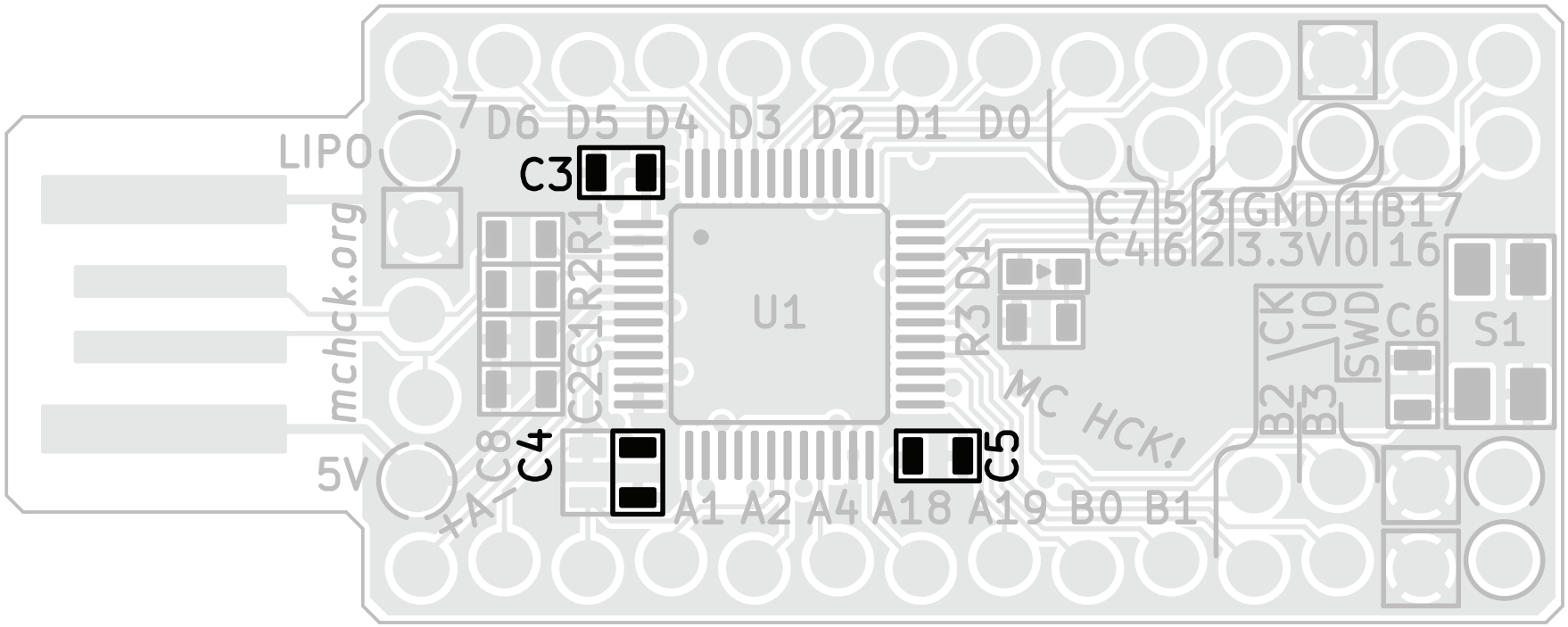
C3, C4, C5

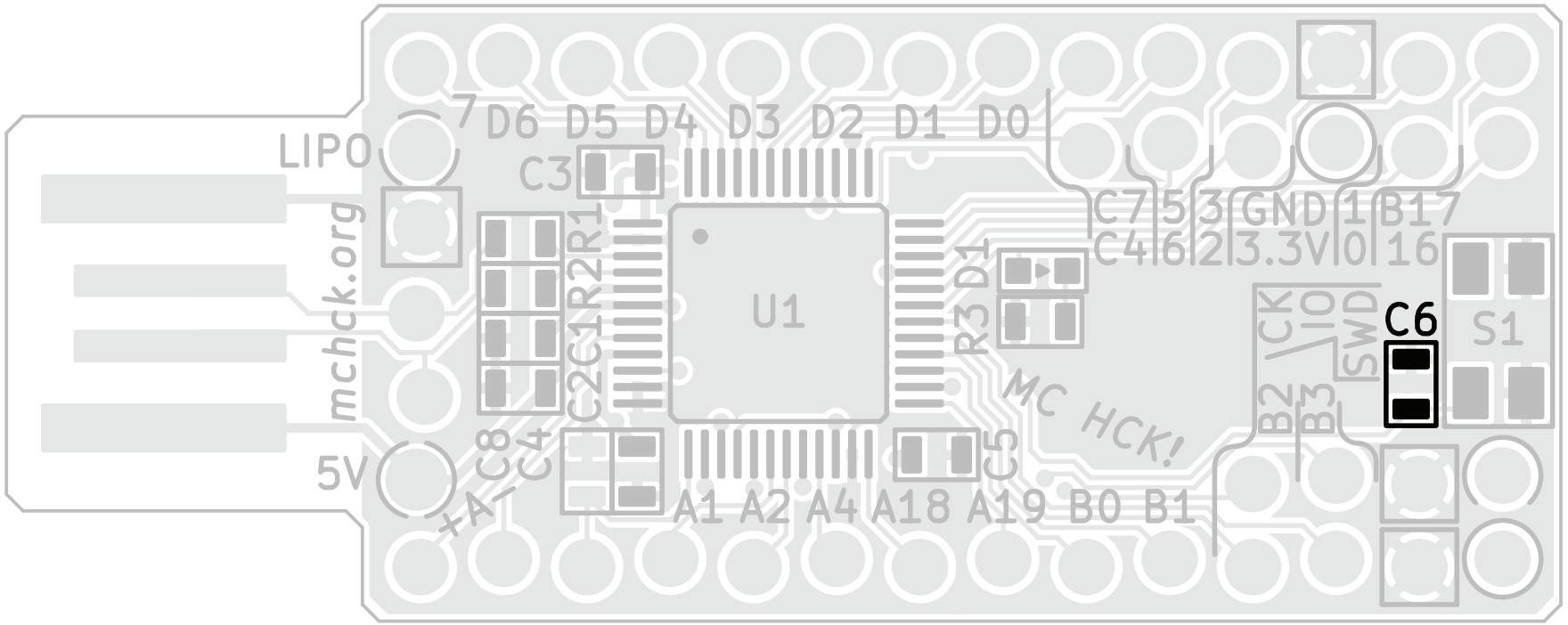
Capacitor, 100 nF $0.019



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.

