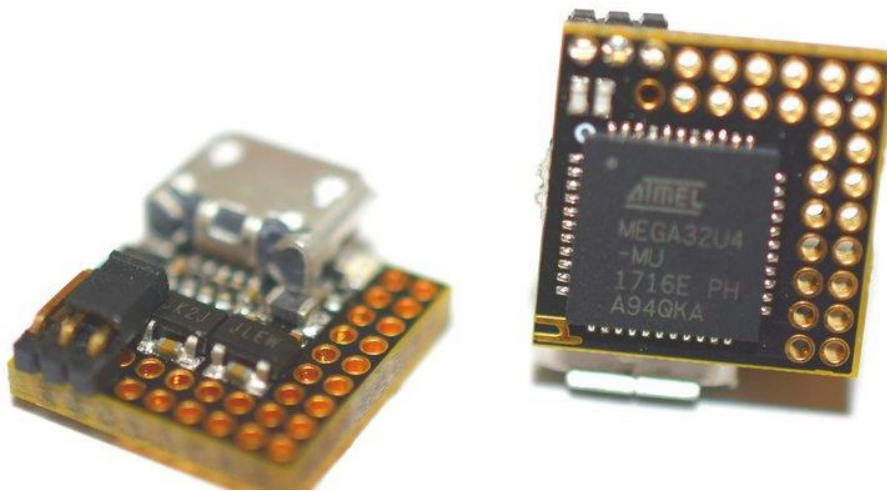


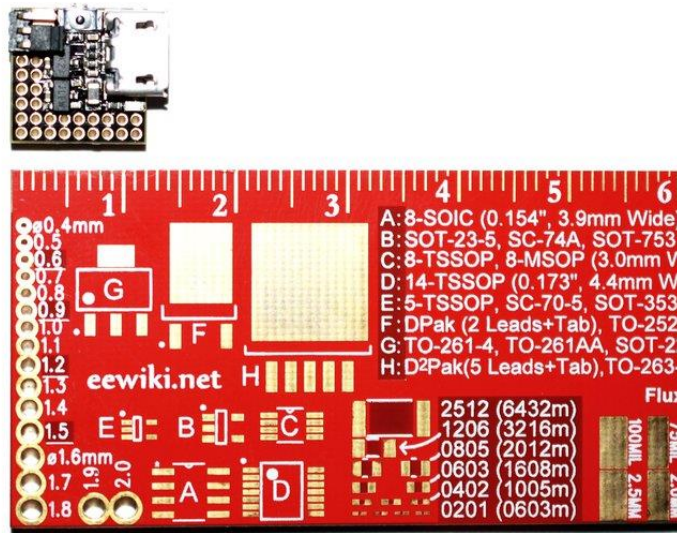
μduino

The smallest Arduino ever created



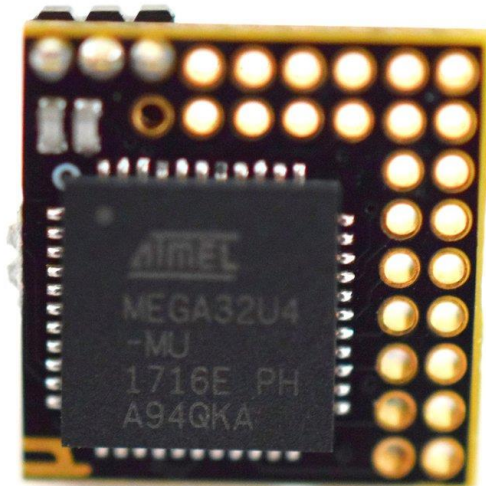
The current range of easy-to-program boards are staggeringly large for the complexity of the designs. As technology continues to advance and new opportunities for sensors and applications arise, why should people be limited to a bulky device? Technology should be able to shrink to meet any opportunity for any use, and that is what the μduino was designed for!

The μduino is the smallest Arduino ever made. Many projects make this claim, but none can compare to the μduino in terms of size or power. Measuring in at 12mm (0.5 inches) square in the final design, nothing even comes close to this size! While similarly sized micro-controller boards do exist, their power is severely limited to using chips such as the Attiny85 (with up to 6 I/O ports) or simply removing a number of I/O ports.



The µduino is the smallest Arduino compatible device ever made, at 12mm square!

The µduino makes use of the power of the ATMEGA32U4 chip found in the Arduino Leonardo (a board over 20 times larger), offering 20 I/O ports, including PWM and ADC ports! In addition, the µduino can be powered by batteries or directly by micro-USB. The µduino was specifically designed to operate in two power modes, 3.3V or 5V, which can be selected using a jumper on the board. This way, you can tailor your µduino to match your sensors and power supplies without having to worry about multiple versions of the same board!



µduino uses the powerful and versatile ATMEGA32U4 microcontroller.

