

# QUASAR KIT 3138 - TWO LED FLASHER

## General Guidelines for Electronic Kits and Assembled Modules

Thank you for choosing one of our products. Please take some time to carefully read the important information below concerning use of this product. The assembly and operating instructions are on the following pages. Help with component identification can be found on our website at [www.quasarelectronics.co.uk/componentid.htm](http://www.quasarelectronics.co.uk/componentid.htm). If you are unsure about any aspect of the assembly or use of this product please contact our Support Team before proceeding.



### WEEE Directive (Waste Electrical and Electronic Equipment)

**Notice To All European Union Citizens. Important environmental information about this product.**

The crossed out wheeled bin symbol on this product, package or documentation indicates that disposal of this product after its lifecycle could harm the environment. Do not dispose of this product (or batteries if used) as unsorted municipal waste. It should be disposed by a specialized company for recycling.

The unit should be returned to your distributor or to a local recycling service. Please respect the local environmental rules. If in doubt contact your local authorities about waste disposal rules.

### Safety: General rules concerning safe use of our Kits or Modules.

**To ensure your safety, please observe these safety measures. In no way are these complete. As safety requirements vary, please check with your local authorities, in order to comply with local requirements. If in doubt, seek the help of a qualified person.**

**Battery or wall-adaptor operated devices are safe devices. They do not require special attention unless mains voltage is connected to an output e.g. a relay.**



To ensure electrical safety, and also protection from fire or personal injury, make sure your mains operated equipment complies with these safety hints:

- Use a suitable plastic enclosure. If a metal enclosure is used, make sure it is properly earthed.
- Use a power switch if the device consumes more than 10W. Use a double pole switch for mains operated, transformer-less kits.
- Mount a fuse in series with the mains switch. Use a slow blow (T) 50mA fuse for transformers up to 10W and a 100mA fuse for transformers up to 20W.
- Use a mains input connector, or a robust power cord with a clamp.
- Internal wiring carrying mains voltages must have a minimum cross-sectional area of 0.5mm<sup>2</sup>.

If supplied, attach the power rating label near the power cord of the device and fill-out the mains voltage, frequency, power consumption and fuse values.

### Troubleshooting and Support

90% of non working kits are due to poor soldering.

We operate a Get-You-Going service for non-working kits but there is a charge based on the time and components needed to complete the repair. Quite often it is not economically viable for us to repair and it is cheaper to supply a new ready made product at full cost.

### Disclaimer

Quasar Electronics reserves the right to change product specifications or to discontinue products without notice. Quasar Electronics cannot be held responsible for any loss or damage, direct or indirect, which might occur from the use of a product. Quasar Electronics Kits or Modules are intended for educational and demonstration purposes only. They are not intended for use in commercial applications. If they are used in such applications the purchaser assumes all responsibility for ensuring compliance with all local laws. In addition, they are not suitable for use as or as a part of life support systems, or systems that might create a hazardous situation of any kind.

# QUASAR KIT 3138 - TWO LED FLASHER

This kit wires the popular 555 IC as an astable, free-running multivibrator. In other words it is wired as a square wave oscillator. It has a double ended output connection in which one LED is OFF when the other is ON, and vice versa.

For an animation of what happens in this kit go to

[www.williamson-labs.com/480\\_555.htm](http://www.williamson-labs.com/480_555.htm)

Note the animated charging and discharging of the capacitor. Note which resistors are involved with the charging and with the discharging. Watch which LED's are on in what part of the cycle. A few minutes watching this animation and making it go faster will give an excellent understanding of how this circuit works.

The capacitor C2 charges exponentially through resistors R1, R2 and the resistance of the trimpot. When C2 has charged to about  $\frac{2}{3} V_{CC}$  it stops charging and it discharges to about  $\frac{1}{3} V_{CC}$  through R2 and the trimpot resistance via pin 7.

There are links on this site to download the 555 Data Sheet and a lot of other relevant information.

