 is specifically relies upon the voltage over the diode. Op-amp IC1 is utilized as voltage amplifier which amplifier the yield from IC1. At last, ammeter is utilized to indicate the temperature.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 680 Ω; R2 = 1 KΩ; R3, R4, R5 = 1 KΩ; R6 = 6.8 KΩ; R7 = 10 KΩ; VR1 = 2.2 KΩ, VR2, VR3, VR5 = 10 KΩ

Capacitors C1, C3 = 0.1 µF; C2 = 10 µF/16V; C4 = 10 µF/16V

Semiconductors IC1, IC2 = µA741; D1 = 1N4148 (Sensor)

Miscellaneous M1 = 1mA-0-1mA or 0-1mA Ammeter

173. AC mains voltage indicator

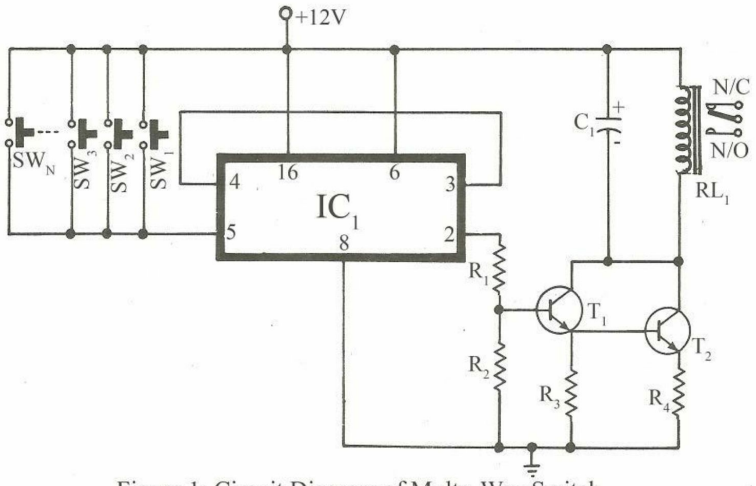


Figure 1: Circuit Diagram of Multy-Way Switch

This is basic and most helpful circuit AC mains voltage indicator, demonstrates the voltage level of AC mains by three unique LEDs. AC mains voltage indicator circuit can be made and assemble even by fledglings.

Circuit description of AC mains voltage indicator

Every one of the three LEDs of AC mains voltage indicator are associated between collectors of transistors T1, T2, T3 separately. Here variable resistor VR1, VR2, and VR3 are utilized to modify the base voltage of transistor T1, T2 and T3 individually. As appeared in circuit outline first AC mains is stepped down by 9V-0-9V transformer and afterward rectified by a signal diode D1 and smoothed by C1 which give yield 25V DC. This circuit is chip away at the rule, when AC mains shift DC voltage additionally changes relatively and detected by transistor T1 through T3.

For setting the low-level voltage, a manual AC voltage controller (MVR) ought to be associated with the primary of transformer X1. Presently set AC voltage of MVR to around 175V and slowly variable resistor VR1 balanced until voltage across the base of transistor T1 reaches 9.7V and transistor begins leading which glow LED1 and quit glowing when the base voltage dips under the preset esteem. This procedure is rehashed for 200V and 230V in which LED2 and LED3 glows separately.

Presently associate this circuit to AC mains, if the voltage dip under 175 volts no LEDs glow. Initial, a high voltage (more than 230V) is shown by each of the three LEDs glows (LED1, LED2, LED3). Second, ordinarily voltage (200V-230V) is shown by two

LEDs (LED1 and LED2). Third, a low voltage (175V-200V) is demonstrated by the glowing of LED1 as it were.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1- R6= 1 KΩ, VR1 – VR3 = 10 KΩ

Capacitor

C1 = 220 µF/50V

Semiconductors

T1 – T3 = BC547, ZD1 – ZD3 = 9.1V Zener diode

D1 = 1N4001, LED1 – LED3 = Simple LED

Miscellaneous

X1 = 230V AC primary to 9V-0-9V, 250mA secondary transformer

SW1 = On/off switch

174. 70/40 Watts Hi-Fi amplifier

This is circuit of the world best Hi-Fi amplifier you may never need to replace by a superior one. The high output, great specification, and little size make this 70/40-watt hi-fi amplifier more flexible.

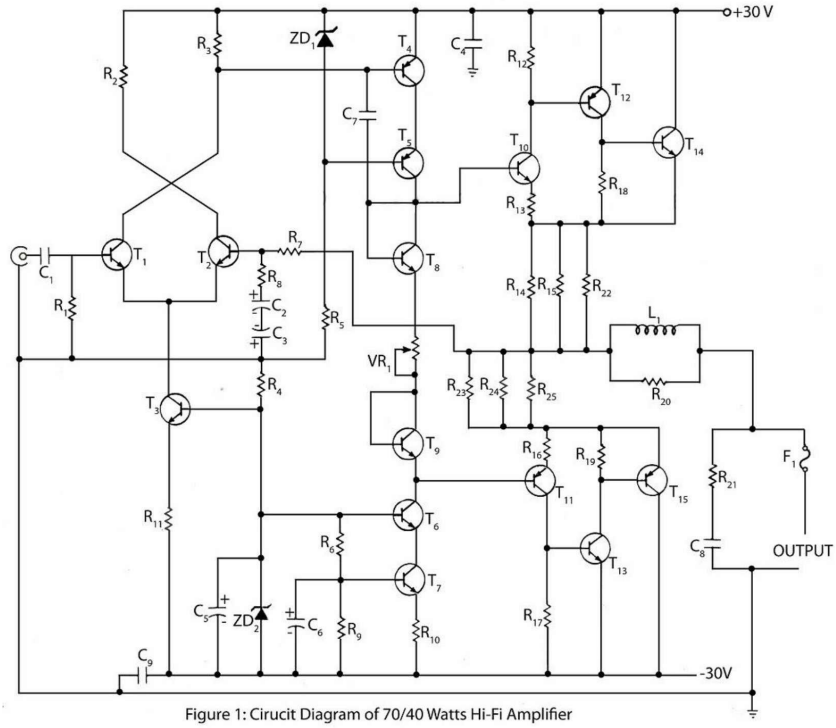


Figure 1: Cirucit Diagram of 70/40 Watts Hi-Fi Amplifier

Circuit description of 70/40 watts hi-fi amplifier

The 70/40 watts hi-fi amplifier circuit is built around transistors, configured in various modes. The signal to be amplified is given to base of transistor T1 configured as differential amplifier with T2. Transistor T3 is utilized to keep up the current of differential amplifier.

Transistor T4 with T5 shapes a fell combine determined straightforwardly by transistor T1. For better outcome transistor T6 and T7 again configured as fell combine and give steady current source to course match T4 and T5 in this amplifier circuit. Temperature coefficient of transistors T10 and T11 is repaid by transistors T8 and T9 which act like diodes. Transistors T10 with T12 and T14 and transistors T11 with T13 and T15 frame a triple Darlington set.

The current through T4 and T5 is kept at a low estimation of around 6mA because the output of this circuit comprises of triple Darlington sets. The little change in

the VBE of T10 and T11 changes output current of hi-fi amplifier extraordinarily. With a specific end goal to prevent distortion in the 70/40 watts hi-fi amplifier when capacitive loads are associated with the output, curl L1 is utilized. Fuse is utilized to prevent DC voltage over the speaker and is associated in series to speaker. The aggregate gain of this amplifier circuit is approximate 32 and is esteem is computed by (R7 + R8)/R8

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1, R7 = 100 KΩ; R2, R3, R9 = 1.2 KΩ; R4, R5, R6 = 2.7 KΩ/2W; R8 = 4.7 KΩ

R10, R13, R16, R18, R19 = 100 Ω; R11 = 3.3 KΩ; R12, R17 = 680 Ω R14, R15, R22, R23, R24, R25 = 1 Ω/2W; R20 = 10 Ω/2W; R21 = 1o Ω/1W; VR1 = 100 Ω

Capacitors

C1 = 1 µF/polyester; C2, C3 = 25 µF/25V electrolytic; C4, C8, C9 = o.1 µF polyester C5 = 10 µF/60V electrolytic; C6 = 4.7 µF/10V electrolytic; C7 = 56 pF ceramic disc

Semiconductors

T1, T2, T3 = BC546B; T4 = BC558B; T5, T11 = 2N4033; T6, T10 = 2N3019; T7 = BC548B T8, T9 = BC147B; T12 = BD140; T13 = BD139; T14 = 2N3055; T15 = MJ2955, ZD1 = 3.3V 400mW Zener diode; ZD2 = 3.9V, 400mW zener diode

Miscellaneous

L1 = Coil having 20 turns of 20 SWG over thin pencil; F1 = 3.5 Ampere fuse

SPECIFICATIONS

Output power (1 KHz, o.7% THD): 73W into 4-Ω and 44W into 8-Ω

Offset Voltage: Less than ±40mV; Input impedance: 100 KΩ; Harmonic distortion: 0.015%;

Intermodulation distortion (70W): 0.02%; Frequency range: 10 Hz – 30 KHz, ±2dB; Signal-to-noise ratio (out = 100mW): Over 72dB

For more information http://electronicsproject.org/7040-watts-hi-fi-amplifier/

175. Fire Alarm Using Thermistor

Some fire alarm circuit is published in different website. Be that as it may, here in this website is a simple and reasonable project of fire alarm using thermistor. where thermistor is utilized as temperature sensor of fire alarm. Working guideline of thermistor is same as LDR (change their resistance with change in heat where LDR change their resistance with change in light fall on it). Circuit Description of fire alarm using thermistor

The entire circuit of fire alarm using thermistor is manufacture and fabricated around thermistor (TH1) and timer IC (IC1) with its driver transistor. The timer IC (IC1) utilized as a part of this circuit is as astable multivibrator oscillator used to waver in sound frequency band. The two transistor T1 and T2 used to drive the timer IC (IC1). The yield from stick 3 of IC1 is bolstered to loudspeaker through transistor T3 to generate sound. The estimation of resistor

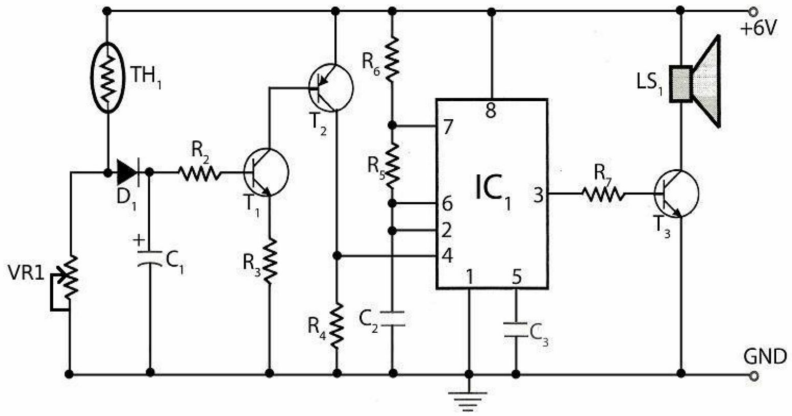


Figure 1: Circuit Diagram Of Fire Alarm Using Thermistor

(R5 and R6) and capacitor (C2) decides the frequency of IC2.

The low resistance way of stretch out positive voltage to the base of transistor is given when the thermistor TH1 wind up hot. Advance collector of transistor T1 is associated with base of transistor T2 gives positive voltage to reset stick 4 of IC1 for reset. Fire alarm using thermistor circuit chips away at wide range of information power supply voltage i.e. 6v to 12V.

COMPONENTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

VR1 = 10 Kohms Variable Resistor for changing the sensitivity of the circuit. R3, R7,

R8 = 470 Ω; R2 = 33 K Ω ; R4 = 560 Ω; R5 = 47 KΩ; R6 = 2.2 KΩ **Capacitors**

C1 = 10 µF/16V; C2 = 0.04 µF; C3 = 0.01 µF

Semiconductors

IC1 = NE555 (timer IC); T1 = BC548; T2 = BC558, T3 = SL100B or any Medium power general purpose NPN transistor like: 2N4922, 2N4921,2N4238, FCX1053A, D1 = 1N4001

Miscellaneous

TH1 = Thermistor 10 KΩ, LS1 = 8 Ω, 1W speaker

176. Light sensitive switch

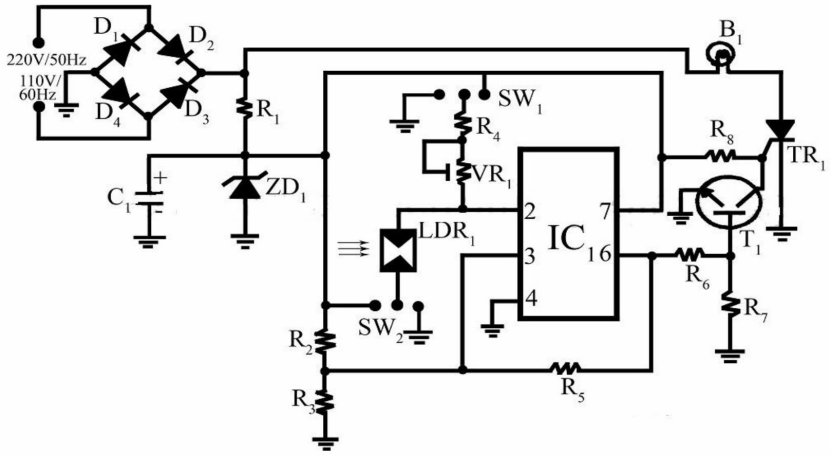


Figure: Circuit Diagram of Light Sensitive Switch

Light sensitive switch is an exceptional kind of switch which properties relies on the light falling in it. This is a simple, low cost and simple to use light sensitive switch. The working of this circuit is genuinely in light of light detecting, i.e. programmed turn it on or off when light fall on it.

Circuit Description

As this is a switching circuit along these lines, for more detail we can divide this circuit into two sections i.e. power supply and switching circuit., In this power supply section, the work of step-down transformer is done by register R1 and further rectification to change into 10V dc is by zener diode ZD1. The output voltage crosswise over zener diode is additionally sifted by capacitor C1. Another section is switching section built around light-dependent register LDR1 with the assistance of operational amplifier IC 741, where LDR is used as sensor of the switching circuit. By changing the position of switch, we can make this circuit both light sensitive and dark sensitive (i.e. turn on in light and turn in dark individually). LDR sense the light and change their opposition corresponding to light and given to stick 2 which is additionally balanced by preset VR1. Output is acquired from stick 6 of IC1 and given to base of transistor T1 through resistor R6 where resistor R7 is used as present limiter. The output is from authority of transistor T1is given to gate of TRIAC1 which additionally turn on the light. As light Sensor By connecting point 1 and 2 of switch SW2 and point 2 and 3 of switch SW1 then the circuit is work as light sensor (i.e. turn on the bulb once light fall on it). As dark Sensor By connecting point 2 and 3 of switch SW2 and point 1 and 2 of switch SW1 then the circuit is work as dark sensor (i.e. turn on the bulb without light).

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

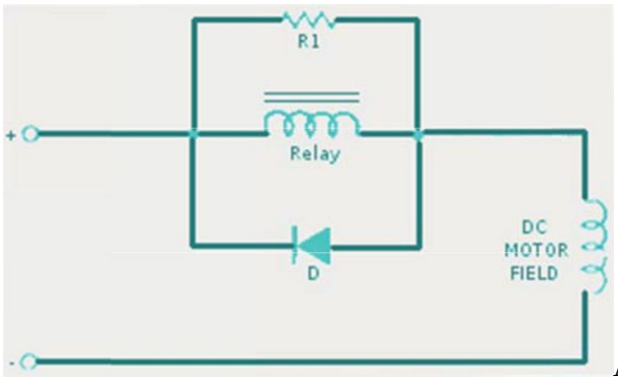
R1 = 100 KΩ/1W; R2, R3 = 100 KΩ; R4 = 4 .7 KΩ; R5, R6 = 220 K Ω; R7 = 68 KΩ; R8 = 33KΩ; VR 1 = 100 KΩ (preset)

Capacitors C1 = 100 µF/16

Semiconductors IC1 = L M741 (Op-amp); T1 = BC547; TR1 = 10GD (Triac); D1 – D 4 = 1N400 4; ZD1 = 10V/100 mW

Miscellaneous LDR1 = Light – Dependent – Resistor; B1 = 200W bulb

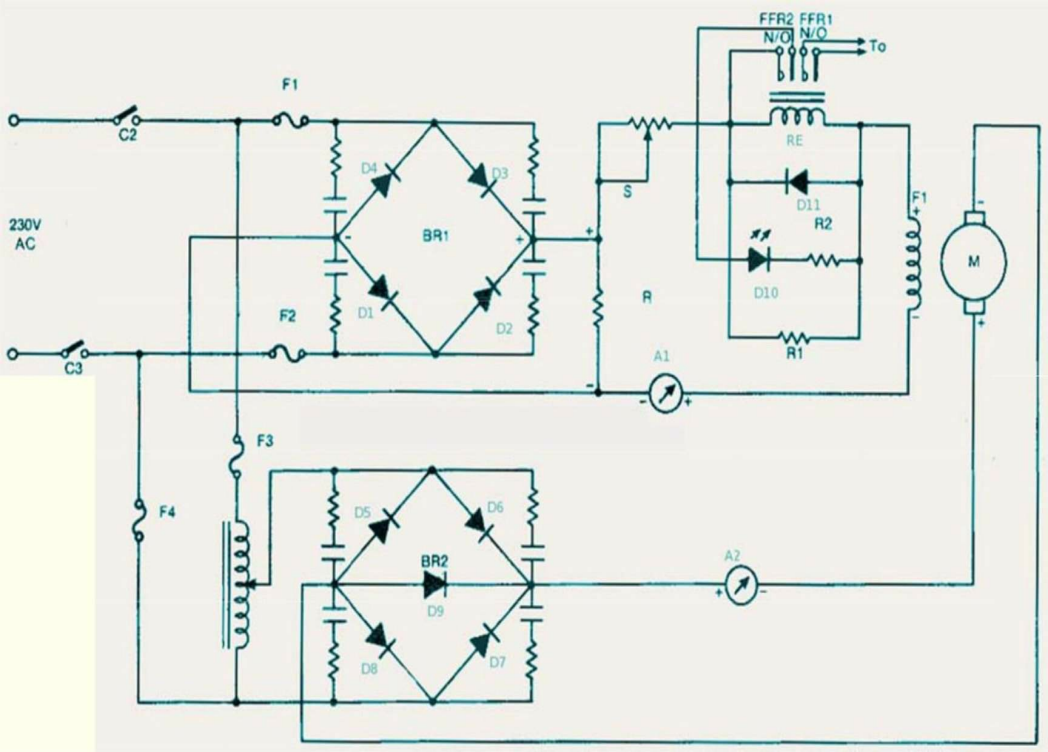
177. Motor Protection



A DC motor is widely utilized for industrial applications where a precise speed control and a constant torque are wanted. It is inversely relative to its field current. If there should arise an occurrence of field current failure, the motor speed will ascend to perilously abnormal state. A field failure protection is in this manner important to cut off the armature supply in the event of field current failure.

CIRCUIT DESCRIPTION

The simple circuit of the field failure protection utilizes an ordinary 6V electromagnetic relay of the open type with I0 amps evaluated strong contacts. This relay can be utilized on a manual autotransformer-controlled DC drive and motorized or thyristor-controlled drives. This motor has a shunt field current of 1.13 amps at 220V DC. A 5-ohm (25~watt) wire-wound resistor (R1) associated in arrangement with the motor field delivers a 5.6-volt drop crosswise over resistor (R1) as long as the field current exists, in this way stimulating the 6V DC relay linked over the resistor as appeared in the diagram below On the off chance that the motor field current fails due to any blame, the voltage drop crosswise over resistor (R1) will be zero which denergizes the relay (FFR) and cuts off the armature supply.



The circuit diagram of a manual autotransformer-controlled DC drive of a 230V, 5HP DC motor with an independently excited shunt field of 230 volts (l. l3 amps) and the FFR (field failure relay) circuit are appeared in circuits diagram respectively. At the point when the begin push button S2 is squeezed, the contactor C is empowered through S2 (N/O contact), limit switch S3 and stop push button S1 contact). The limit switch S3 is really a piece of the autotransformer, and it is mounted to the point that its contacts stay shut just when the autotransformer setting is at zero position. At all different settings of the autotransformer, the limits witch contacts stay open. This is a safety gadget presented, with the goal that the motor can be begun just from the base position of the autotransformer setting, along these lines beginning at decreased voltage and current. On the off chance that the motor is begun on a high armature voltage, the beginning current will be high, particularly if began on load, as is normally the case.

PART LISTS

RESISTOR

R1 Pick-up Resistor 5 Ohm, 25 W, R2 300 Ohm, All R 20K, 25W, Shunt Regulator, FUSE F1, F2, F3, F4 Fuse

DIODE

All 1N4007 LED (Light Emitting Diode)

CAPACITOR

C2, C3 N /O Contact or All 200µF OTHER SM=DC Motor; F1=Shunt Filed; RE=Field Failure Relay; A1=Field Ammeter; A2=Armature

For more Information

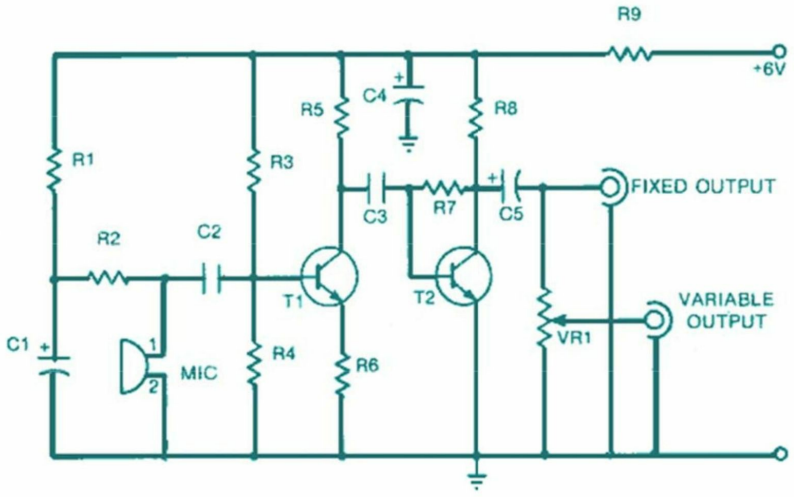
http://electronicsproject.org/motor-protection/

178. Microphone Amplifier

On the off chance that you are searching for the sensitive sound pick-up circuit then here is exactly what you are searching for. The circuit given in this site can be utilized as an alternate device. It can be utilized as a basic microphone a s well similarly as with more exotic gadget a s a sound worked alarm. This circuit is similarly powerful for a bugging gadget.

Circuit Diagram

From this circuit diagram you can see that microphone is employs as the transducer. The yield of the condenser microphone is quite low it needs to interface with a FET amplifier. This amplifier circuit is power by the R1, R2 resistor network. The yield of condenser microphone is nourished to a two-stage amplifier. Transistor T1 (BC149C) use current arrangement input the main stage. The second stage including transistor T2 is associated in the voltage shunt criticism setup. These two stages give adequate gain to pick up even the scarcest whisper. The amplifier circuit in the site requires 4.2-volt supply which can be acquired with a



resistor R9 [1k].

The value of this resistor might be modified to suit a supply voltage other than 6 volts. Yield of the microphone amplifier can be made variable by associating a 10k variable resistor as demonstrated I n the circuit. Circuit's gain can be expanded by reducing the value of R6 to 47 ohms or 22 ohms. depending on the information affectability of the primary amplifier framework. Increment in gain was likewise seen by utilizing 3V supply and eliminating R9 through and through. The microphone ought to be housed in a little round fenced in area.

PART LIST

RESISTORS

R1=1.2 KΩ; R2=2.7 KΩ; R3=33 KΩ; R4=6.8 KΩ; R5= 3.3 KΩ; R6= 100; R7=5 60 KΩ; R8=4.7, KΩ; R9= 10 KΩ; VR=11 KΩ

Transistors

T1=BC149C; T2= BC147B

Capacitors

C1=47µ, 10V; C2, C3=0.1µ; C4 =220µ, 10V; C5=10µ

Miscellaneous BATT 6 VOLT Battery

MIC Condenser Microphone

OTHER PCB, single stand wires, hardware etc.…

179. Multi Switch Controlled Relay

Presently a day, controlling of devices is basic with the help of electronics circuit and every one of us need to control machine in multi-step. Here is a control circuit for relay which could extremely useful to control machine with multi switch.

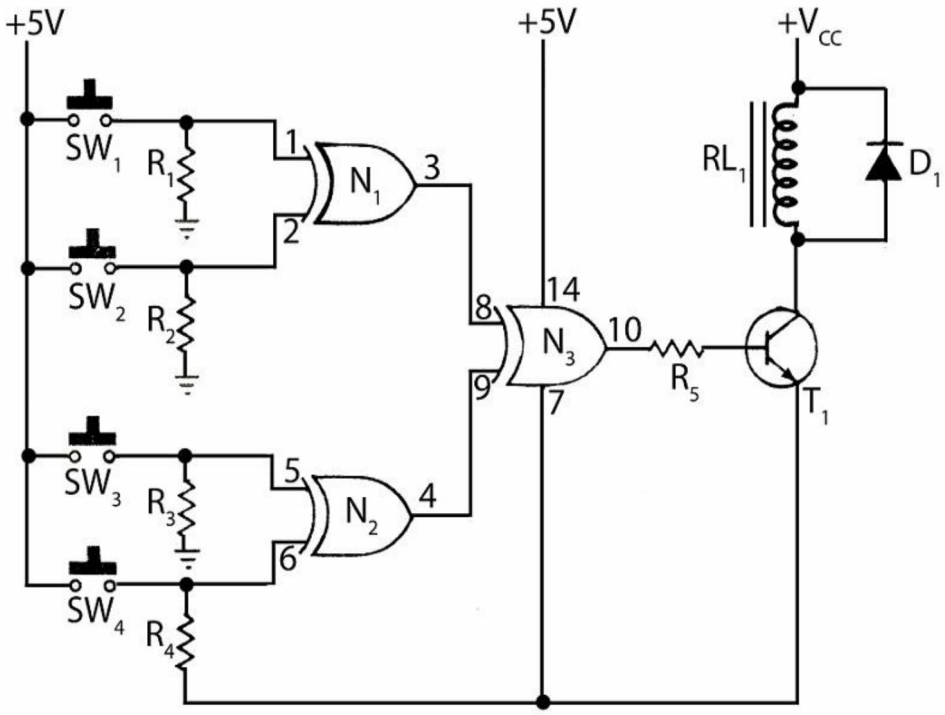


Figure 1: Circuit diagram of multi switch controlled relay

Circuit Description

This whole circuit of multi-switch-controlled relay is fabricated around four 2-input EX-OR gates IC CD4077. The logic of multi switch controlled relay is very basic and can be comprehend by everybody. The truth table for EX-OR gates for various input is demonstrated as follows. The estimation of VCC can be shifted from 9V to 15V.

Truth Table

Exclusive-OR gate

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	0

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 – R4 = 4.7 KΩ; R5 = 15 KΩ

Semiconductors

IC1 = CD4077; T1 = BC547B; D1 = 1N4148

Miscellaneous

SW1 – SW4 = Push to on/off switch; RL1 = 6V 100 Ω relay

Read more http://electronicsproject.org/multi-switch-controlled-relay/

180. Walky-talky without using inductor or coil

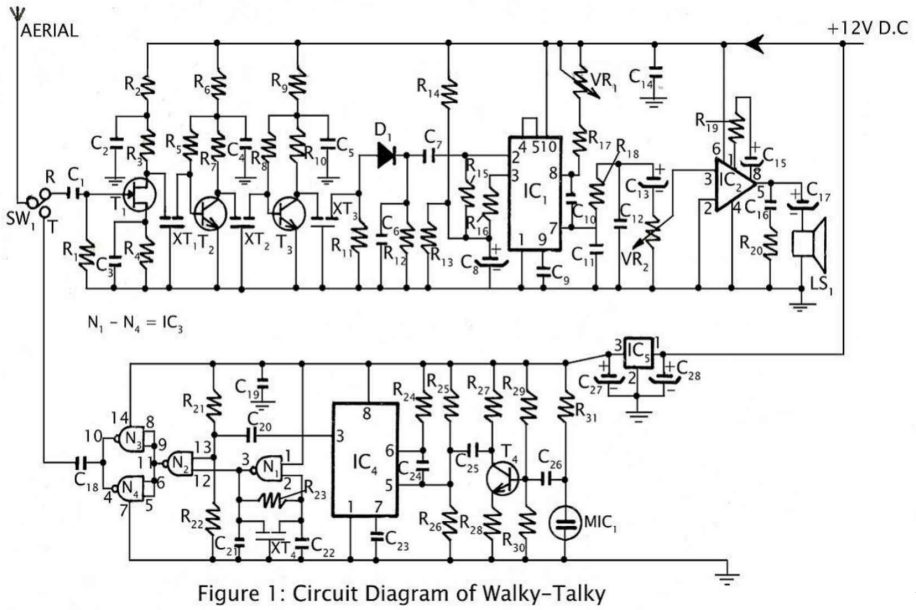


Figure 1: Circuit Diagram of Walky-Talky

Walky-talky in this book is world first verified walky-talky project without using coil. Walky talky is exceptionally interesting and achieve grabbing project for electronics specialist. Communication is managed without any physical connection and mobile network up range of 500 meter. All communication devices use coil which is burden for electronics specialist. In this way, we outline this circuit without using any coil.

Circuit Descriptions

The entire circuit of walky-talky is divided into two main section transmitter and receiver section.

Transmitter section: -

Transmitter section use IC NE566 (IC4) as VCO (Voltage Control Oscillator) for generating frequency around 30 KHz. Resistor R24 with Capacitor C24 utilized as frequency components for frequencies assurance. Voice is get by mike (MIC1) and transformed it into proportional electrical signal. Signal from amplifier is intensified by transistor T4 and given to stick no 5 0f IC4. NAND door N1 with crystal oscillator XT4 settles the yield from stick 3 of IC3. Lastly, signal from NAND N2 through N3 and N4 given to antenna for transmission.

Receiver section: -

Transmitted signal from another walky-talky is gotten from same antenna which is utilized for transmission. Field effect transistor T1 boosts the got signal and make more powerful and send to amplifier section produced using transistor T2 and T3 with crystal oscillator XT1 through XT3. Detector section is produced using diode D1, Capacitor C6 and resistor R12. 30 KHz frequency is gotten from detector section. Frequency of Phase Locked Loop IC NE565 (IC1) is balanced by capacitor C9, resistor R17 and variable resistor VR1. Amplifier IC LM386 (IC2) is utilized to open up the signal and given to speaker.

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 47 KΩ; R2 = 100 Ω; R3, R4, R11, R27 = 2.2 KΩ; R5 = 330 KΩ; R6, R10 = 560 Ω, R7 = 1 KΩ; R8 = 220 KΩ; R9 = 100 Ω; R12, R15, R16 = 4.7 KΩ; R13, R31 = 10 KΩ, R14 = 15 KΩ; R17 = 1.8 KΩ; R18 = 1.2 KΩ; R19 = 1 KΩ; R20 = 4.7 Ω; R21, R22 = 100 KΩ, R23 = 120 KΩ; R24 = 5.6 KΩ; R25 = 22 KΩ; R26 = 150 KΩ; R28 = 330 Ω; R29 = 220 KΩ, R30 = 47 KΩ; VR1 = 4.7 KΩ; VR2 = 22 KΩ

Capacitors

C1, C6, C10, C24 = 1 KpF; C2, C4, C5 = 47 KpF; C3 = 20 KpF; C7, C9, C23= 2.2 KpF C8 = 4.7 µF/16V; C11 = 22 KpF; C12, C16 = 0.1 µF; C13 = 2.2 µF/16 V; C14, C19, C25, C26 =0.22 µF; C15 = 10 µF/16V; C17 = 220 µF/16V; C18, C20 = 10 KpF; C21, C22 = 68 pF C27 = 1000 µF/16V; C28 = 10 µF/16V

Semiconductors

IC1 = NE565 (Phase Lock IC); IC2 = LM386 (Amplifier IC); IC3 = CD4011 (Quad 2-input NAND Gate IC); IC4 = LM566 (Voltage Controlled Oscillator); IC5 = LM7812 (Voltage Regulator); T1 = BFW10; T2, T3 = BF194; T4 = BC148; D1 = 1N4148

Miscellaneous

XT1 – XT4 = 10.7 MHz crystal; SW1 = Single pole double throw switch; LS1 = 8Ω speaker MIC1 = Condenser microphone; Areal

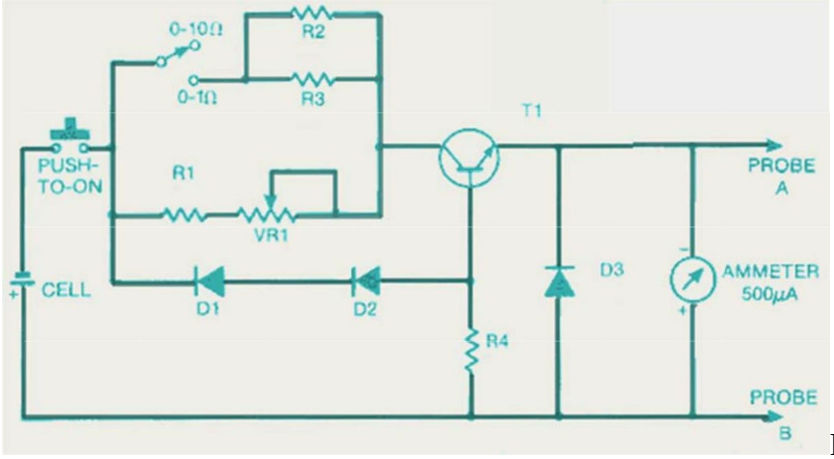
Read more http://electronicsproject.org/walky-talky-without-using-inductor-or-coil/

181. Ohm Meter

The circuit diagram of the ohm meter in this site is extremely useful for estimating the low resistance range from 0 to 1 and 0 to 1 0. You can modify the range according to your savvy. The circuit for a low Ohm meter depicted here is straightforward and has the following advantages over different meters: don't need to see it again and again simply set it once and overlook it for eternity). Scale perusing capacity of this circuit is from zero to a settled esteem instead of infinity. This meter is low power consuming as it utilizes a 1.5-volt pen light cell, two scales (0-1 ohms and 0-10 ohms) over a dial and a push-to-on switch huge power utilization by the circuit.

PART LIST

Resistors



R1=27K; R2=3.3K; R3=3.3K; R4=330K; V R1=100 OHM DIODES D1=1N4001; D2=1N 4001

Circuit Description

The circuit diagram that you can see below is the ohm meter which can gauge the resistance for 0 to 10 ohms. You can see the selector switch over yonder the circuit diagram which can choose the estimating range shape 0 to 1 ohm and 0 to 10 ohms. Transistor T1 fills in as a constant current generator which passes a known current through the resistors which resistance is to be estimated. On the off chance that the maximum drop of the voltage over the emitter of the transistor T1 will be in excess of 100 mV and the ground is shown on the meter whose internal resistance is considerably higher than the testing resistance that is 10 ohms. As a result of which this ohm meter

cannot load the circuit.

There is a diode D3 over the micro ammeter which is utilized to ensure the ohmmeter shape the overload amid the absence of the testing resistor which resistance is to be estimated.

Resistors R1, VR1, R2, R3, D1, D2 and R4 are biased by the transistor T1. Diodes D1 and D2 are used for holding the predisposition level constant inspite of the decaying battery.

The scale of the meter in this project ought to have 0-500 μA. The shunt resistance in this project can be any broad propose meter. Transistor T1 is the silicon npn with a high pick up factor.

Presently the meter ought to be alter by shorting probes An and B. On the off chance that the meter is modify before the it demonstrates a zero resistance. You just need to alter in 0 to 10-ohm scale first and different adjustments will be follow naturally. This can be effectively worked inside a couple of minutes. This is the extremely valuable project for the electronics novices.

Read more http://electronicsproject.org/ohm-meter/

182. Electronics counter

Simple counting should be possible by anyone however counting in interim up to huge number is repetitive and the shot of overlook is maximum. As, we have effectively published Counter Circuit | Advanced Counter. Presently, here electronics counter is second venture by dreamlover innovation in the series of counting based task. Both the counting circuit published in this website checks up to 10,000 with the assistance of four 7-segment displays. The difference is past circuit use CMOS ICs where the electronics counter utilizes TTL ICs.

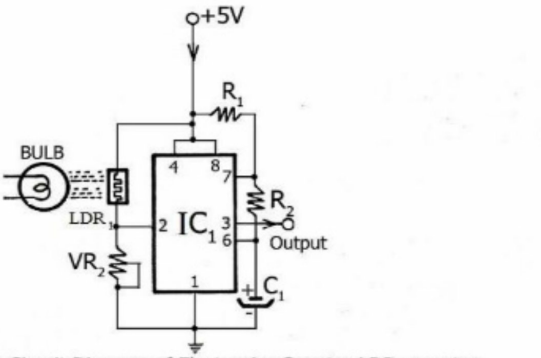


Figure 1: Circuit Diagram of Electronics Counter LDR operator

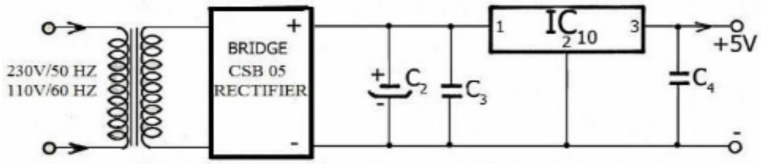


Figure 2: Circuit Diagram of Power Supply for Electronics Counter

Circuit Description

The whole circuit of electronics counter is separated into three fundamental area: - input, show and driver or decoder segment. The input circuit comprises of LDR following by negative square wave generator circuit build around Timer IC (NE555). A bulb is utilized here as light source concentrated on LDR. The property of LDR is that at whatever point the light cantered around base of LDR is discouraged, it gives trigger and square wave is produced and given as input signal to counter circuit. So, the items to be included are organized a row to move one by one in the middle of the light source and the LDR.

