

# Qwiic Mini dToF Imager - TMF8820

SEN-19218

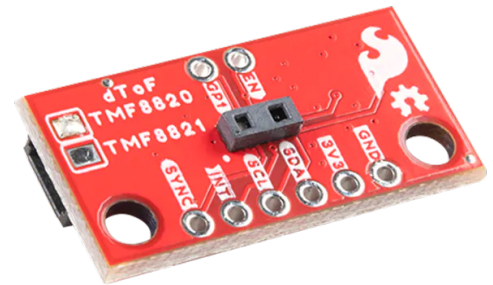
## Product Overview

10/07/2022

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 Imager - TMF8820 is a Direct Time-of-Flight (dToF) sensor. This TMF8820 imager includes a single modular package with an associated Vertical Cavity Surface Emitting Laser (VCSEL) from AMS. The dToF imager is based on Single Photon Avalanche Photodiode (SPAD), time-to-digital converter (TDC), and histogram technology to achieve a 5000mm detection range. This TMF8820 imager features a lens on the SPAD that supports 3 x 3 multizone output data and a wide, dynamically adjustable field of view.



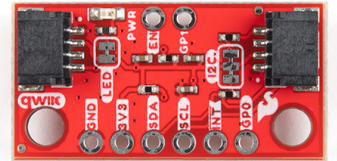
The TMF8820 dToF imager consists of a Multi-Lens-Array (MLA) above the VCSEL that widens the FoL (Field of Illumination). This TMF8820 dToF processed all the raw data on-chip and provided distance information and confidence values on its I<sup>2</sup>C interface. The dToF imager does not require soldering as all communication is enacted via I<sup>2</sup>C. This TMF8820 offers two configurable GPIO pins, and one enable (EN) pin is broken out as PTH pads. The TMF8820 dToF imager includes a power LED and I<sup>2</sup>C pull-up resistors, each configurable via jumpers. Typical applications include presence detection, object detection, and light curtain.

## Specifications

- Operating voltage range:
  - 2.7V to 3.6V
  - (Typically, 3.3V via Qwiic cable)
- Current consumption:
  - 8 $\mu$ A (standby)
  - 57mA (active)
- -30°C to 70°C operating temperature range
- Field of view adjustable up to 63° diagonally
- Up to 30Hz maximum read rate
- 10mm to 5000mm at 30Hz measurement range

## Features

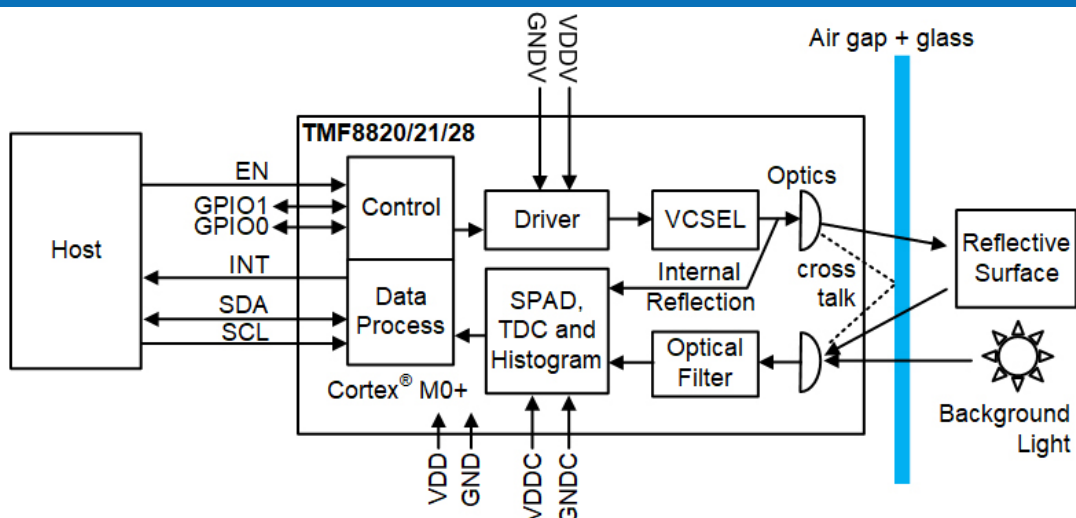
- AMS TMF8821 multi-zone time-of-flight sensor:
  - Direct ToF technology with high sensitivity SPAD detection
  - 3 x 3 configurable multi-zone configuration with multi-object detection
  - Fast Time-to-Digital Converter (TDC) architecture
  - Sub-nanosecond light pulse
  - On-chip histogram processing
  - High-performance on-chip sunlight rejection filter and algorithm
- Light source class 1 940nm VCSEL
- 2 x Qwiic connectors
- I<sup>2</sup>C Address 0 x 41
- Breakout pads:
  - 1 x Ground
  - 1 x Power
  - 1 x I<sup>2</sup>C Port
  - 1 x Interrupt
  - 2 x GPIO
  - 1 x Enable
- Power LED (configurable via jumper)
- I<sup>2</sup>C pull-ups (configurable via jumper)
- 0.5inch x 1.0inch (1.27cm x 2.54cm) board dimensions



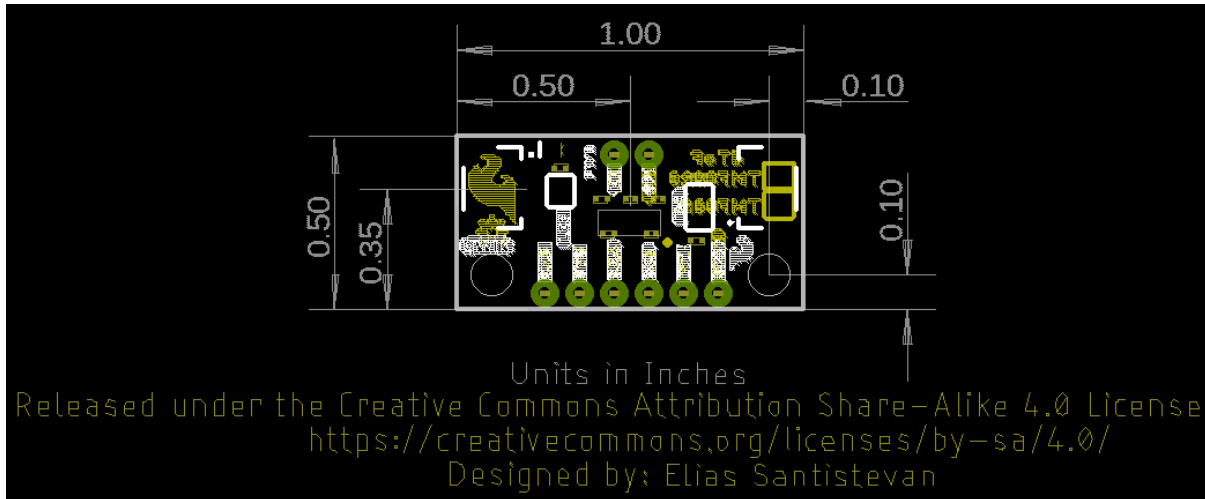
## Applications

- Distance measurement for camera autofocus - Laser Detect Autofocus - LDAF (mobile phone)
- Presence detection (computing and communication)
- Object detection and collision avoidance (robotics)
- Light curtain (industrial)

## Block Diagram



## Board Dimensions



## Mouser Part Number

[View Part](#)

To learn more, visit <https://www.mouser.com/new/sparkfun/sparkfun-gwiic-mini-dtof-imager-tmf8820/>