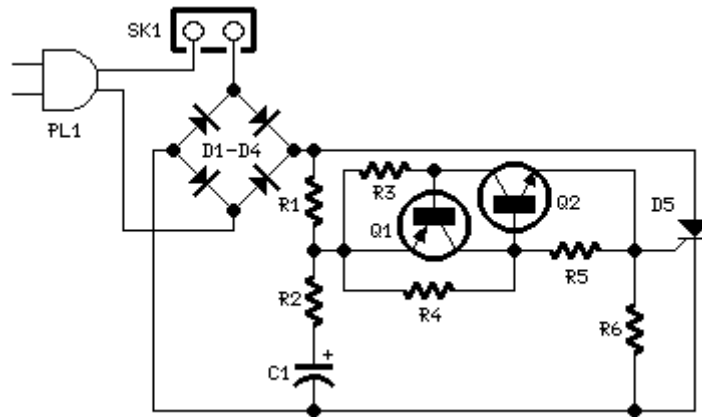


# 220 Volts Flashing Lamps

Especially designed for Christmas tree lamps  
Replaces old thermally-activated switches

## Circuit diagram:



## Parts:

R1\_\_\_\_\_100K    1/4W Resistor  
R2,R5\_\_\_\_\_1K    1/4W Resistors  
R3,R6\_\_\_\_\_470R    1/4W Resistors  
R4\_\_\_\_\_12K    1/4W Resistor

C1\_\_\_\_\_1000 $\mu$ F    25V Electrolytic Capacitor

D1-D4\_\_\_\_\_1N4007    1000V 1A Diodes  
D5\_\_\_\_\_P0102D    400V 800mA SCR

Q1\_\_\_\_\_BC327    45V 800mA PNP Transistor  
Q2\_\_\_\_\_BC337    45V 800mA NPN Transistor

PL1\_\_\_\_\_Male Mains plug  
SK1\_\_\_\_\_Female Mains socket

## Device purpose:

This circuit is intended as a reliable replacement to thermally-activated switches used for Christmas tree lamp-flashing. The device formed by Q1, Q2 and related resistors triggers the SCR. Timing is provided by R1,R2 & C1. To change flashing frequency don't modify R1 and R2 values: set C1 value from 100 to 2200 $\mu$ F instead.

Best performances are obtained with C1=470 or 1000 $\mu$ F and R4=12K or 10K. Due to low consumption of normal 10 or 20 lamp series-loops intended for Christmas trees (60mA @ 220V typical for a 20 lamp series-loop), very small and cheap SCR devices can be used, e.g. C106D1 (400V 3.2A) or TICP106D (400V 2A), this last and the suggested P0102D devices having TO92 case.

### **Important Note:**

For proper operation it's absolutely necessary to employ high Gate-sensitive SCRs.

If you are unable to find these devices you can use Triacs instead. In this case the circuit operates also with relatively powerful devices. A recommended Triac type is the ubiquitous TIC206M (600V 4A) but many others can work.

Note that in spite of the Triac, diode bridge D1-D4 is in any case necessary.

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