

Product Document



Multi-zone Time-of-Flight Sensors

ams.com/time-of-flight

- Supporting up to 8x8 zones
- 940 nm Class 1 eye-safe VCSEL, high-sensitivity SPAD array, precision TDCs and a low-power microcontroller sub-system in a highly integrated modular package
- User adjustable field-of-view
- Embedded histogram processing offers accurate ranging up to a distance of 5 meters and enables the system to detect multiple objects per zone and provides tolerance to smudge
- Incorporates advanced algorithms and wafer level optical filters to offer superior sunlight performance

Sensing is life

ams OSRAM

TMF8820/21/28

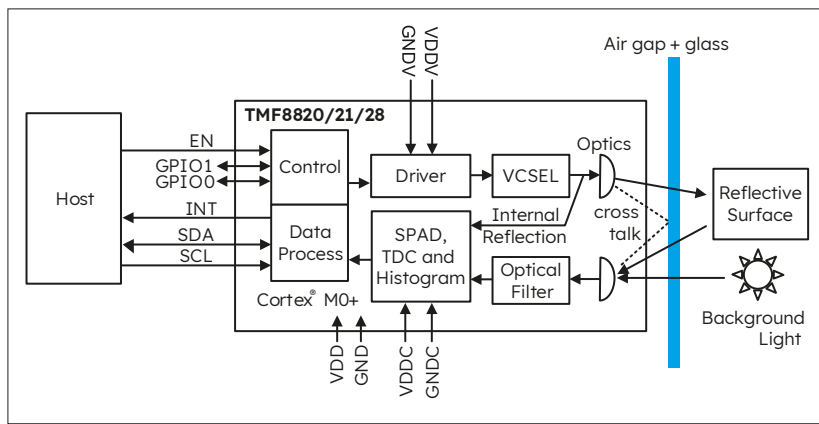
Multi-zone Time-of-Flight Sensors

General Description

The TMF882X family of devices a direct time-of-flight (dToF) sensor in a single modular package with associated VCSEL. The dToF device is based on SPAD, TDCs and histogram technology and achieves 5000 mm detection range. Due to its lens on the SPAD, select devices support 3x3, 4x4, 3x6 and 8x8 multi-zone data and a very wide, dynamically adjustable, field of view.

A multi-lens-array (MLA) inside the package above the VCSEL widens up the FoI (field of illumination). All processing of the raw data is performed on-chip and the TMF882X devices provide distance information together with confidence values through its I²C interface.

Block Diagram



Ordering information

Ordering code	Package	Marking	Delivery Form	Delivery Qty.	Note
TMF8820-1AM	Optical Module	8-digit tracecode	Tape & Reel (7" reels)	500 pcs/reel	3x3 zones
TMF8820-1A			Tape & Reel (13" reels)	4000 pcs/reel	
TMF8821-1AM			Tape & Reel (7" reels)	500 pcs/reel	3x3, 4x4 & 3x6 zones
TMF8821-1A			Tape & Reel (13" reels)	4000 pcs/reel	
TMF8828-1AM			Tape & Reel (7" reels)	500 pcs/reel	3x3, 4x4, 3x6 & 8x8 zones
TMF8828-1A			Tape & Reel (13" reels)	4000 pcs/reel	

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Features

- Multi-zone Time-of-Flight Measurement
 - TMF8820 (3x3)
 - TMF8821 (3x3, 3x6, 4x4)
 - TMF8828 (3x3, 3x6, 4x4, 8x8)
- Histogram algorithm-based architecture
- 940 nm VCSEL, TDC, SPAD and a low-power microcontroller sub-system in a highly integrated modular package
- Ultra low-power consumption
- Standby current only 8µA
- Dynamically adjustable FOV up to 63°
- Class 1 eye safety certification
- Size: 2.0 x 4.6 x 1.4 mm

Benefits

- Small footprint fits within narrow bezel applications and minimizes board size
- Multi-zone and adjustable FOV enable a variety of applications
- Within 3% of measurement (accuracy); no multipath and no multiple object problems
- Output distance value and confidence level through I²C directly without any external data processing.
- Macro object focusing - dynamically adjustable

Applications

- Distance measurement for camera autofocus (LDAF)
- Presence detection and gesture
- Object detection and collision avoidance
- Liquid level monitoring
- Keystone correction
- Light curtain