

### 1. DESCRIPTION

MT3801 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.

MT3801 is capable of achieving a distance measurement of 4000mm, a high ranging speed up to 120Hz. In addition, the precise ranging of an object is irrespective to color, reflectivity and texture of the object.

A built-in histogram-based algorithm with cover glass calibration and compensation for smudges is implanted for high reliability operations. Ambient light noise is minimized due to narrow band optical filter and built-in sunlight rejection algorithm, making the chip available to outdoor sunlight environment for distance measurement.

MT3801 processes all data internally and provides distance information and confidence values via its I<sup>2</sup>C interface.

### 2. FEATURES

- Integrates 940nm IR VCSEL emitter
- Measures absolute range up to 4000mm
- SPAD, histogram and TDC architecture
- Class 1 Eye-safety
- No impact on reflections from multiple objects
- Designed with ambient light suppression and cover glass calibration technologies
- Xshutdown (reset) and interrupt GPIO
- Programmable I<sup>2</sup>C address with 400kHz~1MHz frequency
- No additional optics
- Compact OLGA12 package

### 3. APPLICATIONS

- Laser detection autofocus
- 1D gesture recognition
- Collision avoidance
- Object detection in energy saving mod

### 4. TYPICAL APPLICATION CIRCUIT

