Cellular Phone calling Detector

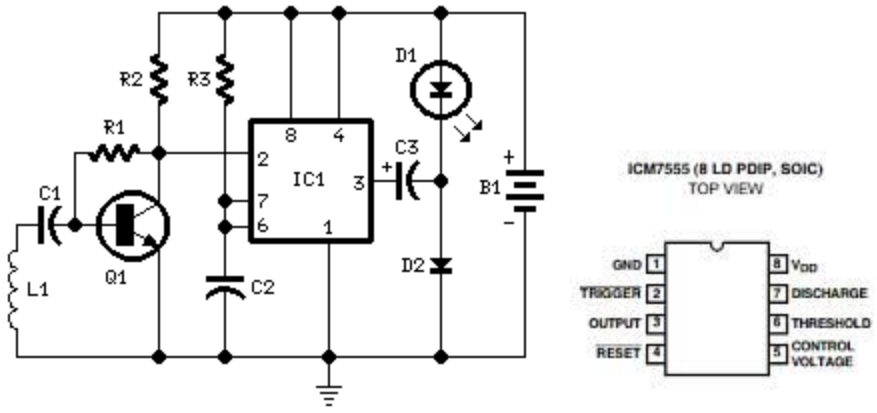
from source http://www.redcircuits.com/Page47.htm

Edited by : ChazTech for local use

Flashes a LED when detecting an incoming call

Powered by one 1.5V cell

Circuit diagram:



Parts:

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R1_____________100K   1/4W Resistor
R2_____________3K9  1/4W Resistor
R3_____________1M   1/4W Resistor

C1,C2__________100nF   63V Polyester Capacitors
C3_____________220ï¿½F   25V Electrolytic Capacitor

D1_____________LED  Red 10mm. Ultra-bright (see Notes)
D2___________1N5819  40V 1A Schottky-barrier Diode (see Notes)

Q1_____________BC547   45V 100mA NPN Transistor

IC1____________7555 or TS555CN CMos Timer IC

L1_____________Sensor coil (see Notes)

B1_____________1.5V Battery (AA or AAA cell etc.)
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Device purpose:

This circuit was designed to detect when a call is incoming in a cellular phone (even when the calling tone of the device is switched-off) by means of a flashing LED.
The device must be placed a few centimeters from the cellular phone, so its sensor coil L1 can detect the field emitted by the phone receiver during an incoming call.

Circuit operation:

The signal detected by the sensor coil is amplified by transistor Q1 and drives the monostable input pin of IC1. The IC's output voltage is doubled by C2 & D2 in order to drive the high-efficiency ultra-bright LED at a suitable peak-voltage.

Comments:

IC2 : The "7555 IC" refers to the ICM7555, a CMOS (Complementary Metal-Oxide-Semiconductor) version of the widely popular NE/SE555 timer IC. It functions as a precise timer, capable of generating accurate time delays or frequencies and is commonly used in astable (oscillator) and monostable (one-shot) modes for applications like waveform generation, measurement, and control systems. Key advantages of the ICM7555 over the standard 555 include significantly lower power consumption, higher operating frequencies, and a wider supply voltage range, making it ideal for battery-powered devices.

Notes:

- Stand-by current drawing is less than 200ï¿½A, therefore a power on/off switch is unnecessary.
- Sensitivity of this circuit depends on the sensor coil type.
- L1 can be made by winding 130 to 150 turns of 0.2 mm. enameled wire on a 5 cm. diameter former (e.g. a can). Remove the coil from the former and wind it with insulating tape, thus obtaining a stand-alone coil.
- A commercial 10mH miniature inductor, usually sold in the form of a tiny rectangular plastic box, can be used satisfactorily but with lower sensitivity.
- IC1 must be a CMos type: only these devices can safely operate at 1.5V supply or less.
- Any Schottky-barrier type diode can be used in place of the 1N5819: the BAT46 type is a very good choice.
