

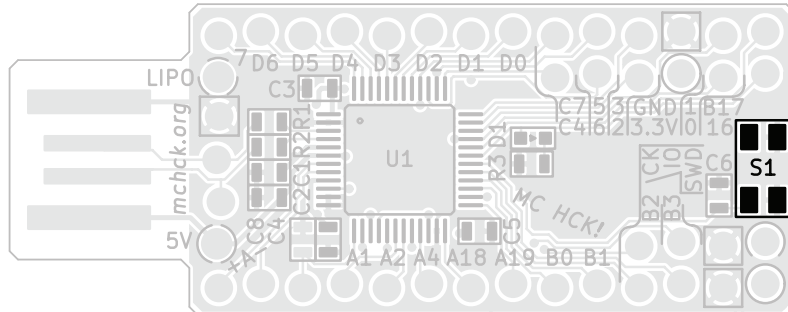
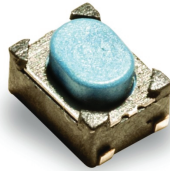
Sushi and Solder One: McHck

<http://mchck.org/>

1 — S1

Pushbutton

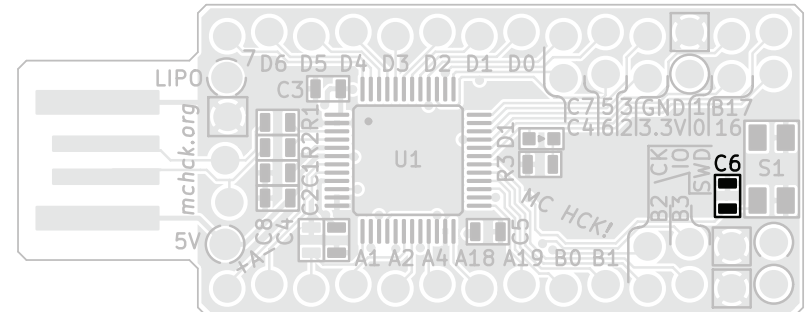
\$0.218



This **pushbutton switch** lets you change the microcontroller into a "bootloader" mode where it will accept a new program.

2 — C6

Capacitor, 100 nF \$0.019

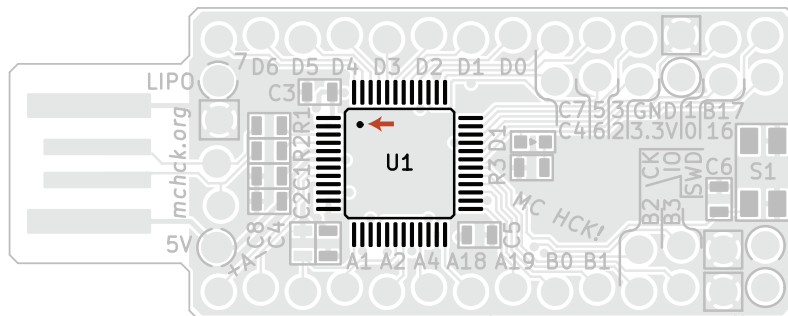


Debouncing capacitors smooth out chatter that occurs when a push-button switch is pressed, preventing false triggering.

3 — U1

Microcontroller

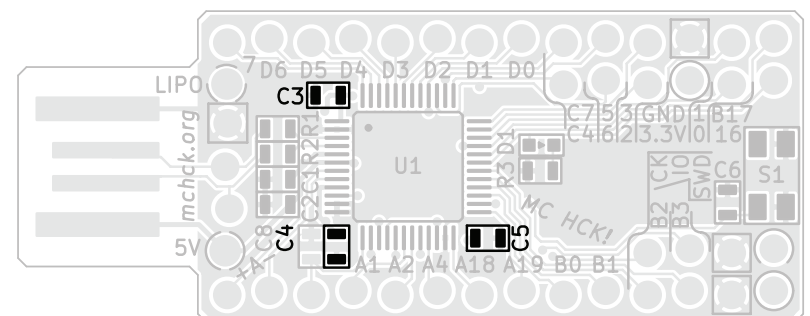
\$4.12



The **microcontroller** is the brain of the operation. It has a ton of different features all on a single tiny silicon chip. This chip, a Freescale Kinetis MK20DX128, is an ARM microcontroller, similar to but less powerful than the CPU in your phone or tablet. Note the **alignment dot**.

