



ANGULAR RATE SENSOR ELEMENT FG5

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The FG5 is a micromechanical sensor element for the measurement of rotational velocity about the z-axis. The MEMS sensor element consists of a tuning fork mechanical structure with double decoupled drive and sense modes. The primary mode (drive) is excited in anti-phase x-direction. The secondary mode (sense) is a movement in y-direction. With the presence of an external rate about the z-axis, the precession of the Coriolis masses lead to an anti-phase movement in y-direction which is the measure for the angular rate signal.

The working principle of the vibrating mass gyroscope is based on capacitance changes. The MEMS itself is a Glass-Si-Glass stack with a height of approx. 750 μm.

Parameters

- Highly doped silicon (0.01 ... 0.05 Ωcm)
- Sensitive to angular velocity about z-axis
- Working frequency 12 kHz
- Quality factor > 180,000
- Differential output sensitivity ≈ 0.3 fF/°/s

	Drive mode		Sense Mode		Unit
	Exc	Det	Exc	Det	
# of accessible electrodes	2	2	4	2	
C0 per electrode	3.93	0.47	0.89	2.86	pF
Sensitivity	110	13	380	1240	fF/μm

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All information contained in this datasheet is preliminary and subject to change.

Furthermore, the described system is not a commercial product.