

CELL PHONE DETECTOR

A MINOR PROJECT REPORT

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Electronics and Communication Engineering

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CERTIFICATE

This is to certify that the seminar report entitled “**CELL PHONE DETECTOR**” that is being submitted by **J.SRI LAKSHMI, SK.RIYAN, SK AHMAD ALISHA** bearing **Regd. No.181FA05093, 181FA05161, 181FA05176** in partial fulfilment for the award of II year II semester B. Tech degree in Electronics and Communication Engineering to Vignan’s Foundation for Science Technology and Research, is a record of work carried out by them under the guidance of (Assistant Professor) of ECE Department.

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ABSTRACT

This handy, pocket-size mobile transmission detector or sniffer can sense the presence of an activated mobile cell phone from a distance of one and-a-half meters. So it can be used to prevent use of mobile phones in examination halls, confidential rooms, etc. It is also useful for detecting the use of mobile phone for Spying and unauthorized video transmission. The circuit can detect the incoming and outgoing calls, SMS and video transmission even if the mobile phone is kept in the silent mode. The moment the Bug detects RF transmission signal from an activated mobile phone, it starts sounding a beep alarm and the LED blinks. The alarm continues until the signal transmission ceases.

1. INTRODUCTION

Cell phone detector is a circuit that sense the presence of any activated cell phone nearby and gives an indication of activated cell phone near around of it. It is a frequency detector which catches frequencies about 0.8-3GHz. This is very helpful to detect cell phones at cell phones restricted places like exam cells, meeting rooms, hospitals etc. It can detect the incoming and outgoing calls, SMS and video transmission even if the cell phone is kept in silent mode. The moment the bug detects RF transmission signal from an activated cell phone, the LED starts blinking, until signal transmission ceases. Unauthorized mobile phone usage in both private and public places has become a problem that may be difficult to solve. Cell phone technology is one that is ubiquitous and is processing by every day the rapid proliferation of cell phones at the beginning of the 21st century eventually raised problems such as their potential use to invade privacy or contribute to rampant and egregious academic cheating. The Intelligent Mobile phone detection project is an advanced device which finds various applications in the modern fields of communication and surveillances. This work is very useful for the private meetings, examination hall, defence establishments, military camp, Hospitals; Petrol pumps etc. where the uses of an active Mobile Communication (GSM) device are prohibited.

2. COMPONENTS

1. BC548 Transistor
2. LED (Light Emitting Diode)
3. 2.2M Ω Resistor (x2)
4. 100K Ω Resistor
5. 1K Ω Resistor
6. 100 μ F Capacitor (50V)
7. 0.22 μ F Capacitor
8. 47pF Capacitor
9. 9V Battery
10. 9V Battery Clip
11. Breadboard
12. CA3130 IC

3. COMPONENTS DESCRIPTION

1. BC548 transistor: - BC548 is another general purpose widely used transistor that can be easily get from reputable electronic components store, this transistor also have bunch of good features on the basis of which one can use it in their electronic circuit, it can handle maximum current of 500mA which is enough to drive many other components such as ICS, other transistors, portion of a circuits, relays, LEDs etc. The max collector dissipation of the device is 625 milliWatt which is another good feature to use it as a small amplifier.

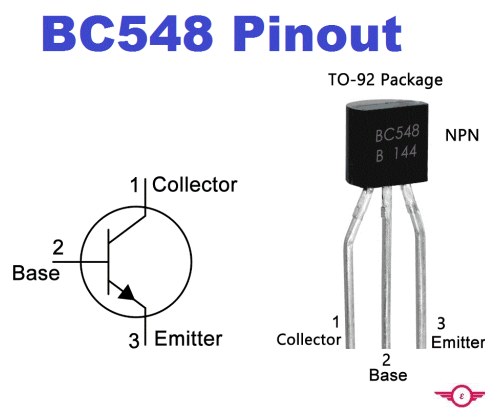


Fig 3.1. Diagram of BC548 transistor

2. LED: - A **light-emitting diode (LED)** is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. The colour of the light is determined by the energy required for electrons to cross the band gap of the semiconductor. White light is obtained by using multiple semiconductors or a layer of light-emitting phosphor on the semiconductor device.



