ANTI CELLPHONE DEVICE(JAMMER AND DETECTOR)

PRESENTED BY:-

- DIVYANSH MEENA (B120623EE)
- GOPAL SINGH (B120508EE)
- NASHID AHMED SHAH (B120315EE)

AIM

We intend to develop an anti-cell phone which detects disables all communications through the cell phone in a particular desired area. Though the emergency calls will be allowed.

PHASES

Project consists of two phases

2. JAMMER

1. DETECTOR

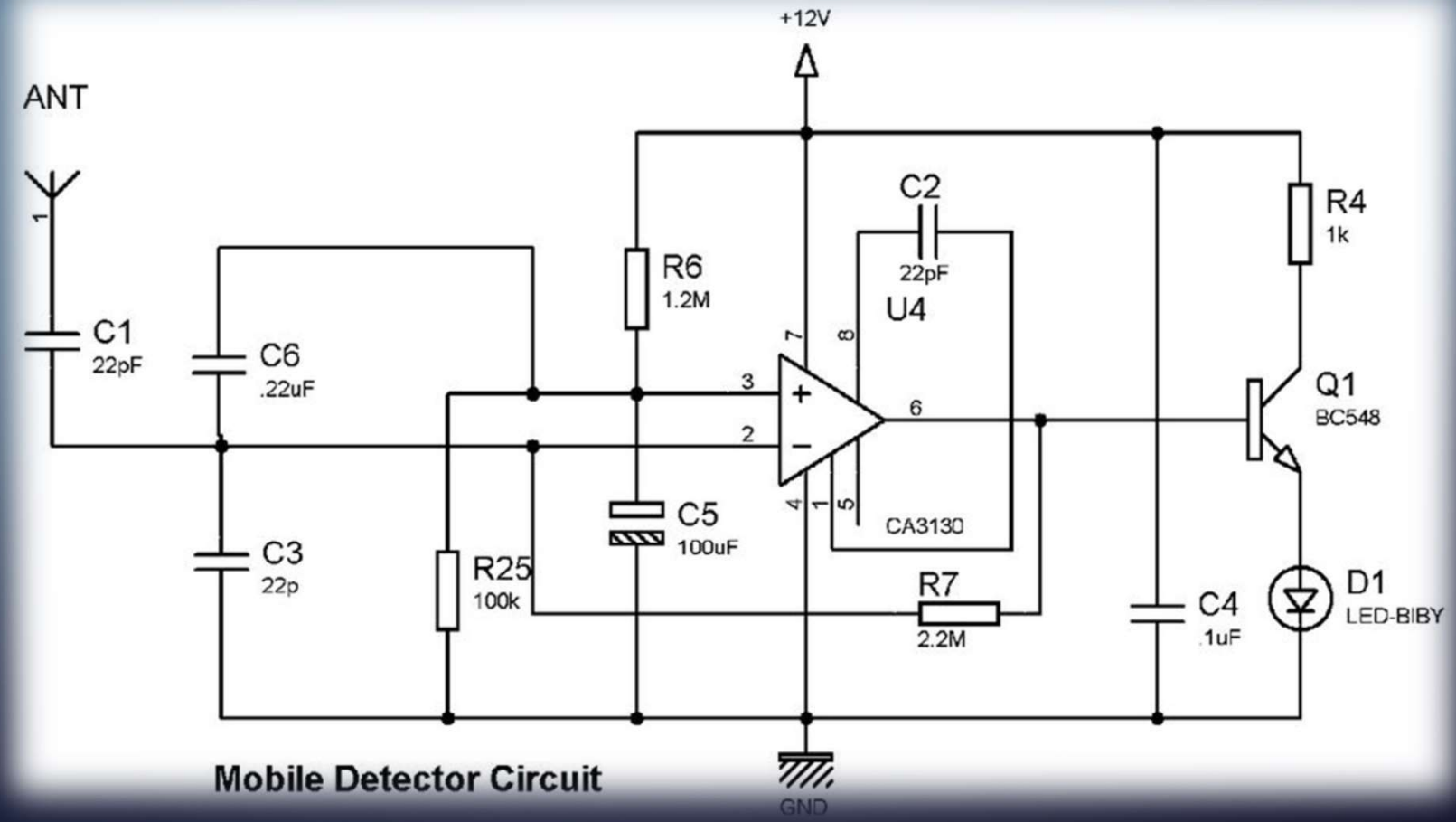
PRACTICAL SIGNIFICANCE

- Military and defense
- Corporate securities
- Examination halls

CONCEPT

- Cell phone divided into areas called cells
- Emittes small signal to base station to show availability.
- Strong RF signal is received when there is any attempt of having a communication .

