

# Fermion TMF8701 ToF Distance Ranging Sensor

## SEN0429

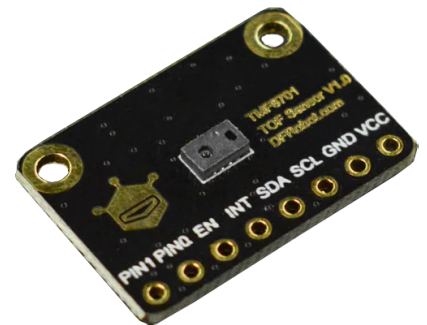
### Product Overview

02/02/2023

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

## Description

DFRobot Fermion TMF8701 Time of Flight (ToF) Distance Ranging Sensor uses the time difference between light pulses to measure distance. This sensor provides single-zone detection of an object irrespective of the color, reflectivity, and texture of the object.



The TMF8701 sensor offers a high dynamic range and operates in either a proximity mode (1cm to 10cm) or a ranging mode (10cm to 60cm) for detection sensing. This sensor can make highly accurate distance measurements within  $\pm 5\%$  and can operate in the dark and in the presence of sunlight. The TMF8701 sensor outputs data through an I<sup>2</sup>C fast-mode communications interface and an integrated microcontroller.

The TMF8701 sensor features 940nm VCSEL Class 1 eye safety, low power consumption, 26mA power consumption at 60Hz, and 0.26 $\mu$ A power-down current consumption (EN=0). Typical applications include 3D face recognition, proximity detection, presence detection, object detection, collision avoidance, and distance measurement.

## Features

- 21° Field Of Illumination (FOI), detect the object closest to the center
- 10mm to 600mm distance sensing
- Enables dark and sunlight environment distance measurement within  $\pm 5\%$
- Built-in histogram for compensating for dirt and smudges on a cover glass
- 940nm VCSEL Class 1 eye safety
- 940 $\mu$ A power consumption at 10Hz (proximity mode)
- 26mA power consumption at 60Hz (distance and proximity mode)
- 0.26 $\mu$ A power-down current consumption (EN=0)

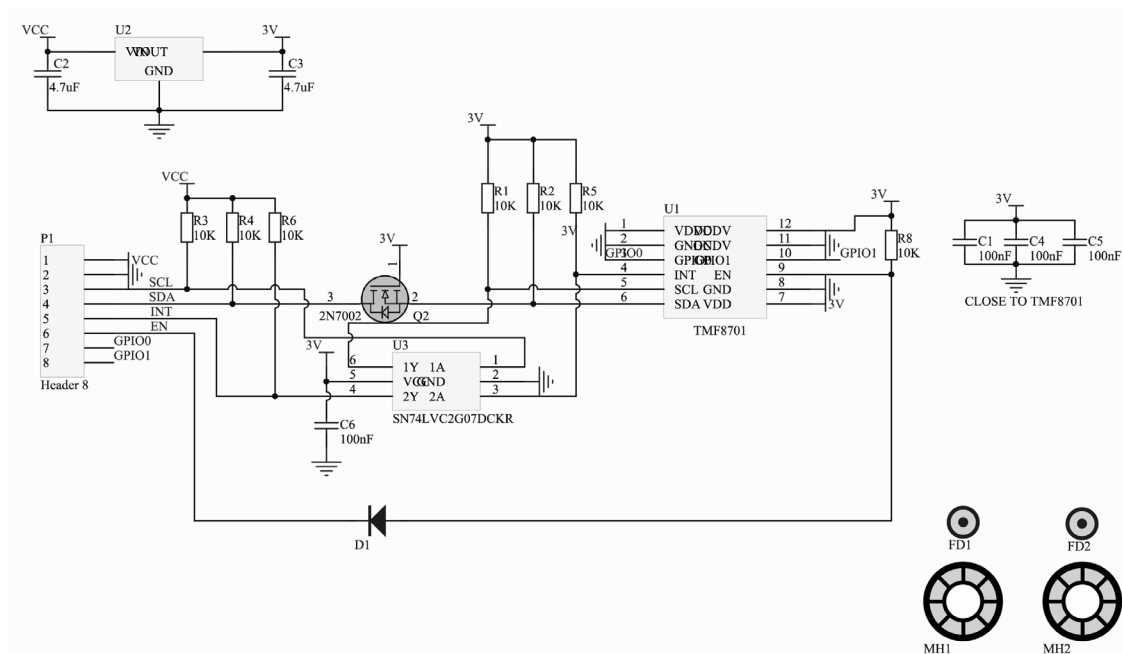
## Specifications

- 2.7V to 3.3V operating voltage range
- <1.5mA operating current
- 1cm to 10cm proximity detection range
- 10cm to 60cm distance sensing range
- -30°C to 60°C operating temperature range
- Breakout 2.54mm-8Pin I2C communication interface
- 21mm x 14.5mm/0.83" x 0.57" dimensions
- 2mm mounting hole size
- 17mm mounting hole pitch

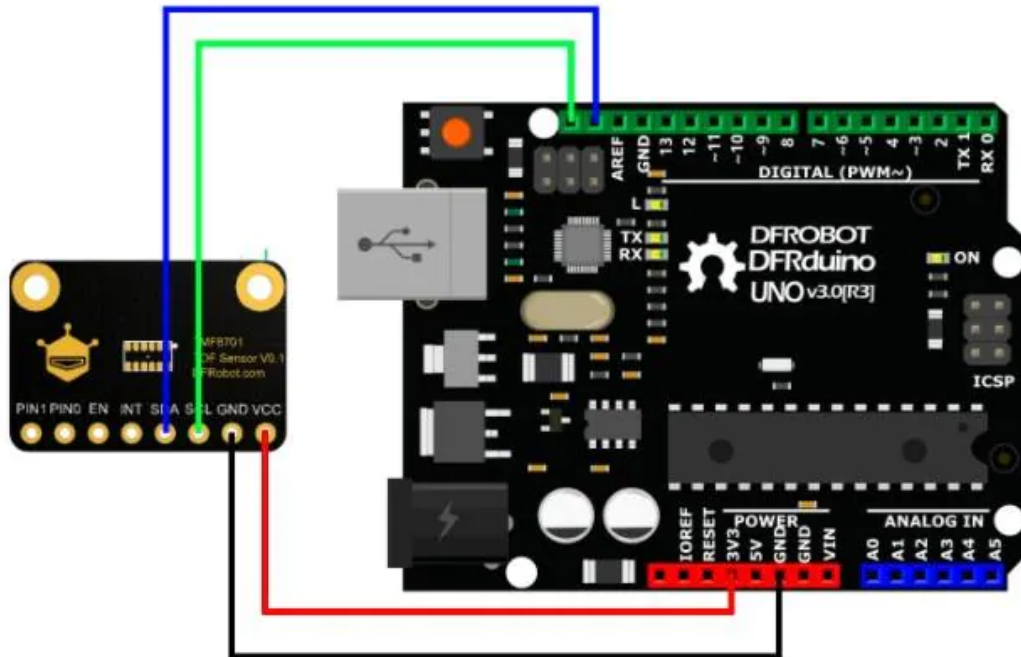
## Applications

- 3D face recognition
- Proximity detection
- Presence detection
- Object detection
- Collision avoidance
- Distance measurement

## Schematic Diagram



## Circuit Diagram



## Mouser Part Number

[View Part](#)

To learn more, visit <https://www.mouser.com/new/dfrobot/dfrobot-fermion-tmf8701-sensor/>