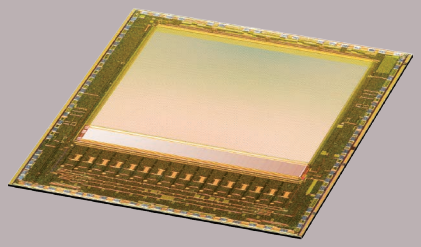


Product Brief

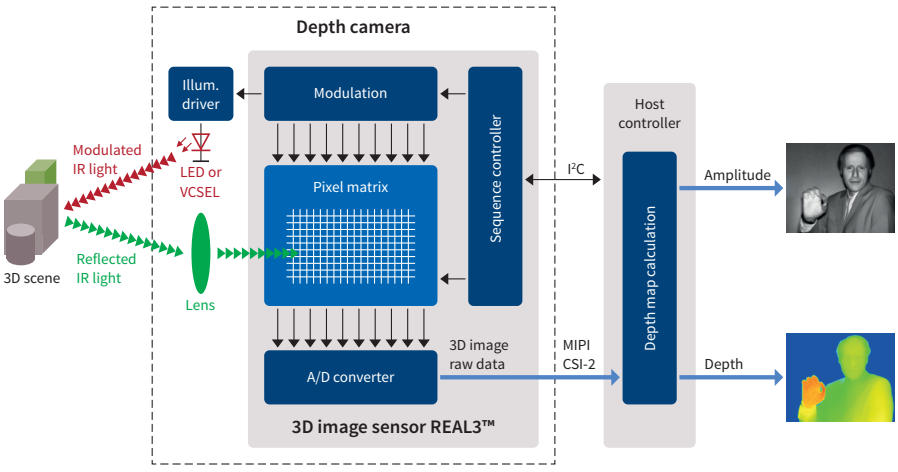
REAL3™ image sensor family

3D depth sensing based on Time-of-Flight

Time-of-Flight (ToF) camera technology based on Infineon's 3D image sensor REAL3™ is sunlight robust, highly scalable, and ready for integration. The benefits of the ToF principle paired with the key features of the REAL3™ image sensor enables most accurate and reliable depth sensing in numerous applications.

- Direct measurement of depth and amplitude in every pixel
  - Highest accuracy
  - Lean computational load
- Active modulated infra-red light and patented Suppression of Background Illumination (SBI) circuitry in every pixel
  - Full operation in any light condition: darkness and bright sunlight
- Monocular system architecture having no mechanical baseline
  - Smallest size and high design flexibility
  - No limitation in close range operation
  - No special requirements on mechanical stability
  - No mechanical alignment and angle correction
  - No recalibration or risk of de-calibration due to drops, vibrations or thermal bending
- Easy and very fast once-in-a-lifetime calibration
  - Cost efficient manufacturing

Time-of-Flight principle and block diagram



Key features

3D Time-of-Flight single-chip with:

Highest level of integration

- Integrated A/D converters for full digital readout
- Integrated CSI-2 interface
- Integrated controller and logic for
  - Illumination control
  - Pixel matrix modulation
  - Autonomous imaging phase sequences

Best performance

- Optimized micro-lens technology for highest photo sensitivity and lowest power consumption
- Patented Suppression of Background Illumination (SBI)
- Fast global shutter data readout for lowest latency (typ. 1–4 ms)
- Frame rates up to 100 fps
- Modulation frequency up to 100 MHz

Smart features

- Flexible configuration during operation via I²C interface of
  - Frame rate
  - Exposure time
  - Modulation frequency
- Configurable region of interest

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Product variants

The next generation ToF imagers of the REAL3™ family are strongly improved in sensitivity by the usage of micro-lens technology.

IRS16x5C is additionally optimized in size and power consumption.

Together with the high configurability of the REAL3™ sensors this enables the usage in many different depth applications, also meeting the requirements to be integrated into mobile devices.

Scalable REAL3™ product portfolio

Product type	Pixel resolution	Description	Package
IRS1125C	352 x 288 pixel (100 k pixel)	Single-chip ToF sensor with micro-lenses; full resolution	Bare die
IRS1645C	224 x 172 pixel (38 k pixel)	Single-chip ToF sensor with micro-lenses; size optimized ASIC	Bare die
IRS1615C	160 x 120 pixel (19 k pixel)	Single-chip ToF sensor with micro-lenses; size optimized ASIC	Bare die

The pixel resolution is configurable to smaller sizes. All imagers are qualified according to consumer electronic requirements.

3D reference camera

The CamBoard pico flexx is the latest 3D camera reference design available at our partner pmdtechnologies (www.pmdtec.com). The camera uses the latest REAL3™ imager, supports 38 k pixel resolution and can provide a depth resolution of ≤ 1% of the range.

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Features	CamBoard pico flexx
Dimensions (incl. housing)	68 mm x 17 mm x 7.25 mm
Measurement range	0.1–4 m
Framerate	5 fps, 10 fps, 25 fps, 35 fps, 45 fps
Power consumption	Average 300 mW for imager and illumination
Illumination	850 nm, VCSEL
Resolution	224 x 172 pixel (38 k)
Viewing angle (H x V)	62° x 45°
Interface	USB2.0, USB3.0

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Additional information
For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices please contact your nearest Infineon Technologies office (www.infineon.com).

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