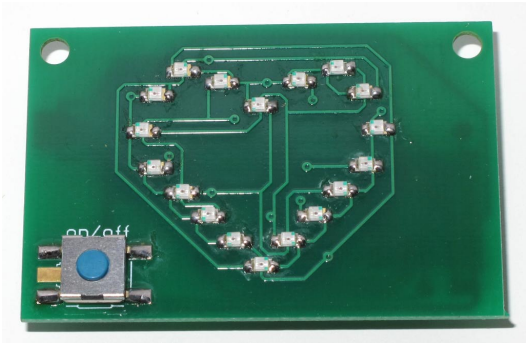
AKL-Mini Construction Kit – Heart

Contents:

1	PCB “AKL-Mini Rev. 1.4”
1	Battery CR2032
1	Battery Holder for CR2032 (SMD)
20	LEDs red (0805)
1	Push-button (SMD)
1	Controller ATtiny2313 (SOIC20)
6	Resistors 68 Ω (0805)
1	Capacitor 100 nF (0805)

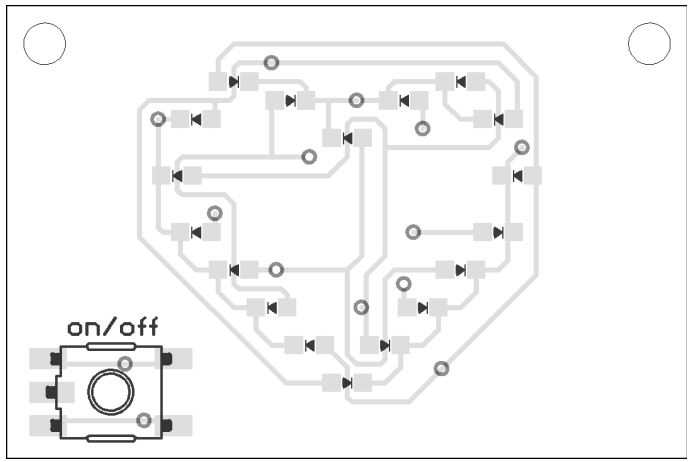


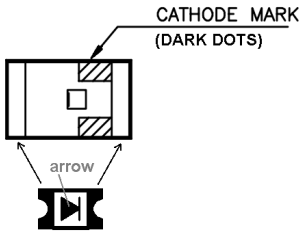
SMD Soldering Advice

To solder the SMD components, tin only one of the pads, then grab the component with tweezers, re-heat the tinned pad and slide the component in sideways. When the component is aligned properly, remove the soldering iron, let the solder joint cool and solder the remaining pins (starting with the diagonally opposite pin for ICs). Solder bridges between adjacent pins can be removed with desoldering wick or by heating up the solder joint, then very quickly knocking the board against the table (with the heated solder bridge facing down).For some illustrated soldering instructions, see http://talkingelectronics.com/projects/SurfaceMount/SurfaceMount-P1.html#table2

It is recommended to solder the components in the order listed below.

1. LEDs: The orientation is important for the LEDs. You can see two small black (or green) dots inside the LED on one side, the same side the arrow on the bottom of the LED is pointing to (cathode). This side must face in the direction the little arrow on the PCB is pointing to, as shown in the image below. Don't solder too long on the LEDs, they will have reduced brightness if they become too hot during soldering. The kit contains two spare LEDs in case you break or lose one.



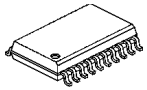


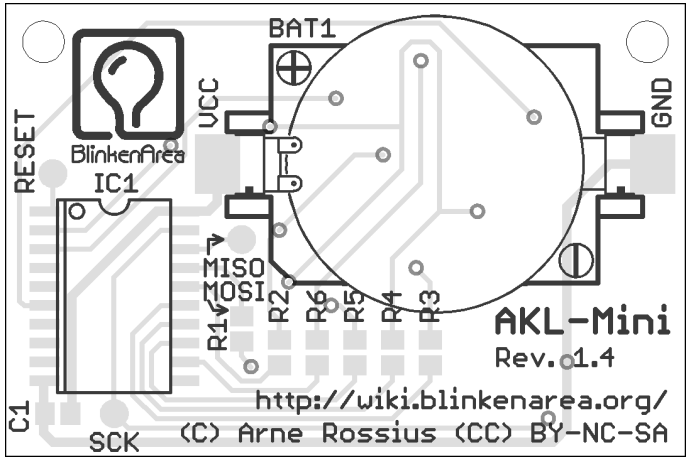
(please turn over)

2. Resistors (R1~R6): The resistors are the small (SMD size 0805, meaning 0.08” × 0.05” ≈ 2 mm × 1.3 mm) rectangular components marked with “680” (**68**·10^0 Ω) or “68R0” (68.0 Ω). The orientation doesn't matter.

3. Capacitor (C1): The capacitor is the small (size 0805) brown component with no marking. The orientation doesn't matter.

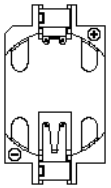
4. Controller (IC1): The dent in one corner (indicating pin 1) must match the small circle in the silkscreen outline on the board.





5. Push-button: Solder the push-button to the intended location on the board (on the LED side). Orientation is not important if your push-button has only 4 pins, the fifth pad remains unused. 5-pin push-buttons will only fit in one orientation.

6. Battery Holder (BAT1): You need a decently sized soldering tip for the battery holder – a long, thin tip for SMD soldering doesn't work very well. If your tip is pointy, hold the *side* of the tip against the battery holder's contact for better heat transfer. Make sure the chamfered corner as well as the ⊕ and ⊖ marks match the silkscreen outline on the board.



Insert battery (text side facing up, i.e. visible) and press push-button to switch on.

- If a LED lights up when switched off or at odd times, it is likely that it's populated the wrong way around. Desolder it by heating the two pads in quick succession until you can push the LED away with the soldering iron's tip, remove any remaining solder with desoldering wick and solder the LED again (rotated 180 degrees).
- If every 6th LED or a group of 6 consecutive LEDs is not working, the cause is probably a bad solder joint on a controller pin.
- If nothing works, check controller pins 10 and 20 (bottom left, top right).
- To switch to “always-on” mode, solder a bridge between controller pins 9 and 10.

Questions? Problems? Comments? Ideas? Please contact me:
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Project webpage: German: http://wiki.blinkenarea.org/index.php/AKL-Mini
English: http://wiki.blinkenarea.org/index.php/AKL-MiniEnglish