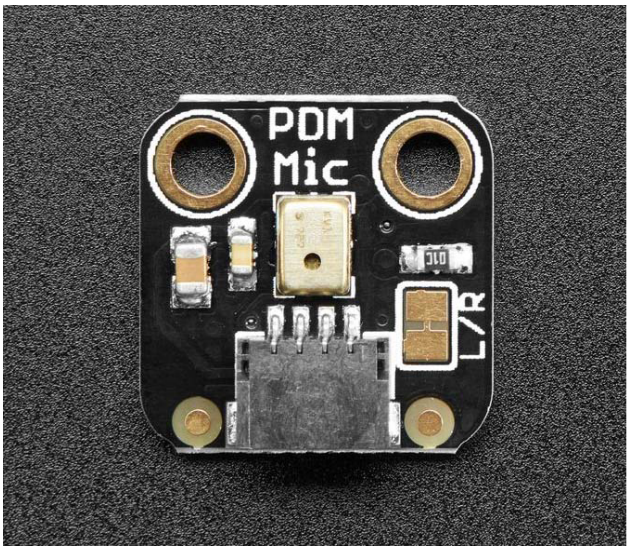
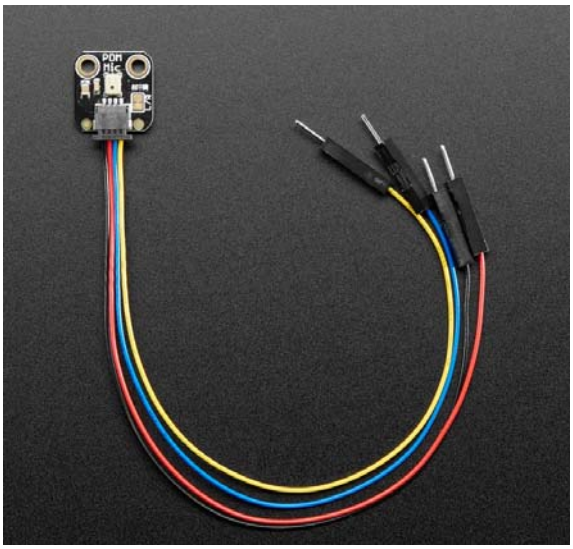




Adafruit PDM Microphone Breakout with JST SH Connector

PRODUCT ID: 4346

An exotic new microphone has arrived in the Adafruit shop, a PDM MEMS Microphone! PDM is the 'third' kind of microphone you can integrate with electronics, apart from analog or I2S. These microphones are very commonly used in products, but are rarely seen in maker projects. Still, they have some benefits so we thought we'd offer a breakout for the shop.

The first thing to note is that this sensor does not provide an 'analog' output like many of our electret microphone assemblies. So it's great for chips that do not have analog inputs. Secondly, the digital interface is a very simplistic pulse density modulation output. It's digital but its *not* PWM and it's *not* I2S. You will need to make sure your chip has a PDM interface - most 32-bit processors these days do!

PDM is a little like 1-bit PWM. You clock the mic with a 1 MHz - 3 MHz clock rate, and on the data line you'll get a square wave out that syncs with the clock.

The data line with be 0 or 1 logic output, with the square wave creating a *density* that when averaged will result in the analog value out.

There's a few ways to manage these mics:

- Your chip comes with a hardware peripheral and library that does all the data managing at high speed, collects samples, applies a filter and gives you an analog value (The nRF52840 is like this and it is ideal!)
- Your chip comes with a hardware peripheral that gives you values, then it is up to you to perform the decimation/filtering. (We have some example code for this on the ATSAMD21 chipset)
- Your chip does not come with a hardware peripheral but you're pretty clever and come up with a way to make it work using SPI (See this example for the ATtiny85)
- You generate the high speed clock, then add an analog filter on the data line, and read the analog value (A hack, but works!)

Either way you decide to go, make sure you have a handle on what support you get with your platform, as these chips are a little tricky!

Each order comes with one fully assembled and tested microphone. This version of the mic has a 4-JST SH connector with 3V, GND, DAT, CLK connections that can be used with one of our JST-SH cables to make a flexible mic arrangement. If you want a version with breakout headers, we have a version here. An on-board solder jumper lets you change the mic from Left to Right channel

