

# Qwiic Mini dToF Imager - TMF8821

SEN-19451

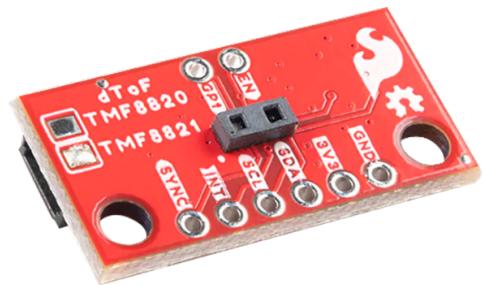
## Product Overview

10/10/2022

For the most up-to-date information, visit [www.mouser.com](http://www.mouser.com) or the supplier's website.

## Description

SparkFun Qwiic Mini dToF TMF8821 Imager is a direct Time-of-Flight (dToF) sensor that includes a single modular package with an associated Vertical Cavity Surface Emitting Laser (VCSEL) from ams. The dToF imager is based on a Single Photon Avalanche Photodiode (SPAD), Time-to-Digital converter (TDC), and histogram technology. This sensor features a 5000mm detection range and a maximum read rate of up to 30Hz. The SEN-19451 consumes a current of 8 $\mu$ A in standby mode and 57mA in active mode. This Time-of-Flight (dToF) sensor operates between a 2.7V to 3.6V voltage range and a -30°C to 70°C temperature range.



The high-performance on-chip optical filter on the sensor blocks most of the ambient light and enables distance measurements in dark and sunlight environments. All communication is enacted exclusively via I<sup>2</sup>C so that no soldering is required to connect it to the rest of the system. This sensor is idle for projects such as distance measurement for camera autofocus - Laser Detect Autofocus - LDAF (mobile phone), presence detection (computing and communication), object detection and collision avoidance (robotics), and light curtain (industrial).

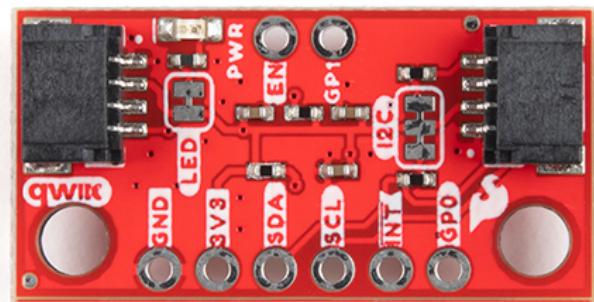
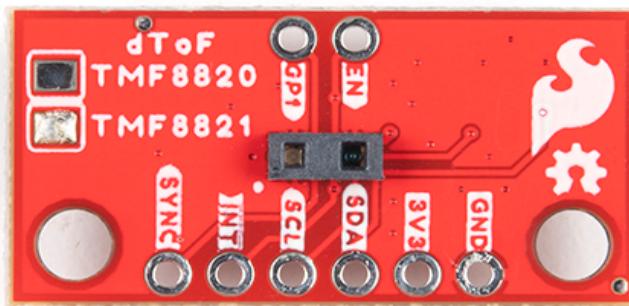
## Features

- Operating voltage:
  - 2.7V to 3.6V
  - (Typically, 3.3V via Qwiic cable)
- Current consumption:
  - 8µA (standby)
  - 57mA (active)
- ams TMF8821 multi-zone Time-of-Flight (ToF) sensor:
  - Direct ToF technology with high sensitivity SPAD detection
  - 4x4 configurable multi-zone configuration with multi-object detection
  - Fast Time-to-Digital Converter (TDC) architecture
  - Sub-nanosecond light pulse
  - On-chip histogram processing
  - High-performance on-chip sunlight rejection filter and algorithm

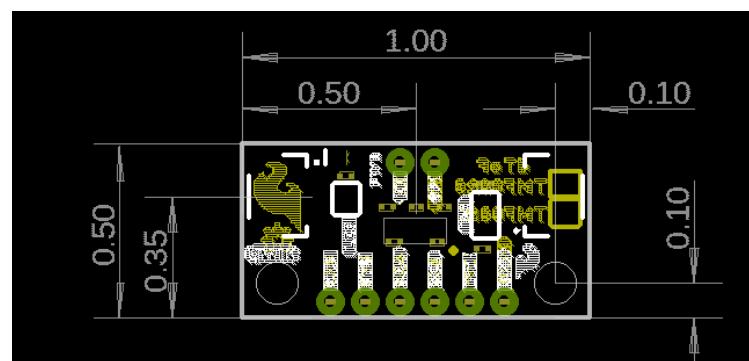
## Features

- 10mm to 5000mm @ 30Hz measurement range
- Class 1 940nm VCSEL light source
- Field of view adjustable up to 63° diagonally
- Up to 30Hz max read rate
- 2x Qwiic connectors
- 0x41 I<sup>2</sup>C address
- -30°C to 70°C operating temperature range
- Breakout pads:
  - 1x Ground
  - 1x Power
  - 1x I<sup>2</sup>C Port
  - 1x Interrupt
  - 2x GPIO
  - 1x Enable
- Power LED (configurable via jumper)
- I<sup>2</sup>C pull-ups (configurable via jumper)
- 0.5" x 1.0" (1.27cm x 2.54cm) board dimensions

## Board Overview



## Board Dimensions

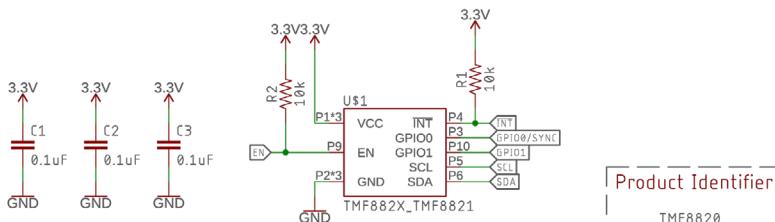


# Schematic

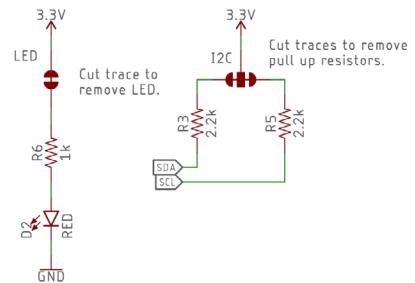
## Distance Time of Flight Sensor: TMF8821

VCC Range: 2.7V – 3.3V  
I/O VCC Range: 1.62V – 3.3V

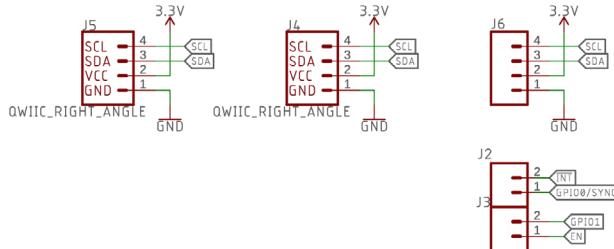
Default Address: 0x41



## Jumpers



## Qwiic Connectors and Header



## Mouser Part Number

[View Part](#)

To learn more, visit <https://www.mouser.com/hew/sparkfun/sparkfun-qwiic-mini-dtof-imager-tmf8821/>