1. DESCRIPTION

MT3502 is a high-performance, ultra-low power optical crown sensor designed for precise motion tracking.

Built on LASER-based optical navigation technology, it captures sequential surface images to determine speed, direction, and displacement with high accuracy. The chip does not require encoded patterns, strips, or special surface markings, enabling seamless operation on various surfaces.

Its integrated digital image processing circuits and adaptive calibration functions, including current and CPI calibration, ensure consistent performance and high reliability for mass production applications.

2. APPLICATIONS

- Smart watches
- Bracelets
- Space-constraint and battery-powered wireless devices
- Devices requiring tracking on surfaces with a wide depth of field (DOF)
- Devices that require tracking on small diameter shafts

3. FEATURES

- Miniature reflowable SMT package with built-in 850nm Infrared VCSEL LASER light source
- Ultra-wide DOF and 24x24 pixels high-resolution sensing area
- Programmable resolution up to 3200 counts/rev
- Efficient low-power management with programmable sleep modes and adaptive frame rate
- Applicable to all kinds of stainless-steel shaft, including smooth and frosted surfaces
- Compliance to IEC/EN 60825-1 Eye Safety
- One-time programmable (OTP) calibration for CPI & LASER, adapts to different shaft assembly tolerances
- I^2C fast plus mode: up to 1MHz
- Supports 3 kinds of I^2C ID addresses and SDA/SCL swapping functionality
- Key-press detection via an extra IO interrupt
- VDD supply voltage range: 1.7V ~ 2.0V
- Available in lead-free OLGA8 package (RoHS compliant)

4. TYPICAL APPLICATION CIRCUIT