C6

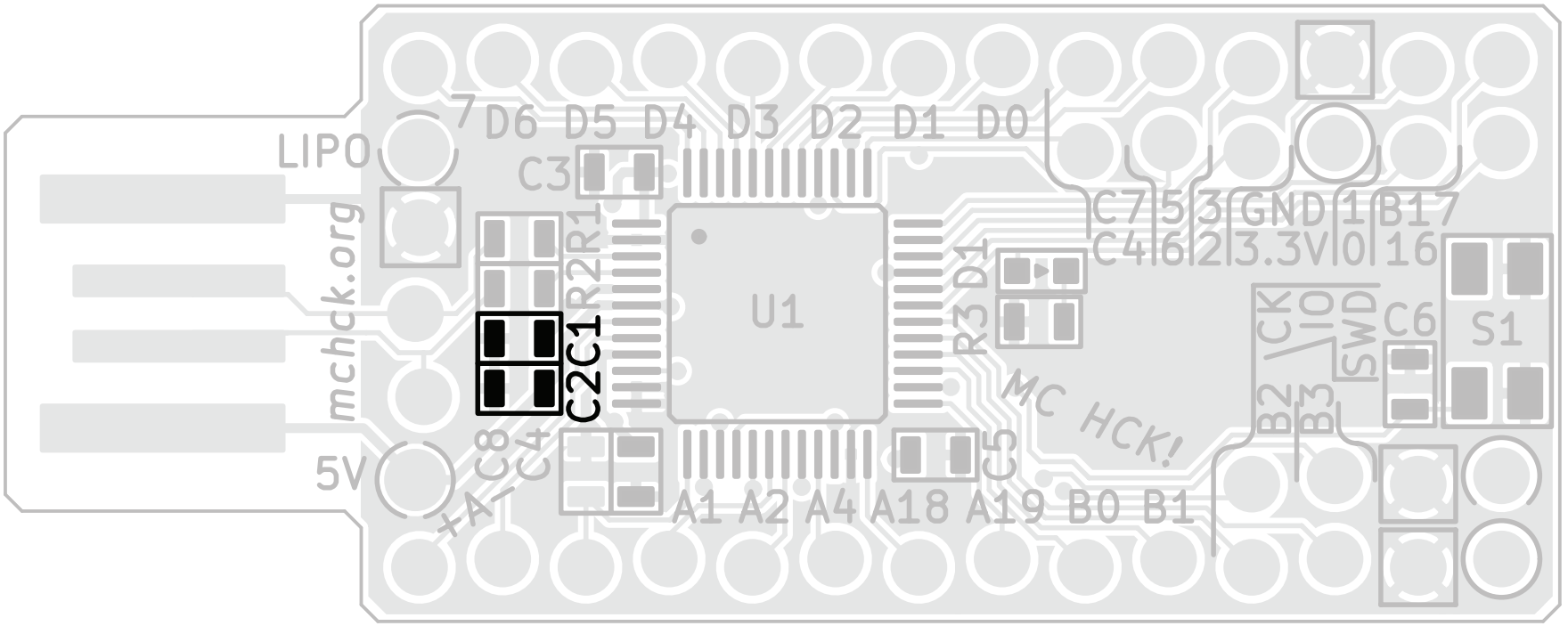
Capacitor, 100 nF $0.019



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

C1, C2

Capacitor, 2.2 uF $0.033

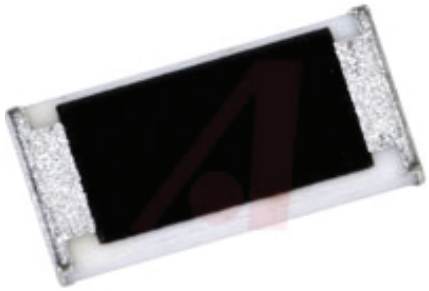


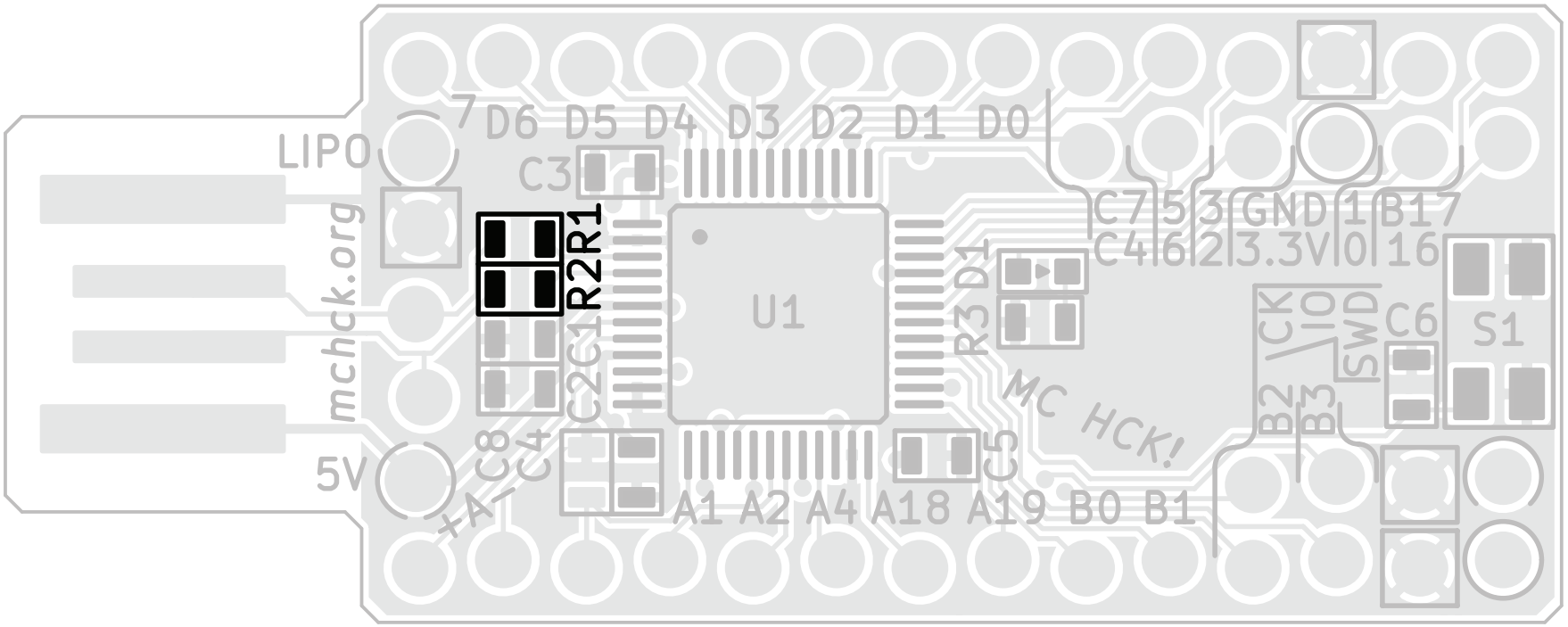
Bulk capacitors act as larger reservoirs of current close to power hungry components, preventing brown-out when