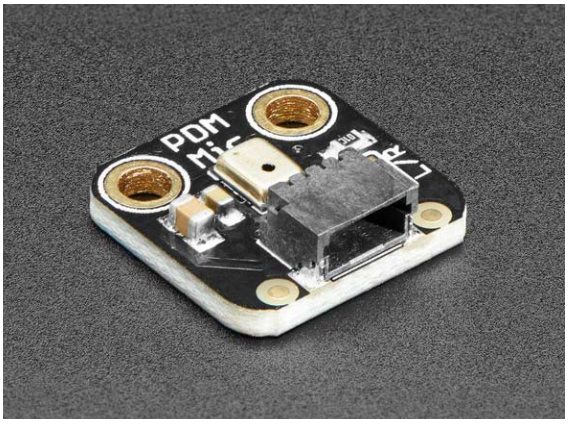
TECHNICAL DETAILS

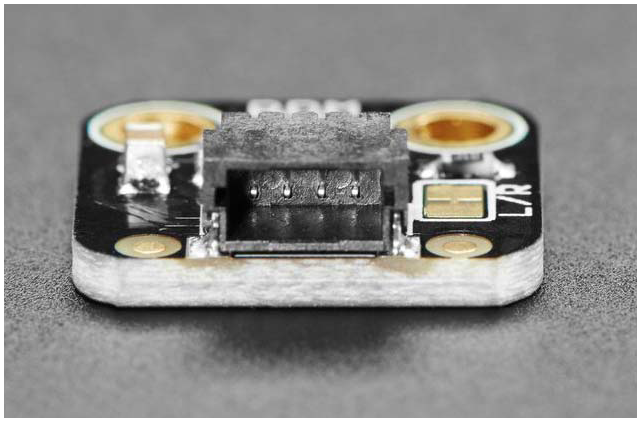
Wiring, schematics, example code, datasheets, Fritzing and more in the product tutorial!

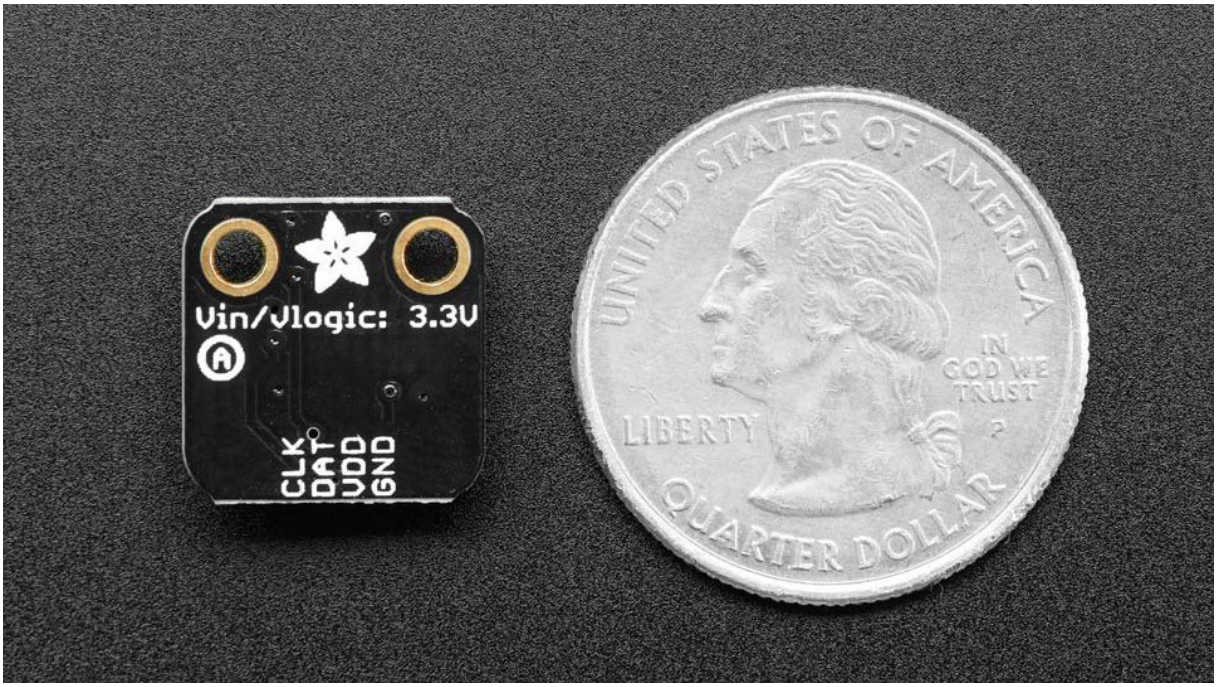
- Voltage Range: 1.8-3.3V
- Clock rate: 1 - 3.25 MHz
- Current draw: 0.6mA
- SNR: 61 dB
- Sensitivity: ~-26 dBFS

Product Dimensions: 14.0mm x 14.0mm x 4.5mm / 0.6" x 0.6" x 0.2"

Product Weight: 0.7g / 0.0oz







https://www.adafruit.com/product/4346/9-10-19