IC2 shows any number between 0-9 as indicated by input square wave given to pin no 14. After each negative pulse a conveying pulse is created by decoder IC and given to another (i.e. from IC2 to IC3, IC3 to IC4, IC4 to IC5) IC5 and IC6 is BCD to 7-segment hook decoder driver. The reset switch SW1 is utilized to reset the electronics counter to 0000 states.

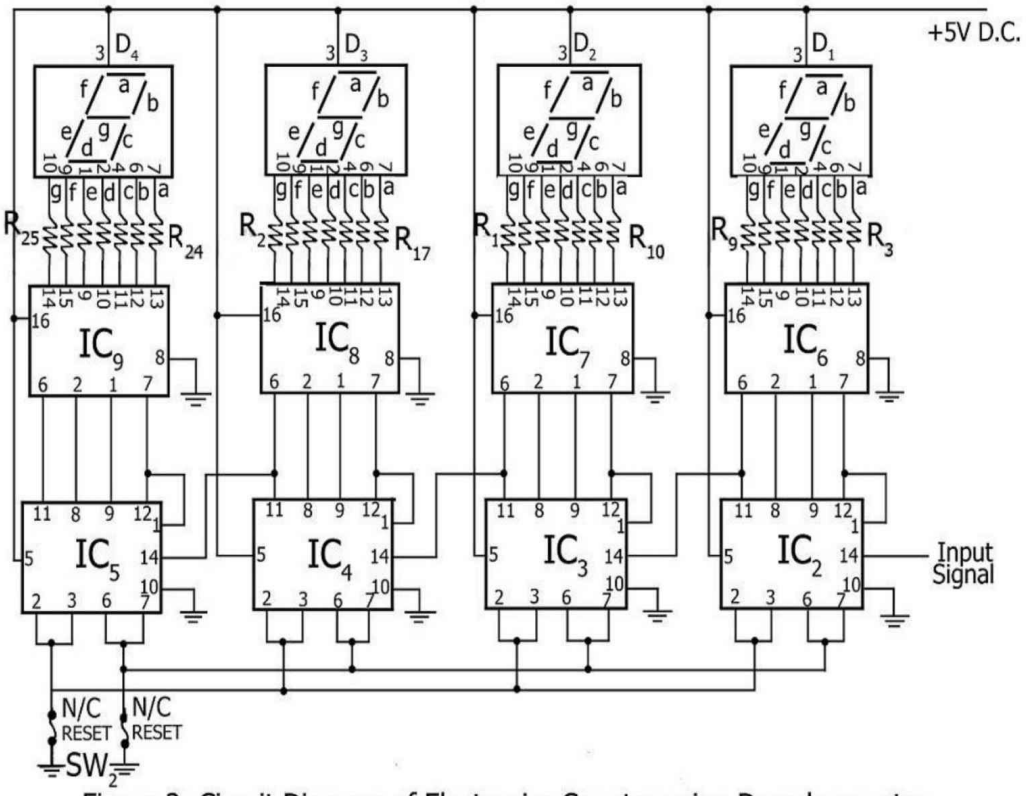


Figure 2: Circuit Diagram of Electronics Counter using Decade counter

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 1 KΩ; R2 = 100 KΩ; R3 – R30 = 180 Ω; VR1 = 100 KΩ preset

Capacitors

C1 = 4.7 µF; C2 = 1000 µF/10V; C3, C4 = 0.1 µF

Semiconductors

IC1 = NE555 (Timer IC); IC¬2 – IC5 = 7490 (Decade and Binary counter)

IC6–IC9 = 7447 (BCD to 7-segment decoder); IC10 = µA 7805 (Voltage Regulator) D1 – D¬4 = Display FND 507

Miscellaneous

Mic1 = Microphone; B1 = Bulb; LDR

Read more http://electronicsproject.org/electronics-counter/

183. Clap operated Remote Control for Fans

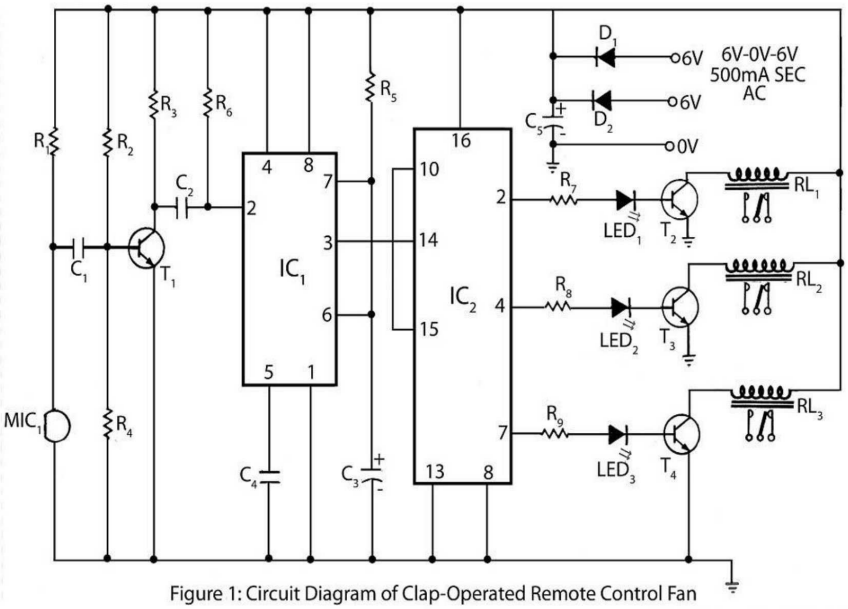


Figure 1: Circuit Diagram of Clap-Operated Remote Control Fan

This is a circuit of clap-operated remote-control fans is utilized to control exchanging properties as well as control speed of fan. The fundamental preferred standpoint of clap operated remote control for fan is, it can control up to ten-step velocities of fan where ordinarily a fan has three to five step speeds.

Circuit description

This entire circuit clap operated remote control for fan is separated into four noteworthy section i.e. sound-operated trigger pulse generator, load operator, clock pulse generator, and clock pulse counter.

Sound-operated trigger pulse:

The heart of this section is transistor T1 BC148, arranged as class-C amplifier mode. The MIC1 is utilized to change voice signal into its relating electrical signal and is given to base of transistor T1 keeping in mind the end goal to amplify and increment its intensity.

Clock pulse generator: -

This section is build around timer IC NE555 and designed as monostable multivibrator. The trigger pulse created by transistor T1 is given to pin 2 of IC1 and day and age (T) for yield high is ascertained by formula. T = 1.1RC

Clock Pulse counter: -

This section is built around decade counter CD4017BC which checks the clock pulse produced by timer IC (IC1). The yield from IC1 is given to pin 14 of IC2. IC2 has ten outputs, viz, o, 1, 2, 3, 4… .9. at that point we utilize just three outputs i.e. yield 1, 2 and 3 from pin 2, 4, and 7 separately. Yield 4 from pin 10 is straightforwardly connected to reset pin 15.

Load operator: -

This section is built around three transistors as relay driver to operate three separate relays. Yield from each pin of IC2 is given to base of every transistor through 100ω and Drove as appeared in circuit outline. Yield is taken from collector of transistor and is connected to relay. The three LEDs used to show gear or speed i.e. LED1, LED2 and LED3 shows gear 1, gear 2 and gear 3 separately.

NOTE: - This circuit used to operate in first speed correspondingly, second clap for second speed, third clap for third speed and fourth clap to turn off the fan.

PARTS LIST

Resistors (all ¼-watt, ± 5% Carbon)

R1 = 10 KΩ; R2 = 1.2 MΩ; R3 = 2.2 KΩ; R4 = 150 KΩ; R5 = 220 KΩ; R6 = 10 KΩ; R7, R8,R9 = 100 Ω

Capacitors

C1, C2 = 0.1 µF/16V; C3 = 4.7 µF/16V; C4 = 0.01 µF (ceramic disc); C5 = 1000 µF/12V

Semiconductors

IC1 = NE555 (Timer IC); IC2 = CD4017BE (decade counter); T1 = BC148; T2, T3, T4 = BEL187; D1, D2 = 1N4001 silicon diode

Miscellaneous

MIC1 = Condenser microphone 34LOD; LED1 = Green; LED2 = yellow; LED3 = RED

6V-0V-6V, 500mA secondary transformer

Read more http://electronicsproject.org/clap-operated-remote-control-for-fans/

184. Mobile cellphone charger

While Traveling charging of mobile battery is great issue since power supply source isn't by and large available. This is a basic project utilizing extremely basic electronics components for charging mobile battery utilizing AA cells.

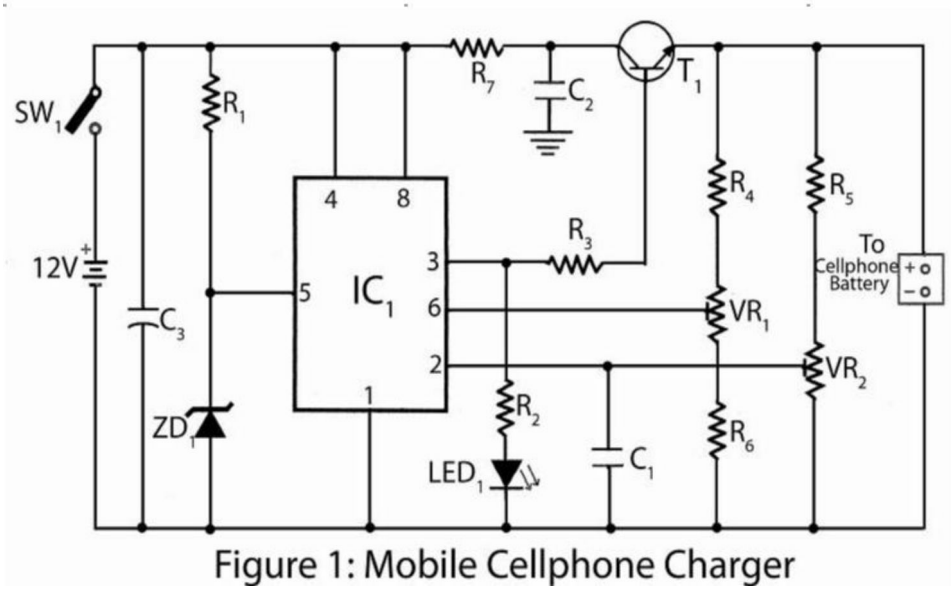


Figure 1: Mobile Cellphone Charger

Circuit descriptions

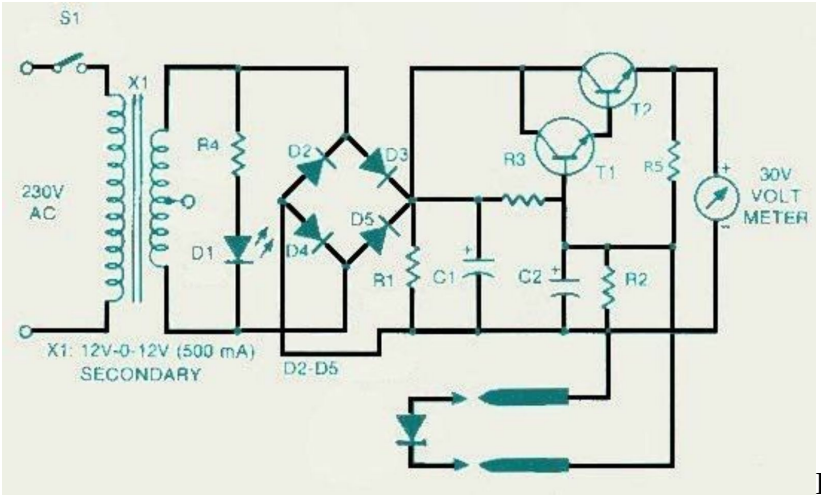
The important portion of the circuit mobile cellphone charger is timer IC NE555, utilizes to charge and monitor the voltage level. IC1 gain power voltage to pin 5 by zener diode ZD1 Threshold pin 6 and trigger pin 2 is provided with a voltage set by VR1 and VR2 respectively. The trigger pin 2 of IC1 is beneath 1/3VCC when discharge battery is associated with the circuit subsequently flip-flop of IC1 is changed on to take yield pin 3 high. The procedure is turned around when battery is completely charged of charged battery is associated. Here transistor T1 used to enhance the charging current from yield pin 3 of IC1. Alter variable resistor VR1 and VR2 according to require.

LED status for different charging conditions

LED status for different charging conditions

Load across the output	Output frequency (at pin 3)	LED_1
No battery connected	765 kHz	On
Charging battery	4.5 Hz	Blink
Fully charged battery	0	Off

185. Test a Diode | Zener Diode



Here's you can get the diode tester circuit for common purpose utilizing diode. You can also test a zener diode by the utilization of this circuit as well. The circuit diagram of the diode tester here is made of basic Transistors and resistors. Any sort of IC isn't utilized as a part of this circuit so it will be easy for the electronics students for understanding the working principal of diode tester in this circuit.

186. Sound Pressure Meter

Here's a basic circuit of "Sound Pressure Meter" to check the pressure of sound. An ammeter of couple of micro-amperes is utilized as a part of its output so as to demonstrate the deflection comparing to intensity of sound.

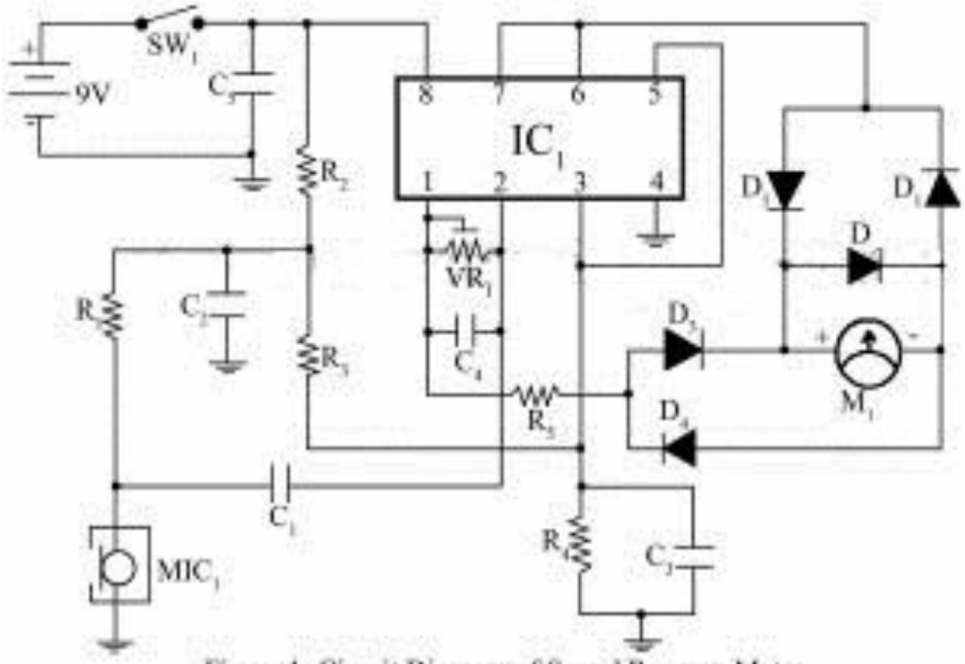


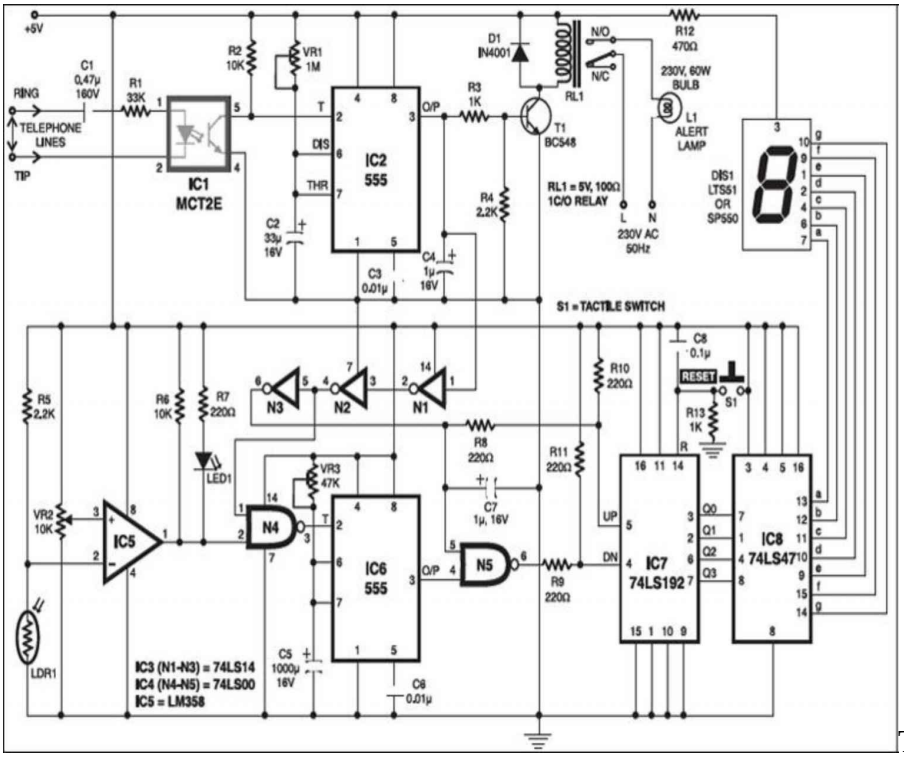
Figure 1: Circuit Diagram of Sound Pressure Meter

Circuit description

The circuit sound pressure meter uses a microphone, an operational amplifier, and a moving curl ammeter. Microphone pick-up the sound to be measured and change it into electrical signal comparing to intensity of sound. The output of microphone is given to stick 2 of IC1 (TLC272) through bipolar capacitor C1, where IC1 is a 2-operational amplifier. Potentiometer VR1 is utilized to choose the amplification power associated with stick 1 and 2. The reference voltage is given to non-inverting pin (stick 3) of IC1 through resistor R3 and R4. As TLC272 (IC1) is a combination of two individual operational amplifier, so for encourage amplification of half voltage of voltage at non-inverting input (stick 3) second operational amplifier is utilized. A moving curl ammeter

of 30 μA range having internal resistance of 6.5 KΩ is utilized as a part of its output.

187. WATCH MAN WATCHER



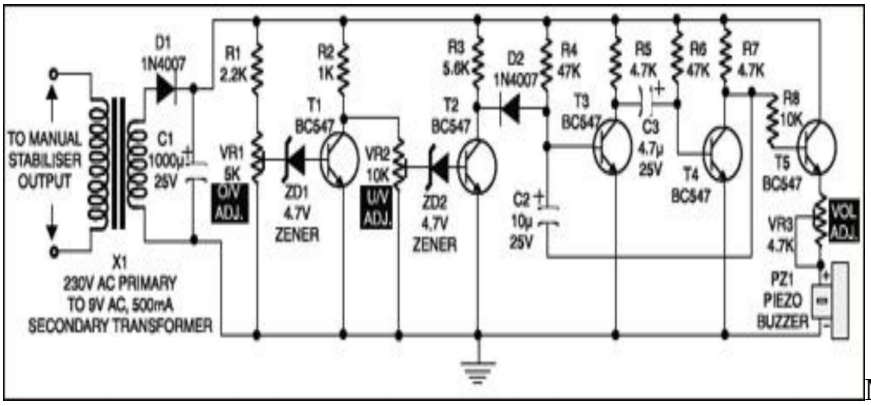
This circuit can be utilized as a part of workplaces, stores, stockrooms, and so forth amid night to check whether the watchman of your foundation is on duty. For operation, it utilizes a current telephone (e.g. in office or store) nearest to the watchman's post.

The watchman is given a sound alarm signal by simply ringing the workplace/store telephone once (minimum) from your residence or some other place, ideally utilizing your mobile phone. The ring is recognized by the given circuit and the watchman is likewise given a visual alarm signal by a glowing lamp. The lamp stays 'on' for a length of almost 60 seconds not long after the ringtone. The watchman is given a guideline to enroll his essence by just pointing his light beam towards a wall-mounted LDR sensor unit (without lifting the handset off-support of the ringing telephone). This is to be done inside the time period amid which the ready lamp shines. In the event that he neglects to do it inside the permissible time, the circuit registers his absence by augmenting a tally. In the event that he does, the tally stays unaltered.

Up to nine separate alarm rings are considered here. The check displayed is the times the watchman failed to enroll his quality. The mobile phone records the called number and call time, and it can be utilized with the displayed tally to get the planning points of

interest.

188. UNDER-/OVER-VOLTAGE BEEP FOR MANUAL STABILIZER



Manual stabilizers are as yet mainstream on account of their basic development, cost efficient, and high reliability because of the nonappearance of any relays while covering an extensive variety of mains AC voltages contrasted with that took care of via automatic voltage stabilizers. These are utilized for the most part in homes and in business places for loads, for example, lighting, TV, fridge and in specific areas where the mains AC voltage fluctuates between low (amid peak hours) and strangely high (amid non-peak hours).

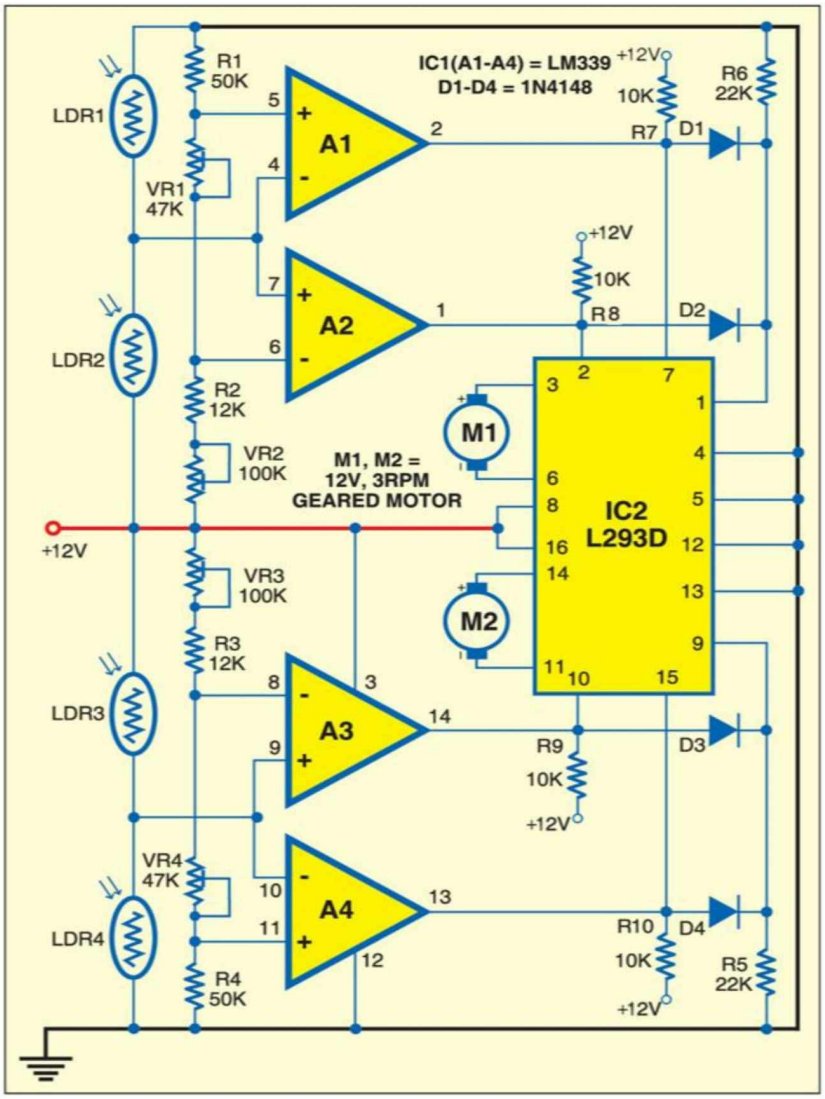
Some manual stabilizers accessible in the market incorporate the high-voltage auto-cut-off facility to turn off the heap when the output voltage of manual stabilizer surpasses a specific preset high voltage limit. The output voltage may turn out to be high because of the ascent in AC mains voltage or because of uncalled for determination by the rotary switch on manual stabilizer.

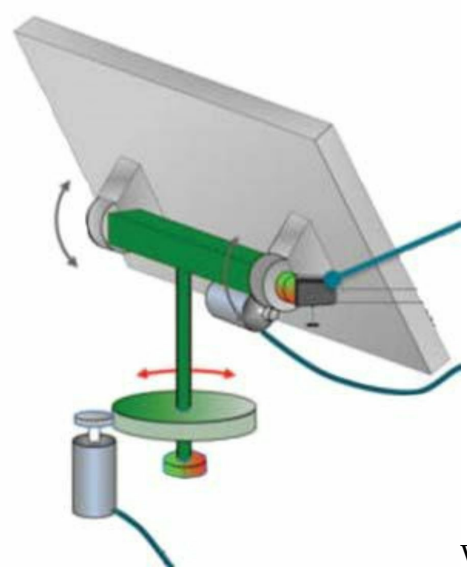
One of the real weaknesses of utilizing a manual stabilizer in areas with an extensive variety of voltage vacillations is that one needs to keep a watch on the manual stabilizer's output voltage that is displayed on a voltmeter and keep changing a similar utilizing its rotary switch. Or disaster will be imminent, the output voltage may reach the preset auto-cut-off limit to switch off the heap without the client's knowledge. To turn on the heap once more, one needs to readjust the stabilizer voltage utilizing its rotary switch. Such activity is extremely irritating and awkward for the client.

189. Solar Tracking System

By and large, solar panels are stationary and don't follow the directions and movement of the sun. Here is a solar tracker system that tracks the sun's direction over the sky and tries to keep up the solar panel perpendicular to the sun's rays, guaranteeing that the maximum measure of sunlight is episode on the panel throughout the day. The solar tracker starts following the sun right from day break, throughout the day till night, and starts once more from the first light following day.

Fig. 1 shows the circuit of the solar tracking system. The solar tracker involves comparator IC LM339, H-bridge motor driver IC L293D (IC2) and a couple of discrete components. Light dependent resistors LDR1 through LDR4 are utilized as sensors to identify the panel's position with respect to the sun. These give the signal to motor driver IC2 to move the solar panel in the sun's direction. LDR1 and LDR2 are settled at the edges of the solar panel along the X axis, and associated with comparators A1 and A2, separately. Presets VR1 and VR2 are set to get low comparator yield at pins 2 and 1 of comparators A1 and A2, individually, to stop motor M1 when the sun's rays are perpendicular to the solar


IC1(A1-A4) = LM339
D1-D4 = 1N4148
LDR1
LDR2
LDR3
LDR4
R1 50K
VR1 47K
R2 12K
VR2 100K
VR3 100K
R3 12K
VR4 47K
R4 50K
A1
A2
A3
A4
+12V
10K
R7
D1
R6 22K
R8
D2
M1, M2 = 12V, 3RPM GEARED MOTOR
M1
M2
IC2 L293D
R9
D3
R10
D4
R5 22K
panel.

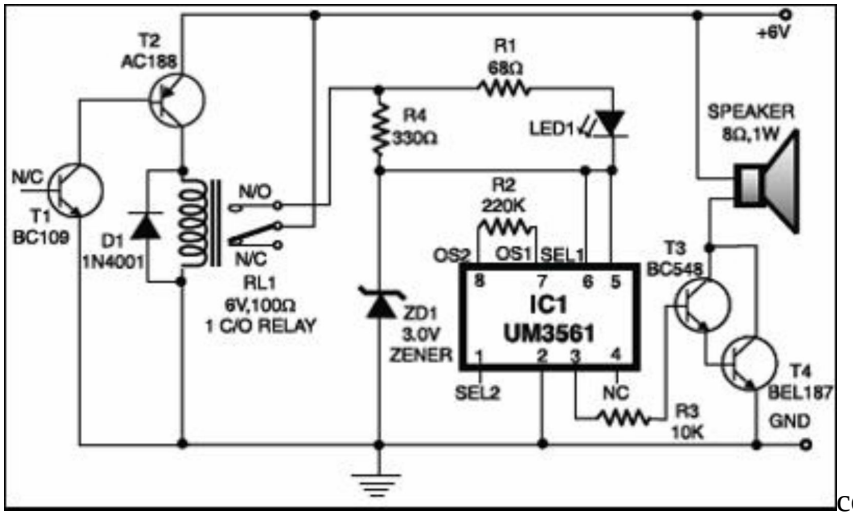


When LDR2 receives more light than LDR1, it offers lower obstruction than LDR1, giving a high contribution to comparators A1 and A2 at pins 4 and 7, individually. Thus, yield stick 1 of comparator A2 goes high to pivot motor M1 in one direction (say, against clockwise) and turn the solar panel.

When LDR1 receives more light than LDR2, it offers lower opposition than LDR2, giving a low contribution to comparators A1 and A2 at pins 4 and 7, individually. As the voltage at stick 5 of comparator A1 is presently higher than the voltage at its stick 4, its yield stick 2 goes high. Thus, motor M1 rotates the other way (say, clock-wise) and the solar panel turns. Similarly, LDR3 and LDR4 track the sun along Y axis. Fig. 2 shows the proposed gathering for the solar tracking system.

190. AUTOMATIC HEAT DETECTOR

This circuit utilizes a correlative pair including npn metallic transistor T1 (BC109) and pnp germanium transistor T2 (AC188) to detect heat (because of outbreak of spark, and so on) in the vicinity and invigorate an alarm. The collector of transistor T1 is connected to the base of transistor T2, while the collector of transistor T2 is



connected to relay RL1.

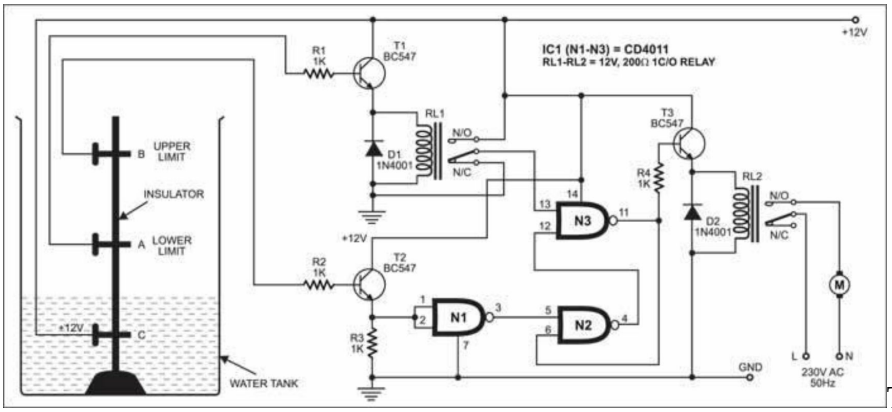
The second portion of the circuit includes mainstream IC UM3561 (an alarm and machine-gun sound generator IC), which can deliver the sound of a discharge unit alarm. Pin numbers 5 and 6 of the IC are connected to the +3V supply when the relay is in stimulated state, though pin 2 is grounded. A resistor (R2) connected crosswise over pins 7 and 8 is utilized to fix the recurrence of the inbuilt oscillator. The output is available from pin 3.

Two transistors BC147 (T3) and BEL187 (T4) are connected in Darlington design to amplify the sound from UM3561. Resistor R4 in series with a 3V zener is utilized to give the 3V supply to UM3561 when the relay is in empowered state. LED1, connected in series with 68-ohm resistor R1 crosswise over resistor R4, sparkles when the alarm is on.

To test the working of the circuit, convey a consuming match-stick near transistor T1 (BC109), which causes the opposition of its emitter-collector junction to go low because of an ascent in temperature and it begins leading. All the while, transistor T2 likewise leads since its base is connected to the collector of transistor T1. Subsequently, relay RL1 stimulates and switches on the alarm circuit to deliver loud sound of a fire unit alarm. Lab notes. We have added a table to empower readers to

acquire all conceivable sound effects by returning pins 1 and 2 as recommended in the table.

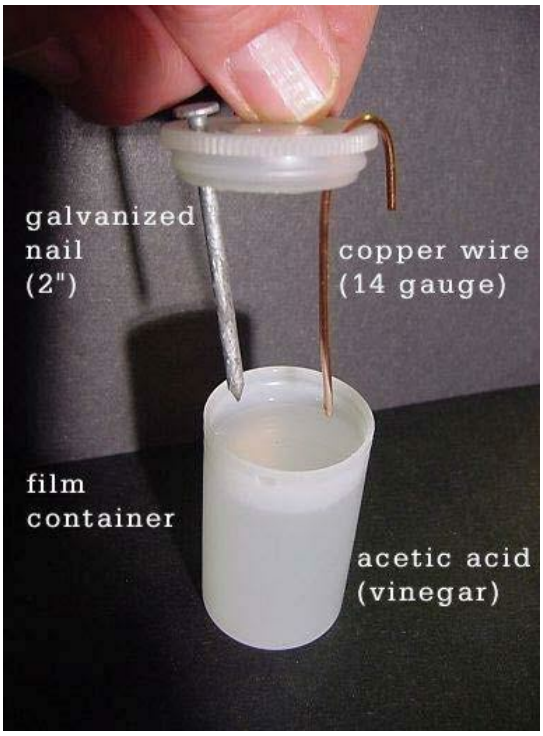
191. Automatic Water Pump Controller



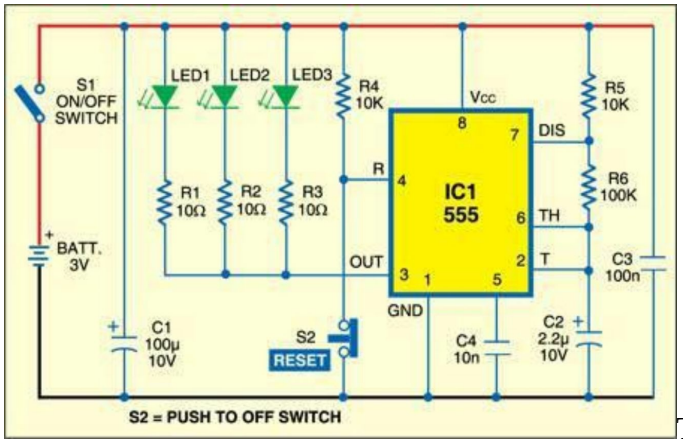
This circuit consequently controls the water pump motor. The motor gets naturally exchanged on when water in the overhead tank (OHT) falls underneath as far as possible. Additionally, it gets turned off when the tank is topped off. Worked around just a single NAND gate IC number CD4011, the circuit is straightforward, minimized and conservative. It works off a 12V DC power supply and devours next to no power.

192. Little Power-Hila Vinegar Battery to power a calculator

LCD calculators draw next to no current. This vinegar battery effortlessly runs these projects. Take the back off of a reasonable adding machine, expel the battery broaden the two battery wires out the sides at that point reassemble.



193. Night Vision Enhancer



This is a simple green LED penlight made around 555 timer IC (IC1) and power-driven from a 3V battery pack.

Another circuit

Load shedding is the normal issue in creating nation where understudy is more affected. By remembering this issue, the gathering of dream darling innovation post extremely basic, valuable and economical undertaking utilizing ultra-bright white LEDs which give adequate light to perusing reason which devour low power i.e. 3 watts of power. It works like emergency light i.e. at the point when AC mains disappointment, the battery backup circuit in a flash light up the LEDs yet when the power continues, the battery supply is naturally separated and this circuit again deals with AC mains.

Circuit Explanation of LED-based reading lamp

Power segment the circuit of LED-based perusing light utilize bridge rectifier associated with optional loop of 0-7.5V, 500mA step-down transformer X1. Throbbing DC from yield of rectifier is given to contribution of voltage regulator IC1 for unadulterated DC yield. All LEDs (LED1 to LED10) is associated in parallel across the yield of voltage regulator. Here resistors R1 to R10 are associated in arrangement with the LEDs individually to restrain the current. In this circuit 5 more LEDs can be utilized for light to build power in a similar way utilized. At the point when AC mains accessible hand-off RL1 invigorated and detach to battery and the other way around on truant of AC mains. For charging battery, a lead from rectifier is straightforwardly associated with +ive and - ive terminals of battery. Here diode D5 and D6 is utilized as switch current insurance diode that don't enable the battery current to stream towards the supply segment and diode D7 is for turnaround extremity assurance.