R1, R2

Resistor, 33 Ω

$0.007

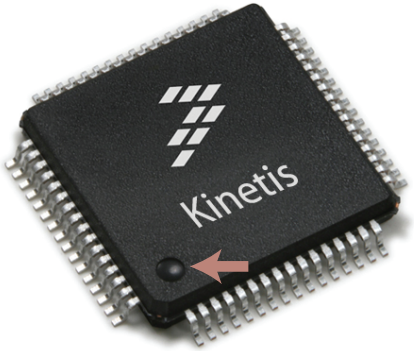


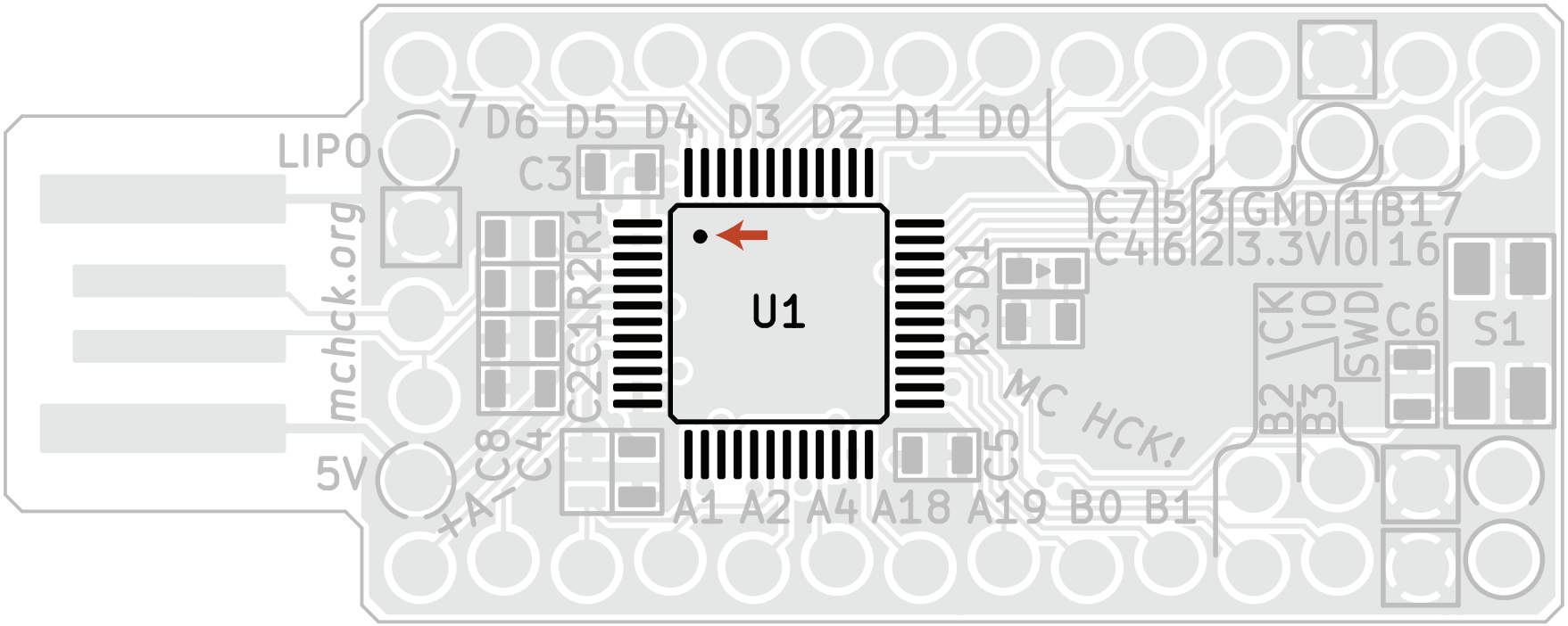


Termination resistors prevent electrical reflections in the USB cable that might cause the host computer to incorrectly call a 1 versus a 0. The black side is normally placed facing up.