For another excellent website devoted to the 555 see

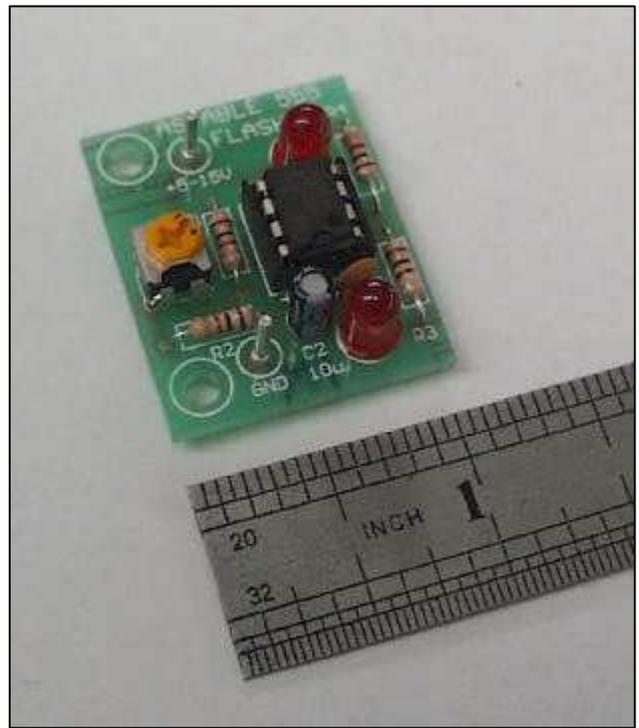
[www.sentex.ca/~mec1995/gadgets/555/555.html](http://www.sentex.ca/~mec1995/gadgets/555/555.html)

In the following website

[www.bowdenshobbycircuits.info/555.htm](http://www.bowdenshobbycircuits.info/555.htm)

you can enter values for R1, R2 and C and see what flash rates they would give.

**Assembly.** It is best to add the lowest height components – the resistors – first. Read the color code to make sure they are the right ones in the right places. The ecap and the LEDs must be put in the right way around. The two pins make it easy to attach alligator clips to the board. You do not have to use them if you do not want to.

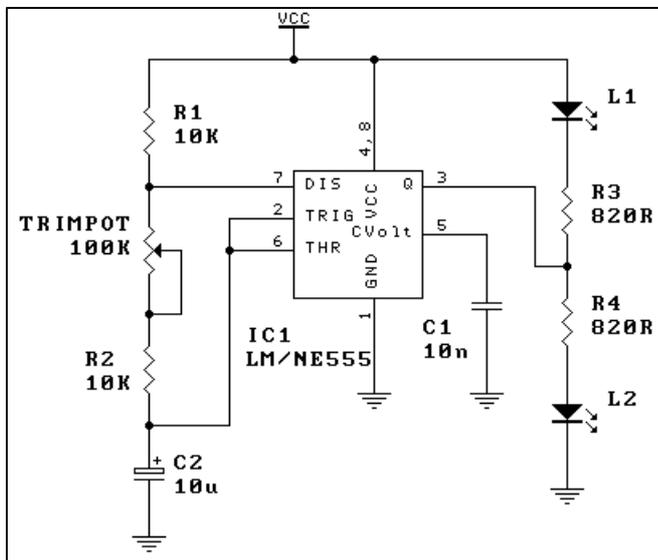


Finally, connect a battery or power supply between 5V and 15V DC to the pins. The LEDs should start to flash off and on.

## COMPONENTS

Resistors 5%, carbon film, 1/4W:

820R grey red brown	R3 R4	2
1K brown black red	R1 R2	2
Koa trimpot 100K 104	Trimpot	1
ceramic capacitor 10n 103	C1	1
electrolytic capacitor 10uF	C2	1
5mm red LED	L1 L2	2
LM/NE555	IC1	1
8 pin IC socket		1
3138 PCB		1



For Technical Support please email [support@quasarelectronics.co.uk](mailto:support@quasarelectronics.co.uk)

For more great kits please see our website at [www.quasarelectronics.co.uk](http://www.quasarelectronics.co.uk)