SIMON-85-KIT. Soldering details, order, and tips.

1. A 2K ohm resistor (red, black, red, golden) position **R6**.

2. 5 x Diodes 1N4148 positions **D1**, **D2**, **D3**, **D4**, and **D5**. **Watch out for the orientation.** The stripe of the diode has to be oriented as indicated by the white print on the board.

3. 7 x 560 ohm resistors (green, blue, brown, gold) at positions **R5**, **R7**, **R8**, **R9**, **R10**, **R11**, **R12**.

4. 2 x 22 ohm resistors (red, red, black, gold) at positions **R3** and **R4**.

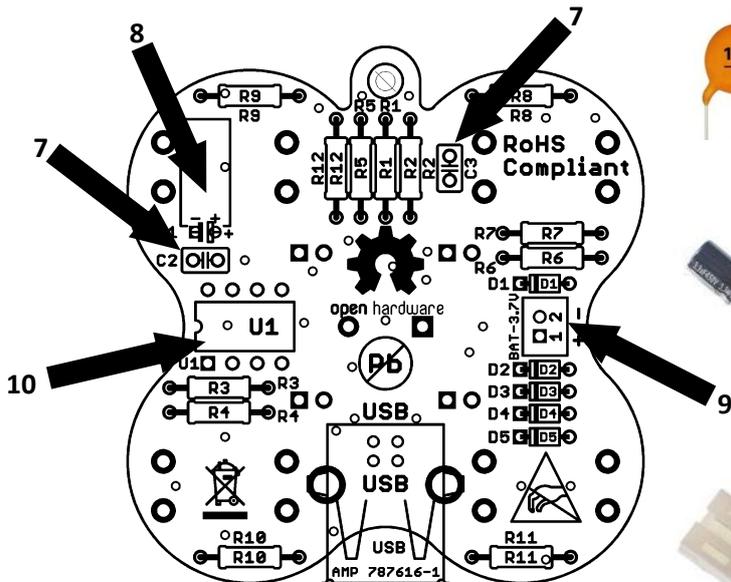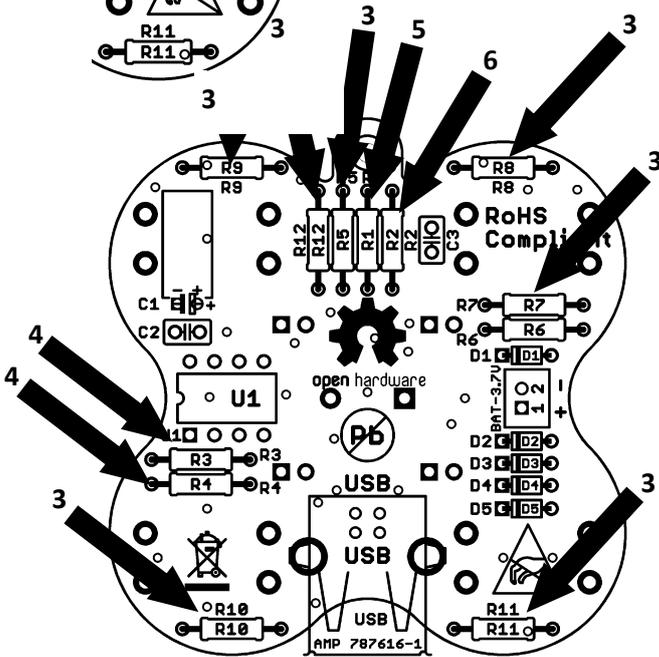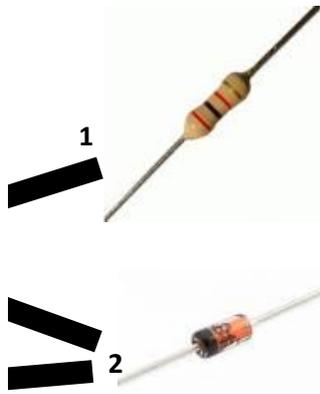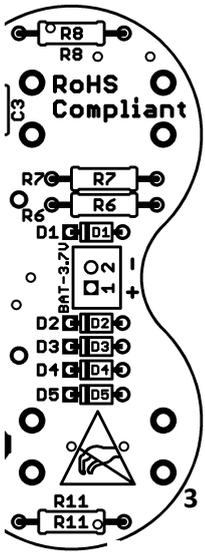**5.** A 10k ohm resistor (brown, black, orange, gold) at position **R1**.