U1

Microcontroller $4.12



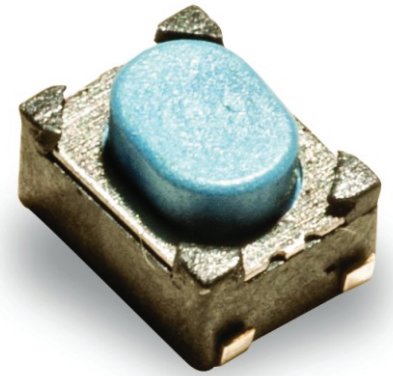


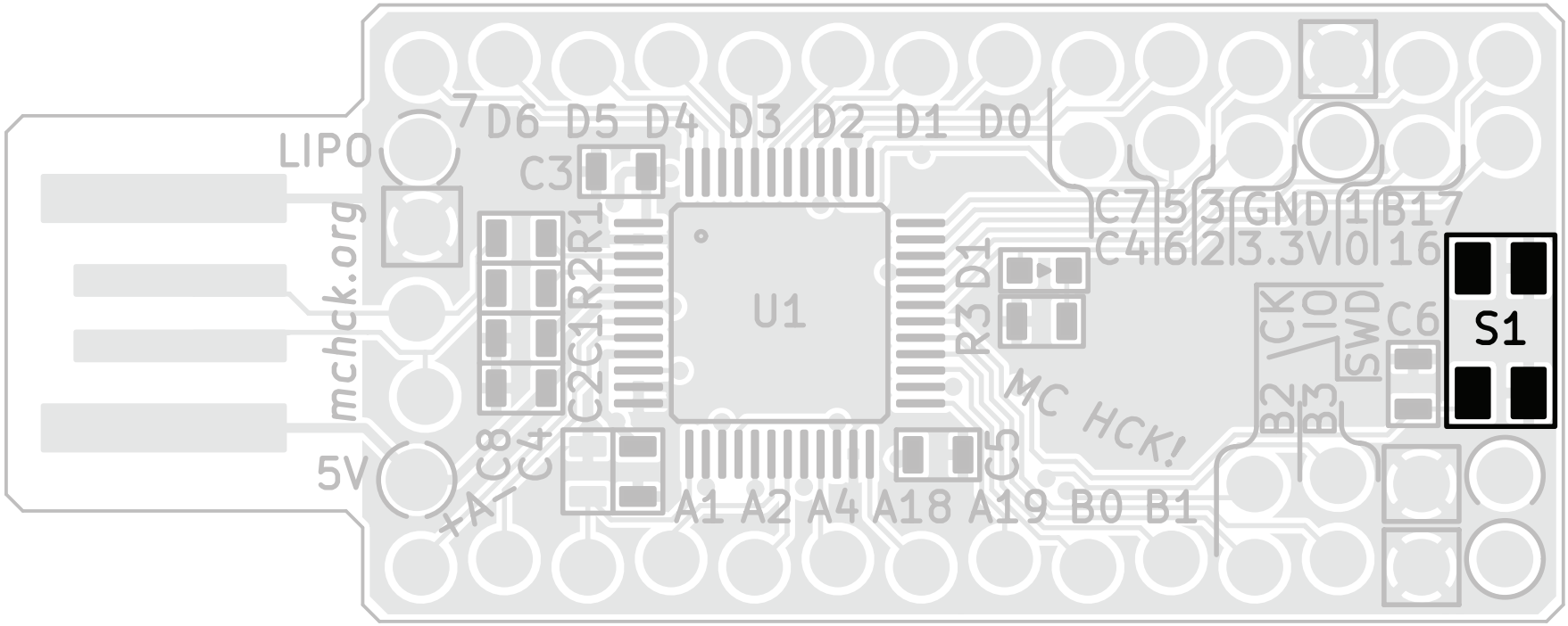
The **microcontroller** is the brain of the operation. It has a ton of different features all on a single tiny silicon chip. This chip, a Freescale Kinetis MK20DX128, is an ARM microcontroller, similar to