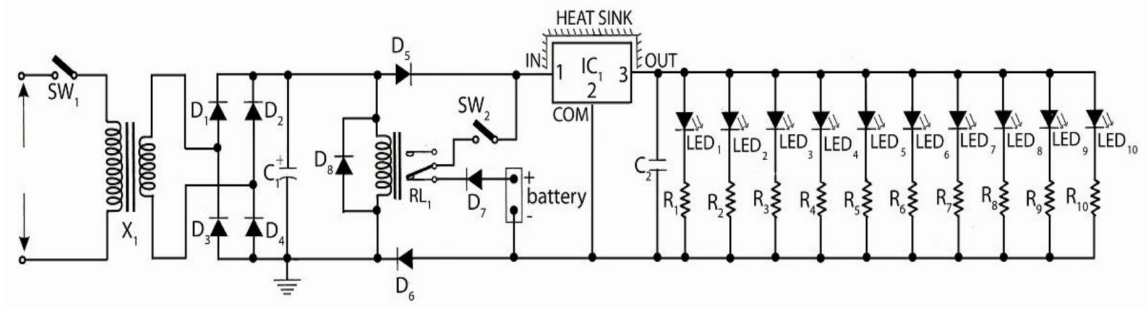
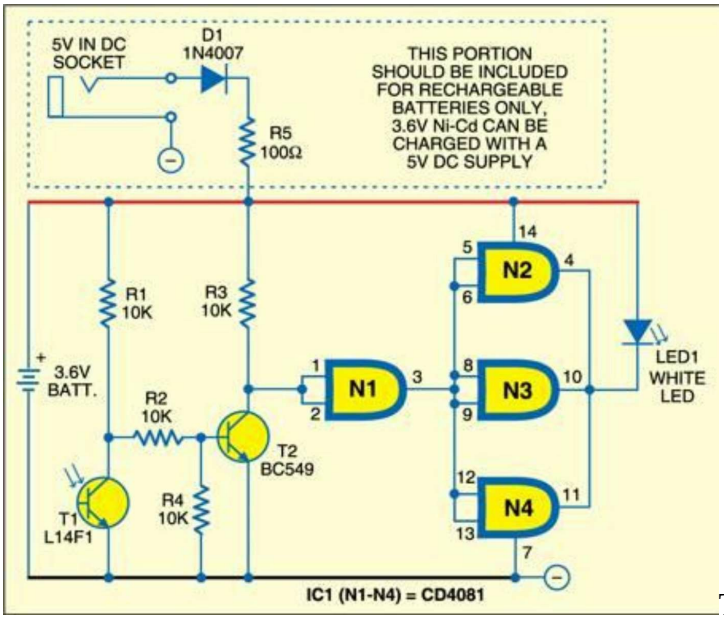


Figure 1: LED-based reading lamp

Components

- Required Resistors (all ¼-watt, ± 5% Carbon)
  R1- R10 = 56 Ω
- Required Capacitors
  C1 = 1000 µF/16V; C2 = 0.1 µF
- Required Semiconductors
  IC1 = 7805 Voltage regulator

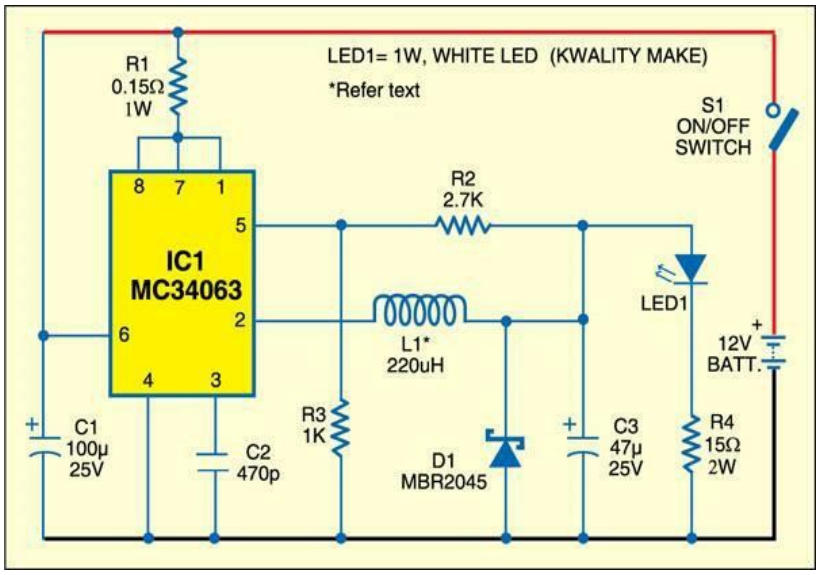
194. Emergency Photo Lamp



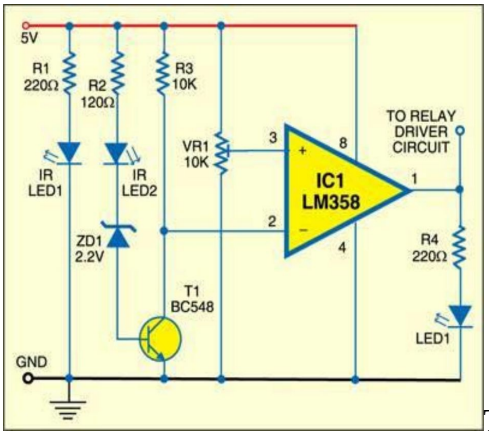
This emergency lamp can be powered moreover by a rechargeable battery (like 3.6V Ni-Cadmium) or a non-rechargeable battery (3.0V CR2032). The white LED (LED1) gleams certainly once the power comes up short and you are left in dull. The quiescent current of the circuit is low and the battery is for all intentions and purposes utilized just once the LED gleams

195. 1W LED For Automotive Applications

This easy circuit gives you a chance to run a 1W Light Emitting Diode from the battery of your Vehicle. IC MC34063 is utilized here as a buck converter. It is a solid switching regulator sub-framework planned for use as a DC-DC converter. The projects comprise of an inner temperature-repaid reference, a comparator, a controlled obligation cycle oscillator with a dynamic ebb and flow restrict circuit, a driver and a high-ebb and flow yield switch. These capacities are contained in an 8-stick double in-line bundle. Another real favourable position of the switching regulator is that it permits expanded application adaptability of the yield voltage.

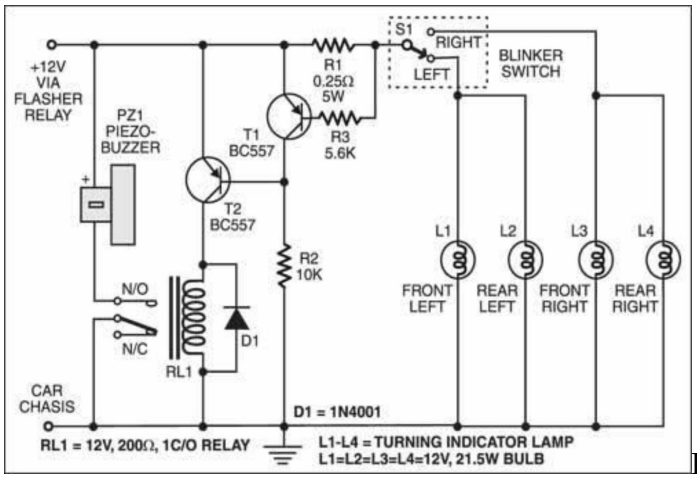


196. Play with Robotic Eye (IR Sensor)



There are different uses of IR sensors, for example, TV remote controllers, criminal alerts and protest counters. Here we have utilized IR sensors (infrared LEDs) to influence a question identification to circuit and furthermore a proximity sensor for way following robots. The fundamental thought is to transmit the infrared light through an IR LED, which is then reflected by any snag ahead and detected by the getting LED.

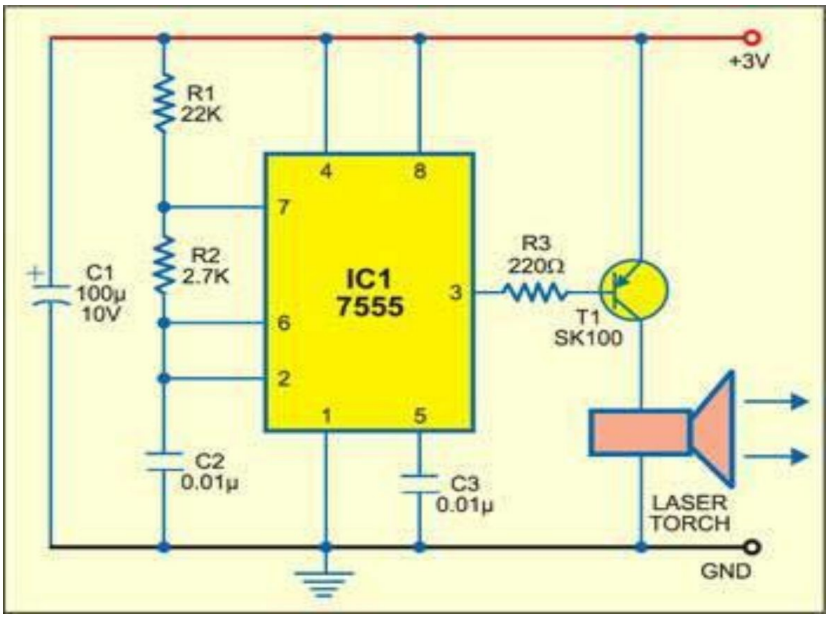
197. Faulty Car Indicator Alarm



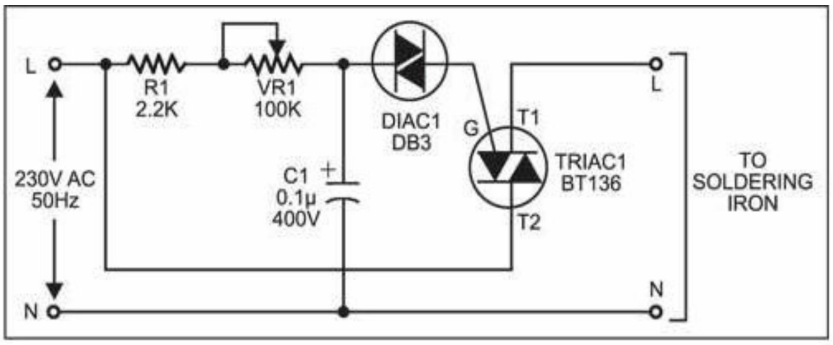
Before going ahead, either left or right, auto drivers need to switch on the auto turn indicator lights with the goal that the moving toward vehicle drivers can avoid potential risk as needs be. An accident is probably going to happen on the off chance that your auto turns indicator lights neglect to glow because of some reason or the other. Here is a circuit that sounds an alert if your turn indicator lights don't glow, helping you to protect against any accident.

198. Long-range Burglar Alarm Using Laser Torch

Laser burn based robber alarms typically work in haziness as it were. In any case, this long-extend photoelectric alarm can work dependably in daytime additionally to caution you against interlopers in your huge compounds, and so on. The alarm includes laser transmitter and receiver units, which are to be mounted on the contrary mainstays of the passage gate. At whatever point anybody enters to intrude on the transmitted laser bar falling on the receiver, the buzzer in the receiver circuit sounds an alarm.

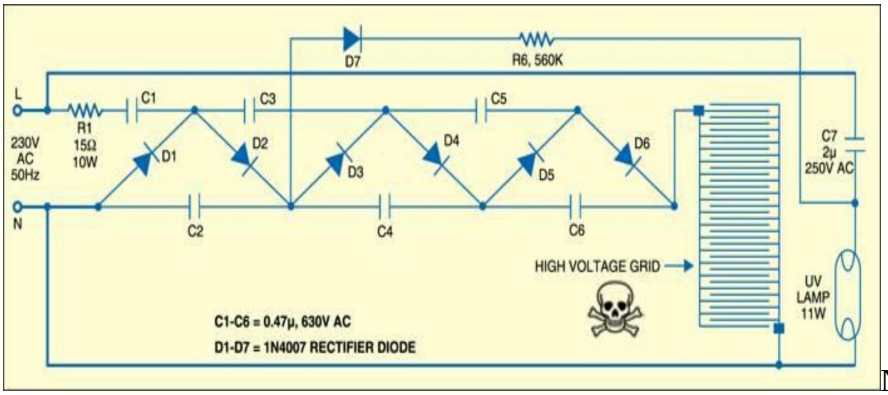


199. Soldering Iron Temperature Controller



This is an easy circuit to control the temperature of a soldering iron. It is particularly helpful if the soldering iron is to be kept on for since a long time ago you can control the heat dispersal from the iron. At the point when a soldering iron is exchanged on, the iron sets aside opportunity to achieve the patch's liquefying point. Basically, associate this circuit to the soldering iron as appeared in the figure and the iron achieves the weld's liquefying point rapidly.

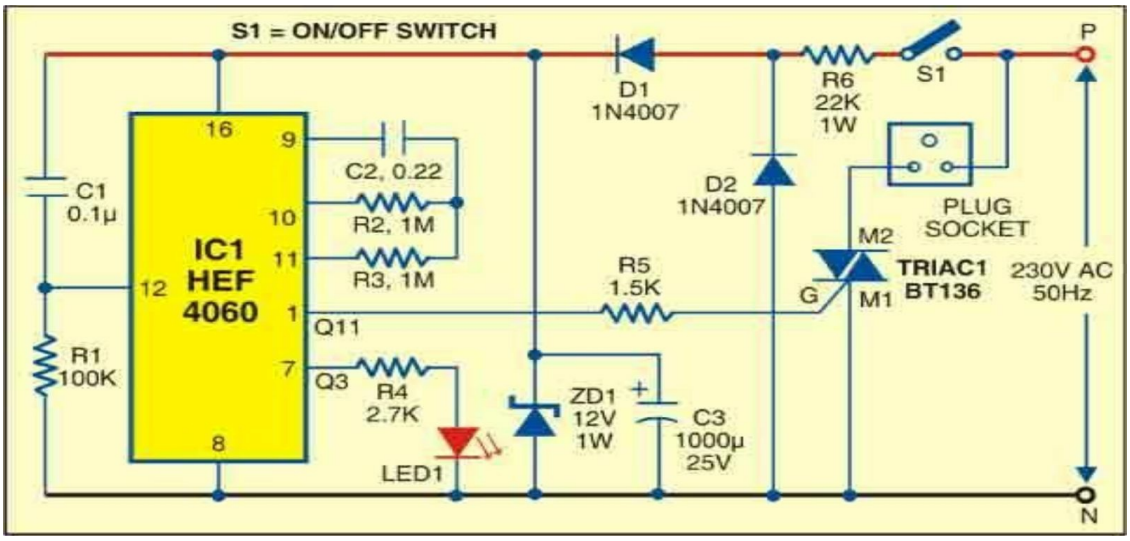
200. Make your own Electric Bug Zapper



None of us prefers bugs at home. To murder these flying creepy crawlies, they should first be pulled in and after that electrocuted. Bug zapper is one such gadget with a high-voltage shocking circuit and a creepy crawly drawing in UV lamp of 365 nm wavelength. This ultraviolet fluorescent lamp is mounted amidst the bureau and a couple of painstakingly divided, electrically protected, charged wire networks encompass the light. At the point when a creepy crawly approach enough to the work match, an electrical circular segment is framed, the dielectric breakdown and current flows through the bug's body. Shocking the creepy crawly doesn't expect it to touch both the wires as a bend frames noticeable all-around hole more than 1800V.

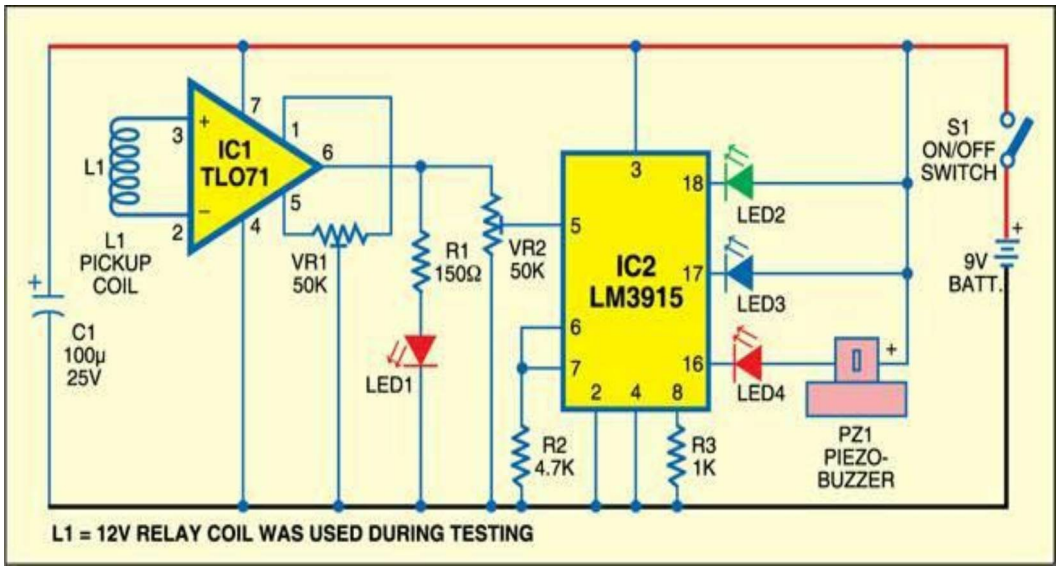
201. Timer for Mosquito Destroyer

In electric-heating mosquito anti-agents, an electric vaporizer warms up a tangle or fluid to discharge non-debasing chemicals into the air and ward off the mosquitoes from the shut environment. Here's a circuit that presents a period hole in the task of the of 15 minutes without lessening the anti-agent's activity on mosquitoes.



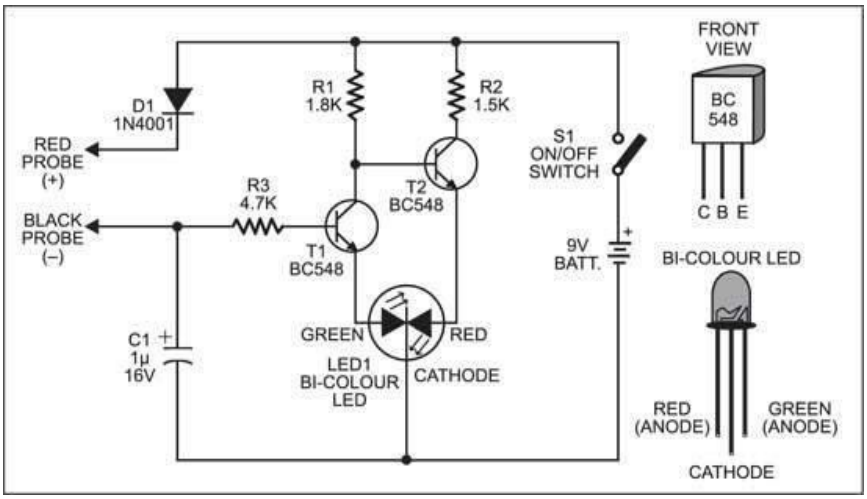
202. Radiation Sensor

When you take a shot at a PC or stare at the TV, your body is overwhelmed in an electronic brown haze radiating from the device. For example, in CRT-based monitors, the spot of electrons that range the screen creates beat electromagnetic radiation . A portion of this energy escapes as radiations in low-frequency and to a great degree low-frequency energy.

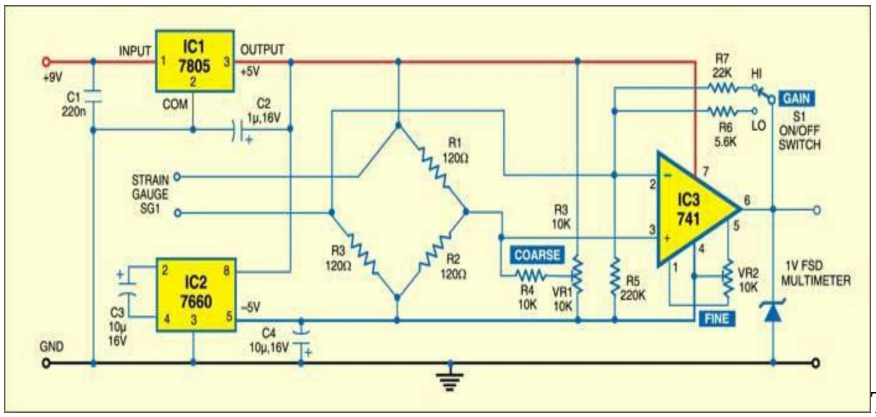


203. Handy Tester

For novices, here is a minimal effort multitester that can be utilized to test the state of all the electronic components from resistors to ICs. It utilizes just a couple of components however can likewise recognize extremity, coherence, logic states and action of multivibrators.

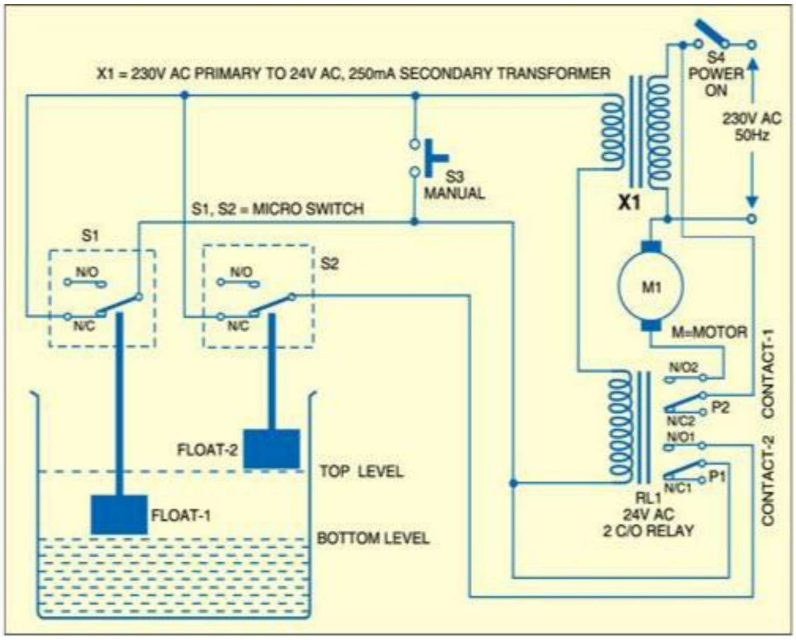


204. Strain Meter

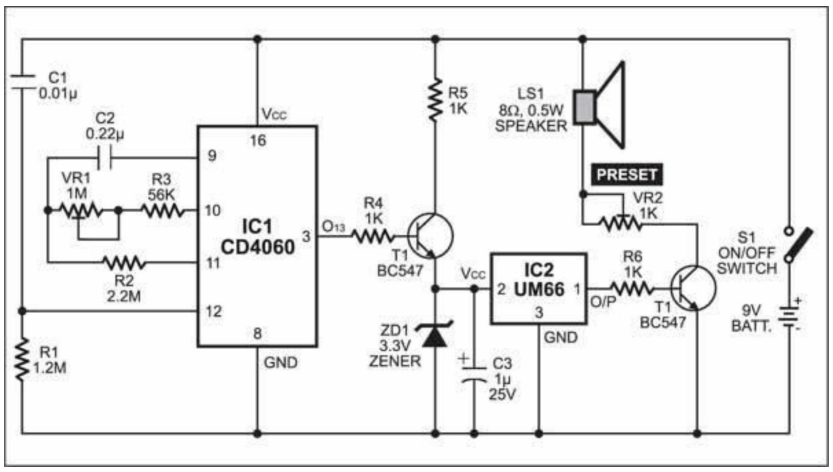


This strain meter demonstrates whether the strain is compressive (decreasing the length) or tractable (expanding the length) when a question, for example, a swagger on a crane changes its shape. The strain is detected by a strain gauge that is stuck to the question being tried. The change in resistance of the strain gauge delivers a change in the perusing of the meter. For the reason, a simple or digital meter, for example, a voltmeter, can be utilized that has full-scale avoidance of 1V DC. Be that as it may, utilization of a digital multimeter would be better.

205. Water Pump Controller



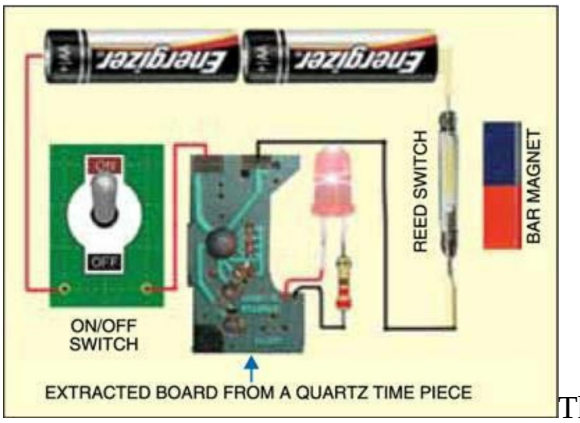
Here is a basic circuit for controlling water level in an overhead tank. The fundamental parts of this pump controller are a step-down transformer, a 24V AC double changeover relay, two buoys and two micro switches. Any accessible relay can be utilized independent of its coil voltage. Obviously, current rating of contacts ought to be considered according to the engine control. The relay ought to have two contacts. A step-down transformer having optional voltage suited to the coil voltage of the relay is utilized. As the circuit works off AC, no amendment is fundamental. Micro-switches S1 and S2 settled over the water tank are worked by independent buoys: one for detecting the bot tom level and the other for top level. A three-center wire is utilized for associating these switches to the relay.

206. 

Timer with Musical Alarm

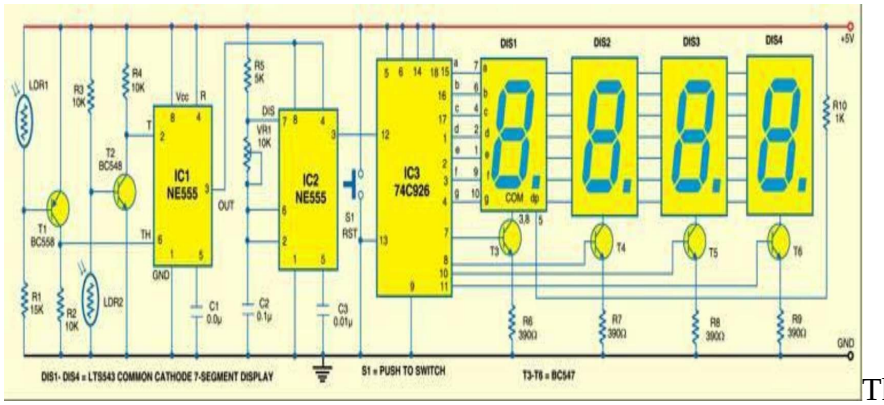
This minimal effort timer can be utilized for presenting a deferral of one moment to two hours. After the planning time frame is more than, a musical melody is heard.

207. Simple Key-hole Lighting Device

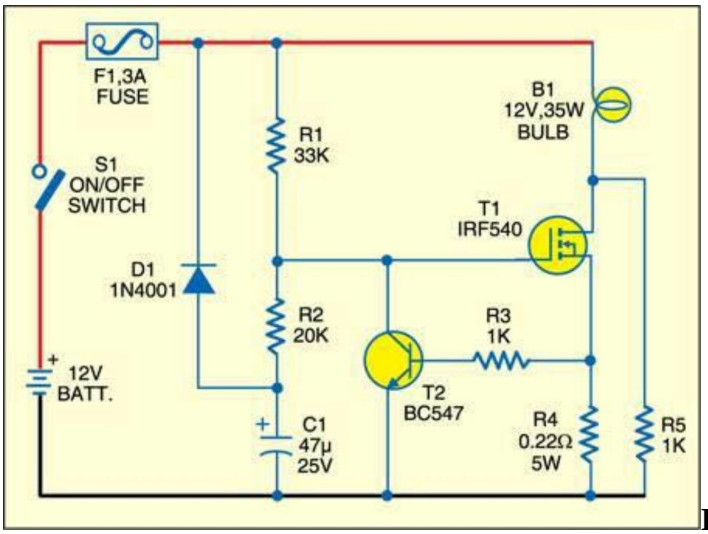


This basic circuit is a extracted circuit load up from a disposed of quartz timepiece.

208. Ball Speed Checker



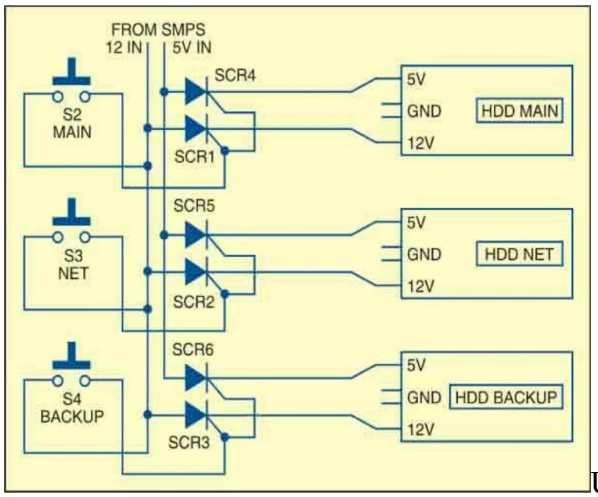
This circuit measures the speed of a cricket ball in light of the time taken by the ball to venture to every part of the separation from the bowling crease to the batting crease.

209. 

Halogen lamp Saver for Bikes

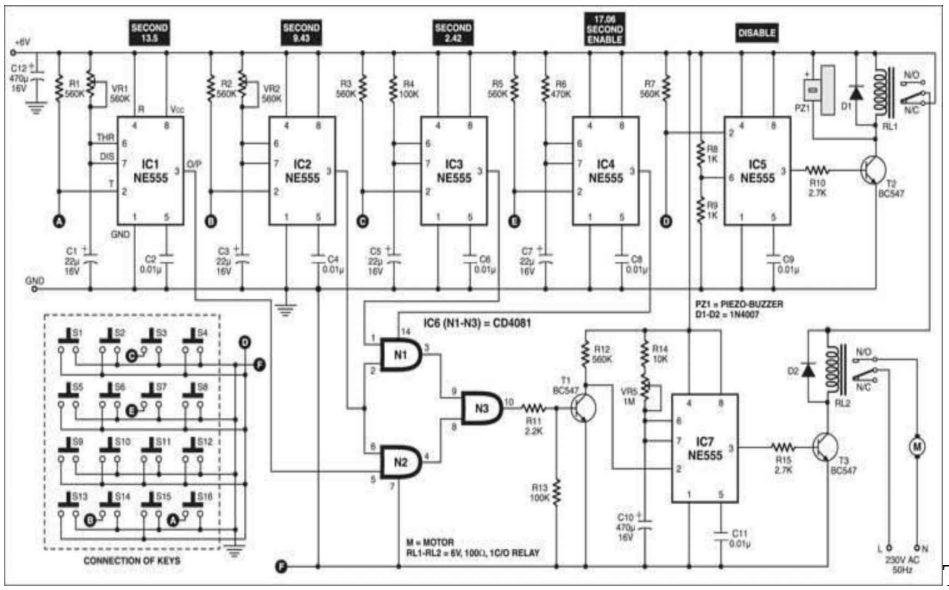
Halogen lamps are inclined to wear out attributable to their minimal cold current. The fast heating inside the lamp melts the thin fiber and stops the lamp life. The circuit depicted here improves the life of the halogen lamp by permitting delicate turn-on of the lamp.

210. HDD Selector Switch



Utilizing the switch-mode power supply (SMPS) of your personal PC, this add-on circuit gives you a chance to switch between three hard disk drives (HDDs) and furthermore guarantee that no one else can open your ensured HDD. It is very valuable for protection from hacking and spying.

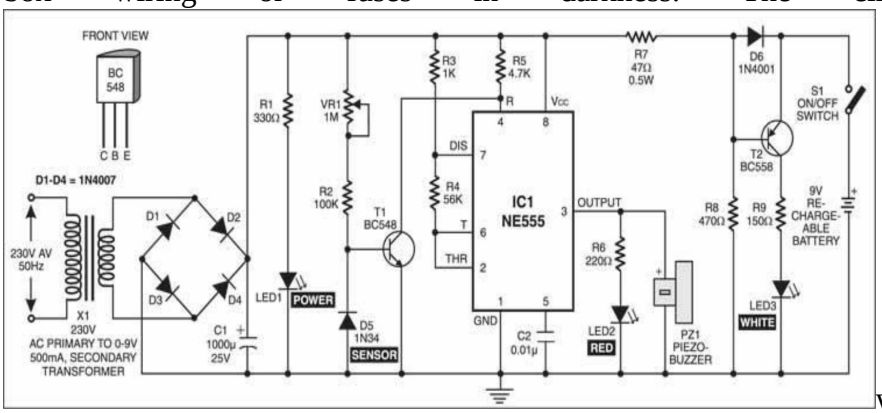
211. Simple Key-Operated Gate Locking System



This simple key-operated gate locking system permits just those people who know the preset code to open the gate. The code is to be entered from the keypad inside the preset time to work the motor fitted in the gate. On the off chance that anybody attempting to open the gate presses a wrong key in the keypad, the system is incapacitated and, in the meantime, sounds an alarm to alert you of an unapproved section.

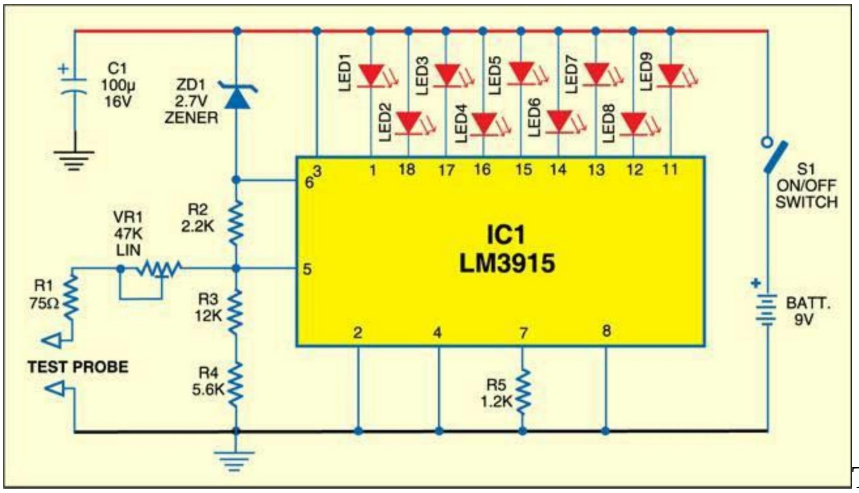
212. Mains Box Heat Monitor

This simple circuit monitors the mains distribution box constantly and sounds an alarm when it senses a high temperature due to overheating, helping to prevent disasters caused by any sparking in the mains box due to short circuits. It also automatically switches on a bright white LED when the power fails. The LED gives ample light to check the mains box wiring or fuses in darkness. The circuit beeps once



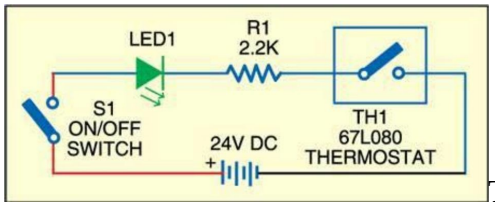
when power fails and again when power resumes

213. Digital Soil Moisture Test

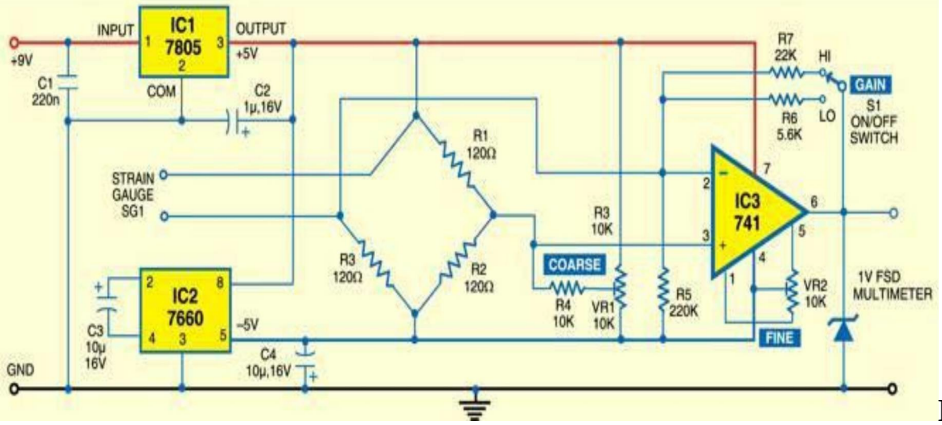


This is a basic and reduced digital soil moisture tester to check whether the soil is dry or wet. It can likewise be utilized to check the dryness or wetness of cotton, woolen and woven textures.

214. Over-Heating Indicator for Water Pipe



The boiling water pipe from the water geyser of your restroom may blast on the off chance that it gets overheated and is left unattended. This circuit monitors the temperature of the water pipe. In the event that the temperature of the pipe goes over certain cutoff, it flashes a LED.

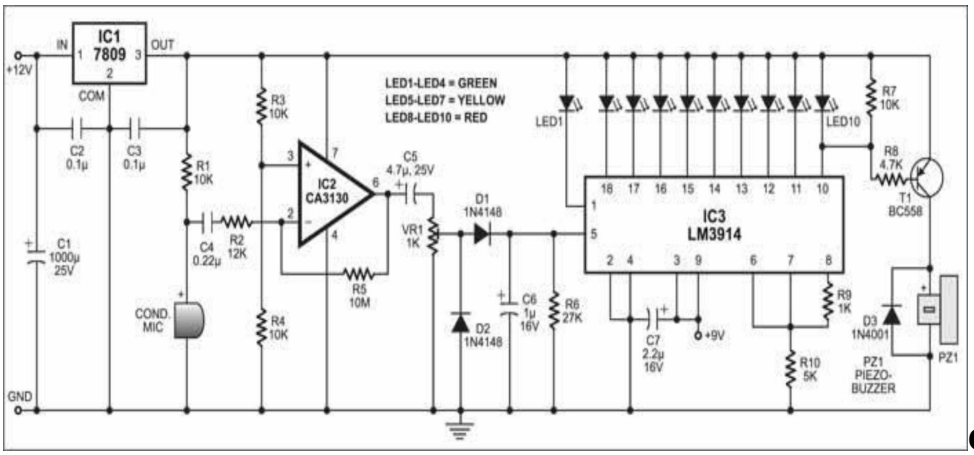
215. 

