

GYPRO[®]4300



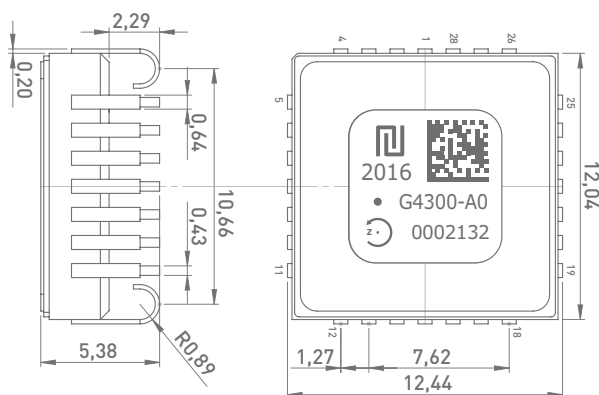
High performance ± 300 °/s MEMS gyroscope with digital interface

High bias stability for precision navigation and positioning in dynamic applications

GYPRO[®]4300 is a high-performance, closed-loop digital MEMS gyroscope with ± 300 °/s input range that offers a cost-effective alternative to entry-level Fiber Optic Gyroscopes (FOG) and Dynamically Tuned Gyroscopes (DTG) at a fraction of their size, weight, and power consumption.

Its high bias stability and vibration rejection make GYPRO[®]4300 an industry-leading MEMS sensor to build high-performance IMU (Inertial Measurement Units) for attitude and motion control systems, as well as INS (Inertial Navigation Systems) for GNSS-aided positioning and navigation in dynamic applications.

The hermetic ceramic SMD package combined with a 24 bits SPI interface eases the integration of GYPRO[®]4300 and reduces the BOM. The built-in self-test ensures initial verification of the sensor's integrity and continuous in-operation functionality test.



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

Key performances

- ± 300 °/s range, single-axis gyroscope
- Bias instability: 0.5 °/h (typ), 2°/h (max)
- Angular Random Walk: 0.10 °/√hr
- Vibration rejection: 0.5 °/h/g²
- Residual scale factor over temperature range: 230 ppm
- Latency: ≤ 1 ms
- Mean Time Between Failure (MTBF): $> 1\,000\,000$ hours
- Available in 3 frequency ranges to minimize mechanical cross-coupling in multi-axis applications

Key features

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

Applications

- INS for GNSS-assisted positioning and navigation of ground vehicles & trains
- AHRS for UAV and e-VTOL
- MRU (Motion Reference Units)
- IMU for precision robotics and remotely operated vehicles
- Stabilization systems
- Borehole drilling and surveying instruments



Key specifications

Parameter	Typ. value	Unit	Note
Range			
Input range	±300	°/s	
Scale Factor			
Residual temperature error (1σ)	230	ppm	Compensated
Non linearity	100	ppm	
Run to run repeatability	60	ppm	
Bias			
Instability (Allan Variance)	0.5	°/h	Maximum 2°/h
In-run stability	7	°/h	
Run to run repeatability	10	°/h	
Residual temperature error (1σ)	50	°/h	Compensated
Vibration rectification error (VRE)	0.5	°/h/g ²	Under 7.3 g rms (20 to 2000Hz)
Bandwidth, noise and output signal			
Bandwidth	200	Hz	Customizable upon request
Angular Random Walk (ARW)	0.10	°/√hr	
RMS Noise	0.017	°/s	1 to 100 Hz
Data rate	1800	Hz	User-configurable
Latency	≤ 1	ms	
Operating Conditions			
Operational vibrations	7.3	g rms	Random (20 – 2000 Hz)
Operational shock	50 6	g ms	Half-sine
Survival shock	2000 0.3	g ms	
Operating temperature range	-40 to +85	°C	
Reliability			
Mean Time Between Failure (MTBF)	> 1 000 000	h	
Power and supply			
Power supply	5	V	
Current consumption	25	mA	

Sensors are factory calibrated and compensated for temperature effects to provide a high-accuracy digital output over the temperature range. Raw data output can also be chosen to enable compensations at the IMU or at the system level.

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