but less powerful than the CPU in your phone or tablet. Note the ***alignment dot***.

S1

Pushbutton

$0.218



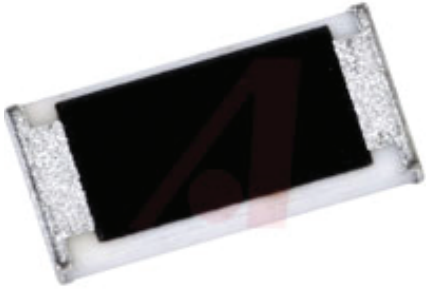


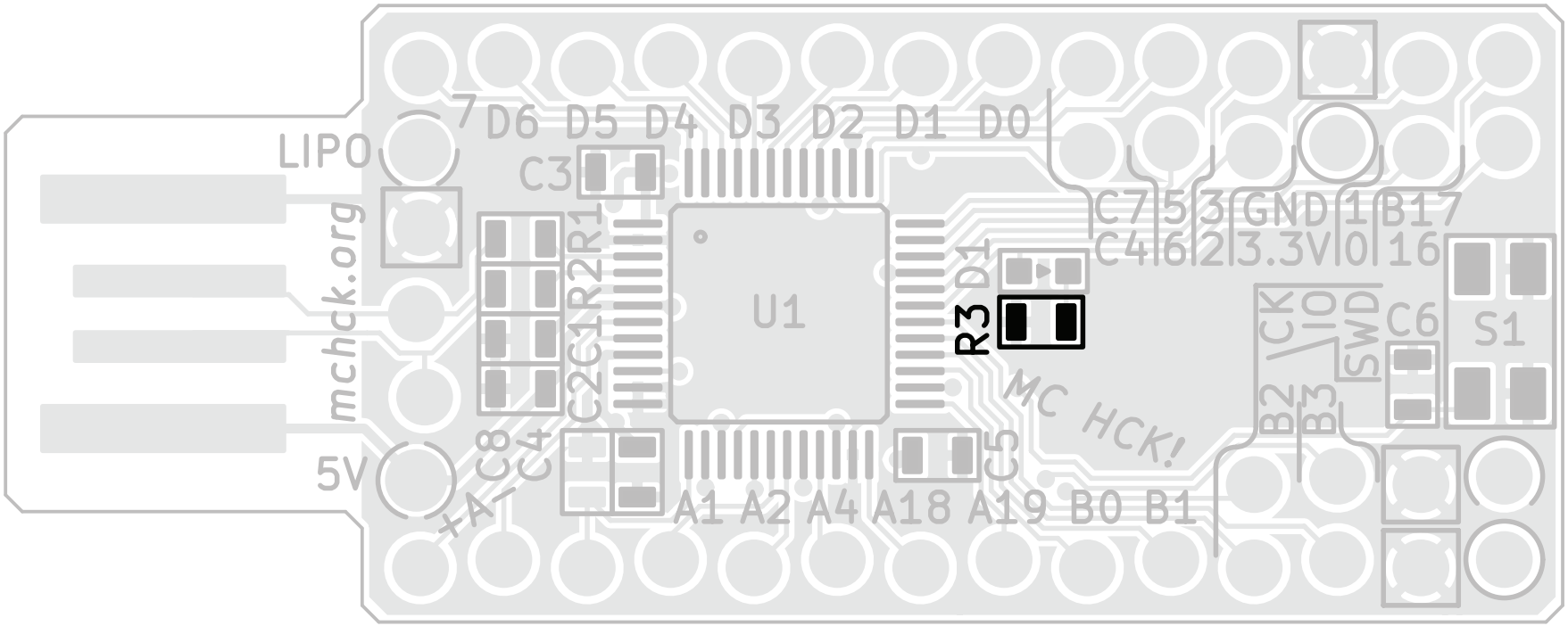
This **pushbutton switch** lets you change the microcontroller into a "bootloader" mode where it will accept a new program.