Linear Timer for General Use

This basic timer can be used to control any electrical machine that should be switched off after certain time, similar to a little warmer or an evaporator, gave the 'relay switch' parameters meet the prerequisites of that apparatus. It uses minimal effort parts and joins digital accuracy with straightforward simple control, giving long timing spans without the use of high esteemed resistors or capacitors.

216. Noise Meter

Noise pollution is watches out for some non-communicable diseases and. Safe level of noise is considered up to 30 dBs. This is an intriguing circuit by dream lover technology, "Noise Meter" used to quantify the level of noise arraigning by LED and likewise it gives cautioning when noise crosses the protected level of 30 dB by beeping sound.



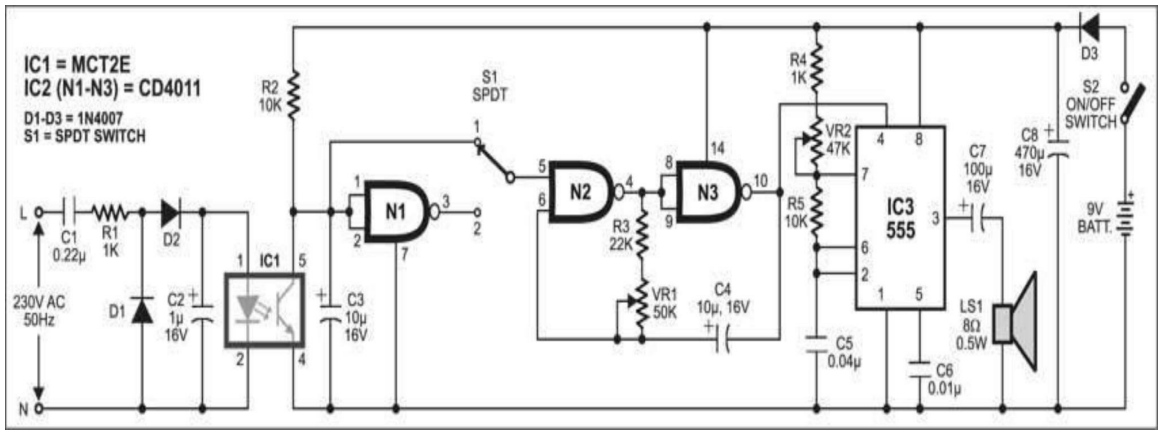
Circuit depiction of Noise Meter

The whole circuit of noise meter has been outlined and manufactured utilizing sound intensity sensor and display unit. This condenser microphone is utilized as sensor of noise meter with operational amplifier (IC2) and relating passive components. The inverting and non-inverting input is given to operational amplifier IC (IC2) from pin 2 and pin 3 separately. Where yield from pin 6 of IC2 is associated with the inverting input for negative feedback through resistor R5. The controlling sound air conditioning signal from potentiometer VR1 is first rectified by diode (D1 and D2) and keeps up it at the yield level of IC2. The display unit is composed around solid IC LM3914 (IC3). It drives ten LEDs by detecting simple voltage. Each LED is associated with yield of IC3 speaks to the sound level of 3 dB in plunging request from 18 to 10. The gleaming each of the ten LEDs show sound intensity is 30dB.

The PNP transistor get base bias when yield at pin 10 of IC3 goes low to drive the piezo buzzer keeping in mind the end goal to give sound. Typically, sound intensity up to 30 dB is charming. Over 80 dB, it winds up irritating. What's more, on the off chance that it goes past 100 dB, it might influence your psychomotor execution, degrading your consideration and causing pressure. Noise pollution may likewise influence your listening ability capacity

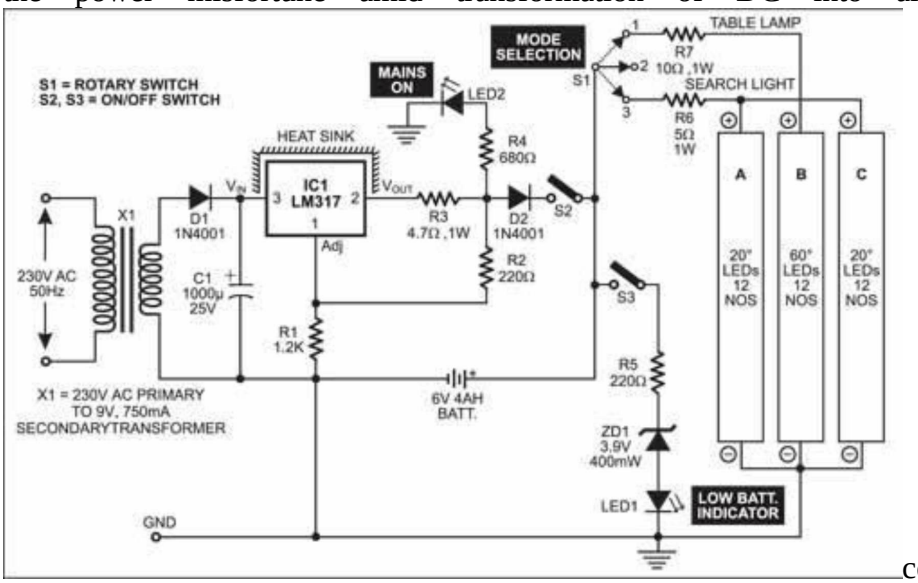
217. Mains Failure and Resumption Alarm

This mains indicator sounds an alarm at whatever point AC mains falls flat or resumes. It is extremely helpful in mechanical establishments, silver screen theatre hall, multi-specialist's hospitals, and so on.



218. Multipurpose White-LED Light

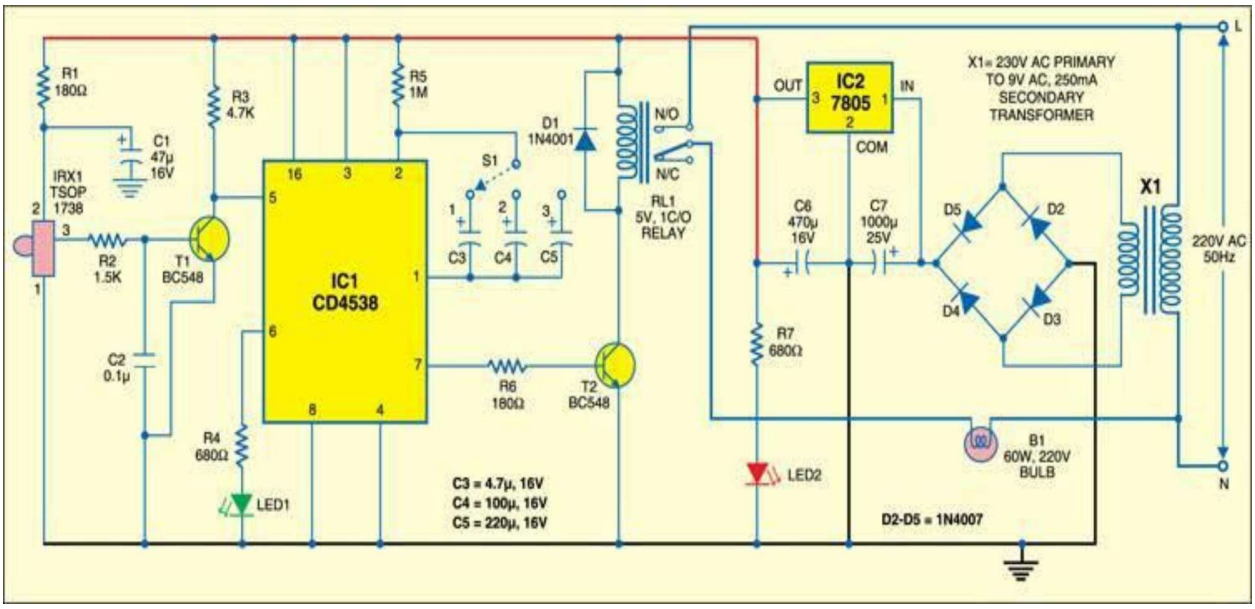
Standard fluorescent lamps and their littler forms called compact fluorescent lamps (CFLs) emanate light every which way (360°) and tend to expand the Hall temperature. In emergency lights utilizing these lamps, the battery keeps going just a couple of hours because of the power misfortune amid transformation of DC into air conditioning. These



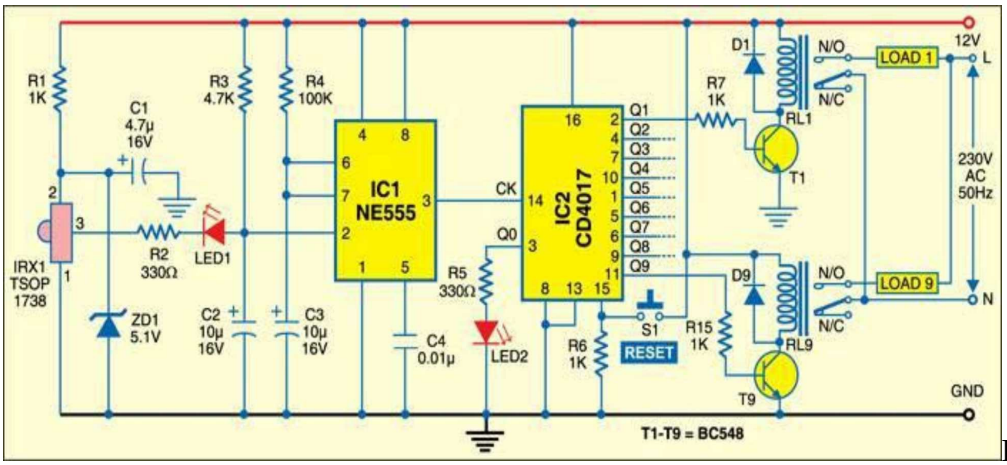
confinements can be overwhelmed by utilizing ultra-bright white LEDs

219. IR-Based Light Control

This circuit turns on the lights at the patio, car stopping or different territories when a motorbike or car enters through the gate to cross the detecting zone. It can likewise be utilized as an electronic watchdog for your home, by actuating an alarm at the same time.


R1
180Ω
R3
4.7K
R5
1M
C1
47µ
16V
IRX1
TSOP
1738
R2
1.5K
T1
BC548
C2
0.1µ
IC1
CD4538
R4
680Ω
LED1
S1
D1
1N4001
C3
C4
C5
N/O
N/C
RL1
5V, 1C/O
RELAY
R6
180Ω
T2
BC548
C3 = 4.7µ, 16V
C4 = 100µ, 16V
C5 = 220µ, 16V
OUT
IC2
7805
IN
COM
C6
470µ
16V
C7
1000µ
25V
R7
680Ω
LED2
X1= 230V AC PRIMARY
TO 9V AC, 250mA
SECONDARY
TRANSFORMER
D5
D2
D4
D3
X1
B1
60W, 220V
BULB
D2-D5 = 1N4007
220V AC
50Hz
L
N

220. Sequential Device Control using TV Remote Control



Here's the circuit gives you a chance to switch on and switch off up to nine devices sequentially from your TV remote control.

221. Software of the Month: Resistor Calculator 1.0.6

Resistor Calculator 1.0.6

Presented here is a simple, easy-to-use freeware for Windows that saves a lot of time and effort in determining the colour code of resistors and resistance values required for LED circuits

DILIN ANAND

Every resistor is marked with colour bands that indicate its resistance, tolerance and sometimes temperature coefficient as well. You might be familiar with the mnemonics for memorising the resistor colour coding: *B. B. ROY of Great Britain has a Very Good Wife*, where the capitalised letters stand for black, brown, red, orange, yellow, green, blue, violet, grey and white, respectively.

Quite often, the whole mental calculation process of resistor codes can be an exhausting task. It also consumes much time. Sometimes you may not remember the mnemon-

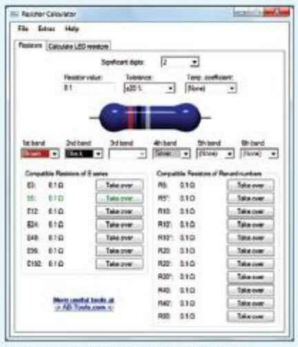


Fig 1: Home screen of resistor calculator

License type	Freeware
Developer	Andreas Breitschopp, AB-Tools.com
Operating system	Windows 8, Windows 7, Windows Vista and Windows XP
Latest version	1.0.6
File size	1.29 MB

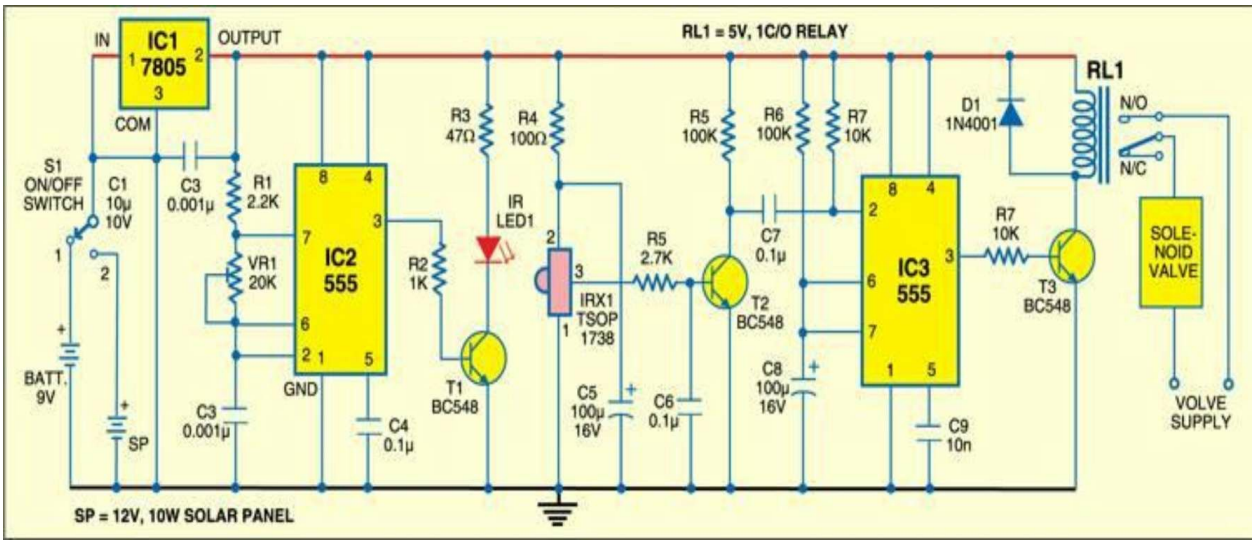
interface is clear and plain, which is a freeware. The users get the latest updates of this program automatically. All updates are absolutely free.

The integrated help system is simple and easy to understand. It also has an intuitive program interface. Further help and support is provided by e-mail and is also available at their website. The program is currently

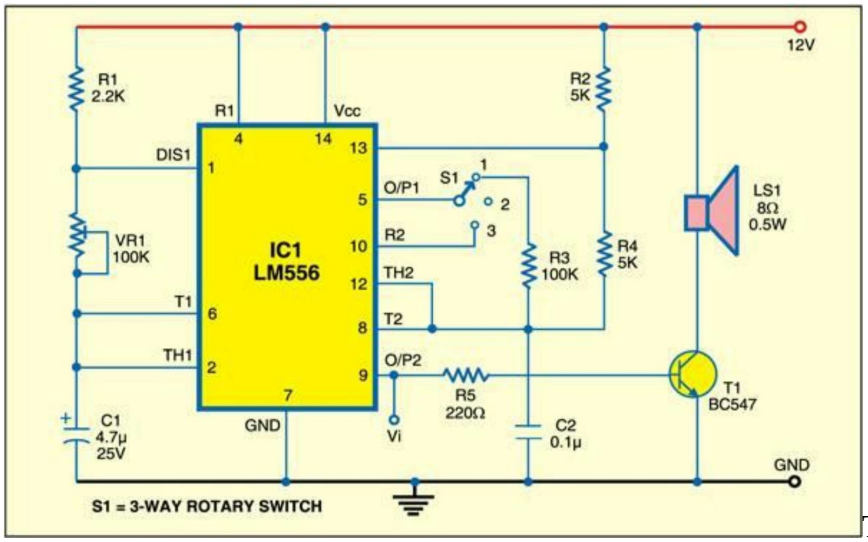
A basic, simple to-utilize freeware for Windows that spares a great deal of time and exertion in deciding the shading code of resistors and resistance esteems required for LED circuits.

222. IR-Controlled Water Supply

This circuit can be utilized as a part of homes or little eateries for a water supply unit, for example, Restroom flush or washbasin tap.


IN
IC1
7805
OUTPUT
COM
RL1 = 5V, 1C/O RELAY
RL1
N/O
N/C
S1
ON/OFF
SWITCH
C1
10µ
10V
C3
0.001µ
R1
2.2K
VR1
20K
IC2
555
GND
C3
0.001µ
C4
0.1µ
R2
1K
T1
BC548
R3
47Ω
R4
100Ω
IR
LED1
IRX1
TSOP
1738
C5
100µ
16V
C6
0.1µ
R5
2.7K
T2
BC548
R5
100K
R6
100K
R7
10K
C7
0.1µ
C8
100µ
16V
IC3
555
C9
10n
D1
1N4001
R7
10K
T3
BC548
SOLE-
NOID
VALVE
VOLVE
SUPPLY
BATT.
9V
SP
SP = 12V, 10W SOLAR PANEL

223. Triple-Mode Tone Generator



This is a basic circuit that generates three unique tones. You can utilize it as a call bell, criminal alarm or some other security alarm.

Alternative circuit.

Presently, this is unique tone generator circuit which produces three diverse sorts of sound as per input three distinctive logic levels (i.e. 0&1, 1&0 and 1&1).

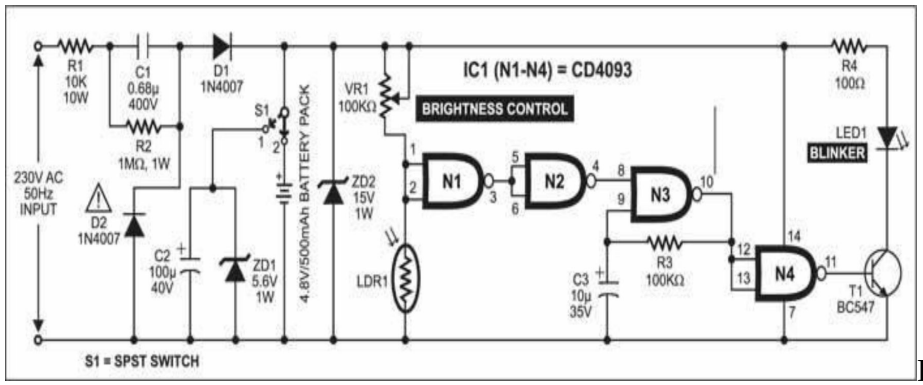
Circuit description

This circuit is planned around computerized IC 7400 which is NAND gate. The working of the circuit resembles the working standard of oscillator circuit, where frequency relies on capacitors C1 and C2. The duty cycle of this circuit is half. The yield is given to power amplifier circuit which additionally drive amplifier or earphone. For low frequency estimation of capacitor C1 and C2 must be high and the other way around.

Components

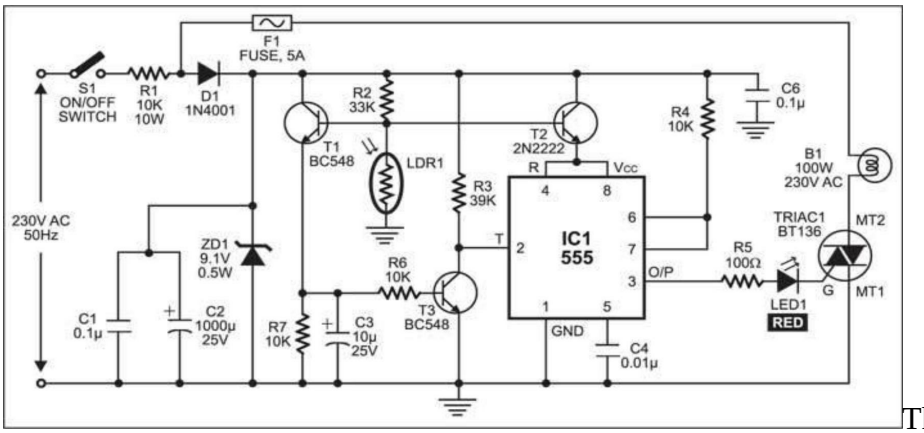
- Required Resistors (all ¼-watt, ± 5% Carbon)
- R1, R4 = 1.2 KΩ; R2, R3 = 1 KΩ; R5 = 10 KΩ; R6, R7 = 47 KΩ
- Required Capacitors
- C1 = 100 kpF; C2 = 220 kpF; C3, C4 = 10 kpF
- Semiconductors IC1 = 7400 (NAND gate)

224. Twilight Lamp Blinker



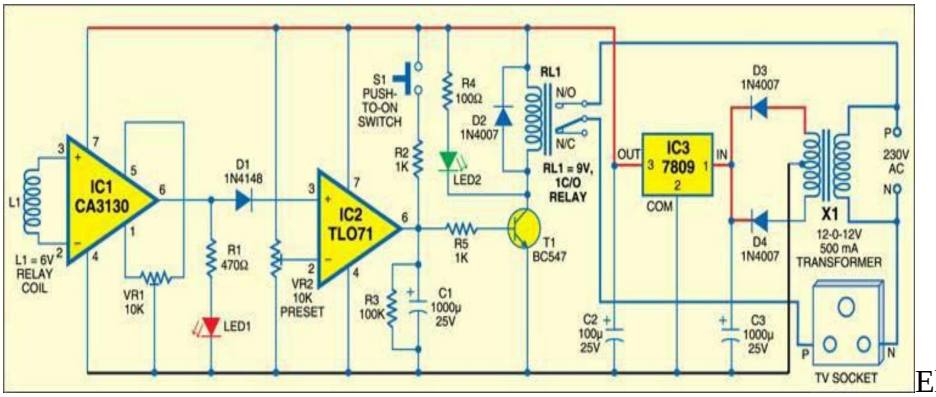
During sunset or sunrise, the ambient light isn't satisfactory to lead you through the open doorway or advance around obstructions. To dodge any setback, here is a twilight lamp blinker that you can put close obstructions.

225. Electronic Street Light Switch

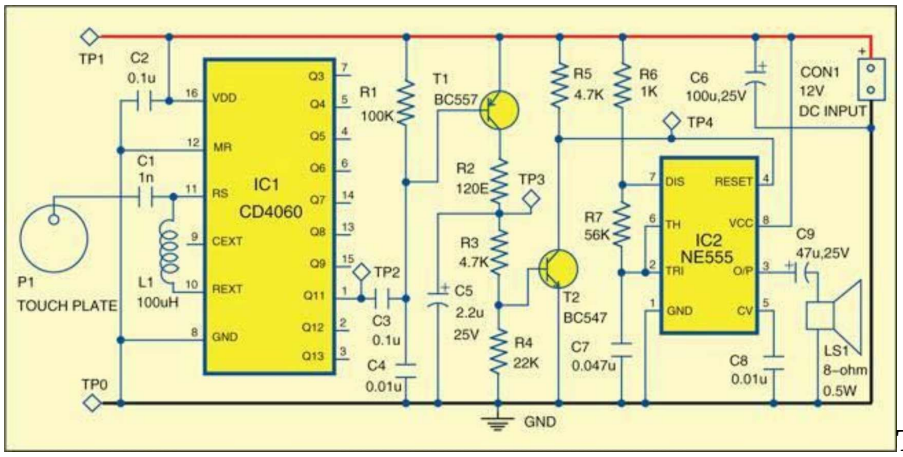


This is a easy and minimal effort low cost street light switch. This switch consequently turns on the light at nightfall and turns it off at dawn. The programmed work spares electricity other than man power.

226. Standby Power-Loss Preventer



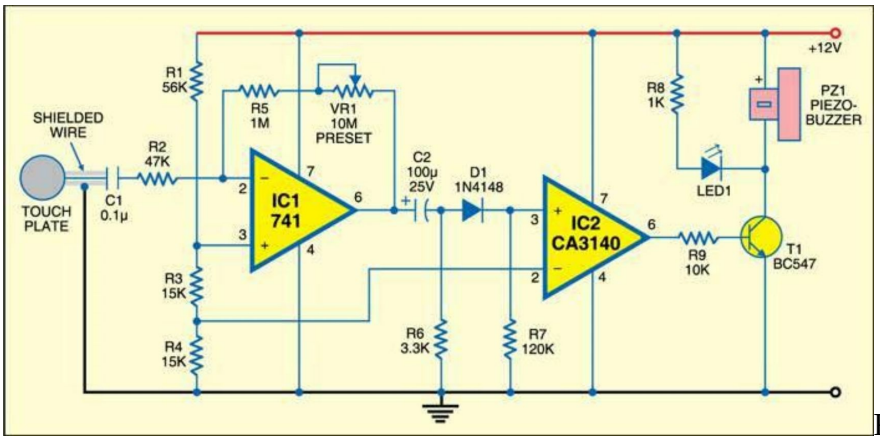
Electronic devices devour some power even in the standby mode, i.e., when they have been switched off utilizing a remote handset yet not the mains power switch. For example, when a CRT television or PC screen is being used, it devours 80-100 watts of power. In the standby mode as well, it draws a couple of watts of power. Hence in the event that you leave these devices in standby mode for quite a while, they may blow up your electricity bill.

227. 

Touch Alarm

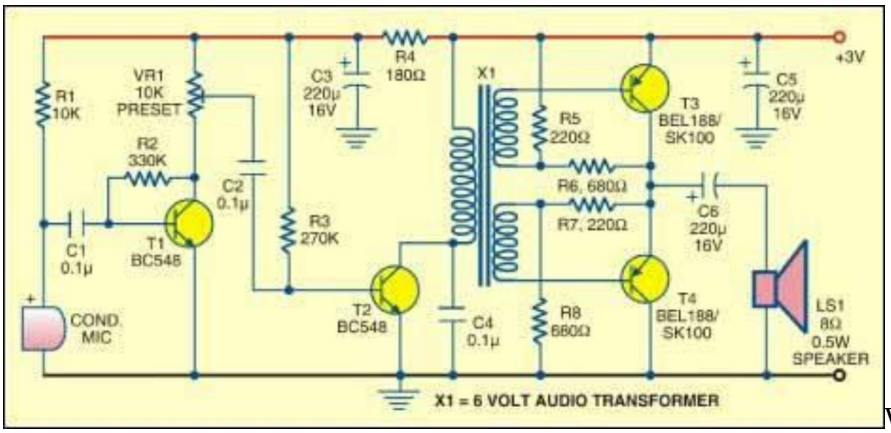
This is a new kind of touch alarm which uses a Radio Frequency oscillator at its input. One unique feature of this touch alarm is that it able to use a big size touch plate. Similarly, no shielded wire is required among the touch plate and the circuit.

228. Hum-Sensitive Touch Alarm



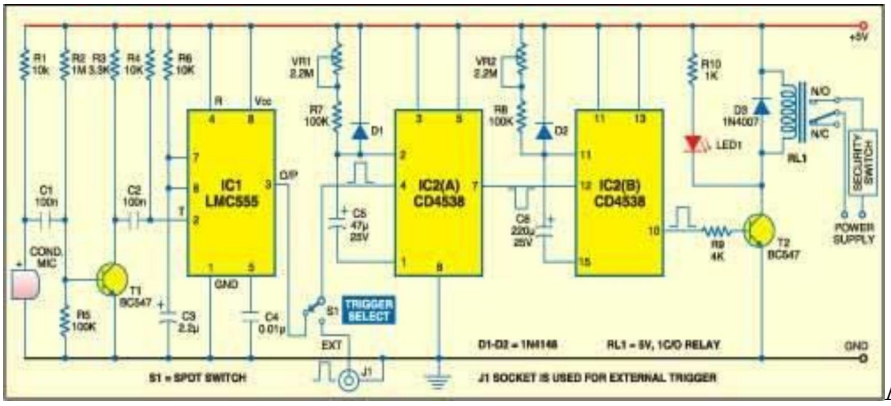
Radiation signals from mains wiring can travel a couple of meters of some distance. These can be instigated by the electromagnetic field in the human body moreover.

229. Room Sound Monitor



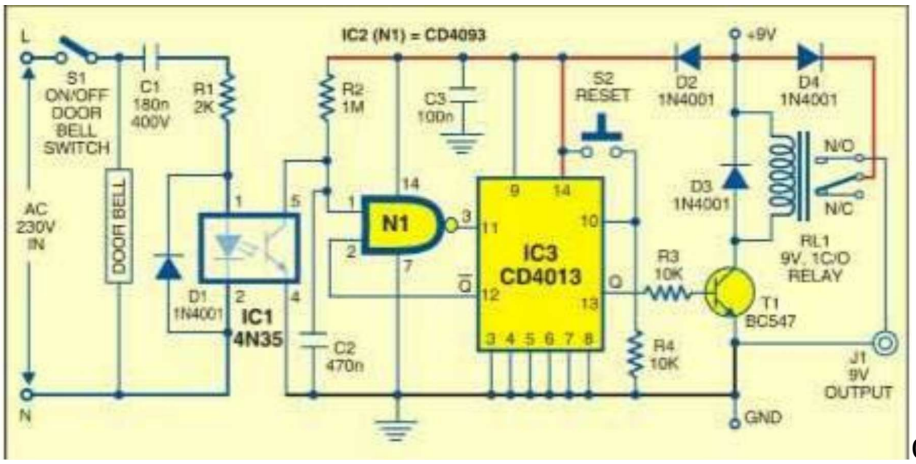
With this basic circuit, you can furtively tune in to conversations going ahead in a room. The circuit is extremely sensitive and powered by a 3V battery.

230. Security System Switcher



An audio signal can be utilized as a type of contribution to control any security system. For instance, a programmed security camera can be designed to react to a thump on the entryway. The circuit depicted here enables the security system to programme in on state. It utilizes a transducer to distinguish gate crashers and a 5V controlled DC control supply gives energy to the circuit**.**

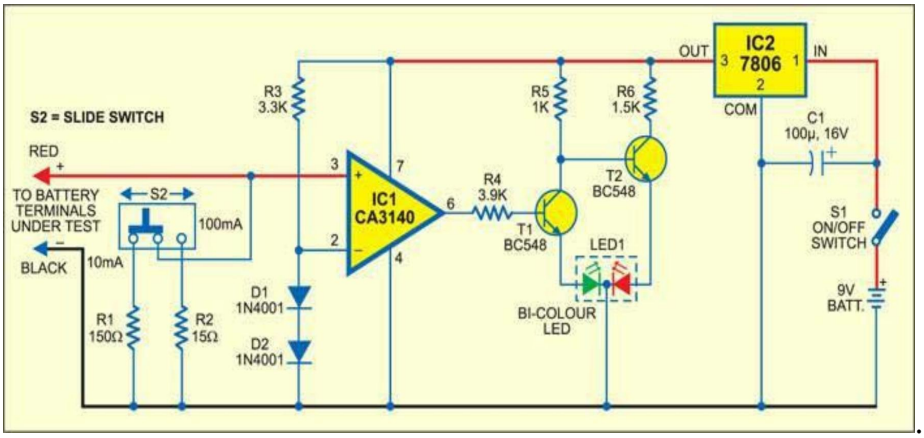
231. Doorbell-controlled Security Switch



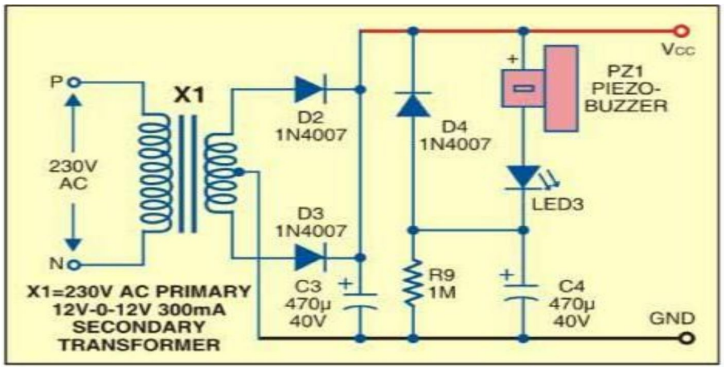
One approach to check whether anyone is at home is to ring the doorbell. Robbers too utilize this very strategy. The circuit portrayed here comes helpful in such a circumstance. It is a straightforward doorbell controlled multipurpose security switch that right away powers up an associated security device, say, a night-vision entryway camera, for working. The circuit works off 9V DC supply. The input of the circuit is associated in parallel with the 230V Air conditioning electric doorbell. An electromagnetic relay is utilized at the yield of the circuit to activate the security device associated with it.

232. Pencell Charge Indicator

Small size AA cells and button cells utilized as a part of electronic devices giving a terminal voltage of 1.5V are regularly evaluated at 500 mAh. As the cells discharge, their internal impedance increments to frame a potential divider alongside the heap and the battery terminal voltage diminishes. This, thus, lessens the execution of the device and we are compelled to supplant the battery with another one. Be that as it may, a similar battery can be utilized again in some other application that requires less current



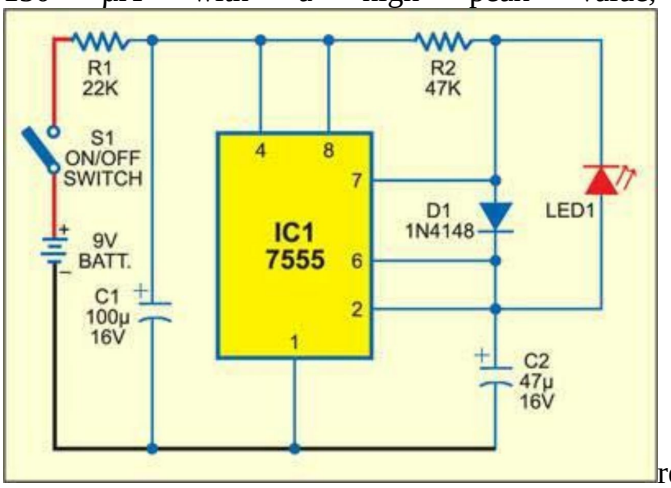
233. Power Resumption Alarm and Low-Voltage Protector



The circuit portrayed here protects your electrical apparatuses like air conditioning motors from harm because of low voltage at power-on. It stays standby without offering power to the load after power resumes. The load can be switched on only physically. This counteracts harm to the device on the off chance that it is 'on' when power resumes.

234. Miser Flash

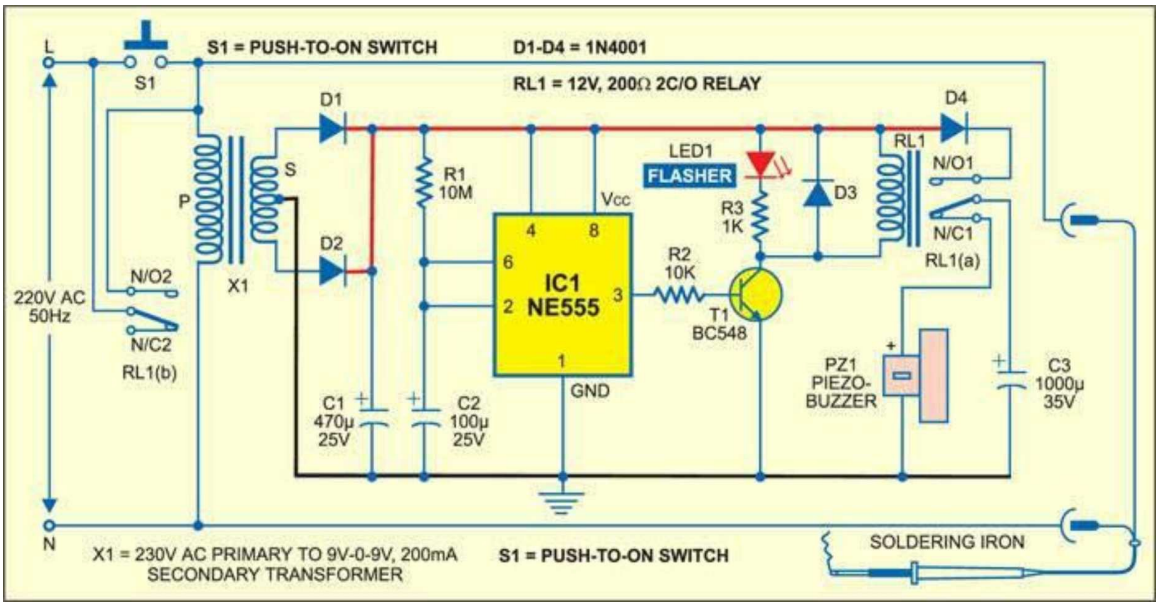
A flashing LED at the doorstep of your carport or home will trap the hoodlums into trusting that an advanced security contraption is installed. The circuit is only a low current drain flasher. It utilizes a solitary CMOS timer that is designed as a free running oscillator utilizing a couple of extra parts. As the LED flashes quickly, the normal current through the LED is around 150 µA with a high peak value, which is adequate for typical



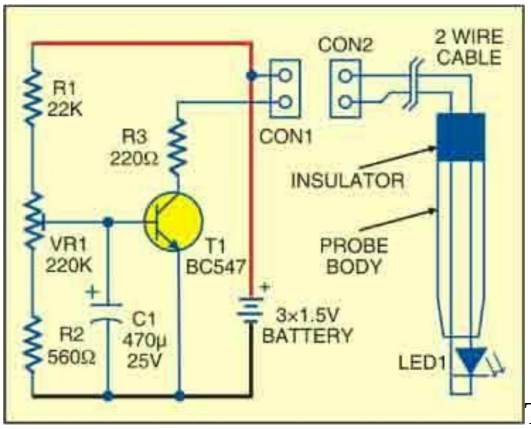
review. This makes it a genuine miser.

