MaxiBlink RGB LS – Construction Kit

Contents:

- 1 PCB "MaxiBlink RGB v1.1 LS"
- 1 IC NE555 (Universal Timer)
- 1 IC 74LS86 (Quad XOR Gate)
- 3 IC 74LS174 (Hex D-Latch)
- 25 RGB LED, 5mm (1 spare)
- 1 IC socket, 8-pin
- 1 IC socket, 14-pin
- 3 IC socket, 16-pin
- 1 Micro-USB power connector
- 4 Ceramic capacitor, 100 nF
- 1 Electrolytic cap., 4.7 µF
- 37 Resistor, 2.7 kΩ (1 spare)
- 25 Resistor, 8.2 kΩ (1 spare)
- 26 Resistor, 10 kΩ (1 spare)

General Soldering Advice

Insert the components one at a time and bend the leads outward slightly to prevent the component from falling out. Heat up the solder joint for a second before feeding some solder wire between the soldering iron's tip, the board and the component's lead. Wait for a few more seconds before removing the tip from the solder joint. Don't move the board until the solder has solidified. After soldering, trim the leads with a wire cutter to about 1 mm length.

See http://mightyohm.com/files/soldercomic/FullSolderComic_EN.pdf (or scan QR code) for more detailed instructions.

I recommended soldering the components in the order listed below.

1. Resistors (R1~R72, R97): Bend the leads 90° as close to the resistor body as possible before inserting them into the board. Orientation doesn't matter. The kit contains one spare resistor for each value.

Resistor	Value	Colour Code
R1, R4, R7, …, R70, R73~R84	2.7 kΩ *("R")*	red, violet, red, gold *or* red, violet, black, brown, brown
R2, R5, R8, …, R71	10 kΩ *("G")*	brown, black, orange, gold *or* brown, black, black, red, brown
R3, R6, R9, …, R72, R97	8.2 kΩ *("B")*	grey, red, red, gold *or* grey, red, black, brown, brown

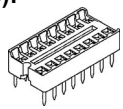
Note that there is one additional 10 kΩ resistor near the bottom of the board (R97).

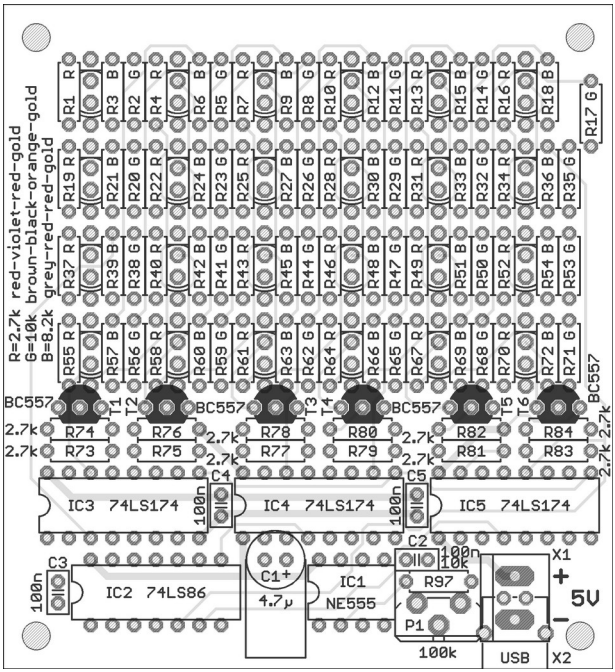
2. USB Connector (X2):

Insert the USB connector and solder all 4 pins.

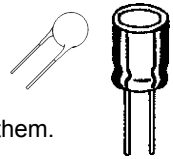
3. IC Sockets (IC1~IC5):

Insert the IC sockets into the board, making sure the orientation of the small notch matches the silkscreen outline. You can bend two diagonally opposite pins of the socket if you like to prevent the sockets from falling out before soldering.





4. Capacitors (C1~C5): Orientation is only important for the electrolytic capacitor (C1), the *negative* side is marked with a printed stripe with "−" signs. On the board, the *positive* side is marked with a "+". Bend the leads 90° so the capacitor lies flat against the board before soldering. The other capacitors (C2~C5) are ceramic disc capacitors, orientation doesn't matter for them.

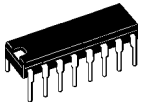


5. Transistors (T1~T6): The flat side of the transistors must match the printed shape on the board. Insert the transistors and carefully push them down until they're 2-3 mm above the board, then solder them.

6. Potentiometer (P1): The potentiometer will only fit in one orientation. Make sure it's straight and inserted as far as it'll go before soldering.

7. LEDs (LED1~LED24): The flat side of the LEDs (closer to the longest pin) must match the outline printed on the board (or refer to the image on the first page of these instructions). Make sure to use the correct holes for each LED (aligned with the resistors on either side). Gently spread the leads until the LED will fit into the board, then push it down to the desired height. Leave at least 5 mm between the LED and the board to avoid spreading the leads too much. You can make a simple jig to ensure the LEDs are perfectly straight and at the same height by drilling 5 mm holes into a piece of perfboard (every 4th hole on standard 0.1" grid). Alternatively, files for a 3D-printed front bezel are available from the project webpage (see below) which will also serve as an assembly jig.

8. ICs (IC1~IC5): Insert the ICs into their corresponding sockets.You may have to bend the pins inward slightly before they will fit into the socket. Make sure the IC's notches match those of the sockets and the silkscreen outlines. Sometimes, the notch on the IC is replaced by a tiny dot or indent near pin one, which should also face towards the notch of the socket (and silkscreen outline).



IC	Pins	Type
IC1	8	NE555
IC2	14	74LS86
IC3~5	16	74LS174*

*) The ICs in the kit might be mislabelled "74HC174", but are actually 74LS174.

9. Connect Power: Connect a Micro-USB cable to the MaxiBlink RGB and plug the other end into a USB charger or power bank (don't use a PC or other expensive equipment as a power source until you're sure that everything is working). If you don't want to use USB, you can solder wires to the two large pads marked "+" and "−" (either on the bottom side of the board, or don't solder the USB connector and connect the wires to the top side) and supply 5 V from a different source. The circuit requires approx. 110 mA when all LEDs are lit (white).

Questions? Problems? Comments? Ideas?
Please contact me! E-Mail: arne@blinkenarea.org

Project webpage:
de: http://wiki.blinkenarea.org/index.php/MaxiBlink_RGB
en: http://wiki.blinkenarea.org/index.php/MaxiBlink_RGBEnglish