R3

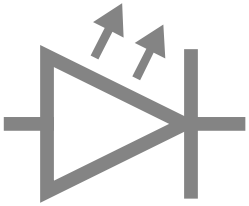
Resistor, 1k Ω

$0.007





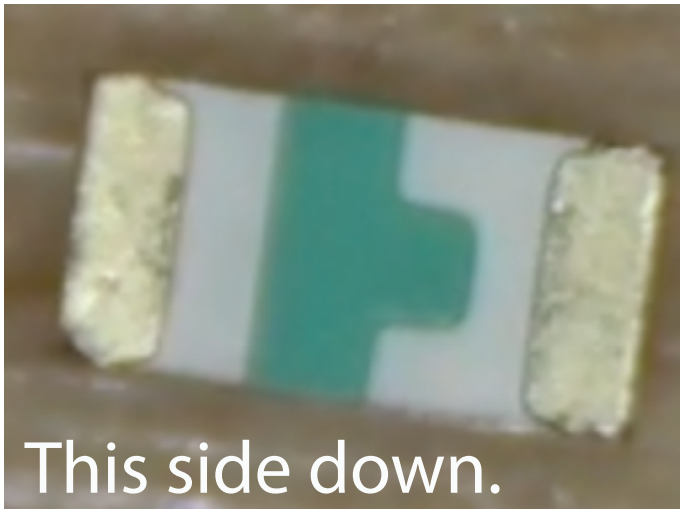
This **current limit resistor** prevents too much current from flowing through the LED, which could cause it to fail.

