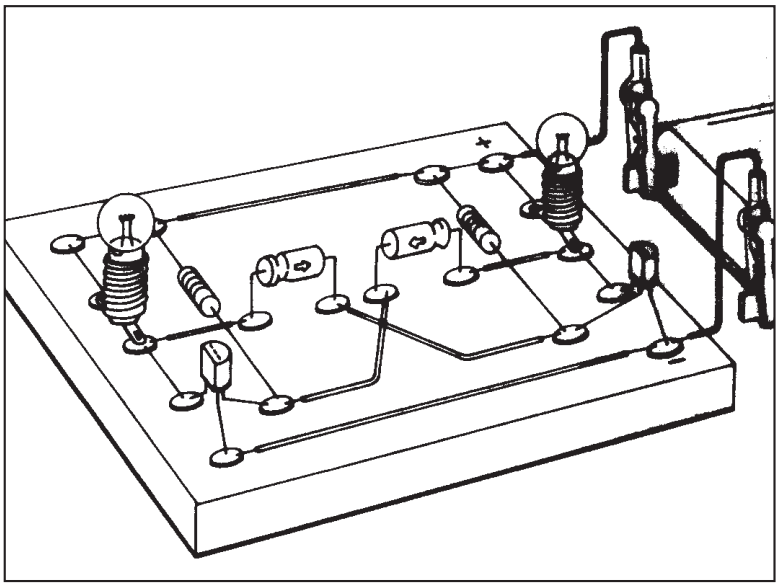
110.040

Flashing lights circuit



Please Note

Due to the manufacturing process of the bulb holders, the inner contact tab may stand a little proud.
We recommend pressing the contact tab down with a small screwdriver, before inserting the bulb.

Contents:

1 x Insulated wire	1 metre
2 x Transistor	BC 548 or BC 547
2 x Resistor	6,8 kΩ
2 x Bulb holder	E10
2 x Bulb	3,8 V / 0,07A
2 x Capasitor	220 µF

Please Note

The OPITEC range of projects is not intended as play toys for young children.They are teaching aids for young people learning the skills of Craft, Design and Technolo- gy.These projects should only be undertaken and tested with the guidance of a fully qualified adult. The finished projects are not suitable to give to children under 3 years old. Some parts can be swallowed. Dan- ger of suffocation!

Necessary tools:

Soldering iron 30W
Multi core solder
Wire stripper
Wire snips

General Notes

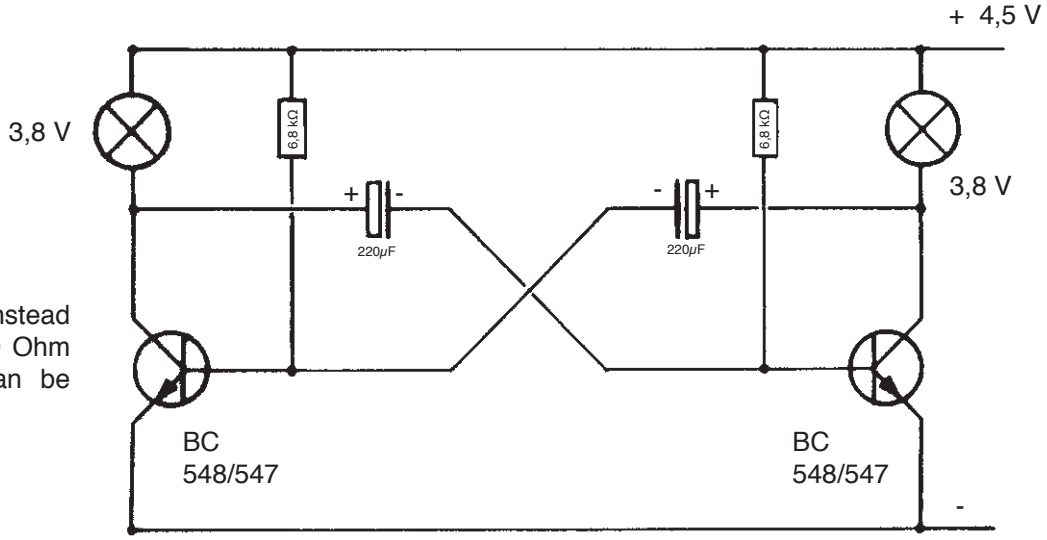
To construct this circuit we reccommend using the following methods.

1. Mounting the components on plaster board (Order No 873.017) using drawing pin heads to solder the components on. (the pins are easily inserted by hand)
2. Mounting the components on strip type circuit board. Order No 241067.
3. Mounting on copper coated circuit board. Order No 241171/241207.

Function description

After the connection of the circuit to a 4,5 volt power source the lamps will blink alternately. Assuming one transistor (BC 548/547) to be in an off state and the other on. In this situation a capacitor will charge through the 3,8 V lamp. The first transistor will be switched on and the voltage at the collector sink to 0,2 V. The state of the capacitors staying momentarily the same. The base of the second transistor is now low. This transistor being closed allows the second capacitor to load to 3,8 V. Through the 6,8 kΩ resistors the voltage climbs slowly to 0,7 V and the base of the transistor becomes high again.
This pattern happens continuously. Uses road lamps and warning lights etc.

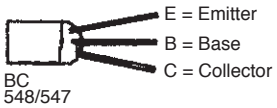
Schematic diagram



A LED can be used instead of the lamp with a 150 Ohm resistor or a relay can be operated.

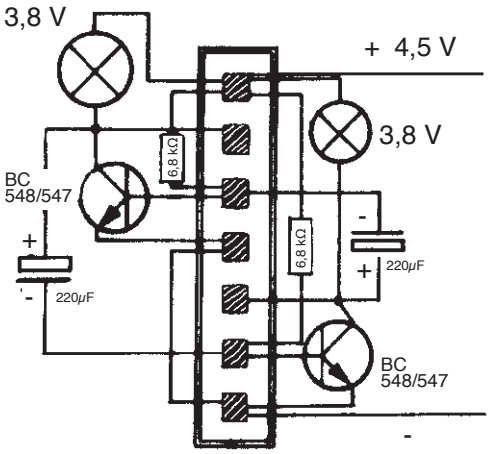
Transistor NPN

Layout of leads E, B, and C.



Transistors are easily damaged if connected incorrectly.

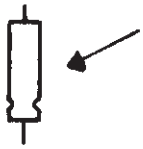
Connecting strip



Resistors

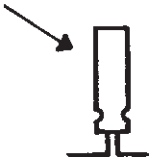
Determination of resistors

Capacitor



Capacitor 220 µF

Both types possible
look for plus & minus
signs



	**Bulb** 3 - 6 V / 0,07 - 0,1 A
	Wire
	Wire with joint (Connection)
	Crossed wires (No connection)