Fig.3.2.LED

3. CAPACITORS: - A capacitor (originally known as a condenser) is a passive two-terminal electrical component used to store energy electrostatically in an electric field. Unlike a resistor, a capacitor does not dissipate energy. Instead, a capacitor stores energy in the form of an electrostatic field between its plates.



Fig 3.3. CAPACITORS

4.RESISTOR:- A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.



Fig 3.4. Resistor

5.BATTERY :- A battery is a device consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric cars. When a battery is supplying electric power, its positive terminal is the cathode and its negative terminal is the anode. The terminal marked negative is the source of electrons that will flow through an external electric circuit to the positive terminal.



Fig 3.5. Battery

6. BREADBOARD:-A breadboard is a construction base for prototyping of electronics. Originally the word referred to a literal bread board, a polished piece of wood used for slicing bread. In the 1970s the solder less breadboard became available and nowadays the term "breadboard" is commonly used to refer to these. Because the solder less breadboard does not require soldering, it is reusable. This makes it easy to use for creating temporary prototypes and experimenting with circuit design.

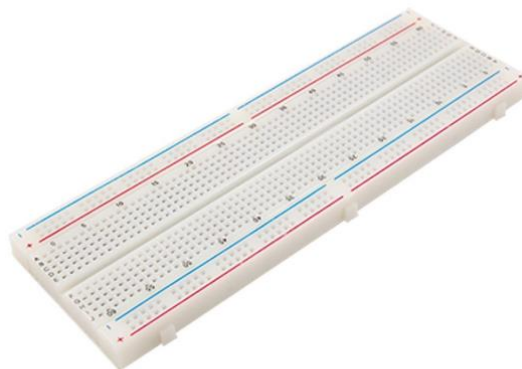


Fig 3.6. Breadboard

7. CA3130 IC: CA3130 is an Op-amplifier with hybrid features i.e. combines the advantage of both Bipolar and CMOS. Bipolar op-amps perform well under high bandwidths (fast switching) and CMOS op-amps perform well by consuming less current. So the CA3130 being a Bi MOS op-amp has the advantage of high bandwidth operation and less current consumption. The op-amp is built using MOSFETS and hence it has high input impedance. Op-amp has high bandwidth, fast sample rate, less power consumption and high input impedance.

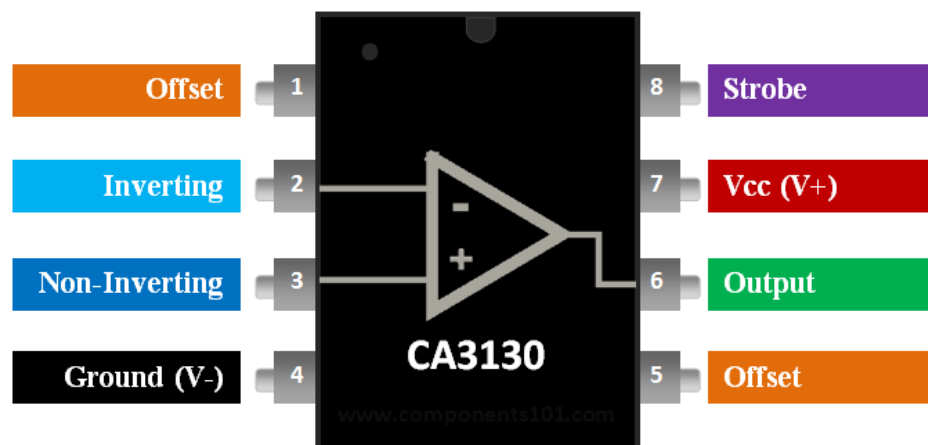


Fig 3.7. CA3130 IC

4. BLOCK DIAGRAM

Block Diagram:

