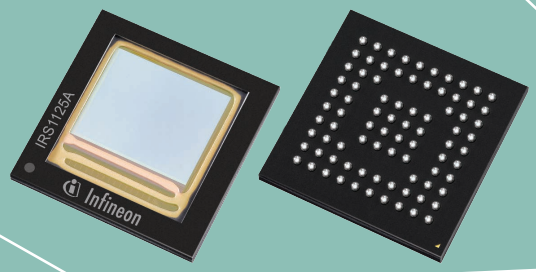


Product brief

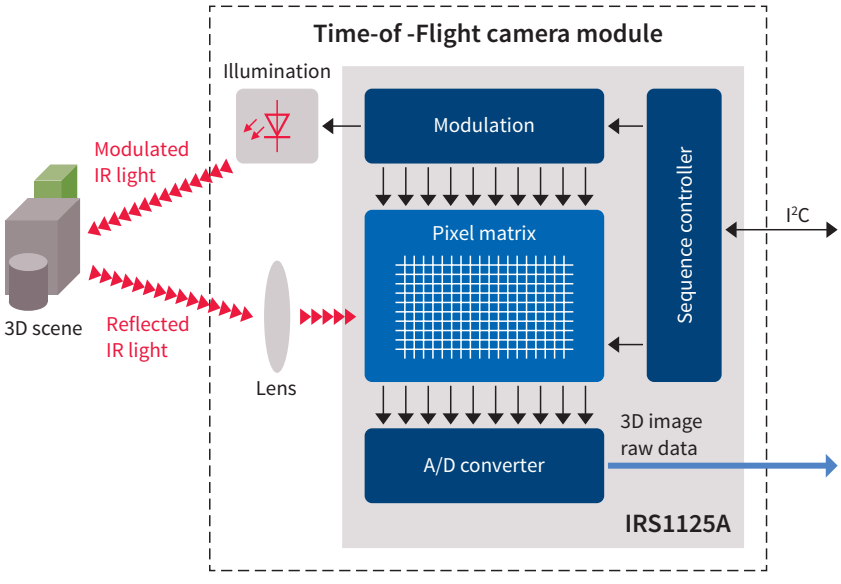
IRS1125A

3D Time-of-Flight single-chip for automotive

As part of Infineon's broad XENSIV™ sensor portfolio, Infineon offers IRS1125A, the automotive qualified variant of the REAL3™ Time-of-Flight (ToF) imager family. Its unbeaten outdoor performance requires a minimum amount of active light at 850 nm and 940 nm wavelengths. Together with the high level of integration this reduces system costs, design complexity and simplifies the thermal management of the 3D camera module.

Key features

- Time-of-Flight single-chip including illumination control and digital data output
- CIF resolution: 352 x 288 pixels (~100 k pixels)
- Patented suppression of background illumination circuitry in every pixel for best sunlight robustness
- Spread Spectrum Clock (SSC) to avoid interference from other infrared devices
- Up to 100 MHz modulation frequency
- Fast global shutter readout
- CSI-2 or parallel data interface
- Flexible imager operation after each frame: adaptation of frame rate, exposure time or modulation frequency
- Optical LFBGA-84 package, 10 mm x 10 mm
- AEC-Q100 grade 2 qualification
- T_{Amb} = -40°C to 105°C



www.infineon.com/real3-automotive

Key benefits

The Infineon ToF solution based on IRS1125A provides

- Best performance in strong sunlight conditions with minimum amount of active light
  - ToF-optimized CMOS process
  - Patented Suppression of Background Illumination (SBI) circuitry in every pixel
  - Support of highly modulated infrared light
  - Independent data streams for brightness and distance
- Small form factor and monocular system architecture
  - Highly integrated single-chip
  - No mechanical baseline
  - No risk of de-calibration over lifetime
- Reliable mass production
  - Standard soldering process: optical BGA package without need of underfiller material
  - AEC-Q100 grade 2 qualified
  - Fast and easy once-in-a-lifetime camera calibration

In corporation with pmdtechnologies AG

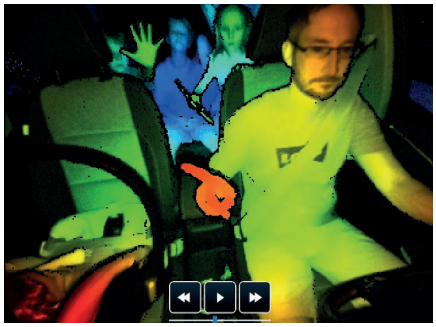
Key applications

- Car in-cabin sensing
- Gesture control
- Short range car exterior (~10 m)

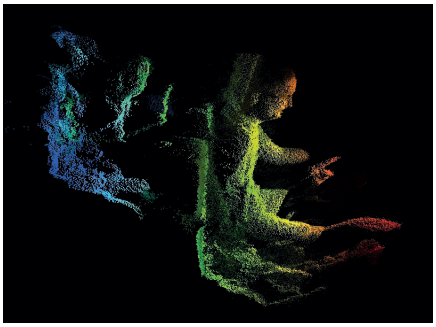
IRS1125A

3D Time-of-Flight single-chip for automotive

Time-of-flight technology is directly measuring the depth and amplitude information in every pixel by using modulated infrared light. The infrared light is emitted to the whole scenery and the reflected light is captured by the ToF imager. The measured phase difference between emitted and received light as well as the amplitude values are resulting into highly reliable distance information and a greyscale picture of the complete scene simultaneously in all ambient light conditions – at night, in sunlight and heavily changing light conditions. Additional benefits compared to other depth sensing technologies are the simple and robust design of a ToF camera module without the need of any mechanical baseline, fast camera calibration for easy and robust mass production and a comparatively lean computational load of the application processor.



Front view – ToF data as overlay of depth and amplitude



Rotated side view – ToF data as 3D pointcloud

Colour-coded distance visualization:
red = close
blue = far

Product variants

Product type	Pixel resolution	Description	Package
IRS1125A	352 x 288 pixel (~100k pixel)	Single-chip ToF sensor, AEC-Q100 grade 2 qualified	LFBGA-84

Start of production in Q2/2019; ordering details on request

Evaluation tools

To evaluate Infineon's REAL3™ time-of-flight technology, a set of 3D reference cameras is available (consumer grade). The CamBoard pico family has been designed by our development partner pmdtechnologies and comes along with a powerful SDK providing a high quality depth map for evaluation and application software development.

For further details and ordering please visit http://pmdtec.com/picofamily/

pmd
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