CIRCUIT DIAGRAM(DETECTOR)



COMPONETS

- **RESISTOR**
- R7 _____2.2M
- R25_____100K
- R6 _____1.2M
- R4 _____1K
-
- **CAPACITOR**
- C1 _____22pF
- C2 _____22pF
- C3 _____22PF
- C4 _____1µF
- C5_____100µF
- C6 _____0.22µF
-
-
- IC CA3130
- Q1 BC548
- LED
- ANTENNA
- 5 INCH LONG ANTENNA
- POWER SUPPLY
-

WORKING

An ordinary RF detector using tuned LC circuits is not suitable for detecting signals in the GHz frequency band used in mobile phones. The transmission frequency of mobile phones ranges from 0.9 to 3 GHz with a wavelength of 3.3 to 10 cm. So a circuit detecting gigahertz signals is required for a mobile bug.

Here the circuit uses a 0.22µF disk capacitor (C3) to capture the RF signals from the mobile phone. The lead length of the capacitor is fixed as 18 mm with a spacing of 8 mm between the leads to get the desired frequency. The disk capacitor along with the leads acts as a small gigahertz loop antenna to collect the RF signals from the mobile phone.

Op-amp IC CA3130 (IC1) is used in the circuit as a current-to-voltage converter with capacitor C3 connected between its inverting and non-inverting inputs. It is a CMOS version using gate-protected p-channel MOSFET transistors in the input to provide very high input impedance, very low input current and very high speed of performance. The output CMOS transistor is capable of swinging the output voltage to within 10 mV of either supply voltage terminal.

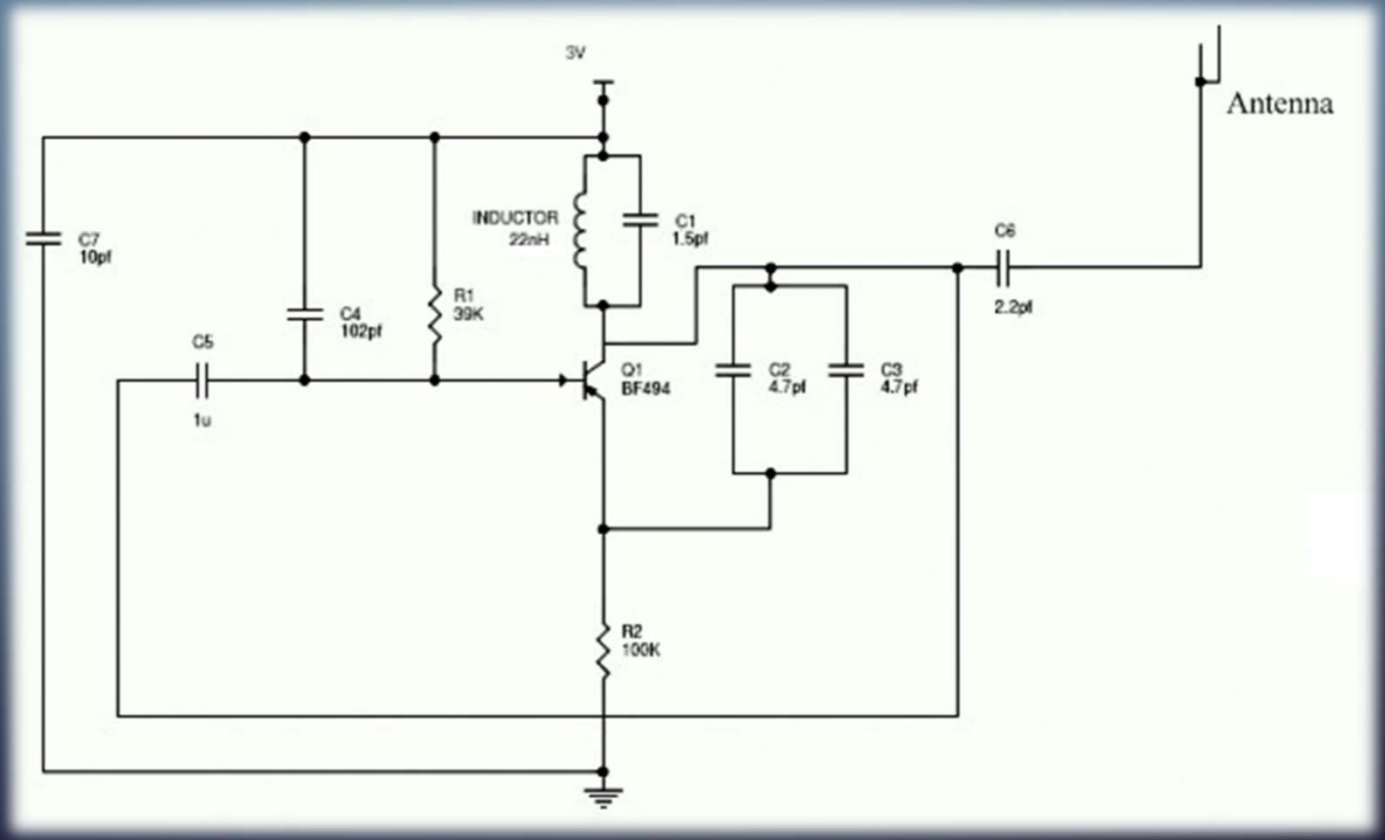
Capacitor C3 in conjunction with the lead inductance acts as a transmission line that intercepts the signals from the mobile phone. This capacitor creates a field, stores energy and transfers the stored energy in the form of minute current to the inputs of IC1. This will upset the balanced input of IC1 and convert the current into the corresponding output voltage.

