

Product Description

DTS6004 is a single-channel dToF SiP micro-module, integrating a high-performance dToF SoC and VCSEL from PolarisIC. It offers high-precision distance measurement up to 7 meters with a frame rate of 30 fps. The module supports 2x2 time-division multiplexing for distance data acquisition. Based on a high-performance SPAD sensor, DTS6004 features an integrated high-precision TDC and co-processor for efficient distance measurement.

DTS6004 uses a 940nm laser, which meets the Class 1 eye safety requirements. It operates on a single power supply and is based on I²C interface for data communication, making it easy to integrate and use.

Visit www.polarisic.com to get more information.



DTS6004

Single-Photon dToF Module

Application Areas:

- Projector autofocus assistance, trapezoidal correction.

Product Features:

- Featuring a highly integrated miniature dToFSiP based on a high-performance SPAD sensor with dimensions as small as 4.9mm x 2.5mm x 1.6mm;
- Support single-point mode, maximum range up to 7m@88% reflectivity target surface@30fps;
- Supports 2 × 2 time division and time zone mode with a maximum range of 4.5m@88% reflectivity target surface@7.5fps;
- The histogram is used to obtain highly accurate distance results based on statistical data combined with a super-resolution algorithm;
- Integration of self-developed co-processor, flexible adjustment of algorithm parameters, can be finely adapted for application scenarios;
- Built-in high-precision TDC, accuracy up to $\pm 8\text{mm}@0.5\text{m}\sim 0.8\text{m}$, $\pm 1\%@ > 0.8\text{m}$;
- Supports multiple access to the same I²C bus, saving host interface resources;
- Glass contamination correction and multipath reflection immunization;
- Reflowable compact package.

1 Basic parameters

Table 1 List of basic parameters

Parameter	Numerical
Package Type	SiP Micro Module Package
Package Size	4.9mm×2.5mm×1.6mm
Number of Connector Pins	12
Interface Type	I ² C
Operating Voltage	Typical: 3.3V
FoV	15° ^[1]
FoI	25°
Operating Power Consumption	140mW
Operating Mode	Single-point Mode; 2×2 Time-division Partitioning Mode
Laser Wavelength	940nm

1. Theoretical values.

2 Performance Parameters

Table 2 Performance Parameter Table

Parameter	Numerical	Unit
Range	Single-point Mode: 7m@88% reflectivity@30fps	-
	Time-division Partitioning Mode: 4.5m@88% reflectivity@7.5fps	-
Frame Rate	Single-point Mode: 30	fps
	Time-division Partitioning Mode 2x2: 7.5	fps
Accuracy	±8mm@0.5m~0.8m; ±1%@>0.8m ^[2]	-

2. Under room temperature conditions, the measurement was taken on an 88% reflective surface. Test results may be affected by environmental factors, including but not limited to ambient temperature and the reflectivity of the target object.

3 System Block Diagram

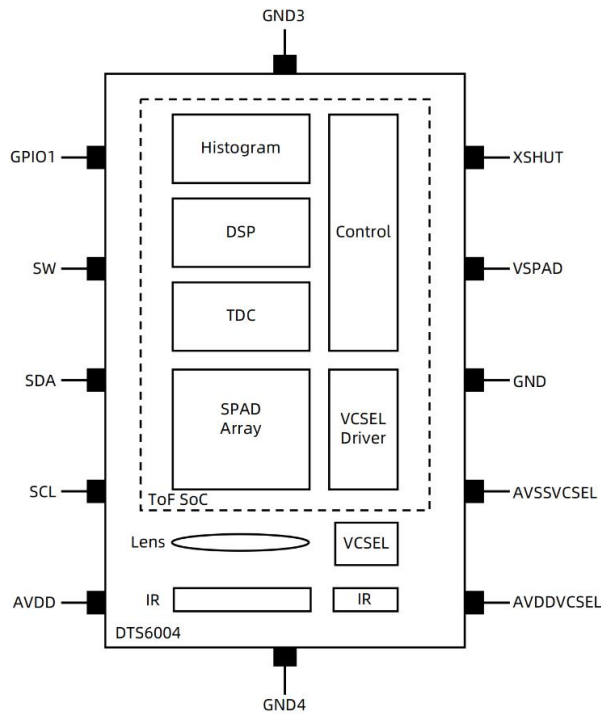


Figure 1 Schematic diagram of the DTS6004 system