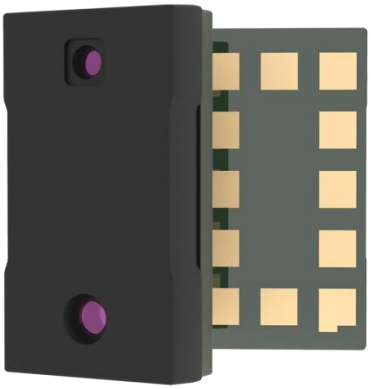

DTS6005

Single-Photond dToF Module

Description

DTS6005 is a single-channel dToF miniature module integrating PolarisIC's high-performance SoC and VCSEL, delivering ultra-precision ranging within 5.2 cm at 100 fps. Built-in histogram algorithms resist ambient light and enable compensation for contamination and reflectivity, plus cover-glass crosstalk calibration.

The DTS6005 employs a 940 nm laser that meets Class 1 eye-safety requirements. Its I/O interface operates from a 1.8 V supply and communicates via the I^2C bus, making integration and use straightforward.

Visit the official website of PolarisIC at www.polarisic.com for more product information.

Features

- Highly integrated miniature dToF SiP built on a high-performance SPAD sensor, measuring only 4.4 mm × 2.4 mm × 1.0 mm.
- Features a built-in high-precision TDC that delivers ±10 mm accuracy over a 10 mm–1000 mm range at 18 % reflectance.
- <2 ms power-loss recovery; I^2C address factory-programmable.
- Compact package compatible with reflow soldering.
- Cover-glass crosstalk calibration supported.
- On-board NVRAM and RISC-V MCU hold factory reflectance and offset calibrations.
- Time-gated photon threshold and narrowband filter ensure superior sunlight immunity.
- Employs histogram-based super-resolution for high-precision ranging.
- Integrates an in-house co-processor with tunable parameters for application-specific tuning.

Application

- Smartphone-assisted autofocus

Parameter

Feature	Detail
Package Type	SiP Miniaturized Module Packaging
Package Size	4.4mm×2.4mm×1.0mm
Number of Connector Pins	12
Interface Type	I^2C
Operating Voltage	Typical: 3.3V
FoI（D86）	21°±3°
Laser Wavelength	940nm
Frame Rate	Typical: 100 fps (slaved to host interrupt)
Reflectivity Correction	Yes
Temperature Compensation	Yes
Sleep Mode	Yes
Operating Temperature	-20°~75°

Feature	Condition	Detail	Unit
Range[1]	Indoor, 88% target	5200	mm
Accuracy[2]	Indoor, 18%/88%target, 10 mm ~1000 mm	±10	mm
	Indoor, 18%/88% target, >1000 mm	±1	%
Temperature Drift	-20 ℃ to 75 ℃, referenced to 25 ℃	±5	mm

[1]Test conditions: room temperature, 3.3 V supply, no cover glass, typical configuration, target fully covering FoV. Range is determined as the maximum distance at which the effective detection rate exceeds 99.7 %.

[2] Accuracy = measured distance – target distance.

Power Consumption

- Hardware standby mode: current ranges from 5 μA (min) to 10 μA (max);
- Software standby mode: current ranges from 9 mA (min) to 18 mA (max);
- Active ranging mode: typical supply current 38 mA.