4 — C3, C4, C5

Capacitor, 100 nF \$0.019



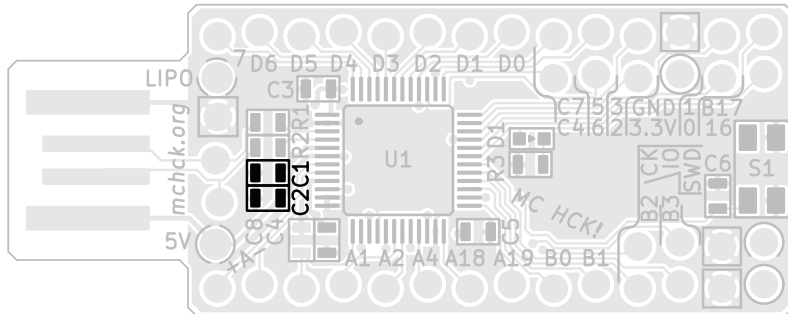
Bypass or decoupling capacitors reduce digital switching noise by providing a small reservoir of fast-reacting current close to a potentially noisy digital chip to smooth out sudden changes in current draw.

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5 $\text{--}\text{||}\text{--}$ C1, C2

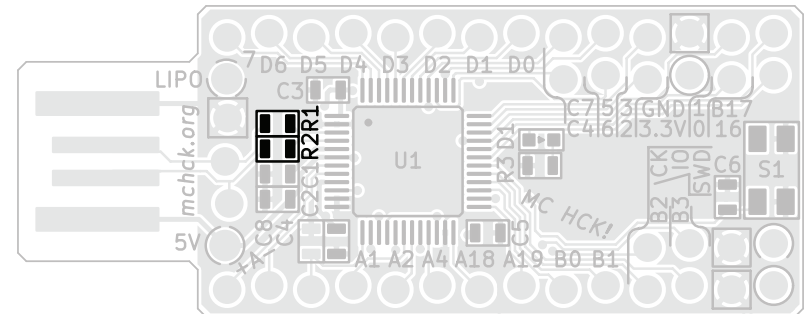
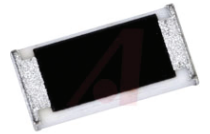
Capacitor, 2.2 μF \$0.033



Bulk capacitors act as larger reservoirs of current close to power hungry components, preventing brown-out when

6 $\text{--}\text{W}\text{--}$ R1, R2

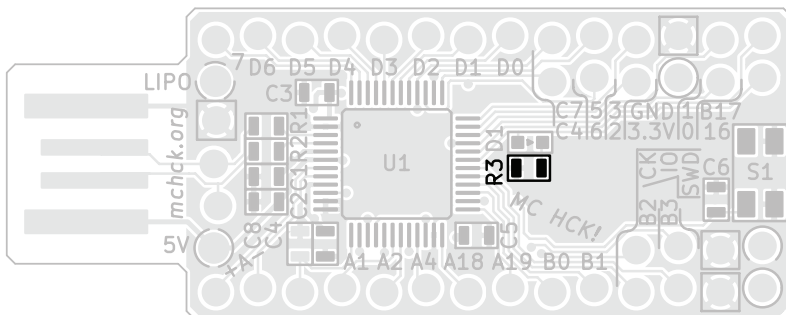
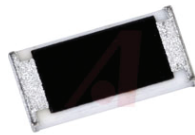
Resistor, 33 Ω \$0.007



Termination resistors prevent electrical reflections in the USB cable that might cause the host computer to incorrectly call a 1 versus a 0. The black side is normally placed facing up.

7 $\text{--}\text{W}\text{--}$ R3

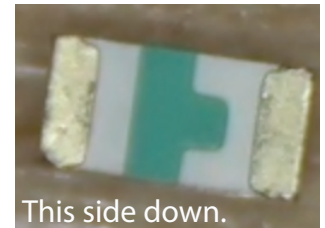
Resistor, 1k Ω \$0.007



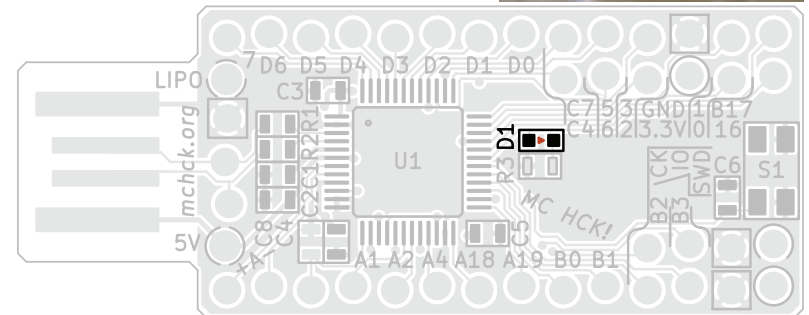
This **current limit resistor** prevents too much current from flowing through the LED, which could cause it to fail.

8 $\text{--}\text{>}\text{--}$ D1

LED ~\$0.10



This side down.



This **light emitting diode** is like a tiny light bulb that glows when you pass current through it. Note the **direction arrow** (on the back in green) if you put it in backwards, it won't light up!