1. DESCRIPTION

MT3805SD is a miniature optical Direct Time-of-Flight (dToF) sensor. The sensor integrates a 940nm Vertical-Cavity Surface-Emitting Laser (VCSEL), and is based on Single-Photon Avalanche Diode (SPAD), Time-to-Digital Converter (TDC), and histogram architecture.

MT3805SD can measure distance between up to 1000mm at a high ranging speed up to 120Hz FPS (frame per second). Additionally, the precise ranging of an object is unaffected by its color, reflectance and texture of the object.

The built-in histogram-based algorithm with cover glass calibration and compensation for smudges is implemented for high-reliability applications. Ambient light noise is minimized by using a narrow-band optical filter and built-in sunlight rejection algorithm.

MT3805SD processes all data internally and provides distance information and confidence level values via its I²C interface.

2. FEATURES

- Integrates a 940nm IR VCSEL emitter
- Up to 1000mm absolute measurement range
- Incorporates SPAD, histogram, and TDC architecture with a built-in Cortex-M0 MCU
- Class 1 Eye-safety
- Integrates EEPROM
- No impact from multiple object reflections
- Designed with ambient light suppression and cover glass calibration technologies
- Supports XSHUT (reset) and interrupt GPIO functionality
- Programmable I²C address within 100kHz~1MHz frequency range
- All-in-1 module
- Available in compact OLGA12 package

3. APPLICATIONS

- Laser autofocus detection
- 1D gesture recognition
- Collision avoidance
- Object detection for energy-saving in high-power systems
- Robotic vacuum cleaner, smart robots, smart bathrooms, monitor, CCTV, etc.

4. TYPICAL APPLICATION CIRCUIT