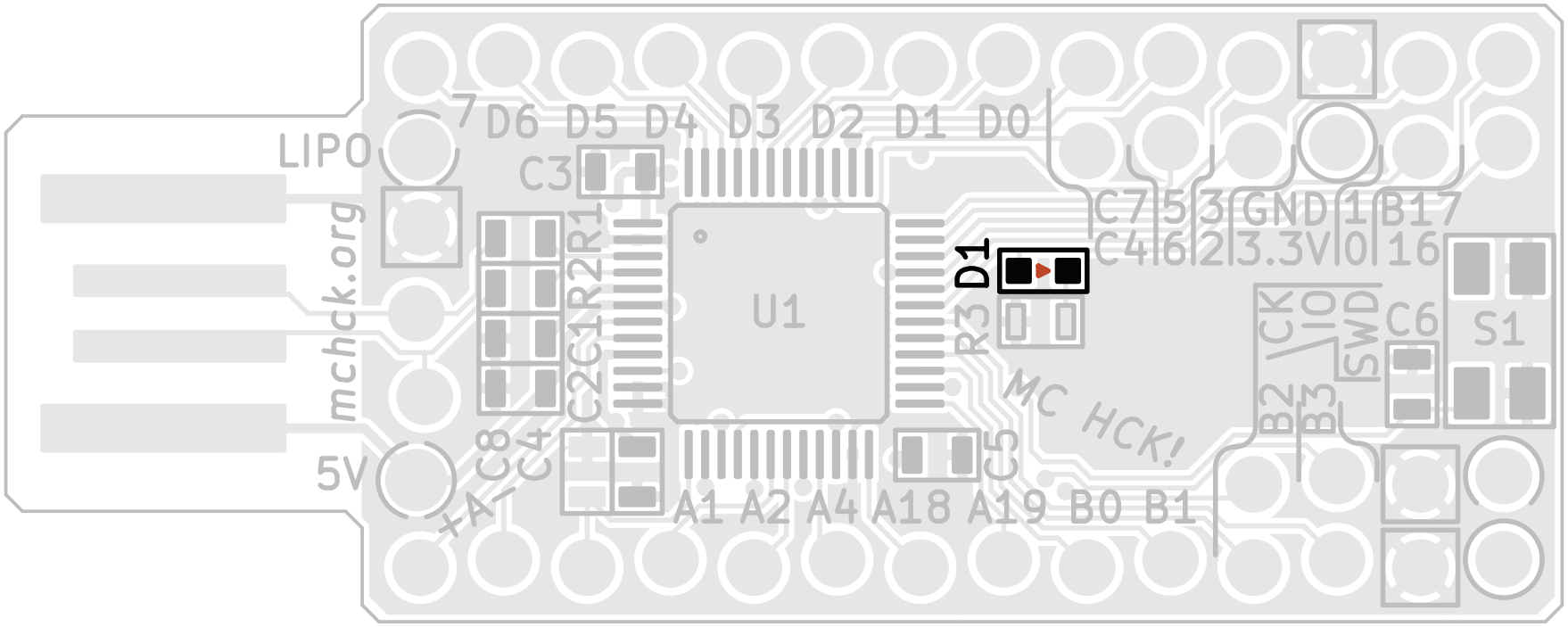


D1

LED

~$0.10





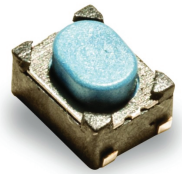
This **light emitting diode** is like a tiny light bulb that glows when you pass curent through it. Note the ***direction arrow*** (on the back in green) if you put it in backwards, it won't light up!

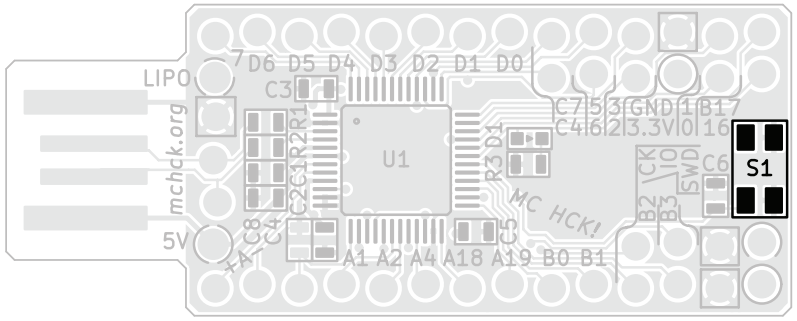
Sushi and Solder One: **McHck**

http://mchck.org/

1 S1

Pushbutton $0.218





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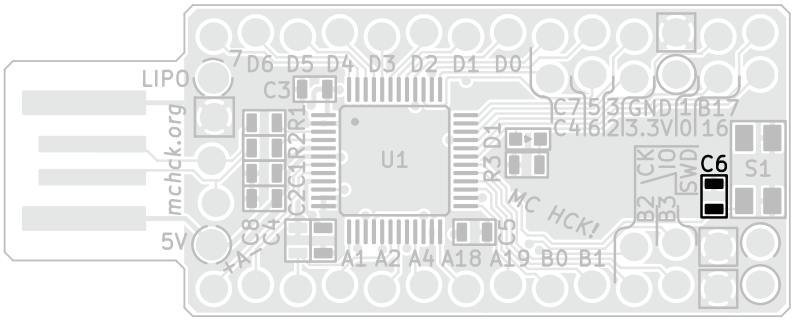
2 C6

Capacitor, 100 nF $0.019



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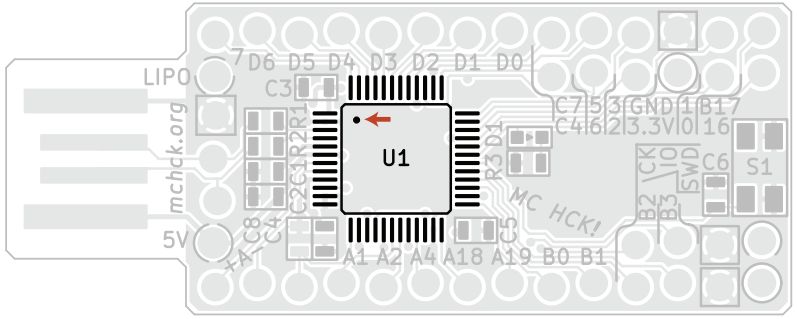
3 U1