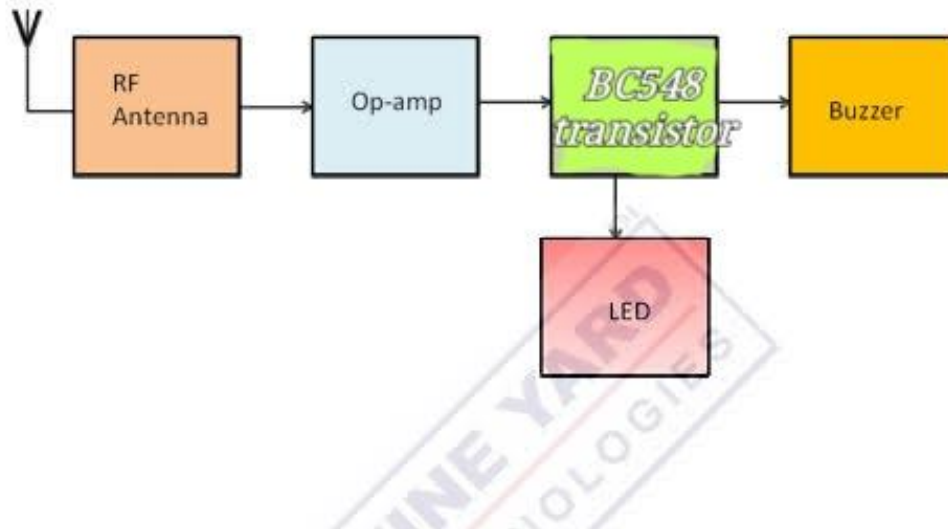


Fig. 4.1 Block diagram of FM transmitter

5. CIRCUIT DIAGRAM

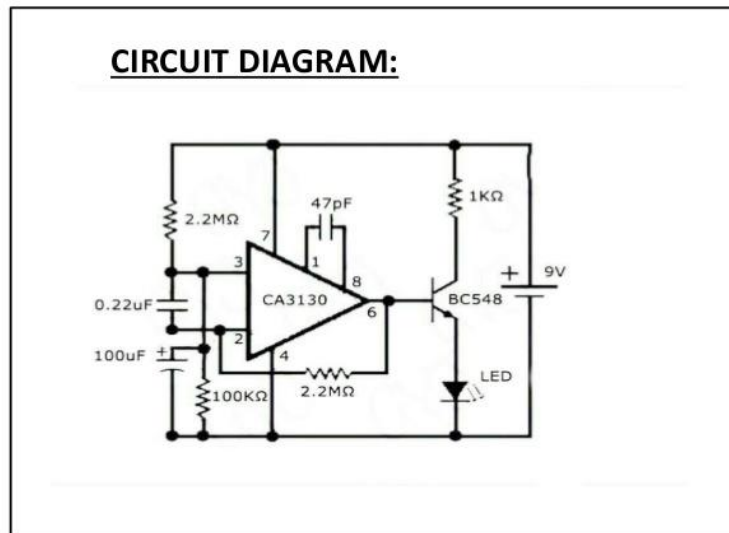


Fig. 5.1 circuit diagram of cell phone detector

6. WORKING

- Ordinary LC (Coil-Capacitor) circuits are used to detect low frequency radiation in the AM and FM bands. It can detect maximum MHz frequency. From Mobile phone we get frequency in terms of GHz.
- The transmission frequency of mobile phone ranges from 0.9 to 3 GHz with wave length of 3.3 to 10 cm .so a circuit detecting GHz signals is required.
- Here 0.22 μ F disk capacitor is used to capture the RF signals from the mobile phone. This along with the leads act as a small GHz loop antenna to collect the RF signals.
- One lead of the capacitor gets DC from the positive rail and the other lead goes to the negative input of IC.
- The capacitor gets energy for storage. This energy is applied to the input of the IC. So the input of IC is almost balanced and output is almost zero. But at any time IC can give a high output if a small current is induced to its inputs.
- There is a natural electromagnetic field around the capacitor caused by the 50Hz from electrical wiring. When the mobile phone radiates high frequency radiation, capacitor oscillates and release energy in the inputs of IC. This oscillation is indicated by the flashing of the LED.
- In short, capacitor carries energy and is in an electromagnetic field. So a slight change in field caused by the RF signals from phone will disturb the field and forces the capacitor to release energy.
- The LED blinks until the signal ceases.