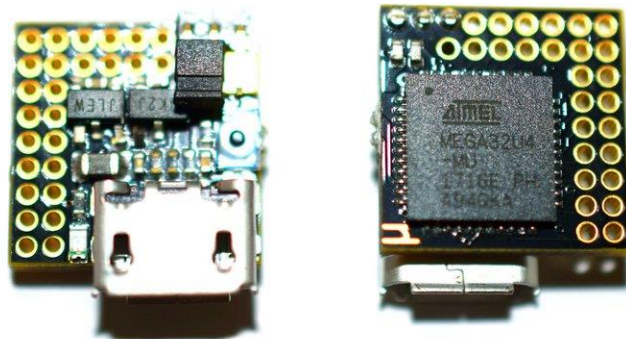
The µduino is extremely small, but that size opens up immense possibility for projects. Instead of being limited to Attiny chips (with programmable memory less than 4MB), the µduino has 28MB available for programming (4MB of the 32MB total is used by the bootloader). This supplies the raw power of a full sized Arduino Leonardo board in the smallest size imaginable.

Unlike many other Arduino-based boards, the µduino uses smaller hole separation (1.27mm vs 2.54mm). While vastly cutting down on size, standard sized wires are still compatible and can be soldered or bent in place.

Who Needs It and Why?

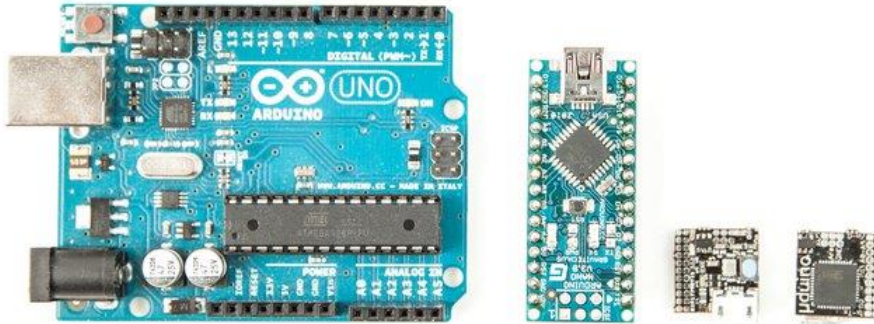
The µduino is designed particularly with wearables and small-sized projects in mind. With this focus, the µduino works very well with sensors. Some uses include a mini quad-copter, GPS logging module, small multimeters, heart rate monitors, and much more!

Preliminary Features & Specifications



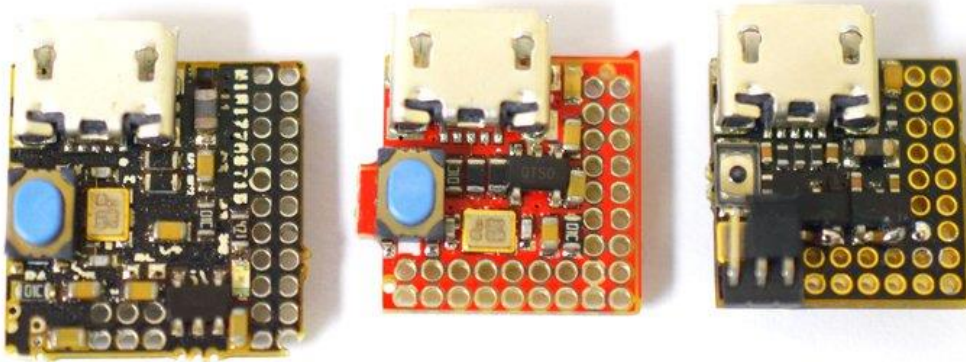
- ATMEGA32U4 microcontroller
- 6x Analog I/O ports
- 14x Digital I/O ports (including Rx/Tx)
- Status LED
- Dual-power modes for 3.3V and 5V operation (accepts up to 16V)
- 1x Power output (3.3V or 5V depending on what mode is selected)
- 3x Ground ports
- 1x Analog reference voltage port
- Reset button
- 16 MHz precision crystal oscillator
- MicroUSB port for easy programming and prototyping
- Preloaded with reliable Arduino Leonardo bootloader

Comparisons



Arduino Uno, Arduino Micro, and μ duino.

| | Size | Microcontroller | Total I/O | PWM I/O | USB Support | Connector Spacing |
|------------------------------|---------------|-----------------|---------------|---------|----------------|-------------------|
| μduino | 12mm x 12mm | ATMEGA32U4 | 20 (6 analog) | 7 PWM | micro USB Port | 1.27 mm spacing |
| Uno | 69mm x 54mm | ATMEGA328P | 20 (6 analog) | 6 PWM | USB-A Port | 2.54 mm spacing |
| Micro | 18mm x 48mm | ATMEGA32U4 | 20 (6 analog) | 7 PWM | micro USB Port | 2.54 mm spacing |
| Digispark | 26mm x 19mm | Attiny85 | 6 (4 analog) | 3 PWM | Full USB Port | 2.54 mm spacing |
| Flora | 45mm diameter | ATMEGA32U4 | 6 (4 analog) | 3 PWM | micro USB Port | mounting holes |
| Pico | 15mm x 15mm | ATMEGA32U4 | 8 (3 analog) | 1 PWM | micro USB Port | 2.54 mm spacing |



Initial prototype (14mm), second prototype (12.5mm), and final design (12mm).

Production and Risks

To reduce the risk of delays, the design was completed and tested successfully ahead of time, and all that remains is production. While the unforeseen can (and unfortunately due to a last-minute design update, did) happen, I remain committed to delivering the μ duino no matter what happens, with initial customer shipments beginning in December 2017.