235. Automatic Soldering Iron Switch

Frequently, we forget to turn off the soldering iron. This outcomes in a smoking oxidized iron as well as waste of electricity. To take care of this issue, here is a circuit that automatically switches off the soldering iron after a foreordained time. The circuit draws no power when it is latent. The circuit can likewise be utilized for controlling the electric iron, kitchen timer or different uses.

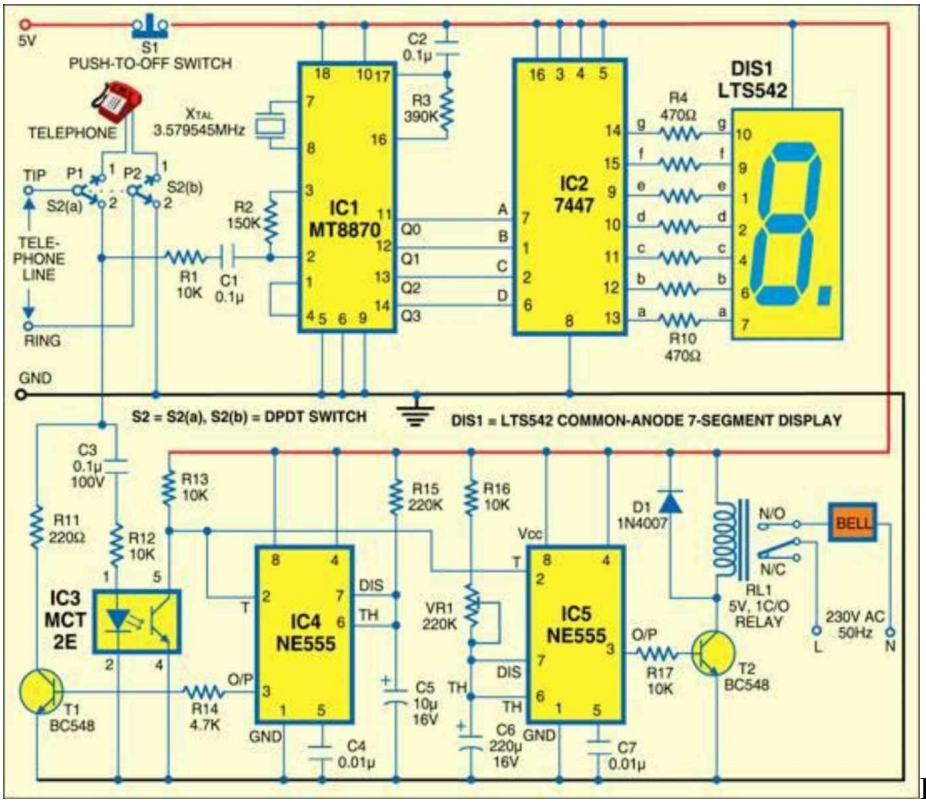

L
S1
S1 = PUSH-TO-ON SWITCH
D1-D4 = 1N4001
RL1 = 12V, 200Ω 2C/O RELAY
D1
D4
RL1
N/O1
N/C1
RL1(a)
LED1
FLASHER
R3
1K
D3
R1
10M
Vcc
P
S
D2
X1
IC1
NE555
R2
10K
T1
BC548
N/O2
N/C2
RL1(b)
220V AC
50Hz
C1
470µ
25V
C2
100µ
25V
GND
PZ1
PIEZO-
BUZZER
C3
1000µ
35V
N
X1 = 230V AC PRIMARY TO 9V-0-9V, 200mA
SECONDARY TRANSFORMER
S1 = PUSH-TO-ON SWITCH
SOLDERING IRON

236. White LED Light Probe for Inspection



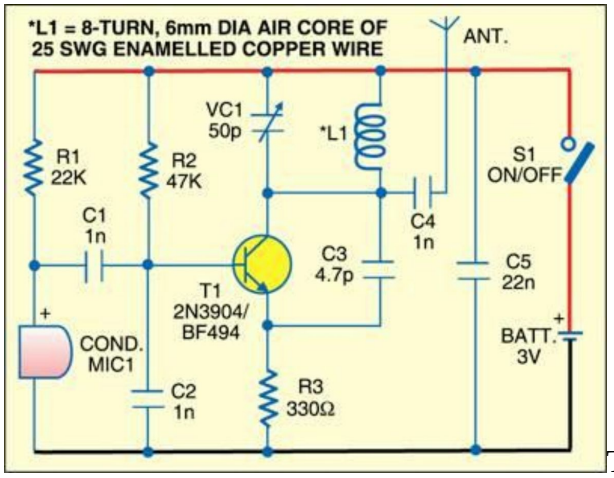
This circuit is valuable for investigating thin spaces like within the CPUs, monitors, PCB modules and other electronic gadgets. The light source is a pencil thin tube with ultra-bright white LED at the tip.

237. Calling Bell Using an Intercom



Here is a basic calling bell circuit that can be utilized as a part of small offices to call the office boy utilizing a current intercom system. The office boy can be called from up to 9 locations where addition lines are installed. The system is associated with a dedicated extension for the office boy. At whatever point somebody needs the office boy's assistance, he can dial the office boy's addition number through the intercom and then press a key to indicate his location number (say, 5). This number will be displayed on a 7-segment display and at the same time a bell will sound to alert the office boy. Pressing a button or switch will be clear the display.

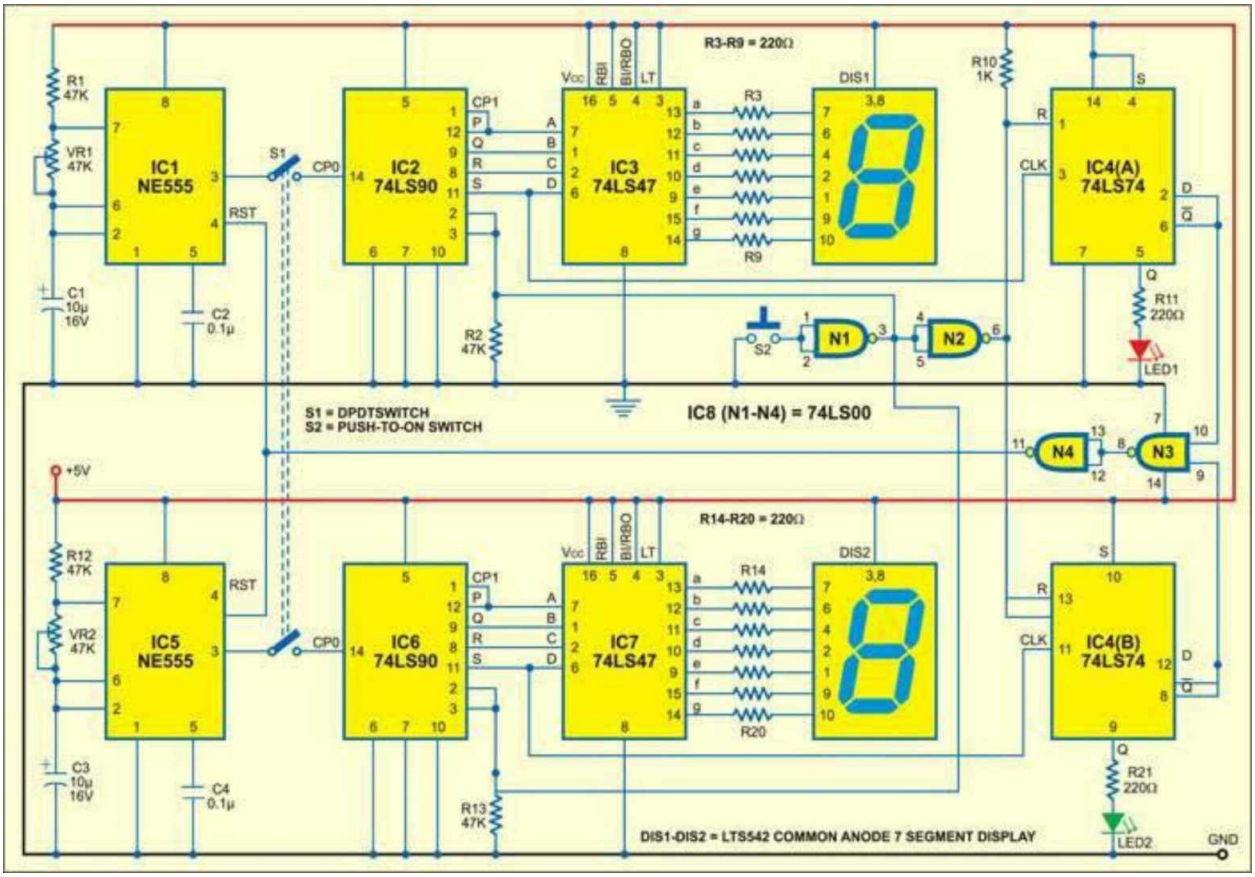
238. FM Bug



This FM bug transmitter circuit will give you a chance to spy on individuals. The transmitter can be put in the coveted room and the discussion got notification from a place far away simply utilizing a general FM radio set.

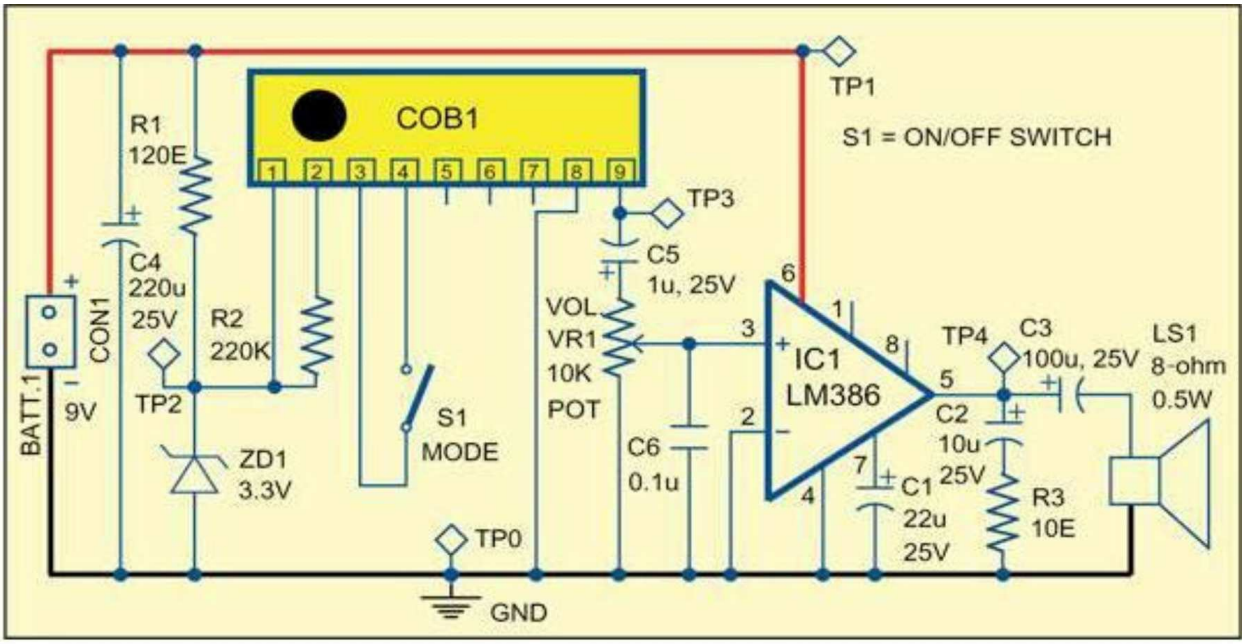
239. Digital Frequency Comparator

This is a digital frequency comparator for oscillators that shows the outcome through a seven-segment show and a LED. At the point when the frequency tally of an oscillator is beneath '8,' the relating LED stays turn-off. When the tally achieves '8,' the LED turns on and the 7-segment show indicates '8'.

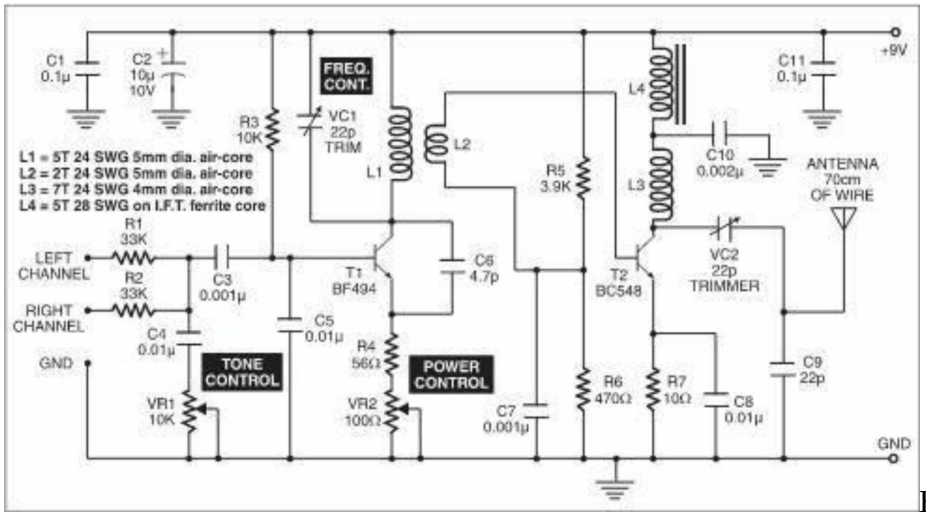

R3-R9 = 220Ω
R14-R20 = 220Ω
R1 47K
VR1 47K
C1 10µ 16V
C2 0.1µ
IC1 NE555
RST
S1
CP0
IC2 74LS90
CP1
R2 47K
Vcc
RBI
BI/RBO
LT
IC3 74LS47
DIS1
R3
R9
R10 1K
IC4(A) 74LS74
R11 220Ω
LED1
S2
N1
N2
N3
N4
IC8 (N1-N4) = 74LS00
S1 = DPDTSWITCH
S2 = PUSH-TO-ON SWITCH
+5V
R12 47K
VR2 47K
C3 10µ 16V
C4 0.1µ
IC5 NE555
IC6 74LS90
IC7 74LS47
DIS2
R14
R20
IC4(B) 74LS74
R21 220Ω
LED2
R13 47K
DIS1-DIS2 = LTS542 COMMON ANODE 7 SEGMENT DISPLAY
GND

240. Bhajan and Mantra Chanting amplifier

Individuals in India get a kick out of the chance to serenade different mantras as they trust it brings good luck, peace of mind and aides in concentration. Here we introduce the circuit of an electronic chanting gadget having nine bhajans and one mantra to look over.

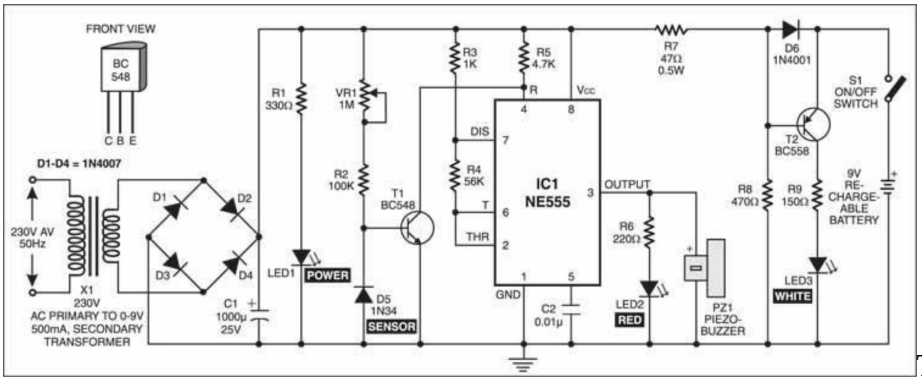

COB1
1
2
3
4
5
6
7
8
9
TP1
S1 = ON/OFF SWITCH
R1
120E
C4
220u
25V
CON1
BATT.1
9V
TP2
R2
220K
ZD1
3.3V
S1
MODE
TP0
GND
TP3
C5
1u, 25V
VOL
VR1
10K
POT
C6
0.1u
IC1
LM386
TP4
C3
100u, 25V
C2
10u
25V
C1
22u
25V
R3
10E
LS1
8-ohm
0.5W

241. Quality FM Transmitter



Here’s FM transmitter for your stereo or somewhat other amplifier delivers a good signal strength up to a distance of 500 meters with an energy output of about 200 mW. It works off a 9V battery.

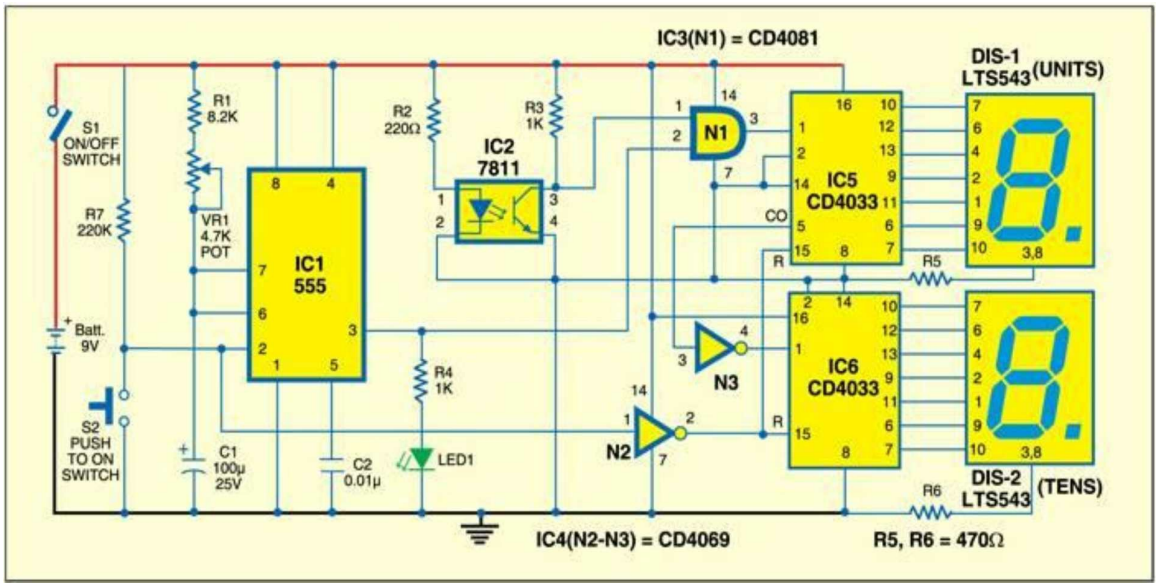
242. Mains Box Heat Monitor



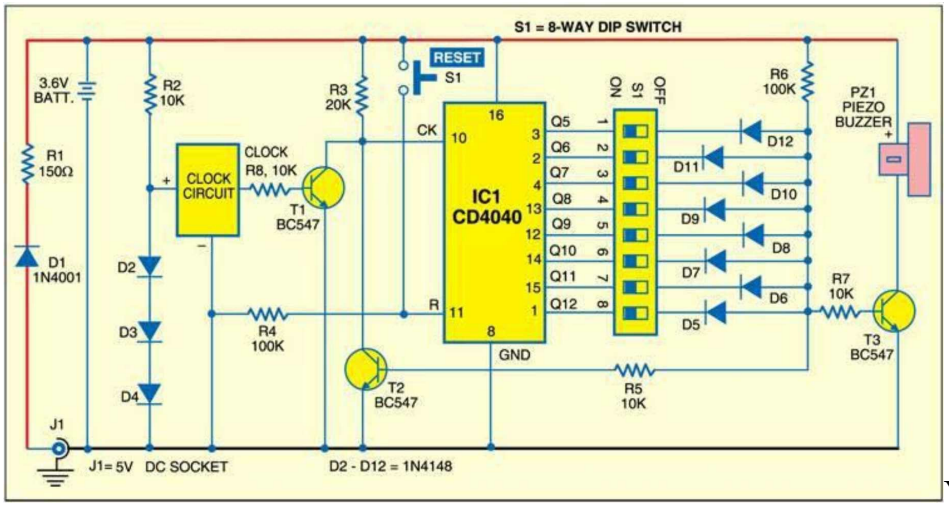
This basic circuit monitors the mains dispersion box always and sounds an alarm when it detects a high temperature because of overheating, anticipating disasters caused by any starting in the mains box because of short circuits. It additionally naturally switches on a splendid white LED when the power comes up short. The LED gives adequate light to check the mains box wiring or wires in obscurity. The circuit beeps once when control comes up short and again when control resumes.

243. Tachometer

A tachometer is a device used to measures the rotational speed of a pole or disk in a motor or other machine. Here we introduce the fundamental variant of the tachometer that demonstrates the revolutions per second (RPS) on an advanced show.

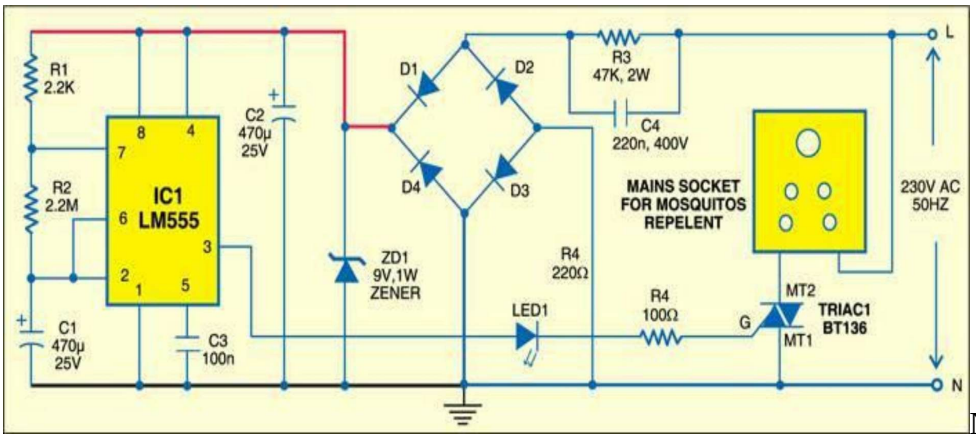

IC3(N1) = CD4081
DIS-1
LTS543
(UNITS)
S1
ON/OFF
SWITCH
R1
8.2K
R2
220Ω
R3
1K
IC2
7811
N1
IC5
CD4033
CO
R
R5
R7
220K
VR1
4.7K
POT
IC1
555
Batt.
9V
R4
1K
N3
IC6
CD4033
S2
PUSH
TO ON
SWITCH
C1
100µ
25V
C2
0.01µ
LED1
N2
DIS-2
LTS543
(TENS)
R6
IC4(N2-N3) = CD4069
R5, R6 = 470Ω

244. Timer from Old Quartz Clock

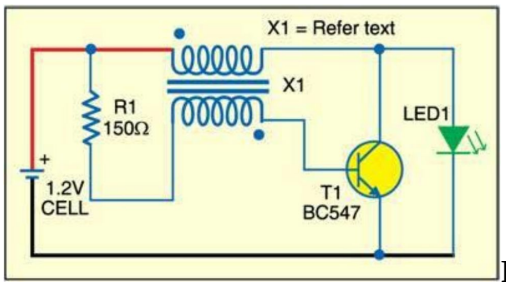


You can manufacture an exact, cost efficient timer from the circuit of an old quartz clock. This timer has a time duration of up to two hours, which is adequate for most everyday activities.

245. Keep Away Ni-Cd from Memory effect



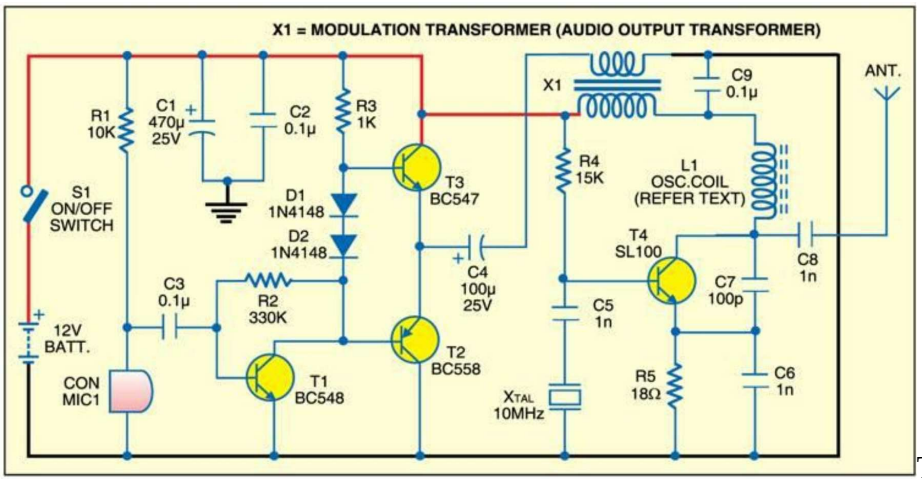
Nickel–Cadmium batteries suffer from associate undesirable memory result because of partial discharge. The remedy is to utterly discharge the battery before recharging.

246. 

Periodically on off Mosquito ad hoc circuit

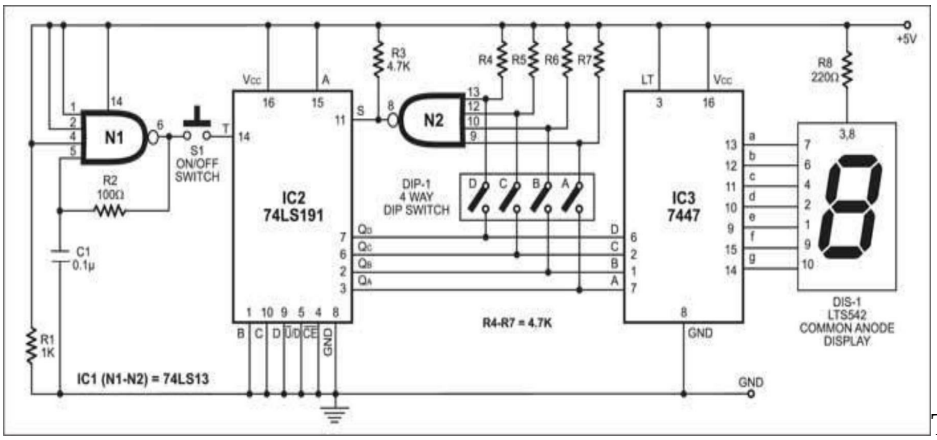
A portion of the mosquito repellents accessible in the market utilize a toxic fluid to create poisonous vapors keeping in mind the end goal to repulse mosquitoes out of the room. Because of the continuous arrival of poisonous vapors into the room, after 12 pm the natural balance of the air composition for good health comes to or surpasses the basic level. Generally, these vapors assault the brain through lungs and apply an anesthetic impact on mosquitoes and also other living creatures by little or more prominent rate. Long introduction to these toxic vapors may cause neurological or related issues.

247. Crystal AM Transmitter

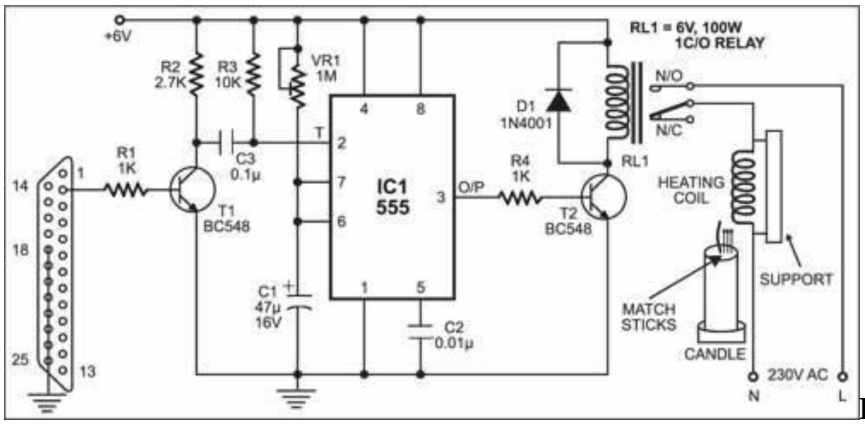


This is the circuit of a medium energy AM transmitter that will pass 100-150 mW of radio frequency (RF) energy.

248. Programmable Electronic Dice



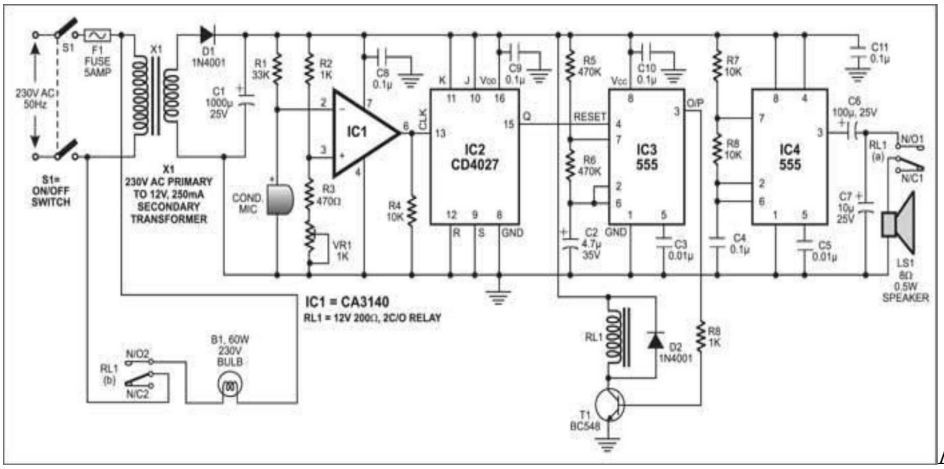
This is a fundamental programmable electronic dice with numeric show. This dice can be modified utilizing a 4-way Plunge switch to show any arbitrary number in the vicinity of '1' and "2," '1' and "3,"... or on the other hand '1' and "9."

249. 

PC-Based Candle Igniter

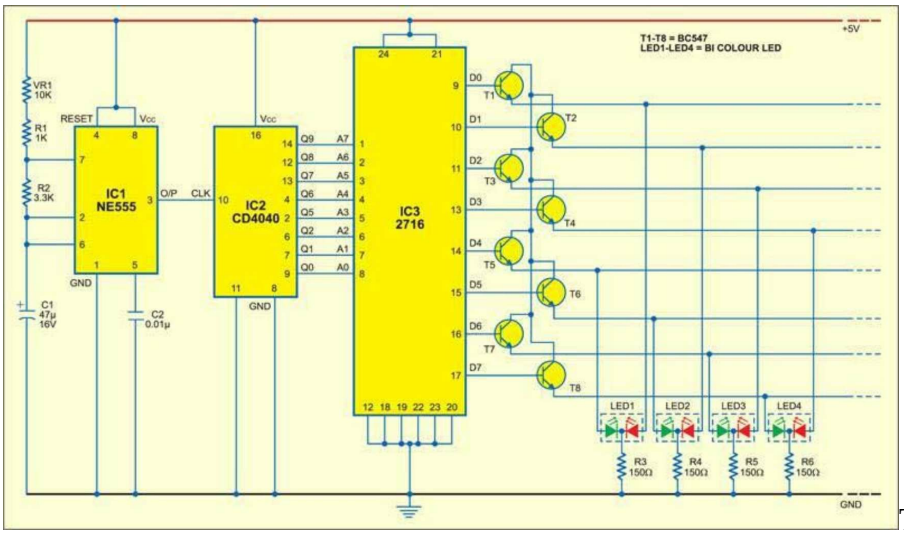
This is a computer-based firing system that lets you fire up a candle using matchsticks by just pressing the "Enter" key on the Computer’s keyboard. It is mostly useful when celebrating such occasions as Birthdays Celebration.

250. Sound Operated Intruder Alarm



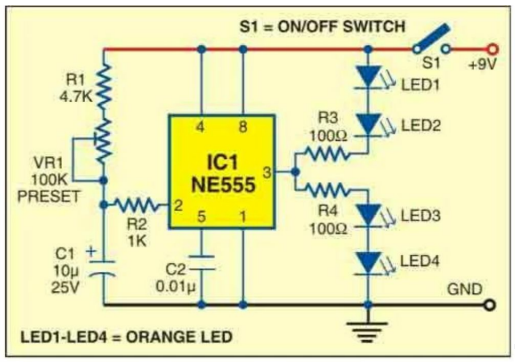
At the point when this burglar alarm distinguishes any sound, for example, that made by opening of a door or embeddings a key into the lock, it begins blazing a light and sounding a discontinuous sound alarm to caution you of an intruder. Both the light and the alarm are naturally turned off by the following sound pulse.

251. Versatile LED Display



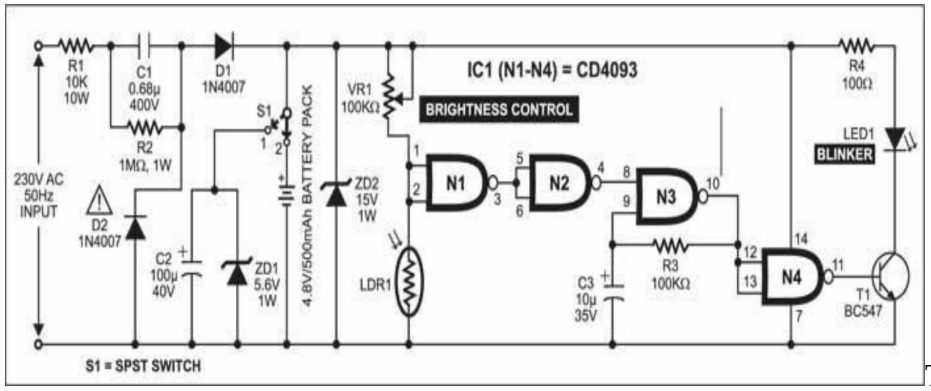
This circuit utilizes an erasable programmable read-only memory (EPROM) to display different light examples on LEDs. Since bicolor LEDs (including green and red LEDs) have been utilized, display is conceivable in three hues (green, red and golden).

252. Multiutility flash light

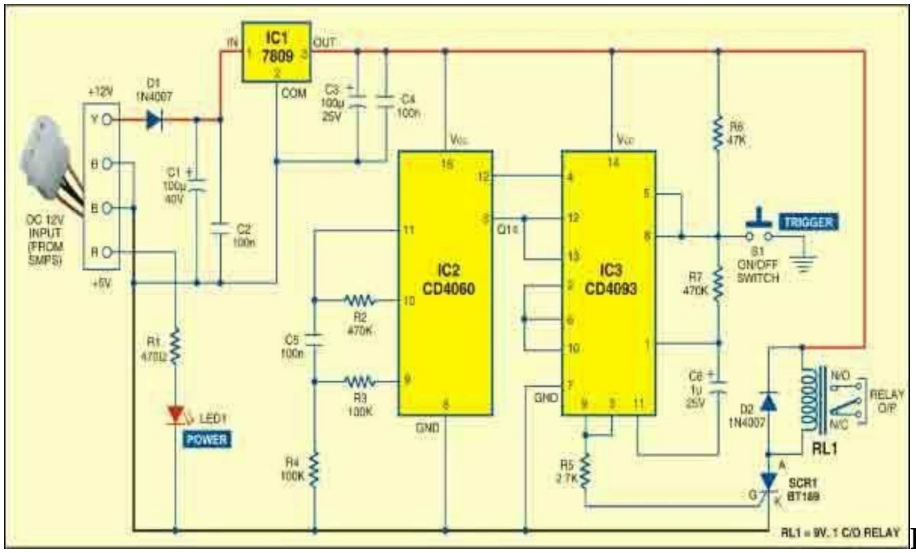


This multi utility flash light comprises of three areas: a flasher, a sound-to-light show and a white LED-based flashlight.

253. Twilight using white LEDs



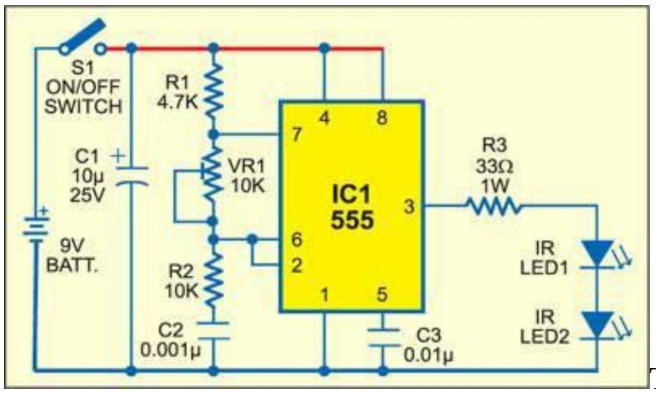
This sunlight-controlled lamp utilizes a light-dependent resistor (LDR) as the sunlight sensor and an aggregate of 25 high brilliance white LEDs. Isolate resistors are associated in series with each column of the LEDs.

254. 

PC TIMER

Basically, proposed for establishment into a desktop PC, this flexible timer with movable time output gives controlled 'on' time for PC peripherals like printers, scanners and desktop perusing lamps. As it is intended for an input voltage of 12 volts, it might likewise be valuable in your lab.