Microcontroller $4.12



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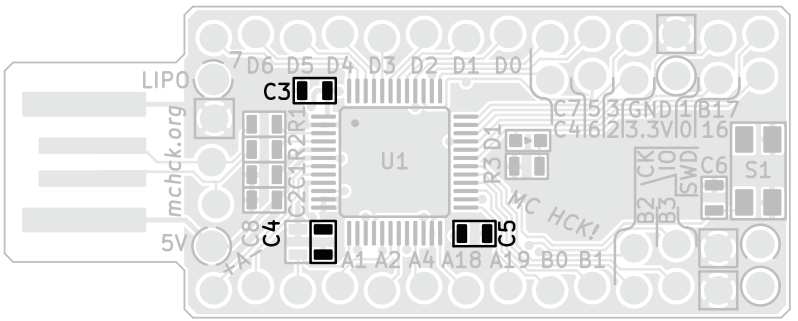
4 C3, C4, C5

Capacitor, 100 nF $0.019



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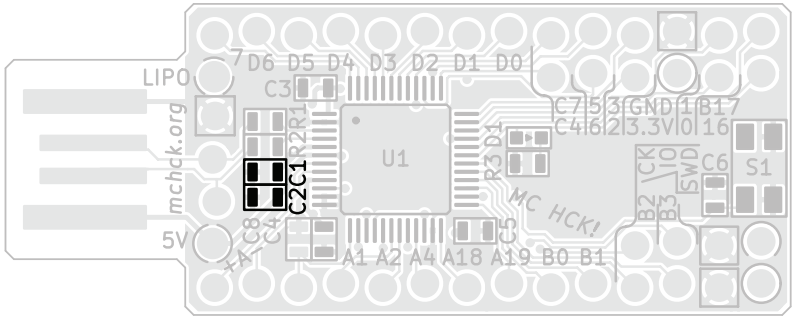
5 C1, C2

Capacitor, 2.2 uF $0.033



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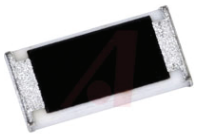
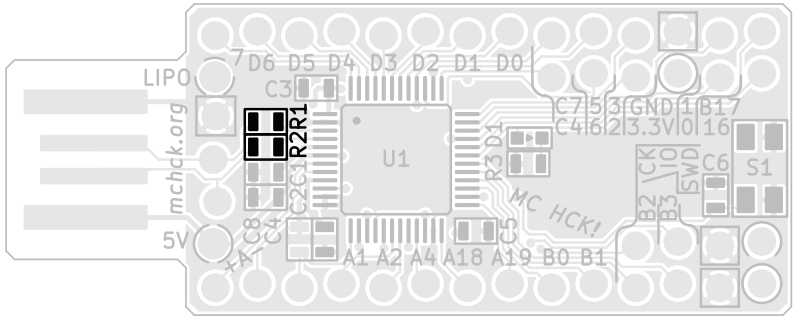
6 R1, R2

Resistor, 33 Ω $0.007





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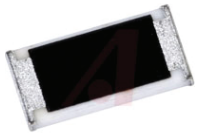
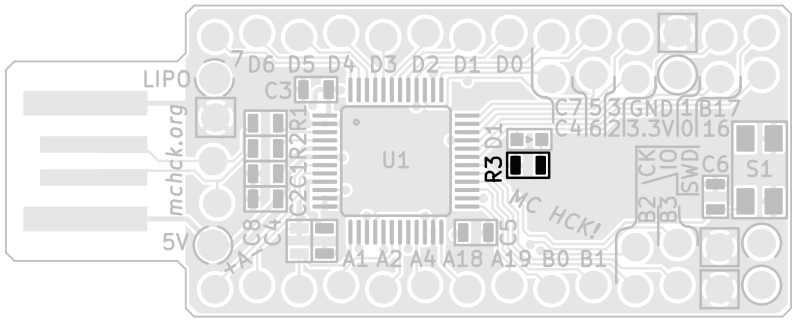
7 R3

Resistor, 1k Ω $0.007





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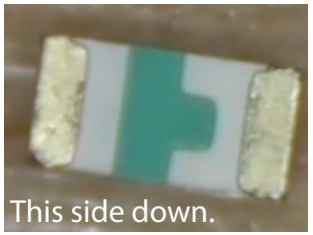
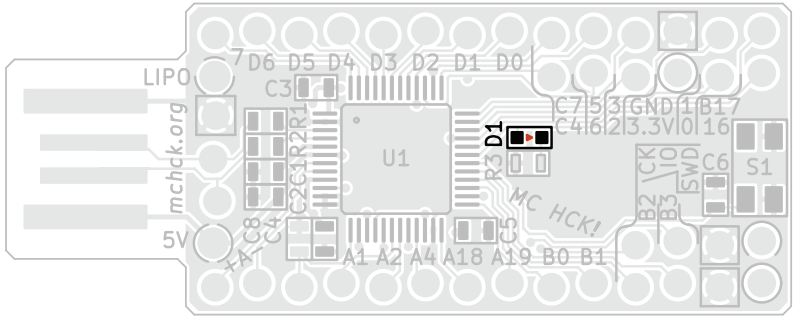
8 D1

LED ~$0.10





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