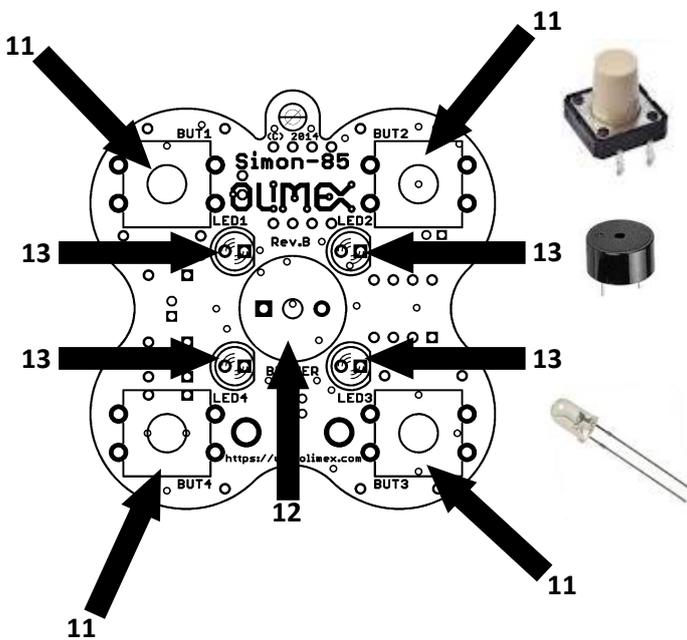**6.** A 3.9K ohm resistor (orange, white, red, gold) at position **R2**.

7. 2 x capacitors 100nF (code 104) at positions **C2** and **C3**.

8. An electrolytic capacitor 10µF at position **C1**. **The component has polarity! The short pin is negative (-), the long pin is positive (+).** Place it in the holes and leave some space between the capacitor and the board. Bend the pins to lie horizontally (e.g. flat) on the board. Then proceed to solder it.

9. A connector DW02S. **Be careful with the orientation.** The gap in the connector must be facing towards the middle of the board!

10. An 8-pin DIL socket at position **U1**. Be careful! The microcontroller may overheat during prolonged soldering. It is recommended to remove the ATtiny85 from the socket before soldering. **Watch out for the socket orientation!** The socket has a dent that should be facing outwards of the board.
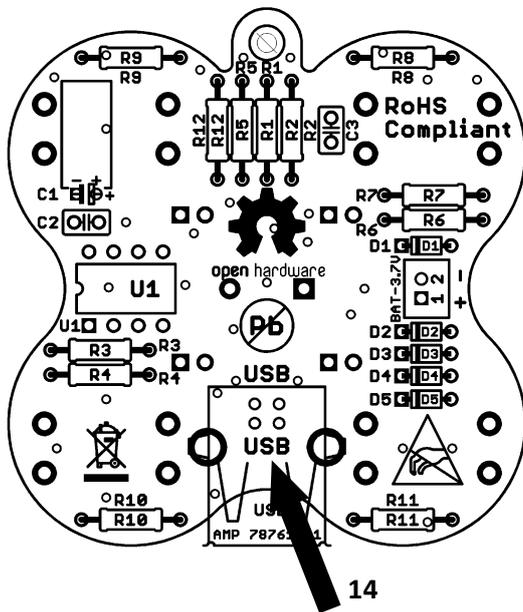
11. 4 x tactile buttons at positions **BUT1**, **BUT2**, **BUT3**, and **BUT4**.

12. A buzzer at position **BUZZER**.

13. 4 x LEDs at positions **LED1**, **LED2**, **LED3**, and **LED4**. **LEDs have polarity!** The short pin is negative (-), the long pin - positive (+). The negative pin goes to the square pinhole! The flat line vsible on the white print of the board should match the flat side of the diode. **Do not keep the soldering iron pressed for more than 2-3 seconds when soldering.** Else the LED might get damaged.

14. A USB type B connector at position **USB**. The connector is placed at the same side of the board as the microcontroller! Double check for short-circuits between the pins before powering!

15. After successful assembly of all other components – place the ATtiny85 microcontroller in the U1 DIL-8 socket. **Be careful with the orientation.** The microcontroller has a dot, which indicates the first pin. The dot should be facing outwards the board.

Turn the board and wait for about 5 seconds. Then four LEDs should turn on. Check the next page for game description and available difficulties!

=== SIMON-85 default game description ===

The board is an implementation of the popular simon game which tests and trains your short-term memory.

The board gets powered by a USB cable compatible with the board's USB type B connector. You need to wait at least 5 seconds after the board gets powered.

There are four LEDs and four buttons. A number of LEDs blink in a random pattern which you should repeat with the buttons. Each successful guess increments the amount of blinks that you would need to guess. If you make an erroneous button press the game would restart.

The buzzer sounds would help you remember the patterns. There is a victory song If manage to complete the game.

There are 4 levels of difficulties that can be selected**.**

Level 1 -> 10 repetitions

Level 2 -> 20 repetitions

Level 3 -> 30 repetitions

Level 4 -> 40 repetitions

To select the difficulty level: after the board had been powered on (be patient, there is timeout defined on purpose) and the four leds are blinking consecutively, you must press and hold any button from BUT1 to BUT4. The number of the button corresponds directly to the level's number.

That's all! Enjoy the game!

For additional resources (sources and schematics) please visit the products web-page at Olimex web-site:

https://www.olimex.com/Products/Duino/AVR/SIMON-85-KIT

The board is also available in a ready-to-use and soldered variant. For more information please visit the product's web-page at our web-site:

https://www.olimex.com/Products/Duino/AVR/SIMON-85