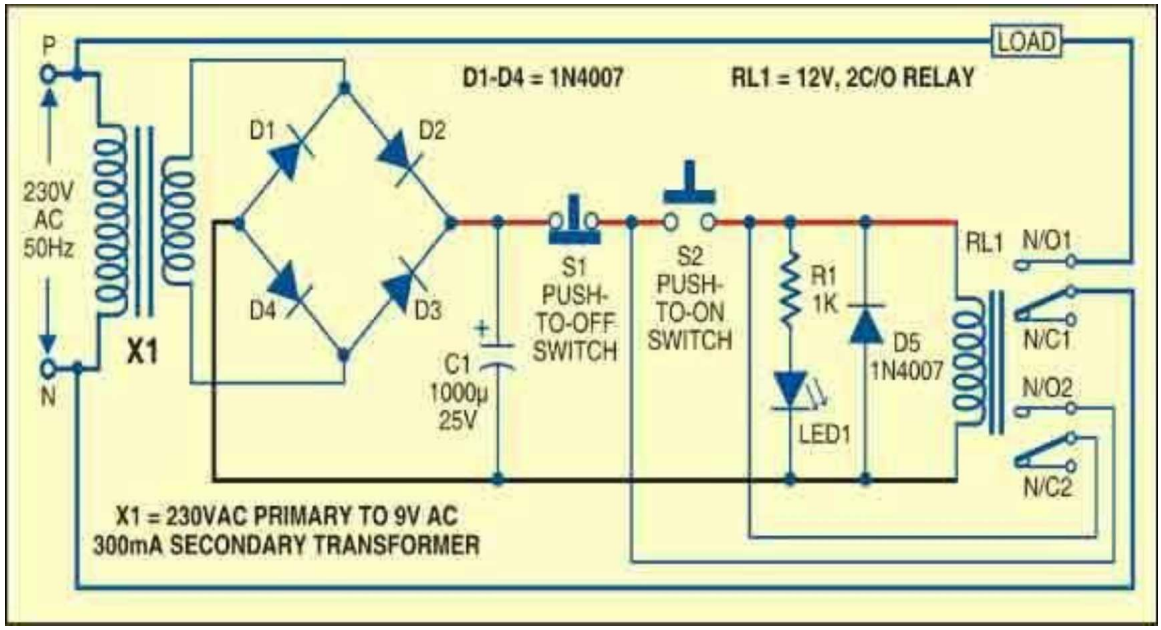
255. Infrared Object Counter



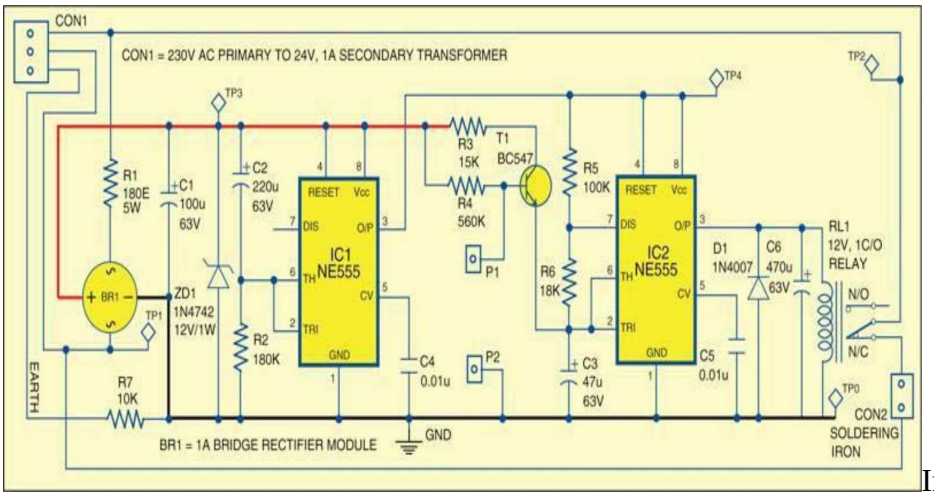
This infrared object counter can be introduced at the section gate to check the aggregate number of people entering any setting. For instance, it can be utilized at the railway stations or transport stands to check the people arriving every day or week.

256. Pushbutton Control for Single-Phase Appliances

This circuit gives you a chance to switch off and switch on a single-phase machine utilizing two separate push switches. Such a game plan is common for modern motors (generally 3-phase) where an isolation is required amongst power and control circuits. Personal protection under broken conditions is guaranteed if the transfer is put remotely. The circuit likewise defends exorbitant devices against visit power cuts as the gadget kills in case of power disappointment and stays off until the point when it is switched-on once more.

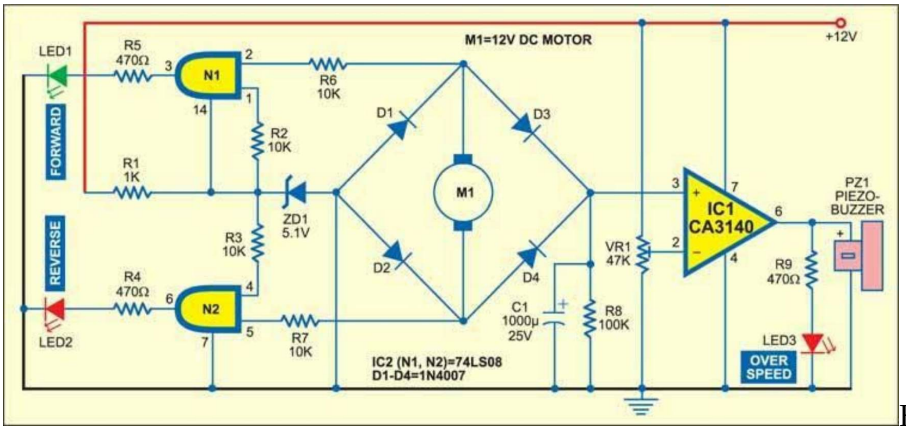


257. Soldering Iron Tip preserver



In spite of the fact that 60/40 solders melt at around 200°C, the tip temperature of a soldering iron ought to be around 370°C. This is important to make a decent joint quickly without the risk of overheating fragile components. One ought to not hold the tip of the iron to the joint for a really long time at such high temperature.

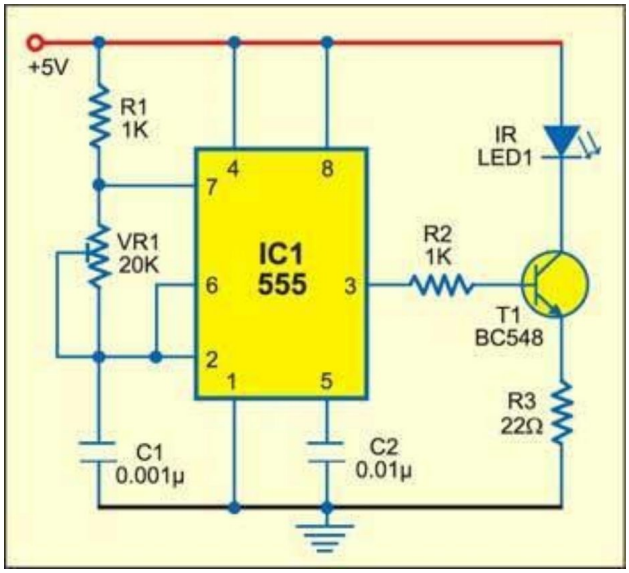
258. Over-Speed Indicator



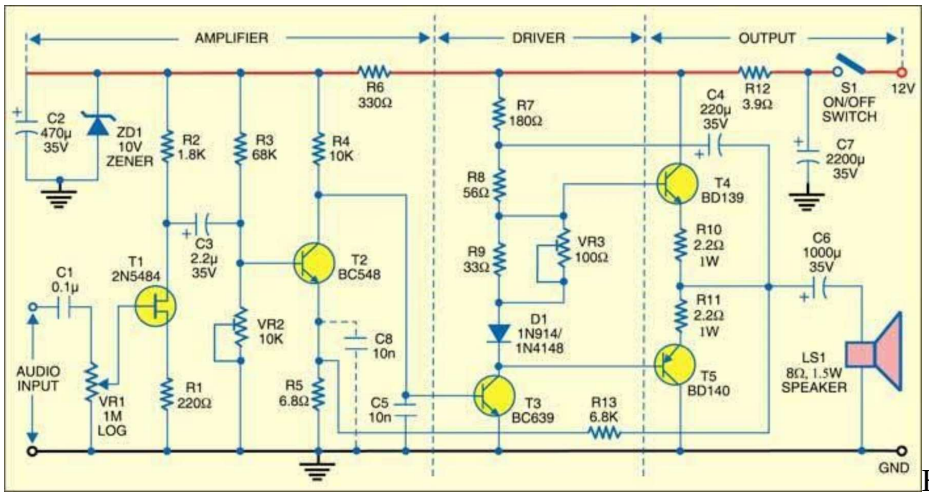
Here's circuit is intended for showing over-speed and direction of rotation of the motor utilized as a part of small scale hand devices, water pump motors, toys and different machines.

259. Automatic Washbasin Tap Controller

Influence your washbasin to tap work automatically when you put your hands just underneath the water tap outlet. This Infrared (IR) based framework detects any interference of the IR rays by your hands or utensil and water automatically begins streaming out of the tap

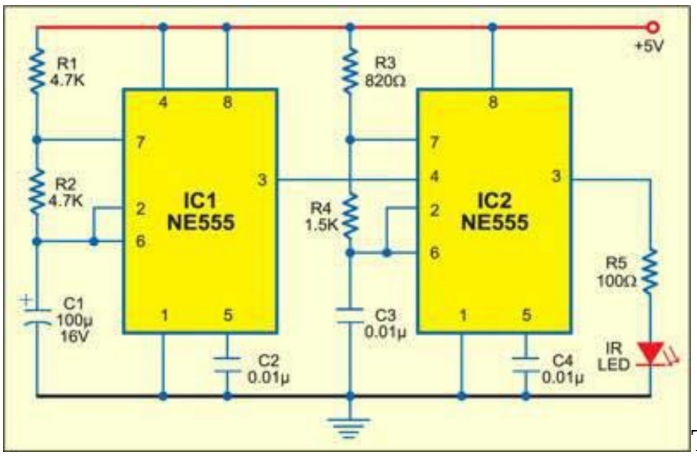

+5V
R1
1K
VR1
20K
IC1
555
4
8
7
6
3
2
1
5
C1
0.001µ
C2
0.01µ
IR
LED1
R2
1K
T1
BC548
R3
22Ω

260. 1.5W Power Amplifier



Here we set all the theory to work and present a basic power amplifier module that can be simply worked with promptly accessible components. The block diagram of the amplifier is appeared in figure It is run of the mill of most audio amplifiers, despite the fact that the circuit is fairly unique.

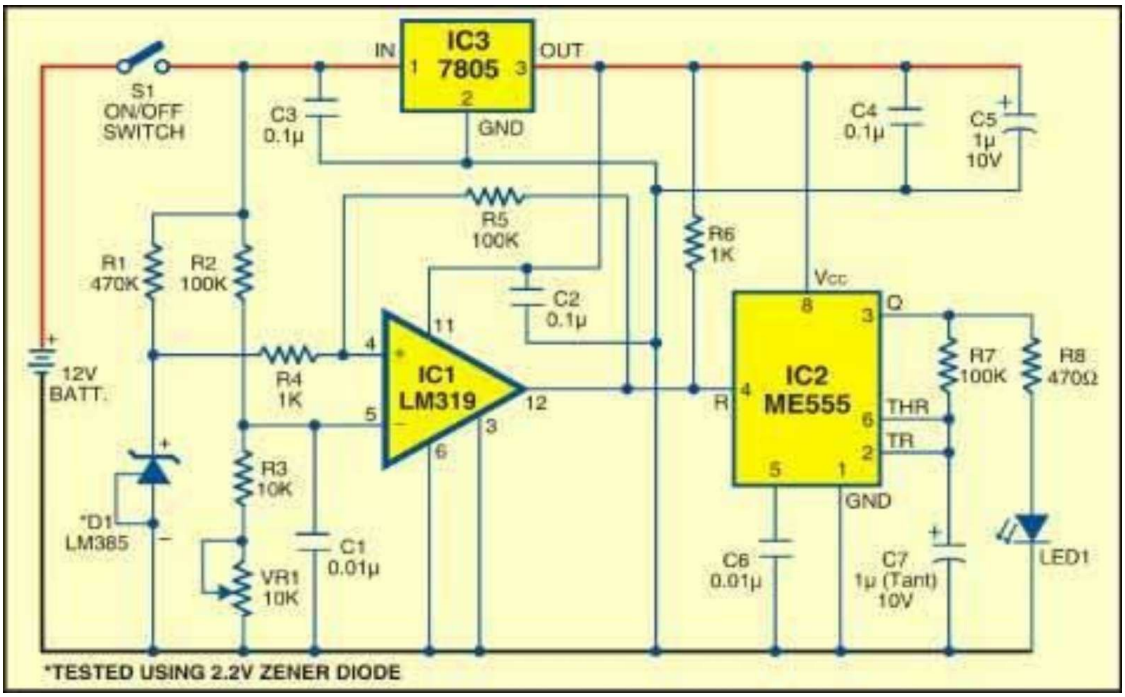
261. Wireless Stepper Motor Controllers



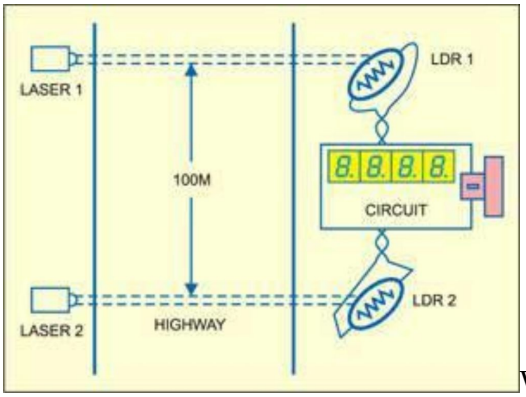
This is a cost efficient and basic wireless stepper motor controller using IR signals. Using this circuit, you can control the stepper motor from a distance of up to 4 meters

262. Battery-Low Indicator

Rechargeable batteries ought not be discharged below a specific voltage level. This lower voltage restrain relies on the sort of the battery. This basic circuit can be utilized for 12V batteries to give a sign of the battery voltage falling below the preset esteem. The sign is as a gleaming LED.

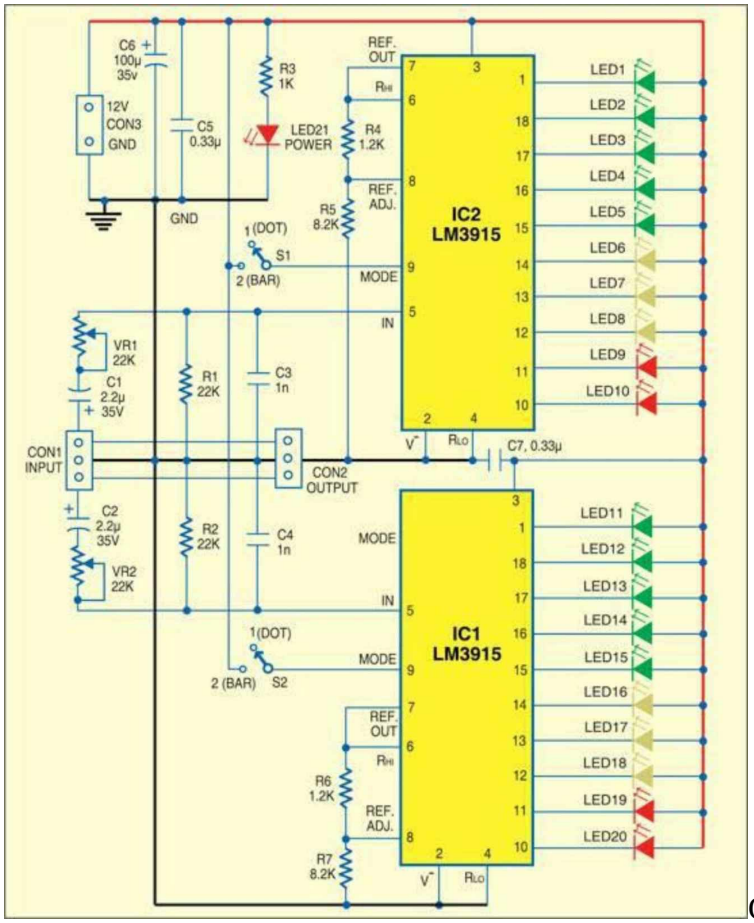

IC3
7805
IN
OUT
GND
S1
ON/OFF
SWITCH
C3
0.1µ
C4
0.1µ
C5
1µ
10V
R5
100K
R6
1K
R1
470K
R2
100K
C2
0.1µ
Vcc
IC2
ME555
Q
THR
TR
GND
R
R7
100K
R8
470Ω
12V
BATT.
R4
1K
IC1
LM319
R3
10K
*D1
LM385
VR1
10K
C1
0.01µ
C6
0.01µ
C7
1µ (Tant)
10V
LED1
*TESTED USING 2.2V ZENER DIODE

263. Speed Checker for Highways



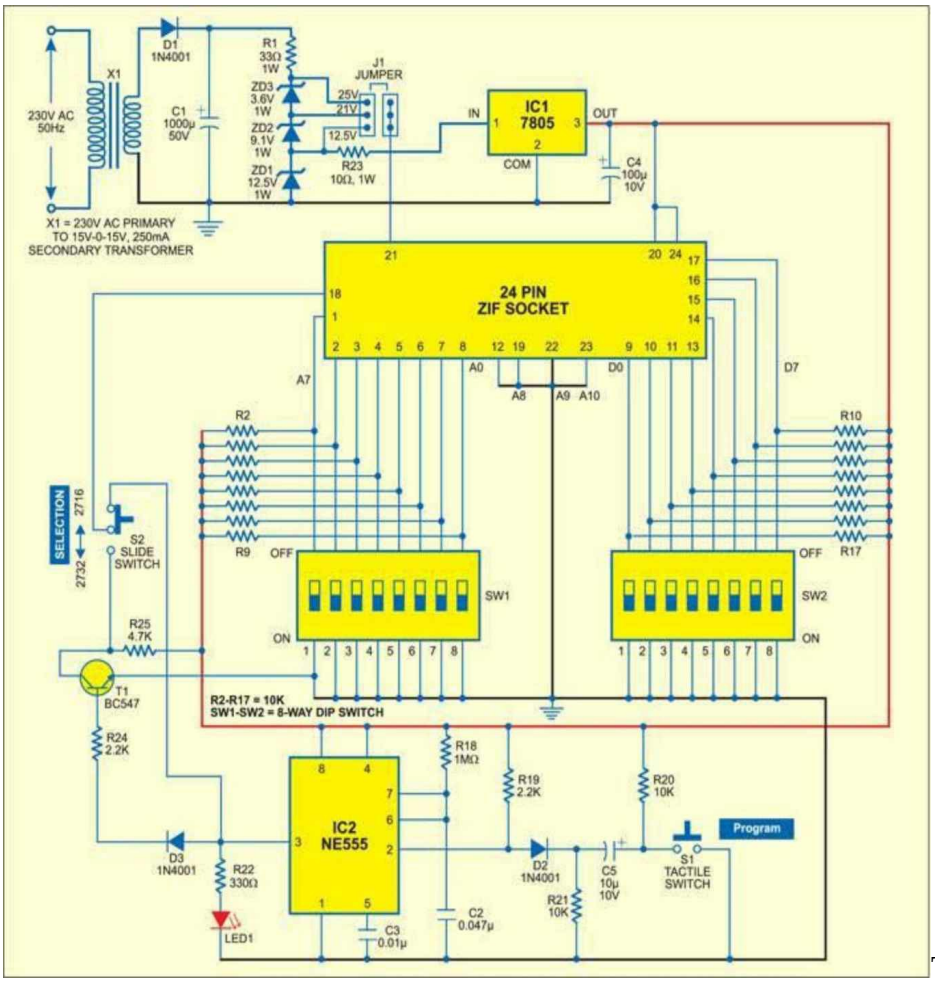
While driving on highways, drivers ought not surpass the maximum speed limit allowed for their vehicle. Be that as it may, accidents continue happening because of speed violations since the drivers have a tendency to disregard their speedometers.

264. Simple Stereo Level Indicator



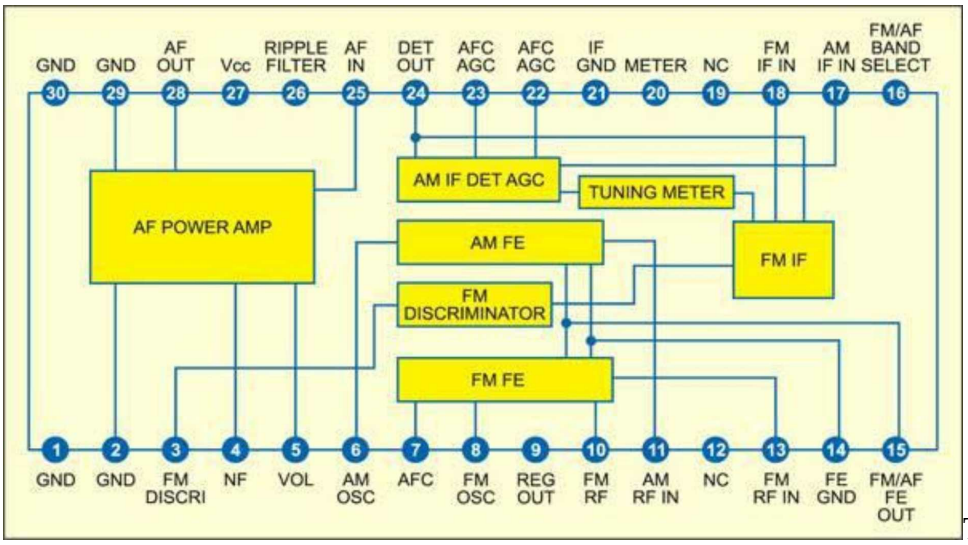
Generally, ease home stereo power amplifiers don't have output level indicators. An output power level indicator can be added to each channel of these stereo power amplifiers. As low levels of the output power are not aggravating and harming to the general humans, there is no compelling reason to include a preamplifier and low-level locator before IC LM3915.Be that as it may, you should know when the output power turns out to be extensively high.

265. Manual EPROM Programmer



The programmer gadgets required for programming the electrically programmable read only memories (EPROMs) are by and high cost. This is a cost-efficient circuit to program binary information into 2716 and 2732 EPROMs.

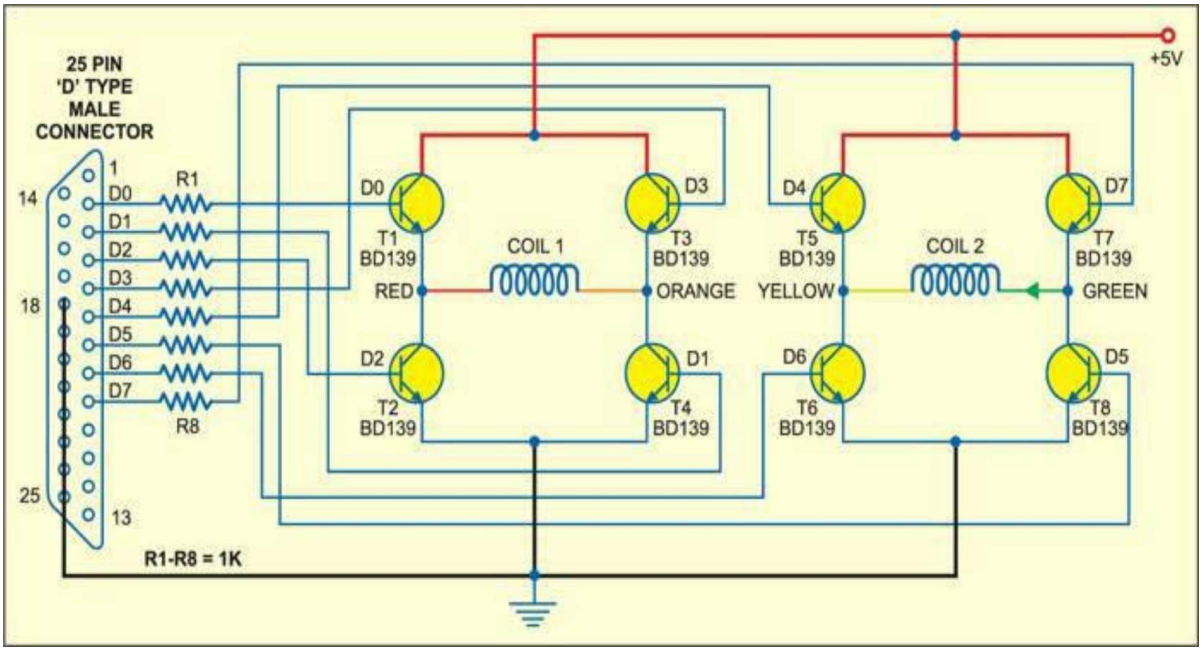
266. Noise-Muting FM Receiver



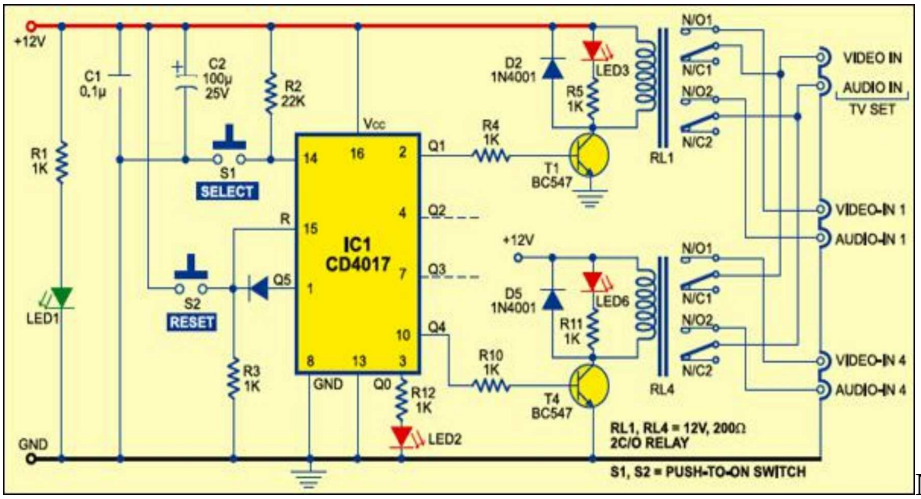
The tuning of a frequency-modulated (FM) receiver to a FM radio station frequency includes a considerable measure of 'murmuring' noise in the middle of the stations, which is exceptionally irritating for the administrator and in that capacity unfortunate.

267. PC-Based Stepper Motor Controller

Here's stepper motor controller is perhaps the cheapest, littlest and easiest. A couple of H-bridges with a software program written in 'C++' is utilized to control the bipolar stepper motor with a stage determination of 18 degree per pulse.

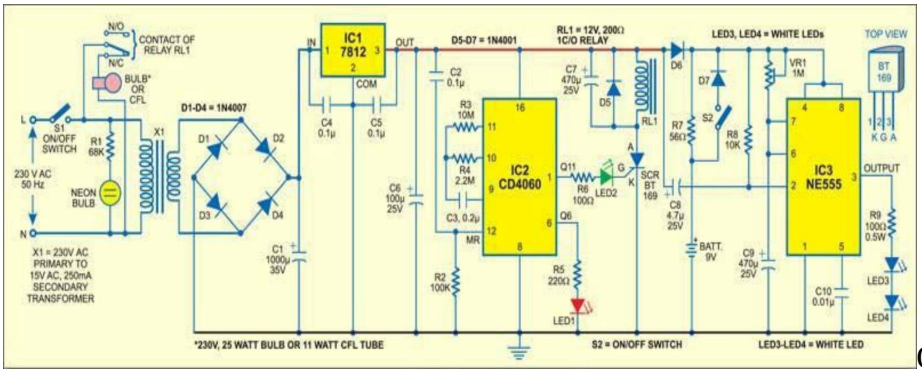

25 PIN
'D' TYPE
MALE
CONNECTOR
1
14
18
25
13
D0
D1
D2
D3
D4
D5
D6
D7
R1
R8
R1-R8 = 1K
+5V
T1
BD139
T2
BD139
T3
BD139
T4
BD139
T5
BD139
T6
BD139
T7
BD139
T8
BD139
COIL 1
COIL 2
RED
ORANGE
YELLOW
GREEN

268. Digital Audio/Video Input Selector



Need to associate in excess of one Audio Video (AV) source to your shading television? Try not to stress, here's an AV input expander for your TVs. It is reasonable and simple to develop

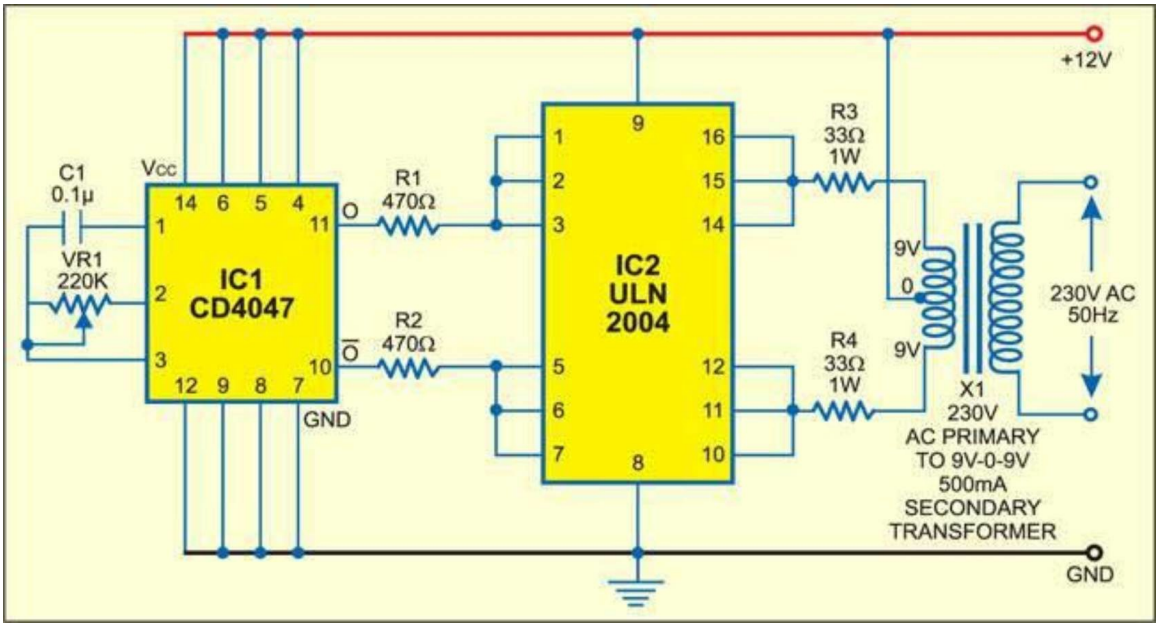
269. Automatic Bathroom Light with Back-up Lamp



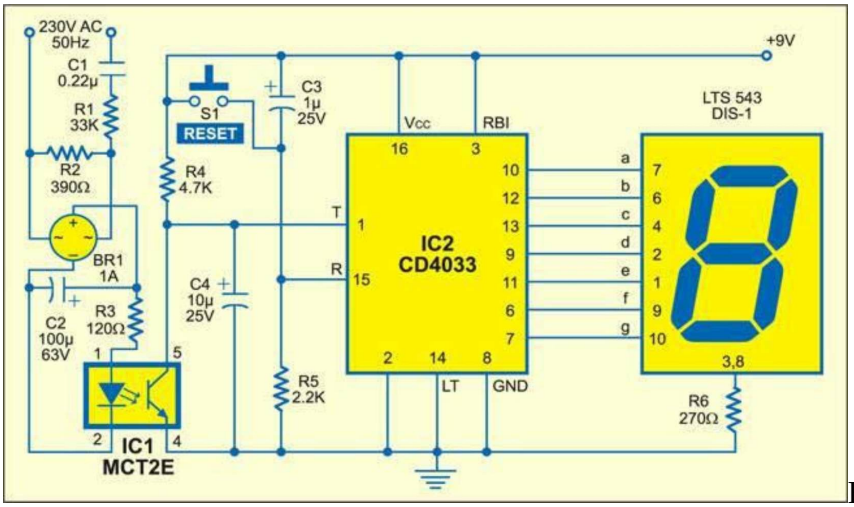
Once in a while we forget to switch off the Toilet light and it stays on unnoticed for long periods. This circuit takes care of the problem of electricity wastage by switching off the lamp automatically following 30 minutes once it is switched on. The backup LED lamp gave in the circuit turns on for three minutes when mains falls flat. This is useful particularly when you are cleaning up around evening time.

270. Simple Low-Power Inverter

This is a simple low-power inverter that converts 12V DC into 230-250V AC Power Supply. It can be utilized to power light loads like window chargers and night lamps, or essentially offer stun to ward off the gate crashers. The circuit is worked around only two ICs, to be specific, IC CD4047 and IC ULN2004.

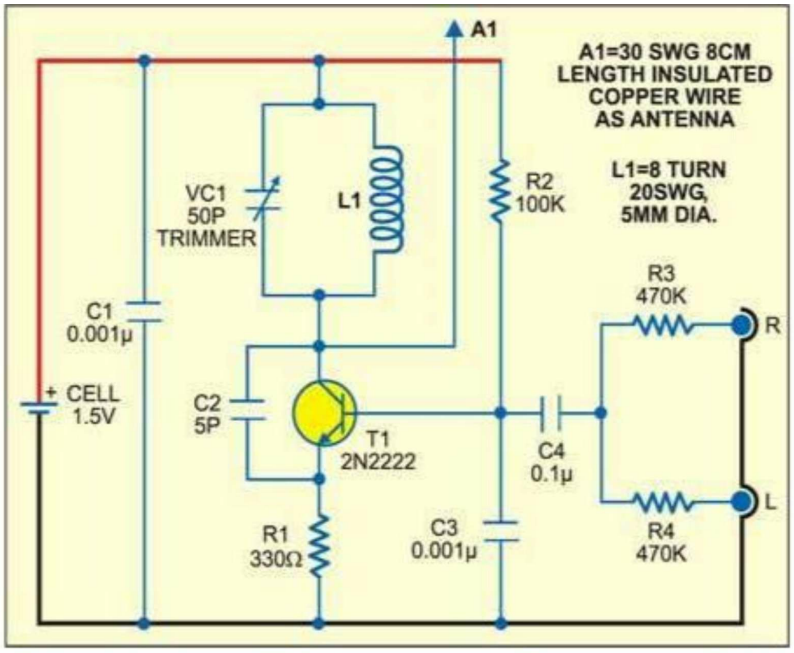

+12V
C1
0.1µ
VR1
220K
Vcc
IC1
CD4047
14 6 5 4
1
2
3
12 9 8 7
11
10
GND
R1
470Ω
R2
470Ω
O
O
IC2
ULN
2004
1 2 3 5 6 7
9
8
16 15 14 12 11 10
R3
33Ω
1W
R4
33Ω
1W
9V
0
9V
X1
230V
AC PRIMARY
TO 9V-0-9V
500mA
SECONDARY
TRANSFORMER
230V AC
50Hz
GND

271. Mains Interruption Counter with Indicator



Here's circuit counts mains supply interruptions (up to 9) and demonstrates the number on a seven-segment display. It is profoundly valuable for automobile battery chargers. In view of the quantity of mains interruptions, the client can expand the charging time for lead-acid batteries.

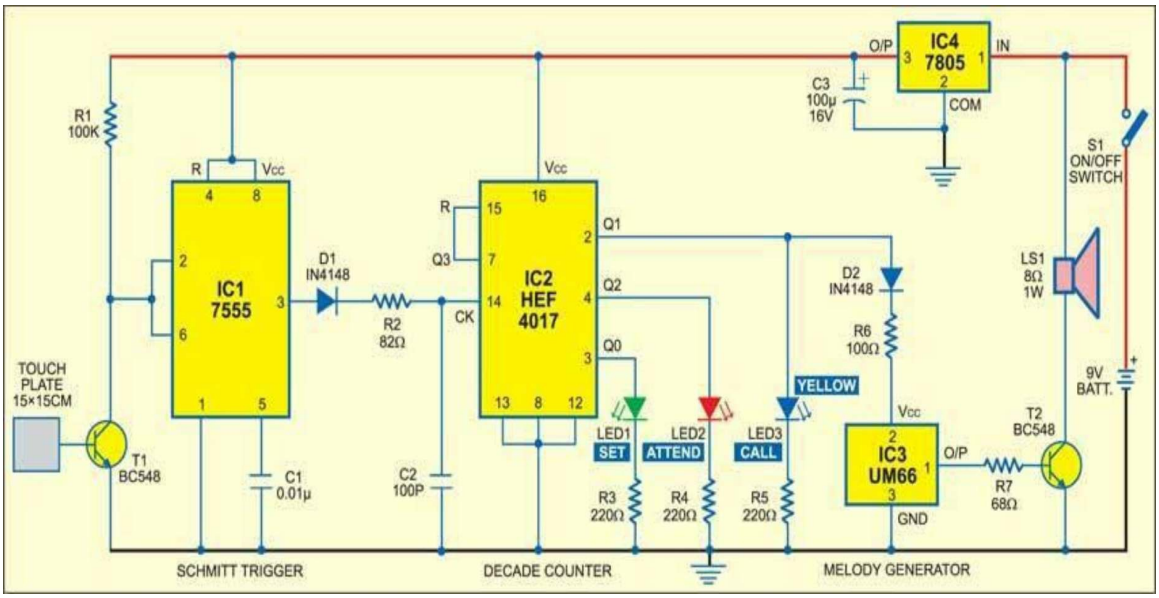
272. FM Adaptor for Car Stereo



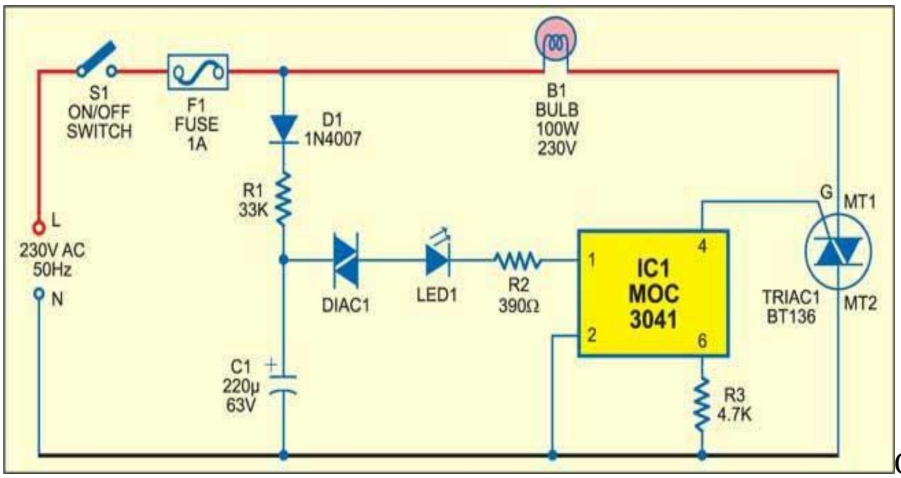
On the off chance that your car has a FM radio with stereo yield yet no inbuilt cassette player, this circuit will come convenient for tuning in to your most loved gathering of music from your own audio player through the FM-stereo car radio.

