



SparkFun gator:particle - micro:bit Accessory Board

SEN-15271

The SparkFun gator:particle micro:bit Accessory Board incorporates the powerful MAX30102 sensor, enabling sensing of pulse oximetry (SpO_2), heart rate (HR) monitoring, and particle (PM) detection. As part of SparkFun's gator:bit series of alligator-clippable accessories, it can be easily interfaced with the micro:bit or other microcontrollers via the SparkFun gator:bit! The MAX30102 includes internal LEDs, photodetectors, optical elements, and low-noise electronics with ambient light rejection. The idea is to pulse the different LEDs, then detect what shines back. Based on the reflected signature, it's possible to detect different types of particles or materials (such as oxygenated blood or smoke from a fire).

The MAX30102 is a high-sensitivity pulse oximeter and heart-rate sensor that communicates over an I²C bus. The specified operating voltage for the MAX30102 is between 1.7V-2V. For use with the gator:bit (v2) and micro:bit, you should provide 3.3V through the 3V3 and GND pads to keep the logic levels consistent; the 3.3V input is then regulated to 1.8V for the MAX301

The micro:bit is a pocket-sized computer that lets you get creative with digital technology. Between the micro:bit and our shield-like bit boards you can do almost anything while coding, customizing and controlling your micro:bit from almost anywhere! You can use your micro:bit for all sorts of unique creations, from robots to musical instruments and more. At half the size of a credit card, this versatile board has vast potential!

FEATURES

- gator:bit Compatible
- MAX30102: HR and SpO₂ sensor
 - Operating Voltage: 1.8-2V
 - Supply Current:
 - Heart Rate and SpO₂ Mode: 600-1200μA
 - IR Only Mode: 600-1200μA
 - Operating Temperature: -40°-85°C
 - (ΣΔ) ADC
 - Resolution: 15-18-bits (programmable)
 - Sampling Rate: 50-3200sps (programmable)
 - IR LED
 - LED Wavelength: 870-900nm (avg. 880nm)
 - Forward Voltage: 1.4V
 - Radiant Power: 6.5mW
 - LED Driver Current: 0-50 mA (programmable)
 - Red LED
 - LED Wavelength: 650-670nm (avg. 660 nm)
 - Forward Voltage: 2.1V
 - Radiant Power: 9.8mW
 - LED Driver Current: 0-50 mA (programmable)
 - Photodetector
 - Spectral Range of Sensitivity: 600-900nm
 - Radiant Sensitive Area: 1.36mm²
 - I²C Address
 - 0xAE - Write Address
 - 0xAF - Read Address

