

The "ハッカー" Board

(hakkā)

The Hakka Board is a POV kit (Persistence of Vision) with an ESP32-C3 (RISC-V) processor, 8 LEDs, and a shake sensor. It uses the persistence of human vision and the afterimage effect: when shaken, the LEDs rapidly turn on and off – making text or images appear to float in the air.

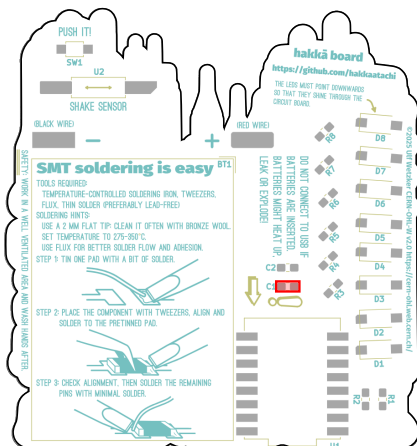
The board can do much more – we are excited to see what you will create with it.

<https://github.com/hakkaatachi>

1 Decoupling capacitor

Stabilizes the supply voltage and serves as a quick energy source during moments of high current demand.

C1 100 nF

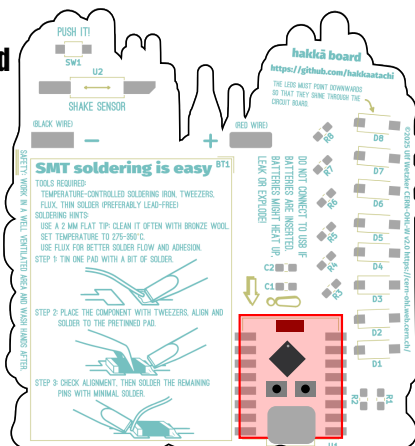


5 Microcontroller board

A compact board with a processor and memory that can be programmed to control various tasks.

U1 ESP32C3

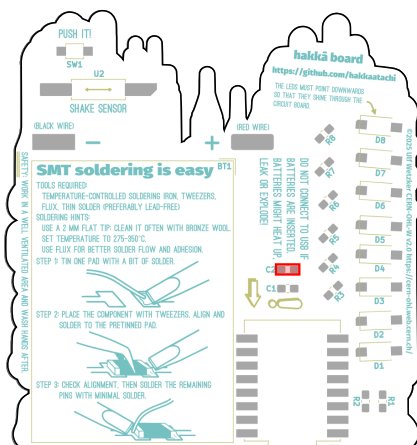
The USB-C connector must face outward!



2 Decoupling capacitor

Stabilizes the supply voltage and serves as a quick energy source during moments of high current demand.

C2 47 uF

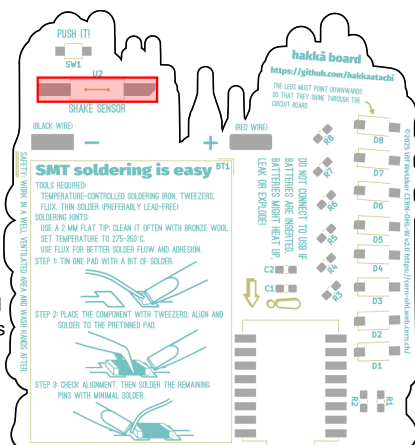


6 Shake sensor

Works like a switch that is activated by a sideways movement.

U2 Shake-Sensor

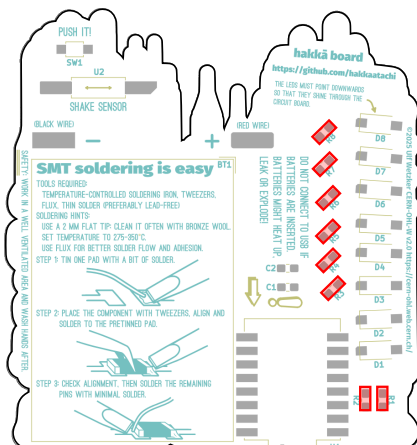
A pull-up resistor in the microcontroller ensures that the input pin connected to the shake sensor remains at a fixed voltage. This suppresses external interference signals. However, it must be activated in the software.



3 Current-limiting resistors for LEDs

They limit the current through the LEDs and determine how bright they are or whether they burn out.

R1 - R8 1k Ohm

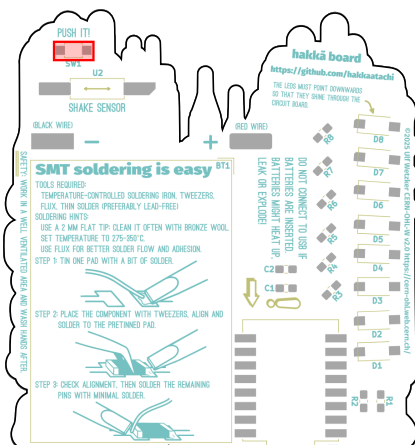


7 Switch

A switch that closes the circuit purely mechanically for as long as it is pressed.

SW Switch

A pull-up resistor in the microcontroller ensures that the input pin connected to the button remains at a fixed voltage. This suppresses external interference signals. However, it must be activated in the software.

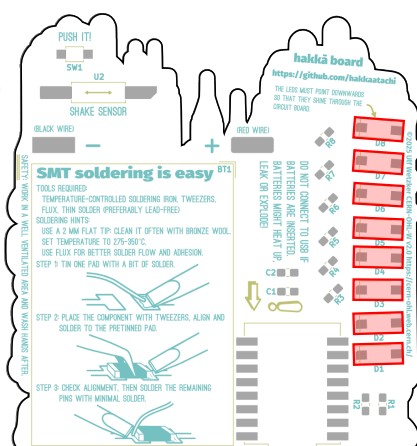


4 LEDs

"Light-Emitting Diode" is a tiny piece of silicon (semiconductor) that lights up when current flows through it.

D1 - D8 LED

LEDs – like all diodes – only allow current to flow in one direction and must therefore be installed with the correct polarity. On our board, the LEDs are also mounted upside down.

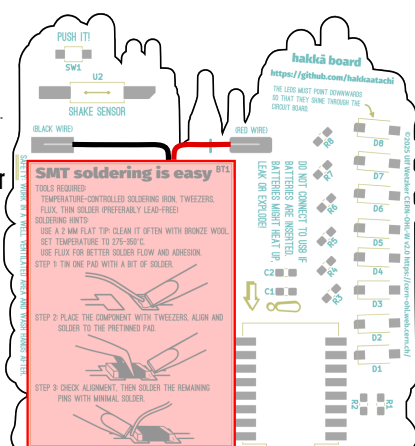


8 Battery holder

Three AAA batteries in series, each 1.5V, provide a total of 4.5V for our circuit.

BT1 3xAAA Battery holder

If the microcontroller board is connected via USB, at least one battery must be removed to prevent overheating. Otherwise, the batteries may leak or even explode.



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