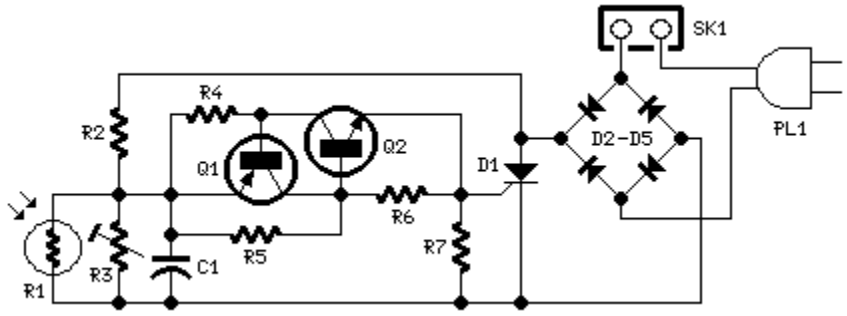
Dark-activated 230V Lamp

Compact circuitry using small-size parts only
Can be wired in parallel to existing switches

Circuit diagram:



Parts:

R1_____Photo resistor (any type)
R2_____100K 1W Resistor
R3_____200K 1/2W Trimmer Cermet
R4,R7_____470R 1/4W Resistors
R5_____12K 1/4W Resistor
R6_____1K 1/4W Resistor

C1_____10nF 63V Polyester Capacitor

D1_____TIC106D 400V 5A SCR
D2-D5_____1N4007 1000V 1A Diodes

Q1_____BC327 45V 800mA PNP Transistor
Q2_____BC337 45V 800mA NPN Transistor

SK1_____Female Mains socket

PL1_____Male Mains plug & cable

Comments:

This device allows one or more lamps to illuminate at sunset and turn off at dawn. Q1 and Q2 form a trigger device for the SCR, providing short pulses at 100Hz frequency. Pulse duration is set by R2 and C1.
When the light hits R1, the photo resistor assumes a very low resistance value, almost shorting C1 and preventing circuit operation. When R1 is in the dark, its resistance value becomes very high thus enabling circuit operation.

Notes:

- R3 allows fine setting of operating threshold and R2 value can be raised to 150K maximum.
- Several lamps wired in parallel can be connected to the circuit, provided total power dissipation of the load doesn't exceed about 300 - 500W
- PL1 can be omitted and the input mains supply wires connected in parallel to any switch controlling lamps. In this case, if the switch is left open, the circuit will be able to drive the lamps; if the switch is closed, the lamps will illuminate and the circuit will be by-passed.
- **Warning!** The circuit is connected to 230Vac mains, then some parts in the circuit board are subjected to **lethal potential!**. Avoid touching the circuit when plugged and enclose it in a plastic box.