Capacitor C4 along with high-value resistor R1 keeps the non-inverting input stable for easy swing of the output to high state. Resistor R2 provides the discharge path for capacitor C4. Feedback resistor R3 makes the inverting input high when the output becomes high. Capacitor C5 (47pF) is connected across 'strobe' (pin 8) and 'null' inputs (pin 1) of IC1 for phase compensation and gain control to optimize the frequency response.

When the cell phone detector signal is detected by C3, the output of IC1 becomes high and low alternately according to the frequency of the signal as indicated by LED1. This triggers monostable timer IC2 through capacitor C7. Capacitor C6 maintains the base bias of transistor T1 for fast switching action. The low-value timing components R6 and C9 produce very short time delay to avoid audio nuisance.

Assemble the cell phone detector circuit on a general purpose PCB as compact as possible and enclose in a small box like junk mobile case. As mentioned earlier, capacitor C3 should have a lead length of 18 mm with lead spacing of 8 mm. Carefully solder the capacitor in standing position with equal spacing of the leads. The response can be optimized by trimming the lead length of C3 for the desired frequency. You may use a short telescopic type antenna.
Use the miniature 12V battery of a remote control and a small buzzer to make the gadget pocket-size. The unit will give the warning indication if someone uses mobile phone within a radius of 0.5 meters.

CIRCUIT DIAGRAM(JAMMER)



COMPONENTS

- **Capacitors:-**
- 10pf ceramic – 1
- 102pf ceramic – 1
- 1.5pf ceramic – 1
- 4.7pf ceramic – 2
- 2.2pf ceramic – 1
- 1uf electrolytic - 1
- **Resistors:-**
- 39k – 1
- 100k - 1
- **Inductor** - 22nH
- **Transistor** – BF494
- **RF Antenna**
- **Source** – 3V

WORKING

- In any jammer circuit, there are three main important circuits. When they are combined together, the output of that circuit will work as a jammer. The three circuits are:
  - RF amplifier
  - Voltage controlled oscillator
  - Tuning circuit
- The transistor Q1, capacitors C4 & C5 and resistor R1 constitute the RF amplifier circuit. This will amplify the signal generated by the tuned circuit. The amplification signal is given to the antenna through C6 capacitor. Capacitor C6 will remove the DC and allow only the AC signal which is transmitted in the air.
- When the transistor Q1 is turned ON, the tuned circuit at the collector will get turned ON. The tuned circuit consists of capacitor C1 and inductor L1. This tuned circuit will act as an oscillator with zero resistance.
- This oscillator or tuned circuit will produce the very high frequency with minimum damping. The both inductor and capacitor of tuned circuit will oscillate at its resonating frequency.
- When the tuned circuit turns ON, the voltage is stored by the capacitor according to its capacity. The main function of the capacitor is to store electrical energy. Once the capacitor is completely charged, it will allow

- the charge to flow through inductor. The inductor is used to store magnetic energy. When the current is flowing across the inductor, it will store the magnetic energy and due to this the voltage across the capacitor will decrease. At some point, complete magnetic energy is stored by the inductor and the charge or voltage across the capacitor will be zero. The magnetic charge through the inductor will decrease and the current will charge the capacitor in opposite or reverse polarity manner. Again after some period of time, capacitor will get completely charged and magnetic energy across the inductor will be completely zero. The capacitor will thus give charge to the inductor and becomes zero. After some time, inductor will give charge to capacitor and become zero. This process continues and the capacitor and the inductor will oscillate and generate the frequency.
- RF amplifier feed is given through the capacitor C5 to the collector terminal before C6 for gain or like a boost signal to the tuned circuit signal. The capacitors C2 and C3 are used for generating the noise for the frequency generated by the tuned circuit. Capacitors C2 and C3 will generate the electronic pulses in some random fashion (technically called noise).
- The feedback back or boost given by the RF amplifier, frequency generated by the tuned circuit, the noise signal generated by the capacitors C2 and C3 will be combined, amplified and transmitted to the air.

Cell phone works at the frequency of 900MHz frequency. To block this 900MHz frequency, we also need to generate 900Mhz frequency with some noise which will act as simple blocking signal, because cell phone receiver will not be able to understand to which signal it has received. Thus, we are able to block the cell phone signal from reaching the cell phones.

So here in the above circuit, we generate the 900MHz frequency to block the actual cell phone signal. Thus, the above circuit will act as a jammer for blocking the actual signal.

RANGE OF DEVICE

- Detector circuit is capable of detecting any desired RF signal in the range of 0.5 m.
- Jammer circuit is capable of blocking signal any GSM cell phone in the range of 2m.

REFERENCES

www.electronicshub.org

www.instructables.com