# AXO®315T0

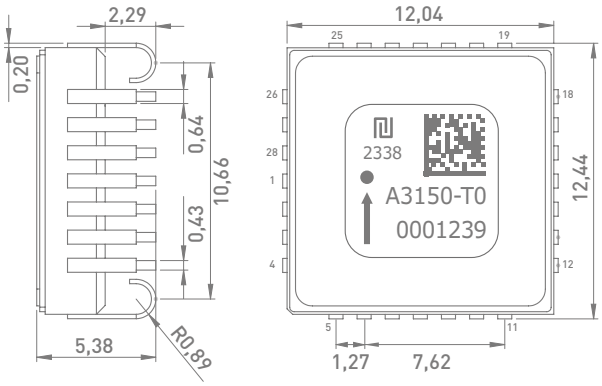

## High-temperature MEMS accelerometer for directional drilling in oil & gas applications

### Product overview

AXO315T0 is a single-axis, high temperature, closed-loop MEMS accelerometer with ±14 g input range that offers a digital, cost-effective, and low-SWaP alternative to quartz accelerometers for precise inclination measurement in directional drilling applications exposed to high temperatures up to 150°C.

Its superior vibration rejection enabled by an innovative closed-loop architecture makes AXO315T0 a perfect candidate for integration into directional modules used for drilling tools guidance under harsh vibrations and shocks.

With a lifespan of more than 1000 hours at 150°C, AXO315T0 is a reliable MEMS acceleration sensor that maximizes the productivity of oil and gas drilling operations while ensuring precise downhole navigation thanks to its high stability under extreme temperature and vibrations conditions.




12 x 12 x 5.5 mm³, 1.4 g, J-Lead ceramic package

### Key performances

- ±14 g range, single-axis in-plane accelerometer
- Operating temperature: -30°C to +150°C
- Residual bias temperature error: 0.8 mg
- Residual scale factor temperature error: 500 ppm
- Powered lifetime: >1000 hours @ 150°C
- Vibration rejection: 20 µg/g²
- Noise density: 10 µg/√Hz

### Key features

- 24-bit digital SPI interface
- Initial and continuous self-test
- Hermetic ceramic SMD package
- Non classified under dual-use export control
- REACH and RoHS compliant

### Applications

- Measurement While Drilling (MWD)
- Logging While Drilling (LWD)
- Directional drilling
- Wireline

## Key specifications

| Parameter | Typ. value | Unit | Note |
|---|---|---|---|
| **Range** | | | |
| Input range | ±14 | g | |
| **Operating conditions** | | | |
| Operating range | -30 to +150 | °C | |
| **Bias** | | | |
| Instability at room temperature | 3 | µg | |
| Instability at +150°C | 5 | µg | |
| Residual temperature error | 0.8 | mg | Over full temperature range |
| Residual temperature error after powered life test | 1.5 | mg | After 1000 hours at 165°C |
| Vibration rectification error | 20 | µg/g² | |
| **Scale Factor** | | | |
| Residual temperature error | 500 | ppm | Over full temperature range |
| Non linearity | 80 | ppm | |
| **Noise** | | | |
| Noise density at room temperature | 10 | µg/√Hz | Over the full bandwidth |
| Noise density at +150°C | 18 | µg/√Hz | Over the full bandwidth |
| VRW at room temperature | 0.003 | m/s/√h | |
| VRW at +150°C | 0.004 | m/s/√h | |
| **Vibrations and shocks** | | | |
| Random vibrations | 20 | g rms | 50 to 2000 Hz |
| Sine vibrations | 50 | g peak | Sine sweep 50 to 800 Hz |
| Shocks (survival) | 2000 | g | 0.3 ms |
| **Frequency response** | | | |
| Bandwidth | 150 | Hz | |
| Data rate | 2500 | Hz | |
| Latency | 2 | ms | |
| **Power and supply** | | | |
| Power supply | 5 | V | |
| Current consumption | 25 | mA | |
| **Reliability** | | | |
| Powered lifetime | > 1000 | h | At 150°C |



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