273. Panic Plate

Valuable for the elderly and feeble people, here's touch-sensitive circuit sounds a panic alarm to get the consideration of others for quick help. The touch plate settled on the wall close to the bedside gives a simple access to the individual on bedrest so he may call for assistance absent much trouble. Yellow LED3 on the board demonstrates the call and the red LED shows a quick consideration.

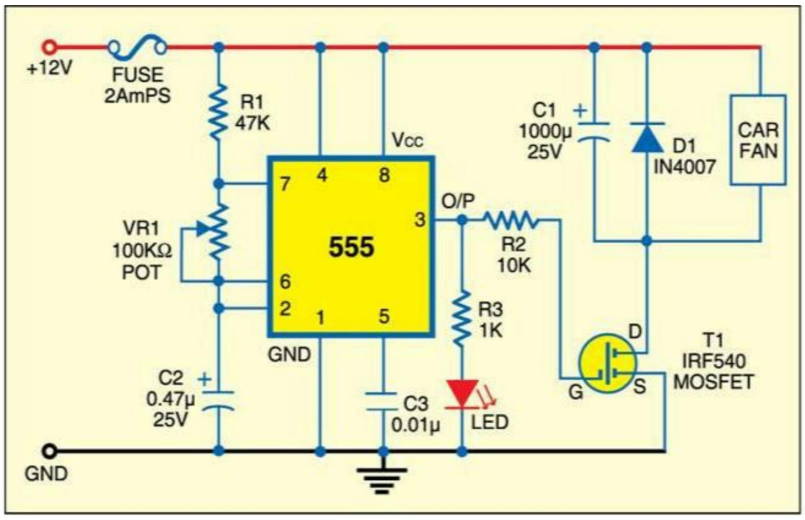


274. Twinkle X-mas Star



Christmas just would not be Christmas in the event that you don't put a flashing star in your Christmas tree. this is the circuit of like a flashing star.

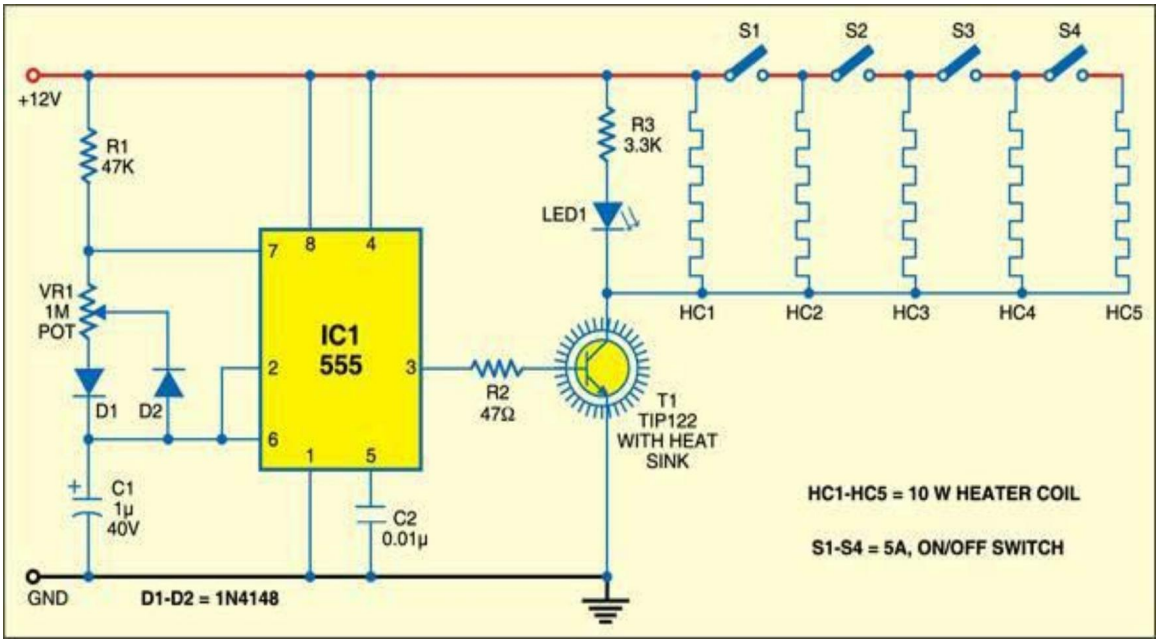
275. Car Fan Speed Controller



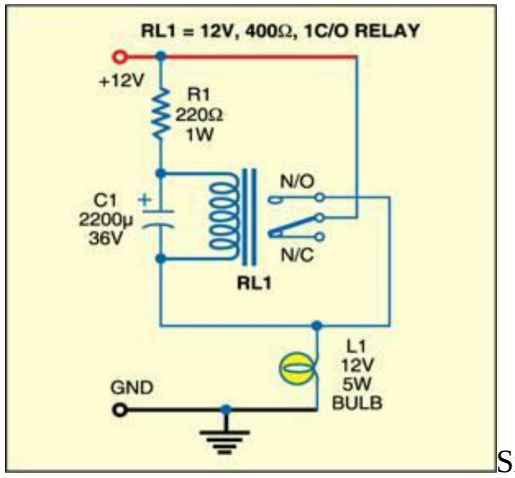
Utilizing this circuit, you can control the speed of 12V DC fans utilized as a part of cars. The circuit is worked around timer 555, which is wired as an astable multivibrator. The yield of the multi vibrator is nourished to IRF 540 MOSFET. The fan is associated between the +ive terminal of the battery and drain (D) of MOSFET T1. Capacitor C1 is associated in parallel to the fan to balance out its speed. Freewheeling diode D1 shields the motor from back emf. A fuse is incorporated for safety.

276. In Car Food and Beverage Warmer

Here's an exceptionally valuable device for the individuals who are frequently on move. It will keep your tea, espresso or food warm while consuming little power.

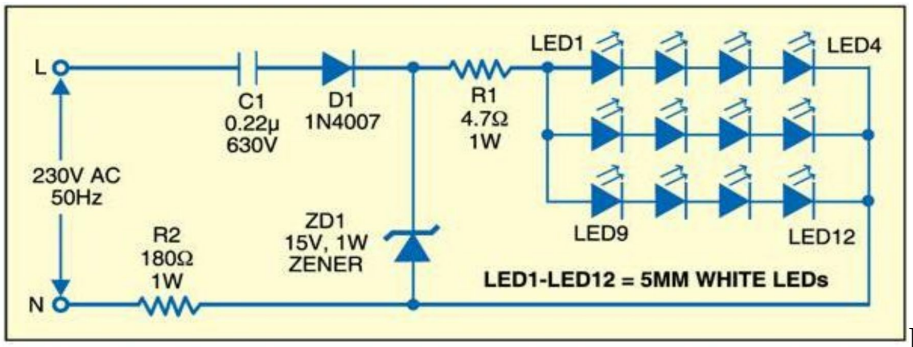

S1
S2
S3
S4
+12V
R1
47K
R3
3.3K
LED1
VR1
1M
POT
IC1
555
7
8
4
2
3
6
1
5
D1
D2
R2
47Ω
T1
TIP122
WITH HEAT
SINK
HC1
HC2
HC3
HC4
HC5
C1
1µ
40V
C2
0.01µ
GND
D1-D2 = 1N4148
HC1-HC5 = 10 W HEATER COIL
S1-S4 = 5A, ON/OFF SWITCH

277. Three Component Flasher



Since this flasher system utilizes just three components, it is moderately simple to build and install. It can be utilized for signal flashing, peril cautioning and interchange flashing.

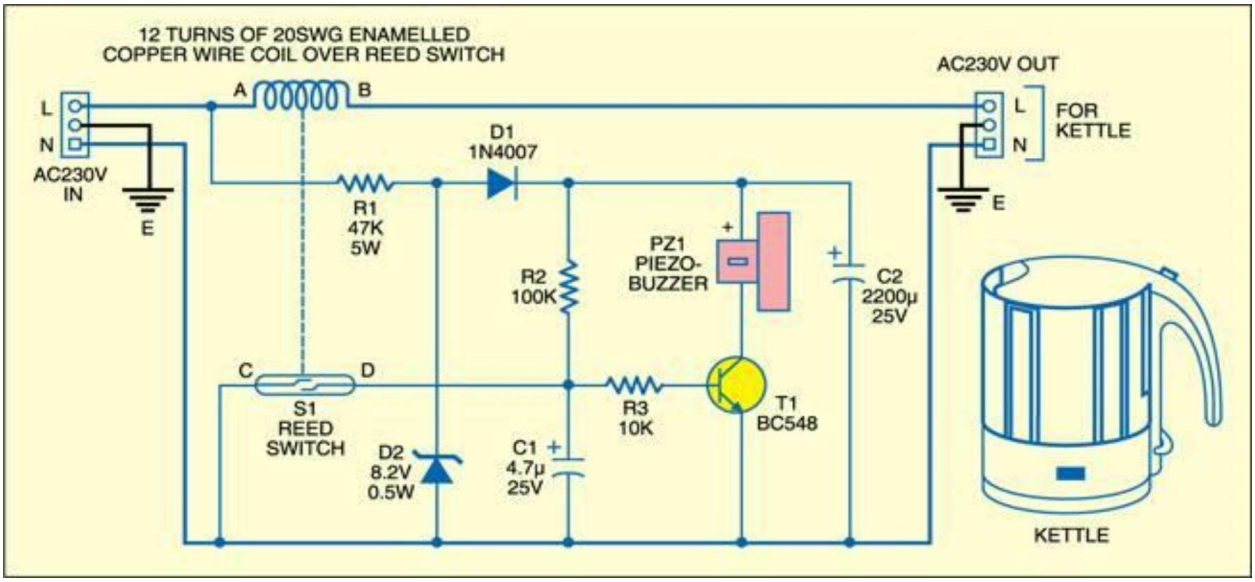
278. Night Lamp



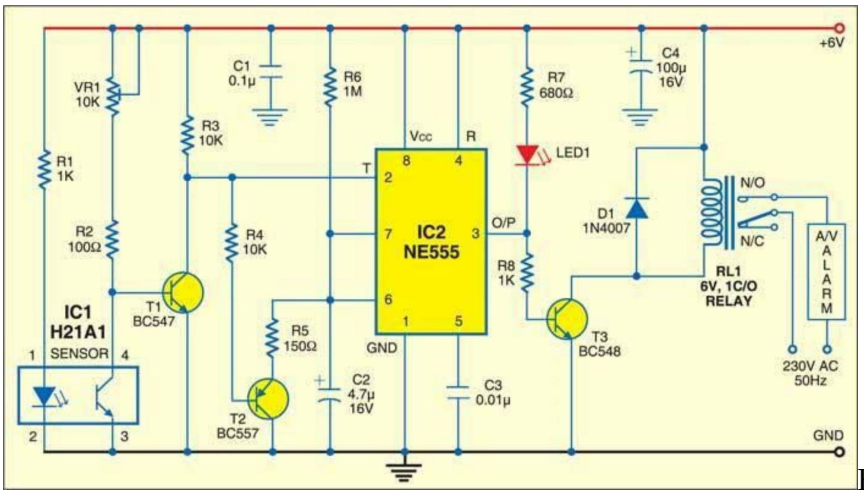
Here's two-night lamp circuits utilizing LEDs. One could be utilized as a night-vision clock and alternate as a TV lamp. Both the circuits are AC worked and expend next to no power. These are additionally ensured against mains variances. The night-vision lamp utilizes twelve LEDs masterminded in the circular pattern of a divider clock, while the TV lamp utilizes 24 LEDs in prism design.

279. Hot-Water-Ready Alarm v

Electric kettles turn-off consequently when water has boiled. Imagine a scenario in which the boiler beeps to alarm you when your water has boiled. The tripping sound of the thermal switch may not enroll as an alarm in your brain. Here's such an extra unit, to the point that gives irregular beeps toward the finish of bubbling. It has the benefits of to a great degree low part check, minimal effort, little size and light weight.

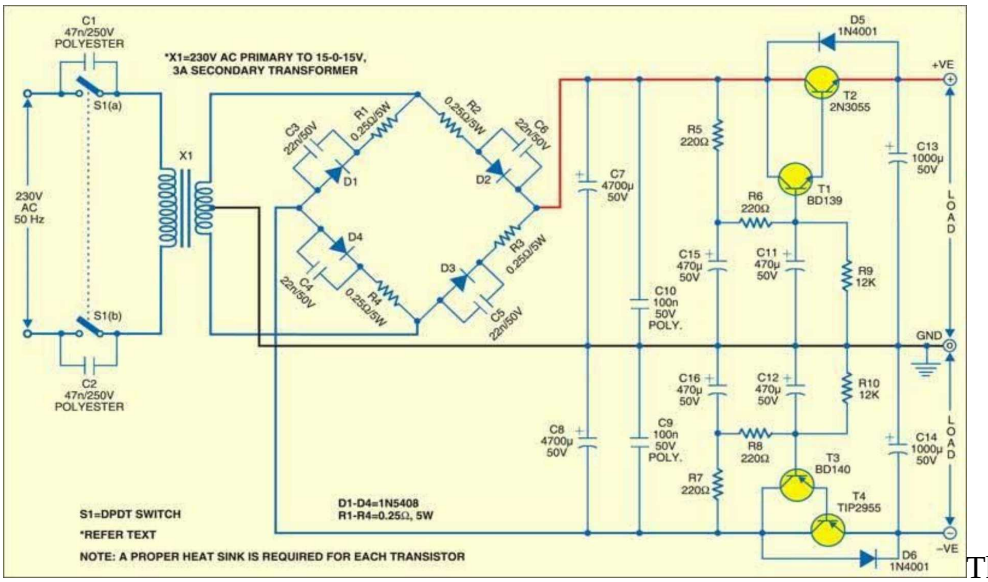


280. Optical Smoke Detector



Here's optical smoke detector utilizes a Cost Efficient, promptly accessible, opened, through-scan, infrared photograph switch. At the point when smoke is sensed, the relay stimulates to activate the audio/visual cautioning alarm.

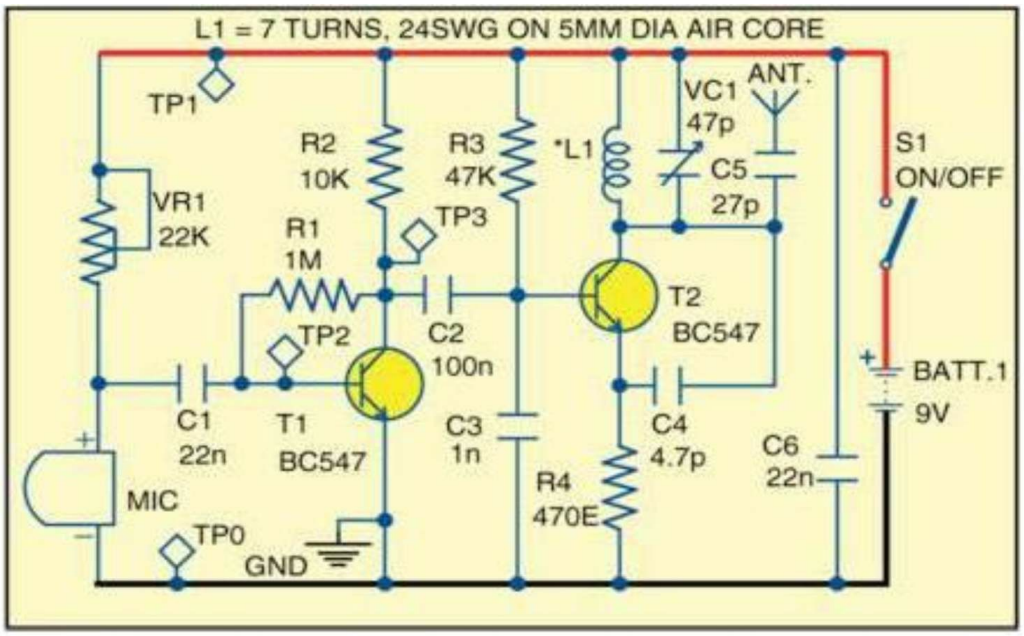
281. Capacitance-Multiplier Power Supply



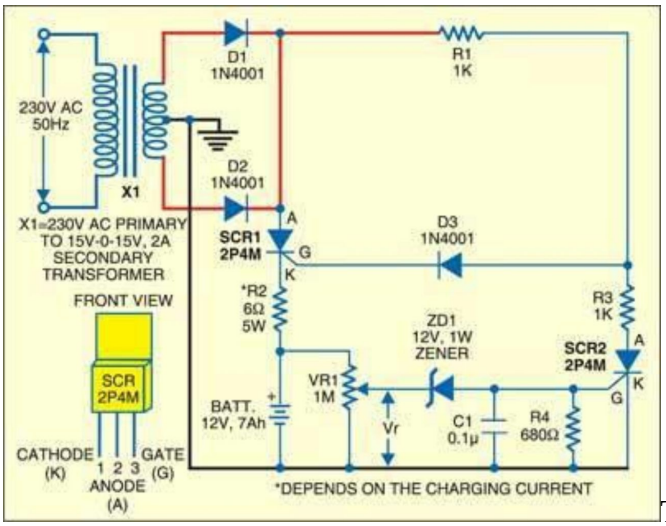
This is the circuit of a Most Effective power supply with regulation that uses a Centre tapped transformer.

282. Wireless PA for Classrooms

In huge classrooms, numerous a times the staff's voice isn't audible to students in the back rows. So the staff need to truly yell to be heard by each understudy. Introduced this is a circuit that can go about as a wireless speech-aid for staff with the goal that their voice reaches to everyone even in a substantial classroom.

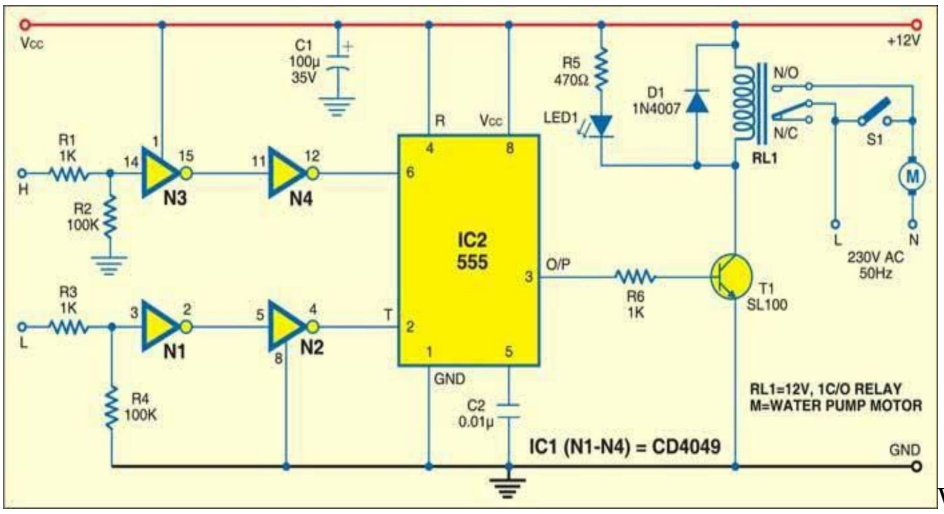

L1 = 7 TURNS, 24SWG ON 5MM DIA AIR CORE
TP1
R2
10K
R3
47K
*L1
VC1
47p
ANT.
S1
ON/OFF
VR1
22K
R1
1M
TP3
C5
27p
T2
BC547
TP2
C2
100n
BATT.1
9V
C1
22n
T1
BC547
C3
1n
C4
4.7p
C6
22n
MIC
R4
470E
TP0
GND

283. Low-Cost Battery Charger



This is an extremely basic and low-cost charger for 12V, 7Ah lead acid batteries. It can likewise be utilized for powering vehicle motors and crisis lighting frameworks.

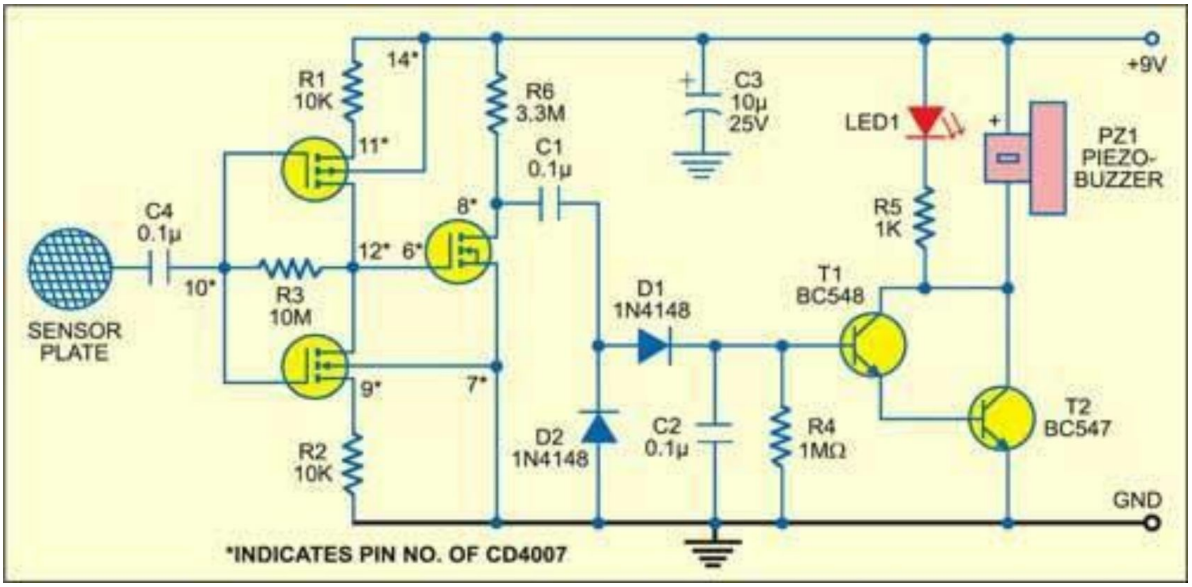
284. Simple Automatic Water-Level Controller



Water level controllers are very common in Nowadays. The one depicted here is worked around timer NE555 and inverter buffer CMOS IC CD4049. It utilizes promptly accessible, low cost components, and is anything but simply to make the circuit and install on the overhead tank (OHT) to preserve water from overflow.

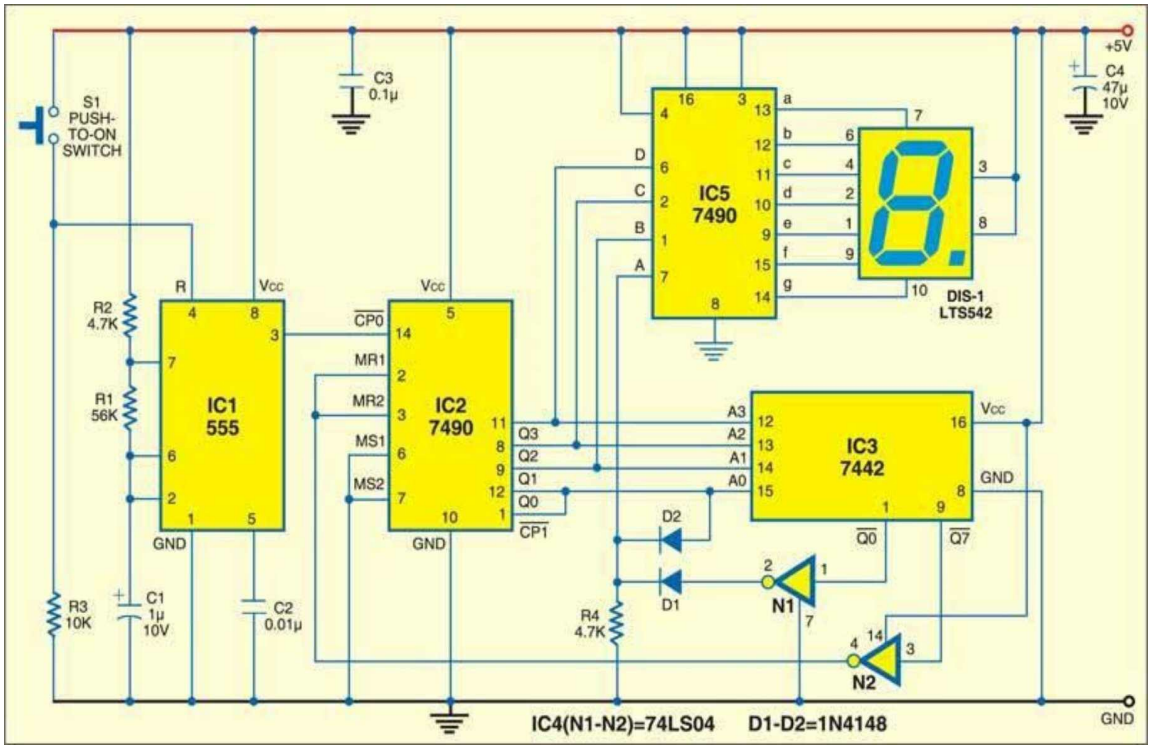
285. Touch-Plate Doorbell

Here's touch plate doorbell makes utilization of enhancement-mode MOSFETs framing some portion of CMOS quad NAND entryway CD4007B in conjunction with a detector and Darlington driver arrange.


+9V
R1
10K
14*
R6
3.3M
C3
10µ
25V
LED1
PZ1
PIEZO-
BUZZER
C1
0.1µ
11*
8*
C4
0.1µ
12*
6*
R5
1K
SENSOR
PLATE
10*
R3
10M
D1
1N4148
T1
BC548
9*
7*
D2
1N4148
C2
0.1µ
R4
1MΩ
T2
BC547
R2
10K
GND
*INDICATES PIN NO. OF CD4007

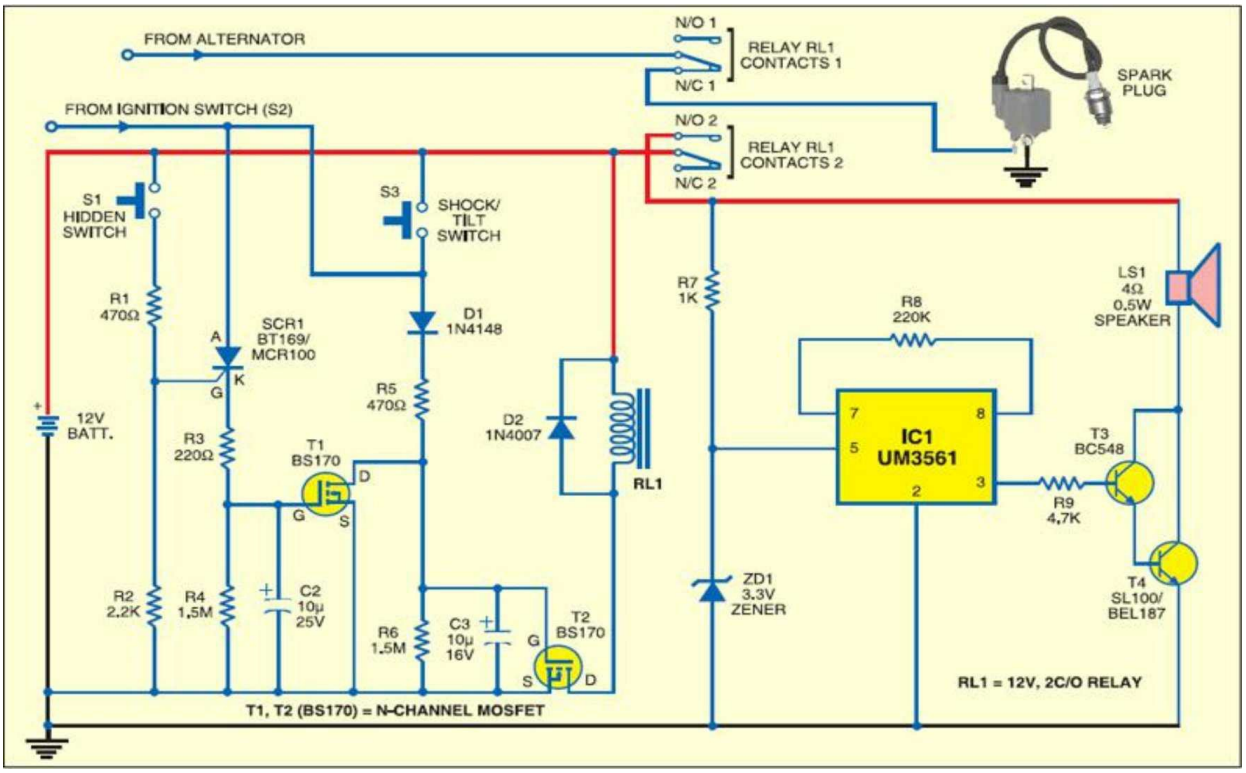
286. Electronic Ludo

Ludo, a traditional board game, requires the players to throw a dice by hand and push ahead their tokens on the board by the quantity of squares indicated by the dice. In this electronic version, the players need to press a push-to-on switch instead of throwing the six-surface dice. At the point when the switch is pressed momentarily, the seven-segment digital counter displays a number immediately. As in the manual dice, the numbers are displayed randomly in the vicinity of '1' and '6' contingent upon the time for which the player presses switch S1.


S1
PUSH-
TO-ON
SWITCH
R2
4.7K
R1
56K
R3
10K
C1
1µ
10V
C2
0.01µ
C3
0.1µ
C4
47µ
10V
+5V
GND
IC1
555
R
Vcc
GND
IC2
7490
CP0
MR1
MR2
MS1
MS2
Q3
Q2
Q1
Q0
CP1
IC5
7490
D
C
B
A
a
b
c
d
e
f
g
DIS-1
LTS542
IC3
7442
A3
A2
A1
A0
Q0
Q7
D1
D2
R4
4.7K
N1
N2
IC4(N1-N2)=74LS04
D1-D2=1N4148

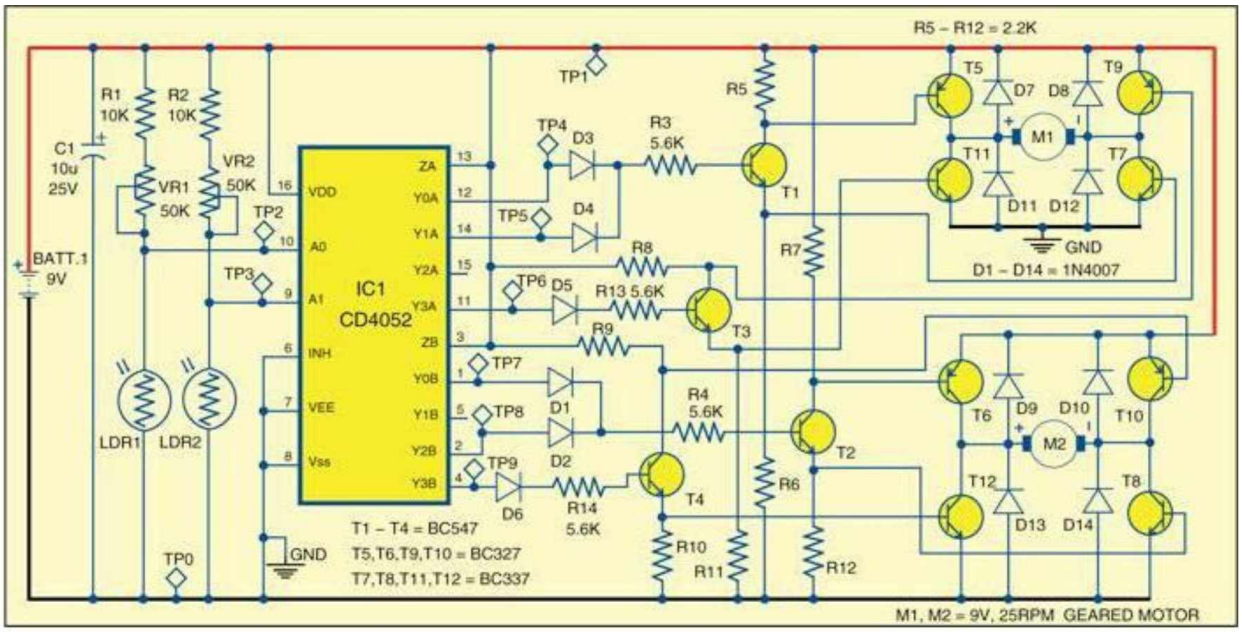
287. Motorbike Alarm

This easy-to-build alarm can be fitted in bikes to shield them from being stolen. The modest circuit can be shrouded anyplace, with no complicated wiring. Practically, it suits all bikes as long as they have a battery. It doesn't deplete out the battery however as the standby current is zero.


FROM ALTERNATOR
FROM IGNITION SWITCH (S2)
N/O 1
RELAY RL1 CONTACTS 1
N/C 1
N/O 2
RELAY RL1 CONTACTS 2
N/C 2
SPARK PLUG
S1 HIDDEN SWITCH
S3 SHOCK/ TILT SWITCH
R1 470Ω
SCR1 BT169/ MCR100
A
K
G
D1 1N4148
R5 470Ω
D2 1N4007
RL1
12V BATT.
R3 220Ω
T1 BS170
D
G
S
R7 1K
R8 220K
LS1 4Ω 0,5W SPEAKER
IC1 UM3561
7
8
5
2
3
T3 BC548
R9 4,7K
T4 SL100/ BEL187
R2 2,2K
R4 1,5M
C2 10µ 25V
R6 1,5M
C3 10µ 16V
T2 BS170
ZD1 3.3V ZENER
T1, T2 (BS170) = N-CHANNEL MOSFET
RL1 = 12V, 2C/O RELAY

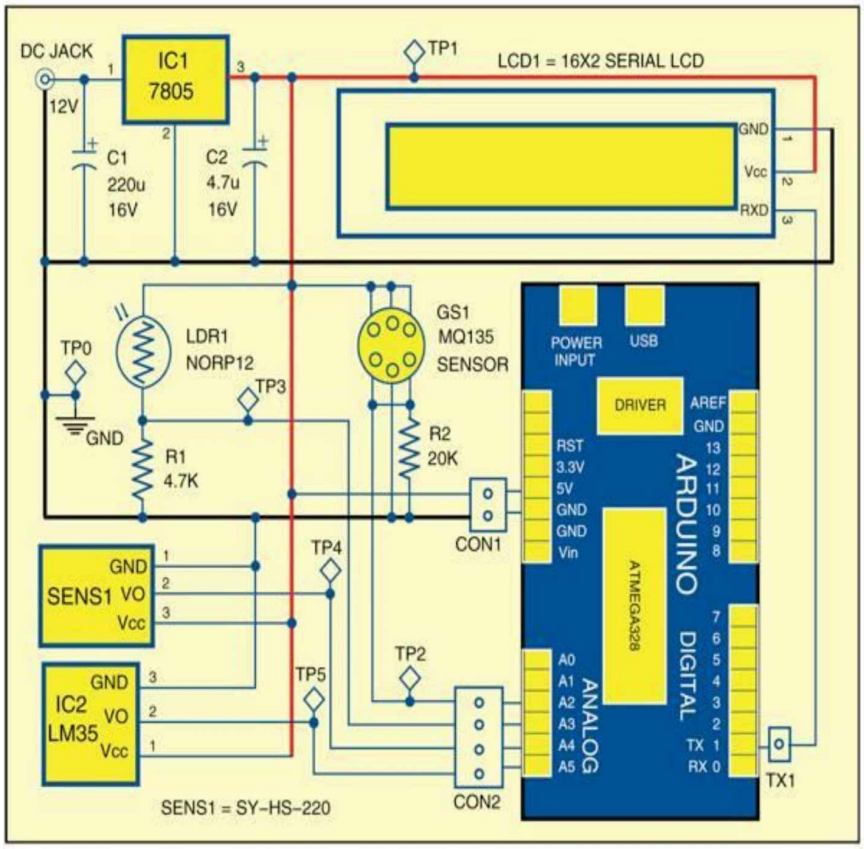
288. Dual Motor Control for Robots

Exhibited here is a basic circuit that can drive two motors for a little robot, enabling the robot to arrange an obstacle course. Two light dependent resistors (LDRs) are utilized to recognize the obstacle and the motors are driven correspondingly to maintain a strategic distance from the obstacles consequently. Two H-bridge motor circuits are utilized that can drive each motor forward or backward, or stop it, independently.


