



DTS6004

dToF Sensor Module

Description

The DTS6004 is a single-channel dToF (direct Time-of-Flight) SiP (System in Package) miniaturized module, integrating a high-performance dToF SoC (System on Chip) developed by PolarisIC and a VCSEL (Vertical Cavity Surface Emitting Laser) transmitter. It is capable of high-precision distance measurement within a range of 7 meters, with a frame rate of 30fps. The DTS6004 supports 2x2 time-partitioned zoning mode for distance data acquisition. Based on a high-performance SPAD (Single Photon Avalanche Diode) sensor, the DTS6004 features an integrated high-precision TDC (Time-to-Digital Converter) and co-processor on the module, enabling efficient distance measurement.

The module uses a 940nm laser, which complies with Class 1 eye-safety requirements. It operates on a single power supply and communicates data via an I²C interface, making it easy to integrate and use.

Visit www.polarisic.com to get more product details..

Features

- Highly integrated miniature dToF SiP with dimensions as 4.9mmx2.5mmx1.6mm
- Supports single-point mode with a maximum range of 7 meters at 88% reflectivity and 30fps.
- Supports 2x2 time-partitioned zoning mode with a maximum range of 4.5 meters at 88% reflectivity and 7.5fps.
- Compatible with reflow soldering processes
- Features a high-precision TDC: accuracy up to $\pm 8\text{mm}$ at 0.5m to 0.8m, and $\pm 1\%$ at distances greater than 0.8m.
- Employs histogram technology
- Incorporates a proprietary co-processor

Application

- Projector autofocus assistance, trapezoidal correction.

1 Basic Parameters

Table 1: Basic Parameters

Feature	Detail
Package Type	SiP Miniaturized Module Packaging
Package Size	4.9mm×2.5mm×1.6mm
Number of Connector Pins	12
Interface Type	I ² C
Operating Voltage	3.3V (Typical Value)
FoV	15° ^[1]
FoI	25°
Power Consumption	140mW
Operating Mode	Single-point Mode; 2×2 Time-partitioned Zoning Mode
laser Wavelength	940nm

[1] Theoretical Value.

2 Performance Parameters

Table 2: Performance Parameters

Feature	Detail	Unit
Range	Single-point Mode: 7m@88% reflectivity@ 30fps	-
	Time-partitioned Zoning Mode: 4.5m@88% reflectivity@30fps	-
Frame Rate	Single-point Mode: 30	fps
	2×2 Time-partitioned Zoning Mode: 7.5	fps
Precision	±8mm@0.5m~0.8m; ±1%@>0.8m ^[2]	-

[2] Measured at 88% reflectivity under room temperature conditions. Test results may be affected by environmental factors, including but not limited to ambient temperature and target reflectivity.