8. ADVANTAGES

- The circuit is small in size.
- It can be used for detecting cell phones used for spying and transmission of unauthorized audios and videos.

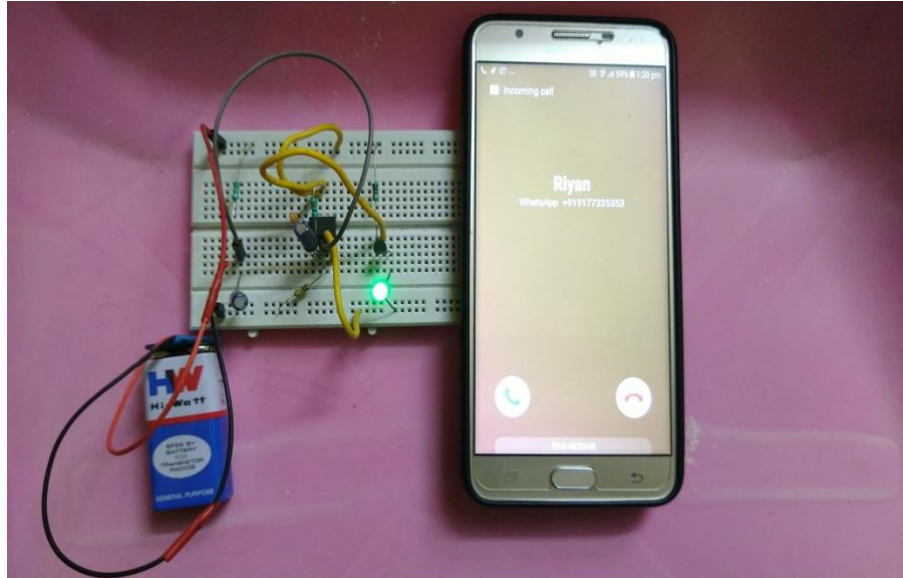
9. DISADVANTAGES

- It is a short range detector, of the order of centimetres.
- The presence of this device would jam the signals of other devices due to the fluctuations.

10. APPLICATIONS

- This circuit can be used to detect the presence of active cell phones at examination halls and meetings.
- It can be used to detect active cell phones in Hospitals, Petrol pumps, Court of law and Military bases.
- It is also used to detect the presences of cell phones in the confidential rooms like business meetings

11. OUTPUT RESULT



12. CONCLUSION

In today's scenario as the advancement in technology is increasing the misuse of it also growing. As an example mobile phones are also used for cheating in exam halls, spying and unauthorized transmission of audio, video files. To overcome this problem cell phone detector is a good idea. So mobile detector is cheap technology which we have used to protect the privacy of people. In this circuit we use some basic terminology and concept of electrical and electronics engineering and some simple equipment. As experiments are never dies and ideas are never stops so there also a possibility of improvement in this system.

13. REFERENCES

- <https://www.slideshare.net/RanapratapMajee1/cell-phone-detector-ppt-74094330>
- <https://www.slideshare.net/vamshivarun/mobile-phone-detector-pdf>
- <https://www.slideshare.net/madhusudansharma7549/ready-to-upload-ppt-on-cell-phone-detector>
- <https://www.youtube.com/watch?v=xW-hXU7MWnM>
- <https://www.elprocus.com/how-cell-phone-detector-works/>