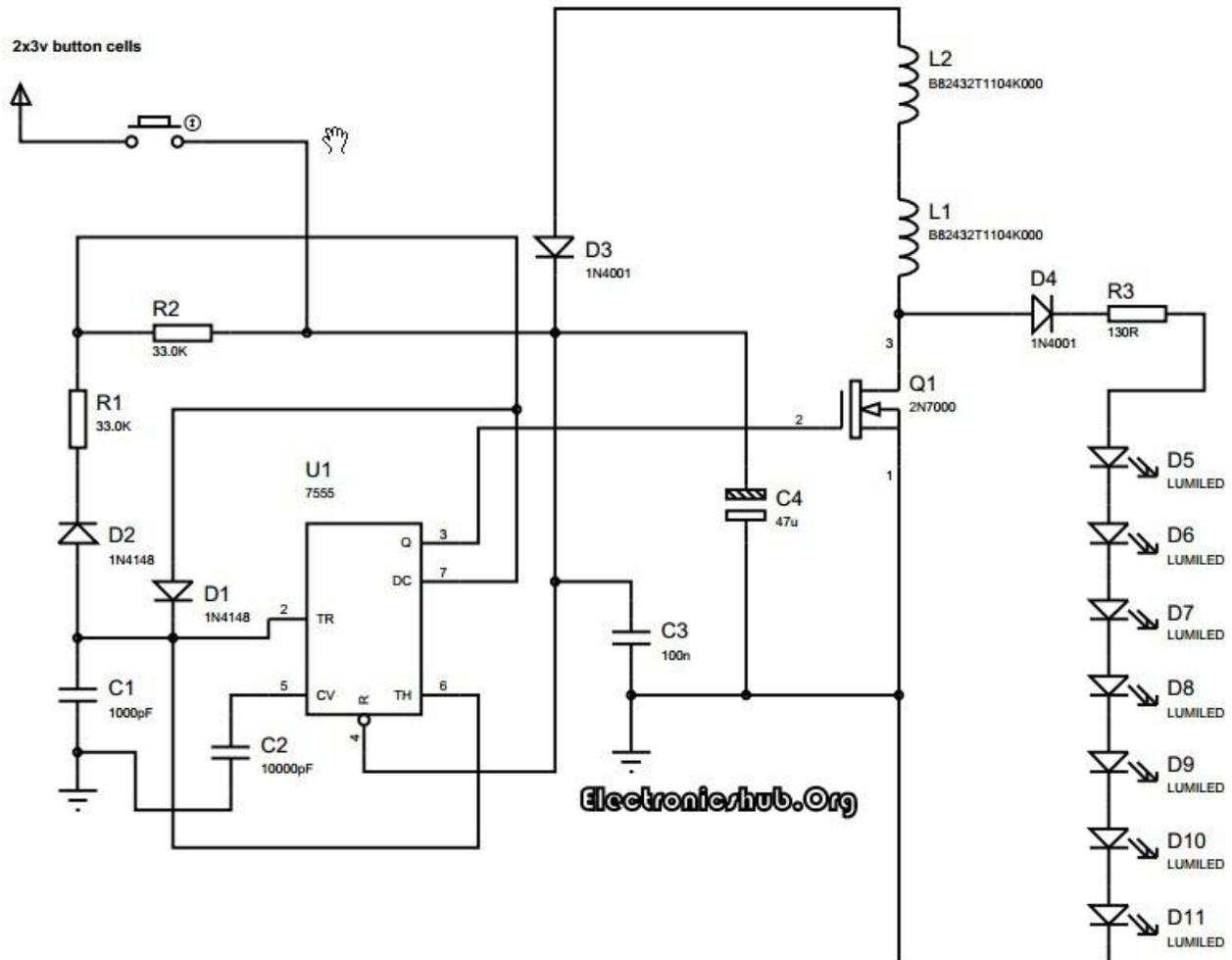


Battery Powered Portable Light

Power cuts are quite common in developing countries. Power cut at night time is sometimes serious when you need a light for something and you cannot leave that work in the middle. For example, if you are taking bath or if you are reading for your exam which is only one day ahead or if you are in the middle of your cooking, whatever the situation is, many times it is quite disgusting to face power cuts at night. We will understand the importance of light when we have power cuts. In this article, we shall discuss a circuit which can handle unexpected and undesired darkness in our homes or offices.

The instant solution to the problem described is to have a handy battery powered portable light which we can easily carry to the place it is needed. It provides considerable amount of brightness required to do our daily tasks.

Circuit Diagram for Battery Powered Portable Light:



The circuit makes use of an IC 555 timer in astable mode with a slightly different configuration which differs it from the standard model and also it makes use of a few passive storage elements like inductors in order to achieve high voltages than the supply voltage so that many LEDs can be powered with a low voltage battery. The LEDs are connected in series instead of parallel to make sure that the circuit runs on less power. The voltage is being multiplied in order to satisfy the hunger of all our series resistors. This kind of circuit requires less power compared to the conventional resistor in series with LEDs power supply taking equal intensities into consideration.

The circuit makes use of IC 7555 instead of a conventional 555 IC. The reason behind that is the IC 7555 takes lesser power than the conventional type. IC 7555 is made using CMOS technology whereas the NE555 is made using TTL logic family. This means that 7555 is quite slower compared to TTL based 555 IC but at the same time, it consumes very little power comparatively. We are operating the circuit at a not so high frequency so that the 7555 IC is quite sufficient for our speed requirements. The circuit also uses a 2N7000 MOSFET which switches on and off in sync with the IC 555 timer. The inductor which is present in the circuit stores the energy in its magnetic fields and it helps us to operate the LEDs in series by providing a higher voltage than the source generates.

Source: www.electronicshub.org/battery-powered-portable-light/