

# 1 MegaPixel Time-of-Flight Module

## FEATURES

- ▶ 1024 × 1024 ToF imager with 3.5 μm × 3.5 μm pixels
- ▶ 75° × 75° field of view
- ▶ Imager lens subassembly with 940 nm band-pass filter
- ▶ Illumination subassembly with eye safety support
- ▶ 4-lane MIPI CSI-2 transmitter interface, 1.5 Gbps per lane
- ▶ 4-wire SPI and 2-wire I<sup>2</sup>C serial interfaces
- ▶ NVM (Flash) for module boot-up sequence
- ▶ Power regulators for local imager and illumination rails
- ▶ Calibrated modes at 1024 × 1024 and 512 × 512 resolutions
- ▶ Depth range: 0.4 m to 4 m (depth noise (1 σ) 15 mm maximum, 19% minimum target reflectance, 3 klux equivalent sunlight)
- ▶ Depth accuracy: ±5 mm (across full depth range)
- ▶ Available in 50-lead, MODULE, ML-50-1 package

## APPLICATIONS

- ▶ Machine vision systems
- ▶ Robotics
- ▶ Building automation
- ▶ Augmented reality (AR) systems

## MODULE FUNCTIONAL BLOCK DIAGRAM

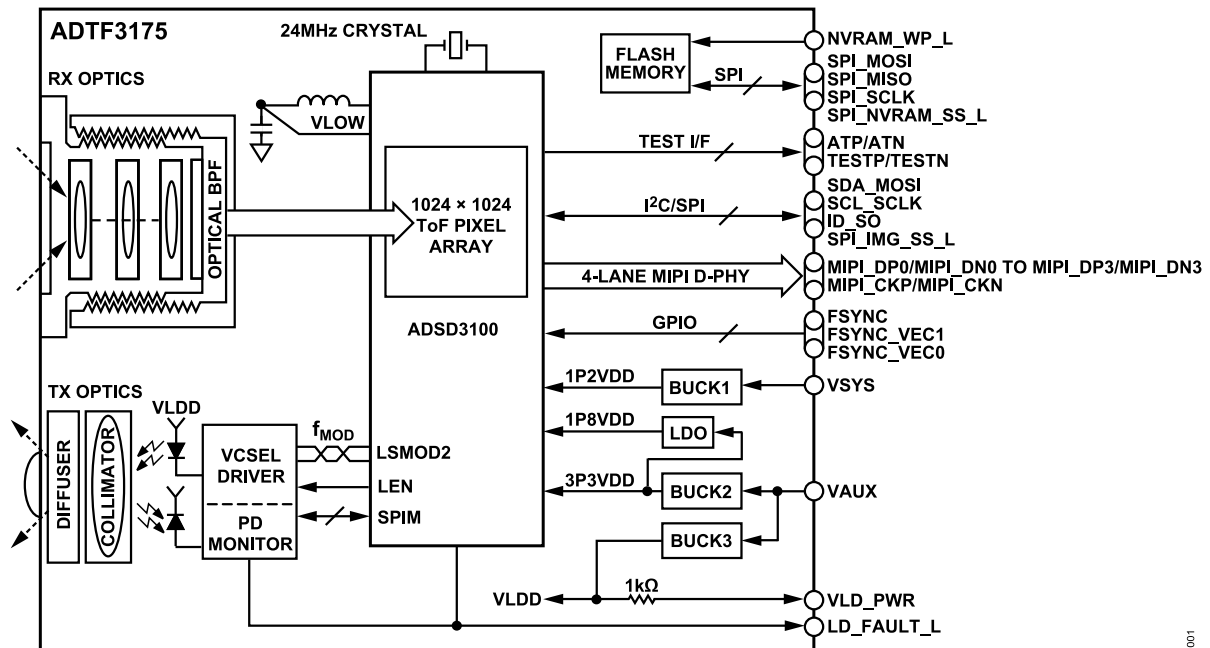


Figure 1. Module Functional Block Diagram

## GENERAL DESCRIPTION

The ADTF3175 is a complete Time-of-Flight (ToF) module for high resolution 3D depth sensing and vision systems. Based on the [ADSD3100](#), a 1 megapixel CMOS indirect ToF (iToF) imager, the ADTF3175 also integrates the lens and optical band-pass filter for the imager, an infrared illumination source containing optics, laser diode, laser diode driver and photodetector, a flash memory, and power regulators to generate local supply voltages. The module is fully calibrated at multiple range and resolution modes. To complete the depth sensing system, the raw image data from the ADTF3175 is processed externally by the host system processor or depth image signal processor (ISP).

The ADTF3175 image data output interfaces electrically to the host system over a 4-lane mobile industry processor interface (MIPI), Camera Serial Interface 2 (CSI-2) transmitter interface. The module programming and operation are controlled through 4-wire serial peripheral interface (SPI) and I<sup>2</sup>C interface.

The ADTF3175 has module dimensions of 42 mm × 31 mm × 15.1 mm and is specified over an operating temperature range of -20°C to 65°C.

For more information about the ADTF3175, contact [tof@analog.com](mailto:tof@analog.com).

Rev. Sp0

DOCUMENT FEEDBACK

TECHNICAL SUPPORT

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