R5 – R12 = 2.2K
R1 10K
R2 10K
C1 10u 25V
VR1 50K
VR2 50K
BATT.1 9V
LDR1
LDR2
IC1 CD4052
VDD
A0
A1
INH
VEE
Vss
ZA
Y0A
Y1A
Y2A
Y3A
ZB
Y0B
Y1B
Y2B
Y3B
TP0
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
GND
D1
D2
D3
D4
D5
D6
R3 5.6K
R4 5.6K
R5
R6
R7
R8
R9
R10
R11
R12
R13 5.6K
R14 5.6K
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
D7
D8
D9
D10
D11
D12
D13
D14
M1
M2
GND
D1 – D14 = 1N4007
T1 – T4 = BC547
T5,T6,T9,T10 = BC327
T7,T8,T11,T12 = BC337
M1, M2 = 9V, 25RPM GEARED MOTOR

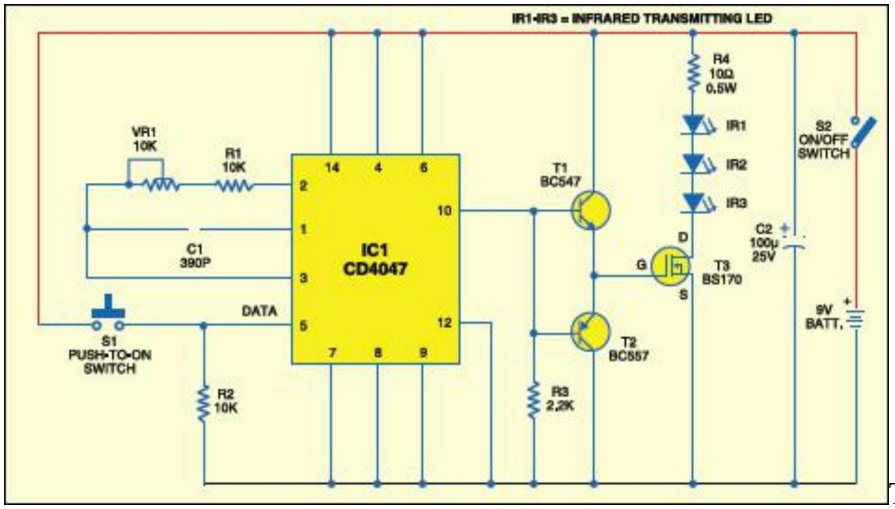
289. Environment Monitoring System Using Arduino

An agreeable environment can expand the efficiency multi folds. So, it is vital that the environment factors, for example, temperature, relative stickiness, dew point, light power and air quality (gas/smoke), are ceaselessly checked and comparing systems acclimated to keep up an open to workplace.



Circuit Diagram of Environment Monitoring System Using Arduino

290. Long-Range IR Transmitter

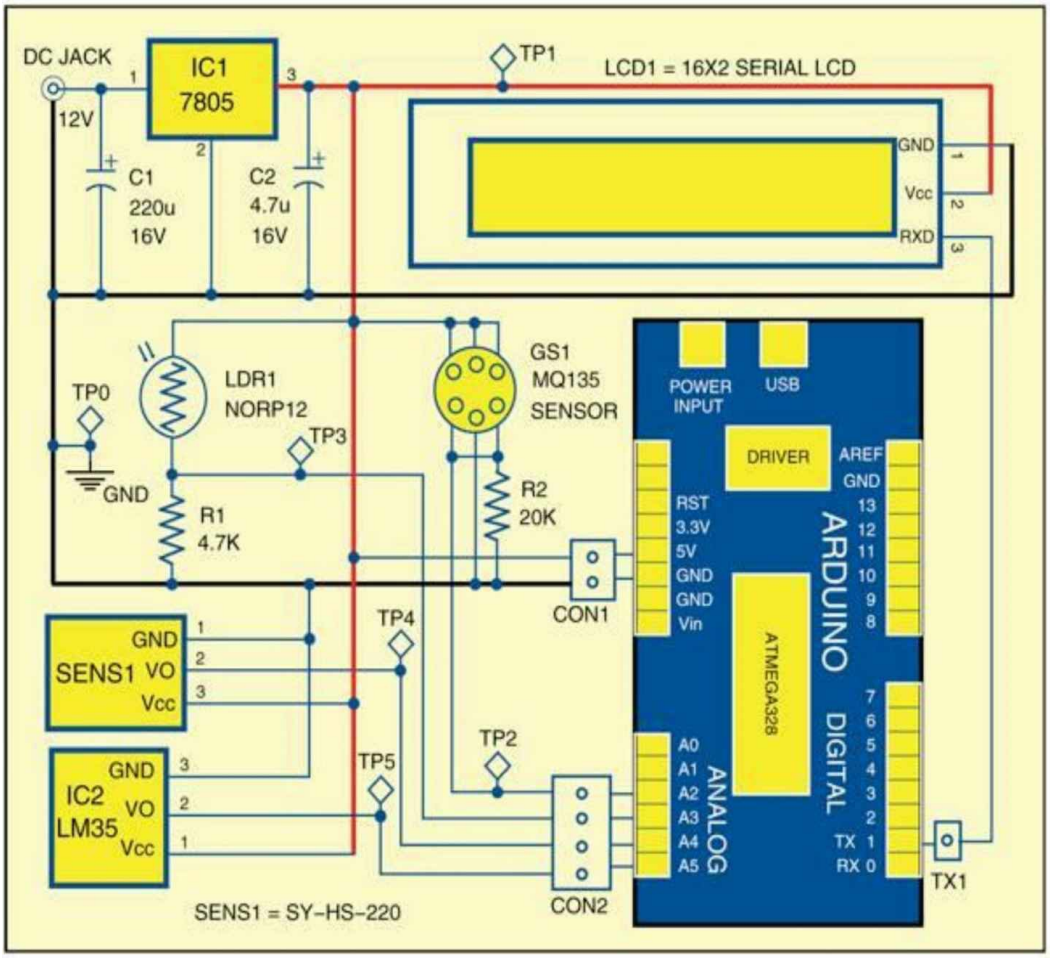


The majority of the IR remotes work dependably inside a range of 5 meters. The circuit intricacy increments on the off chance that you plan the IR transmitter for dependable task over a longer range, say, 10 meters. To twofold the range from 5 meters to 10 meters, you have to increase the transmitted power four times.

•

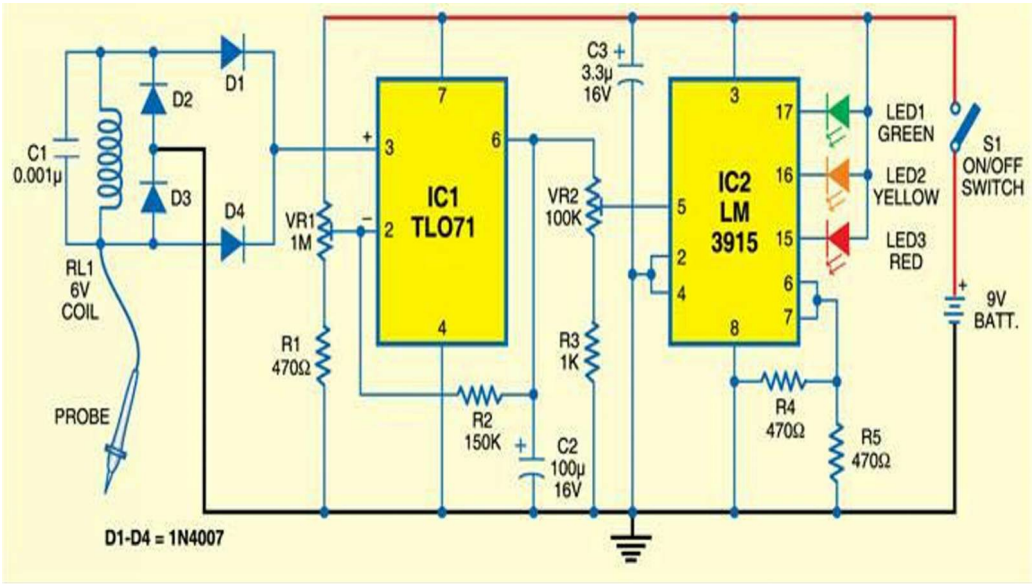
291. Variable Bench Power Supply with LCD and Monitor Display

A variable bench power supply is an imperative hardware in electronics lab for leading investigations, prototyping, and testing. This cool-looking DIY bench power supply gives settled 5V and 12V yields alongside a different variable DC yield extending from 1.2 to 25V. The on-board LCD show indicates momentary yield voltage, current, and power drawn, which are critical parameters amid prototyping of another project. The power supply can likewise be associated with a PC through RS232 port to picture and monitor these parameters graphically on screen. The project utilizes Atmega8 microcontroller for estimating and showing the electrical yield parameters.

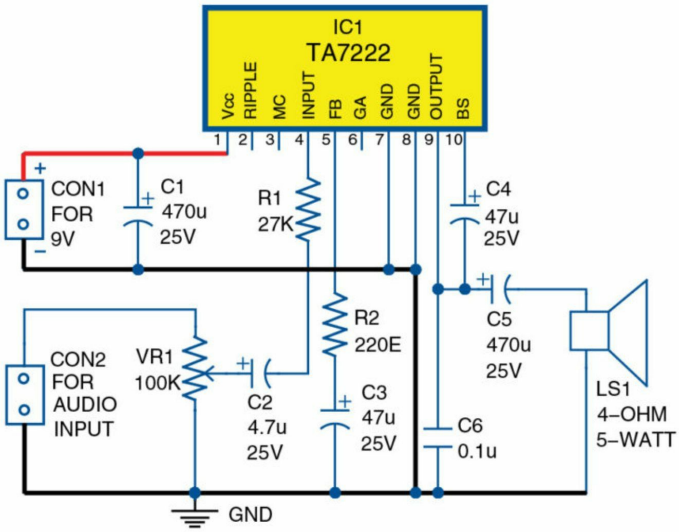


292. Earth Leakage Tester.

Earth leakage for electrical wiring is a serious issue, particularly amid rainy season. Pipelines are more powerless against earth leakage and may cause an unforeseen electric shock. Electrical apparatuses or defective wiring might be the wellspring of leakage current through the wet wall to the earth. A customary AC analyzer can't identify the earth leakage if current isn't sufficiently high to switch on a neon lamp


C1
0.001µ
D1
D2
D3
D4
RL1
6V
COIL
PROBE
VR1
1M
R1
470Ω
IC1
TLO71
R2
150K
C2
100µ
16V
C3
3.3µ
16V
VR2
100K
R3
1K
IC2
LM
3915
R4
470Ω
R5
470Ω
LED1
GREEN
LED2
YELLOW
LED3
RED
S1
ON/OFF
SWITCH
9V
BATT.
D1-D4 = 1N4007

293. 5-Watt Audio Amplifier Using TA7222



Here is a basic 5-watt mono audio amplifier utilizing IC TA7222 that drives a 4-ohm speaker utilizing a 9V battery or a 9V DC adaptor. You can likewise make a stereo amplifier by utilizing two identical circuits.

Circuit diagram of the 5-watt mono audio amplifier is appeared in Fig. 1. Aside from audio amplifier TA7222 (IC1) and a 4-ohm speaker (LS1), this 5-watt AF amplifier utilizes a couple of resistors and capacitors, variable resistors and two connectors.

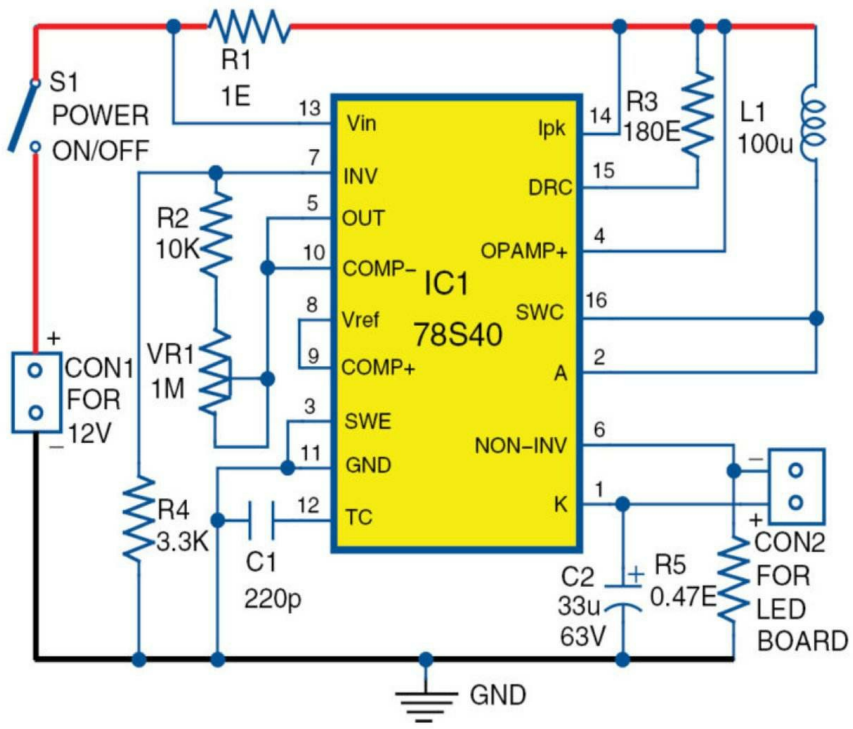
IC TA7222 (IC1) is the heart of the circuit. This IC has ten pins. Stick 1 is associated with +9V power supply. 470µF, 25V capacitor (C1) associated amongst +9V and ground goes about as a filter. Pins 2 and 3 of the IC are not utilized. Stick 4 is associated with audio input terminal through potmeter VR1, capacitor C2 and resistor R1. Potmeter VR1 is utilized to control the audio input signal. Stick 5 of the IC is associated with the ground through resistor R2 and capacitor C3. Stick 6 isn't utilized. Pins 7 and 8 are grounded. Capacitor C4 is associated between pins 9 and 10. Stick 9 is associated with the ground through capacitor C6. It is additionally associated with the 4-ohm speaker (LS1) through capacitor C5.

294. Battery-Powered Night Lamp Using an Old LED Bulb

Here's circuit utilized cost efficient 3W LED board to build a battery-powered night lamp. This board comprises of eight SMD2835 LEDs associated in series. Branded LED bulbs have SMPS drivers and insurance circuits for legitimate brightening. In any case, some shoddy LED bulbs have just capacitor control supplies and no assurance circuits. In this undertaking, 78S40 IC is utilized, which goes about as an exchanging regulator system.

SMD2835 LED module

SMD2835 is a novel bundling structure with self-heat-sink design and high-efficiency LED module, broadly utilized as a part of the fields of general, business, modern, city and car lighting, among others. A portion of its highlights are given beneath.



Vertical structure

Chip coordinate conduction balances enhance heat dispersal performance, which can withstand higher current (40-60mA).

Huge heat-sink

Heat-sink is 2-3 times bigger than SMD3528 with a great heat dispersal design.

Huge light-transmitting surface

This enhances the efficiency of light up to 90 percent.

Value of projects

In spite of the fact that SMD2835 is 25 percent less expensive than SMD3528, the same iridescent flux can be accomplished using the previous. The circuit appeared in Fig. 1 is worked around 78S40 DC-DC converter IC (IC1), eight high-brilliant SMD2835 LEDs (from an old LED bulb) and a couple of different segments. Here,

IC1 is arranged as an altered lift converter. It goes about as both lift converter and

PARTS LIST

Semiconductors:

IC1	- 78S40 DC-to-DC converter

Resistors (all 1/4-watt, ±5% carbon):

R1	- 1-ohm
R2	- 10-kilo-ohm
R3	- 180-ohm
R4	- 3.3-kilo-ohm
R5	- 0.47-ohm
VR1	- 1-mega-ohm preset

Capacitors:

C1	- 220pF ceramic disk
C2	- 33µF, 63V electrolytic

Miscellaneous:

CON1, CON2	- 2-pin terminal connector
S1	- On/off switch
L1	- 100µH inductor
	- 12V battery
	- LED board

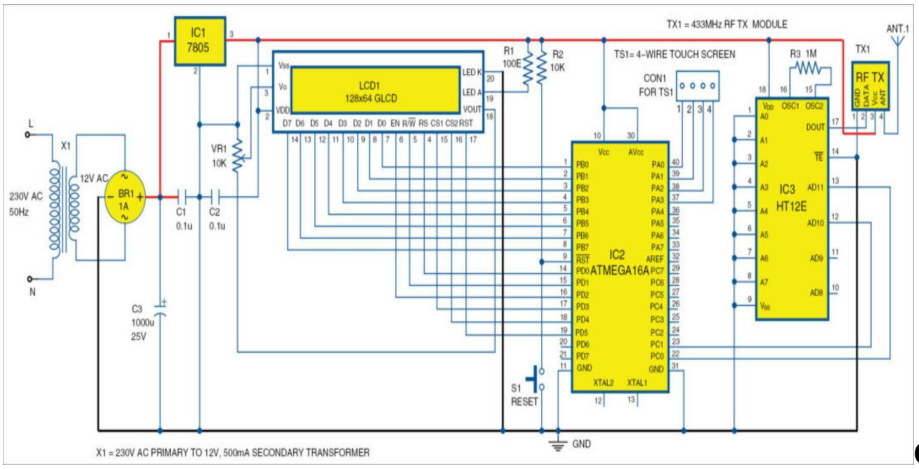
constant current driver. IC1 is in a 16-stick double inline bundle that permits reference and a non-modifying contribution of the comparator to be stuck out. These extra highlights incredibly enhance the adaptability of this part and permit the execution of more sophisticated applications.

IC1, inductor L1 and the onboard hardware of LED board perform voltage boosting tasks. Current direction is refined by checking the voltage drop crosswise over sense resistor R5, which is set in series on the LED board. Since the most extreme voltage over the sense resistor is short of what one volt, the on-chip operational amplifier is utilized to build the sense voltage for criticism.

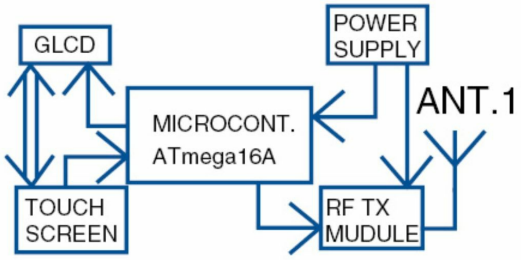
Capacitor C1 decides the working frequency of the circuit. Preset VR1 is utilized to control the splendor of the LED. Switch S1 is utilized to switch the LED board on/off.

295. Touchscreen and GLCD-Based Home Automation

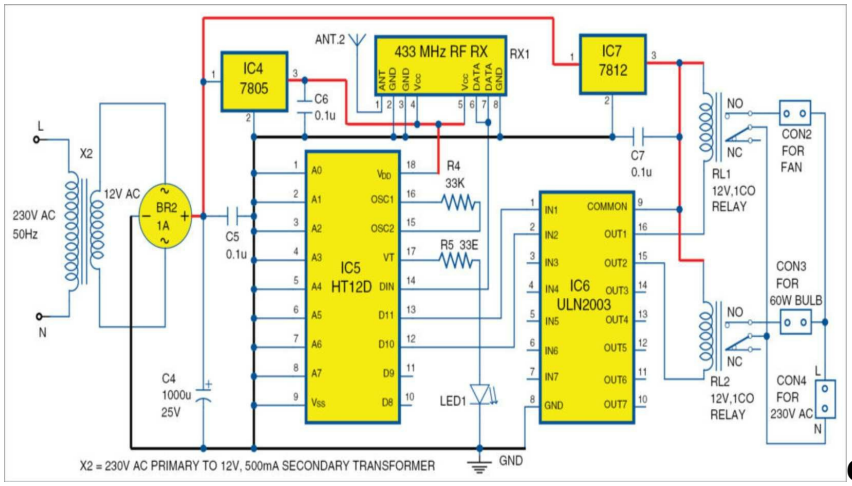
This project controls home electrical apparatuses utilizing a touchscreen input device. The framework includes two relays for controlling a globule and a fan for instance. The touchscreen set on a graphical LCD goes about as a control panel for sending control commands through a pair of wireless radio frequency (RF) correspondence modules. The touchscreen panel on the transmitter side interfaced to a microcontroller sends on/off commands to the collector where the heaps/apparatuses are associated. By contacting the predetermined bit on the touchscreen panel, the heaps are turned on/off remotely through the wireless RF modules.



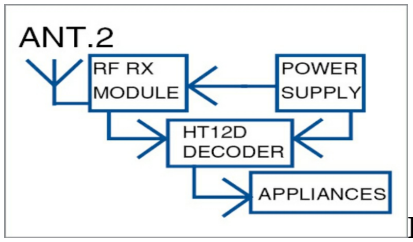
Circuit diagram of the transmitter



Block diagram of the transmitter



Circuit diagram of the receiver

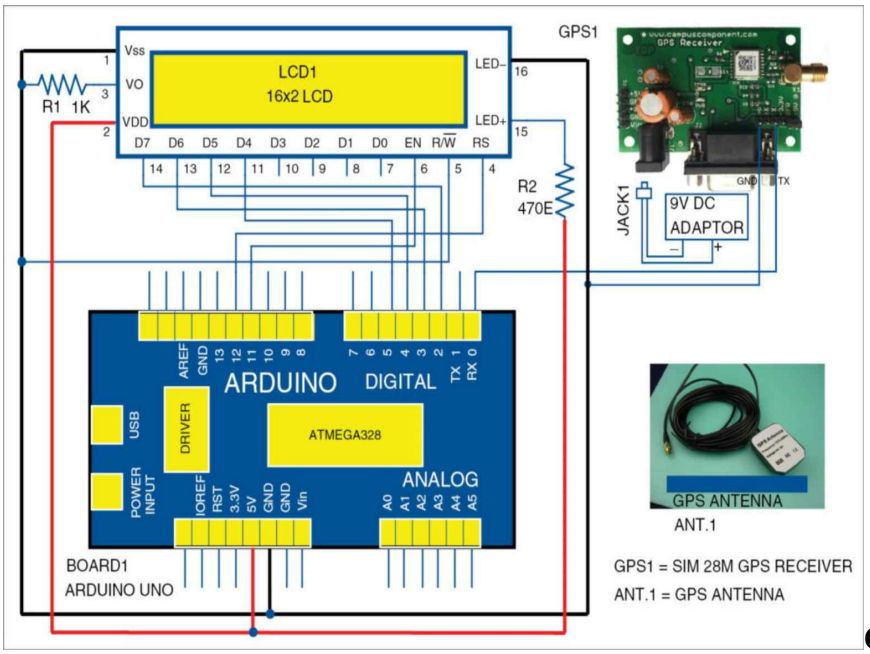


Block diagram of receiver

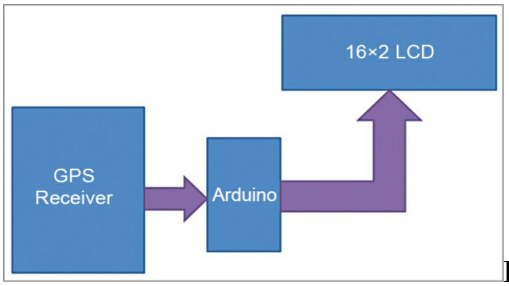
296. GPS Clock using Arduino

Global positioning system (GPS) synchronized clocks give exact time. These clocks are all inclusive and usually utilized at railway stations, transport stands and airports. These are generally utilized for military purposes as well.

Here we depict a GPS clock in light of Arduino Uno R3—an AVR ATmega328-based microcontroller load up with six simple inputs pins and 14 computerized input/yield (I/O) pins. The microcontroller has 32kB ISP flash memory, 2kB Smash and 1kB EEPROM. The board gives serial communication by means of UART, SPI and I2C.

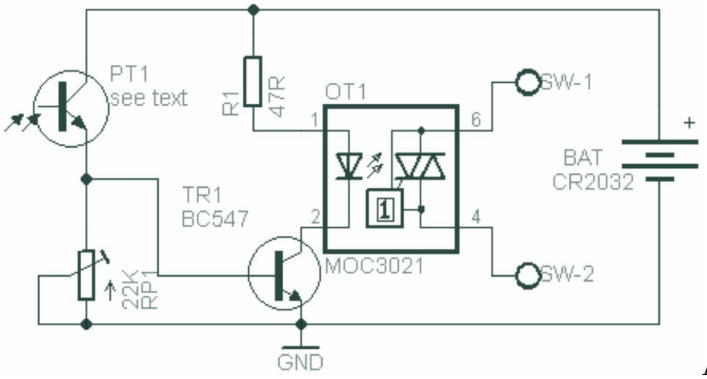


Circuit diagram of GPS clock using Arduino



Block diagram of GPS clock using Arduino

297. Optical Slave Flash Trigger



A "slave flash" (otherwise called speed light/strobe) is a flashgun that lounges around unobtrusively until the point that it sees a bright light. At the point when the slave sees a flash, it flashes itself. Utilizing off-camera flashguns get you some incredible dynamic lighting for superb photography that would be hard to make some other way. Demoed here is an off-camera flash trigger extra "Optical Slave Flash Trigger" which is massively valuable on the off chance that you work with a speed light. It basically is an outstanding light-touchy sensor identifies light impulses and awakens the electronics which at that point at last flames the connected speed light.

Project Design

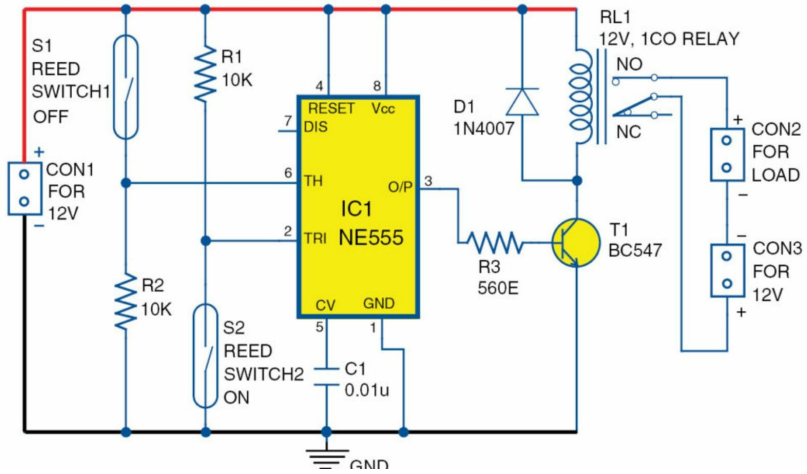
The base is to make things little, shoddy, segregated, and freely powered. The most ideal approach to do this is to utilize cheap and promptly accessible components as the heart of the hardware. I lean toward not utilizing a microcontroller, even a shabby variation, for such a basic outline (it would be a needless excess). The thought behind the outline is extremely simple:

- Sense the light impulse (from the ace flash) utilizing a standard light sensor
- Confirm the light level is over a steady threshold (which can be adjusted utilizing a variable resistor to tweak the detection affectability)
- Trigger the spare flash through a galvanically-secluded (sans contact) electronic switch

This little circuit works on the standard of Wheatstone bridge. At the point when light falls on the phototransistor (PT1), its conductivity (and ebb and flow) increases which makes the driver transistor (TR1) forward biased. Subsequently, the opto-detached triac (OT1) awakens to trigger the slave flash (on account of an optical coupling, it empowers securely to utilize even the most established flashgun that could somehow damage your hardware by high voltage start). Be that as it may, you should know that the associated slave flash doesn't work when the encompassing light is excessively solid i.e. amid open daylight. Moreover, it might even fizzle when you have a bright wellspring of artificial light in its way. Variable resistor (RP1) here causes you to set a light detection threshold the correct way.

298. Automatic Water Refilled for Air-Coolers

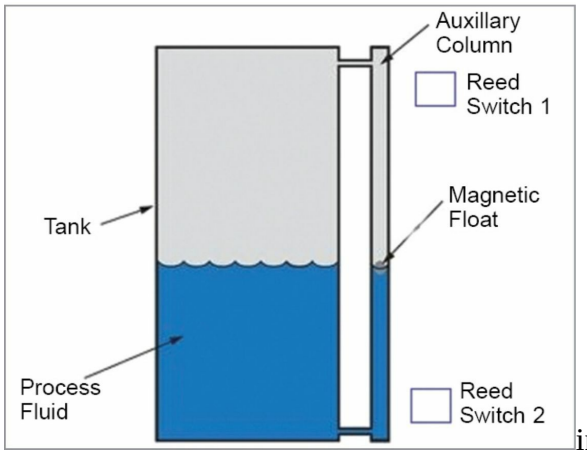
Air-coolers give cool air in a room by adding moisture to the air. This damp air is passed up a fumes fan or blower, which influences the room temperature to drop. These coolers require frequent refilling of water. Displayed here is a circuit to refill water automatically in an air-cooler tank when the water dips under a foreordained level.



Circuit and working

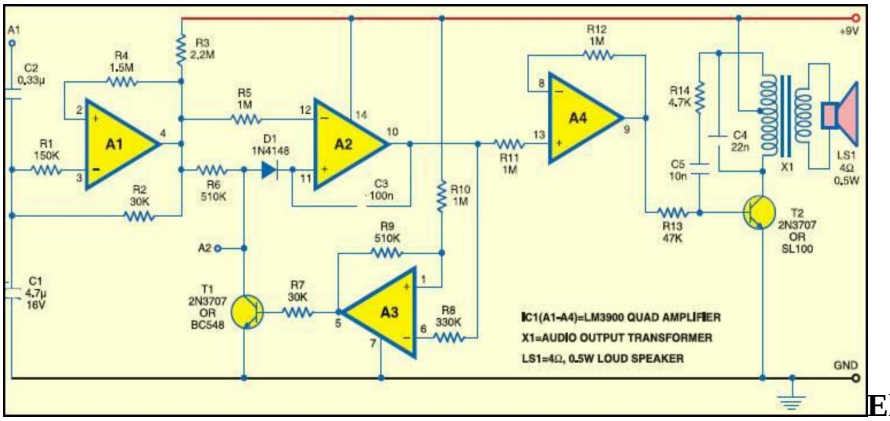
Circuit diagram of the automatic water refilled for air-coolers is appeared in Fig. 1. It is worked around NE555 timer (IC1), transistor BC547 (T1), reed switches (S1 and S2), and a couple of different components. IC1 is arranged like bi-stable mode, the main contrast being that switch S1 is associated with pin 6 rather than pin 4.

The two reed switches (S1 and S2) are appended at upper and base levels of the tank as appeared in Fig. 2. Working of the circuit is truly basic. In the event that water dips under the foreordained level, the attractive float closes reed change S2 to pull pin 2 of IC1 to ground. Along these lines the voltage on pin 2 goes underneath 1/3Vcc and the yield of IC1 goes high. This stimulates the relay to



initiate the solenoid valve. In this way the water streams into the tank.

Once the tank is full, the attractive float closes reed switch S1. Pin 6 of IC1 goes over 2/3Vcc and the yield goes low. This de-invigorates the relay to deactivate the solenoid valve, which stops the water streaming into the cooler tank.

299. 

Electronic Horn

This a basic circuit of an electronic horn that is built around fourfold operation amp IC LM3900 (IC1). IC LM3900 has four independent operation amps (A1 through A4) with an extensive output voltage swing. It can work at up to 32V DC.

300. Bridge Power Audio Amplifier

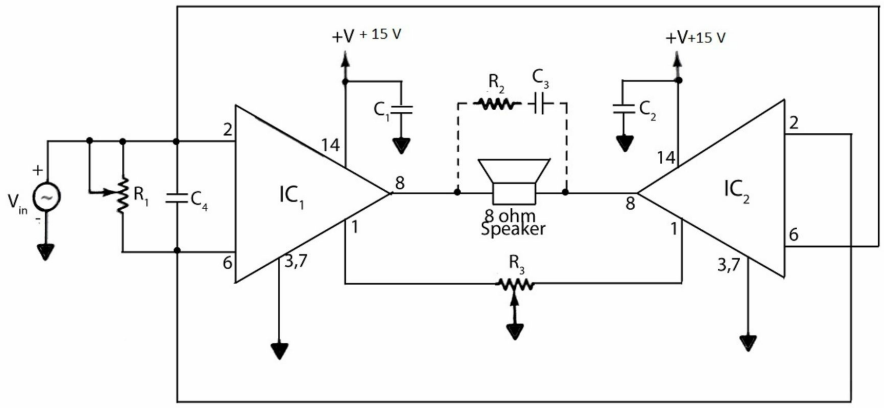


Figure 1-1 Bridge Power Audio Amplifier

This is basic circuit of bridge power audio amplifier utilized as a part of utilization requiring more power than is given by the single LM380 amplifier, the two LM380s can be utilized as a part of the bridge config appeared in figure 1. In this course of action (bridge power audio amplifier) the maximum output voltage swing will be twice that of a solitary LM380 amplifier; along these lines, the power conveyed to the load by bridge power audio amplifier will be four times to such an extent. For enhanced execution, variable resistor R3 ought to be utilized to adjust the output counterbalance voltage of the LM380s. Here R2 C3 for strength with high-current loads.

COMPONENTS LISTS

Resistors (all ¼-watt, ± 5% Carbon)

R1 =2 MΩ potentiometer; R2 = 2.7 Ω; R3 = 1 MΩ Capacitors

C1, C2, C3 = 0.1 µF; C4 = 51 pF

Semiconductors

IC1, IC¬2 = LM380 audio power amplifier

Miscellaneous

8Ω 1-W speaker

MORE USEFUL LINKS

Here are links to projects, tutorials, parts, and online communities to help you get started with **electronics projects for beginners.**

Instructables.com

Written by a thirteen-year-old, this article links to a number of mini projects geared to students new to electronics. Projects contain a how to solder, solar iPhone charger, a water energy calculator and a solar cockroach.

http://www.instructables.com/id/Electronic-Projects-For-Beginners/

http://www.instructables.com/id/Beginners-Electronics-Projects/

5 Beginner Projects That Work on The Initial Attempt

Links to videos viewing simple projects, with a clap on clap off switch.

http://www.buildcircuit.com/5-beginners-projects-that-work-in-the-first-attempt/

Simple Electronics Projects for Beginners

Articles by reader comments for a project, by a FM radio transmitter, water level indicator, and infrared motion detector.

http://www.circuitstoday.com/simple-electronics-projects-and-circuits

Electronics Projects for Dummies

No one who seen this magazine is a dummy, but this Dummies website has a great step-by-step group of projects for a coin toss circuit that also imparts the process of designing and making electronics projects.

http://www.dummies.com/how-to/consumer-electronics/electronics/Electronics-Projects.html

Beginner Electronics Projects from Radio Shack

Actually, an impression article with about ideas on what they offer student who want to get started by electronics projects, for i.e., Engineer Small Notebooks which sound interesting.

http://techchannel.radioshack.com/beginner-electronics-projects-1831.html

Electronics Projects from Makezine

While maximum of their projects is not for novices, this is a great website to browse to get enthusiastic about what you might do once you finish a few electronics projects for beginners. Here’s some really arranged projects on this site.

http://makezine.com/category/electronics/

Ben Heck Show: Back to Basics

Important skills like how not to fry your projects.

http://www.youtube.com/playlist?list=PLwO8CTSLTkijrSW6DIFsQxcvjRo5fZ-y5

Spark Fun Tutorials

https://learn.sparkfun.com/tutorials

How to Solder

The ability to solder, with heat to fuse two soft-metals, is a important skill for electronics projects.

https://learn.sparkfun.com/tutorials/how-to-solder—through-hole-soldering/all

Parts for Electronics Projects

ADAFRUIT

To Concentration on Arduino, Raspberry Pi, and Beagle Board parts and projects, through lots of tutorials.

https://www.adafruit.com/

ELEMENT 14

Element 14 demonstration that features electronics projects, as well as an online free where you can get assistance by your projects.

http://www.element14.com/community/welcome

OCTOPARTS

A search engine to discovery electronic parts from various different sellers.

http://www.octopart.com/

MINIBREAD

http://www.minibread.com/

SPARK FUN

https://www.sparkfun.com/

References

1. Earl Boysen and Nacy C.Muir (2006), Electronics Projects for Dummies.
2. Cathleen Shamieh (2015), Electronics for Dummies
3. Charles Platt (2015), Make electronics Second Edition.
4. Bill Pretty (2015), Getting Started with Electronics Projects
5. http://electronicsforu.com/newelectronics/lab/freecircuitslist.asp?id=1026
6. http://electronicsforu.com/newelectronics/lab/freecircuitslist.asp?id=1028
7. http://electronicsforu.com/newelectronics/lab/freecircuitslist.asp?id=1027

ABOUT THE AUTHOR

Arsath Natheem is an Indian biomedical engineer and youtuber who works primarily in the field of artificial intelligence, He is best known for his multimedia Presentation about "How the Biomedical Engineers Save the life" at Velalar College of Engineering and Technology in Tamilnadu, he was awarded the best project holder for Human Interaction Intelligence Robot as Personal Assistance, and IoT Based Voice Recognition Robot for defenses, also presented his project at Adhiyamaan college of engineering and Technology and won the first prize for his project. He participated project competition at Madras institute of technology (MIT) in Chennai, He completed his Undergraduate Degree at Velalar College of Engineering and Technology, He Interested in the field of an Artificial Intelligence that’s will be specifically applicable for Medical Diagnosis.

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