

Sampling
Now

ORION™

Angular Rate and Dual-Axis Linear Acceleration Combi-Sensor

SILICON SENSING®

www.siliconsensing.com

CMS300



Actual size

CMS390



Actual size

Features

- Small (CMS300: 10.4 x 6.0 x 2.2mm
CMS390: 10.4 x 6.7 x 2.7)
- Proven and robust silicon MEMS vibrating ring gyro and dual-axis accelerometer
- Excellent bias over temperature (1.75°/s, 30mg)
- Flat and orthogonal mounting options (CMS300 and CMS390)
- User selectable dynamic ranges (150°/s, 300°/s, 2.5g and 10g)
- Digital (SPI®) output mode
- User selectable bandwidth (Rate; 45, 55, 90 or 117Hz Acc; 45, 62, 95 or 190Hz)
- Range and bandwidth independently selectable for each axis
- Low power consumption (8mA) from 3.3V supply
- High shock and vibration rejection
- Temperature range -40 +125°C

- Hermetically sealed ceramic LCC surface mount package for temperature and humidity resistance
- Integral temperature sensor
- RoHS compliant
- AEC Q100 tested

Applications

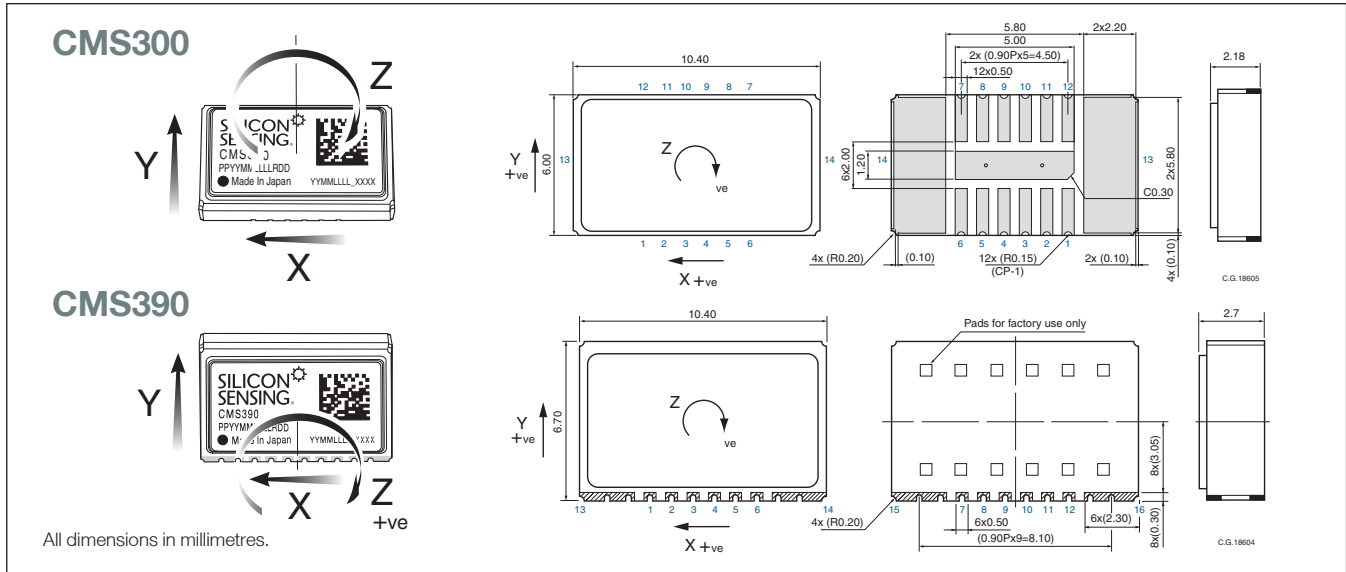
- Vehicle braking (ESC)
- Vehicle safety (Roll Detection)
- Vehicle dynamics measurement and control
- Vehicle navigation and personal navigation
- Inertial Measurement Units



ORION™
Angular Rate and
Dual-Axis Linear
Acceleration
Combi-sensor

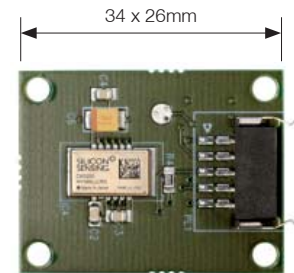


Angular Rate and Dual-Axis Linear Acceleration Combi-Sensor

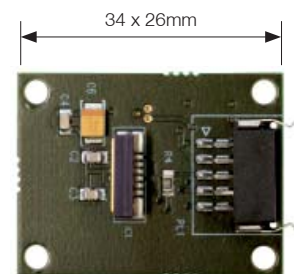


Specification and Typical Values

Parameter	Specification Limit	Typical
Ordering part numbers	CMS300, CMS390	
Number of sense axes	Single-axis angular rate (Z) and 2-axis linear acceleration (X,Y)	
Angular Rate Channel		
Dynamic range	$\pm 150^\circ/\text{s}$, $\pm 300^\circ/\text{s}$ (set by user via SPI®)	
Scale factor	204.8 lsb/°/s ($\pm 150^\circ/\text{s}$), 102.4 lsb/°/s ($\pm 300^\circ/\text{s}$)	
Resolution	0.05°/s	0.005°/s (150°/s)
SF over temperature	$< \pm 2\%$	$< \pm 1\%$
SF non-linearity	$< \pm 0.25^\circ/\text{s}$ ($\pm 150^\circ/\text{s}$)	$< \pm 0.15^\circ/\text{s}$ ($\pm 150^\circ/\text{s}$)
Bias over temperature (-40°C to +125°C)	$\pm 1.75^\circ/\text{s}$	$\pm 1.0^\circ/\text{s}$
Bandwidth (-3dB)	45Hz, 55Hz, 90Hz, 117Hz (independently set by user via SPI®)	
Noise (RMS in 45Hz)	0.1°/s	0.06°/s
Linear Acceleration Channels		
Dynamic range	$\pm 2.5\text{g}$, $\pm 10\text{g}$ (each axis independently set by user via SPI®)	
Scale factor	12800 lsb/g ($\pm 2.5\text{g}$), 3200 lsb/g ($\pm 10\text{g}$)	
Resolution	1mg	0.079mg (2.5g)
SF over temperature	$< \pm 2.5\%$	$\pm 1\%$
SF non-linearity	$< \pm 12.5\text{mg}$ (2.5g)	$< \pm 3\text{mg}$ (2.5g)
Bias over temperature (-40°C to +85°C)	$\pm 30\text{mg}$ ($\pm 2.5\text{g}$), $\pm 75\text{mg}$ ($\pm 10\text{g}$)	
Bandwidth (-3dB)	$\pm 45\text{Hz}$, $\pm 62\text{Hz}$, $\pm 95\text{Hz}$, $\pm 190\text{Hz}$ (each axis independently set by user via SPI®)	
Noise (RMS in 45Hz)	2mg	1mg
General		
Temperature	-40°C to +125°C (operating), -55°C to +150°C (storage)	
Shock	95g 6ms ½ sine (operating), 10,000g 0.5ms ½ sine (unpowered)	
Vibration	12g _{rms} 10Hz - 5kHz	
Start-up time	300ms	150ms
Supply voltage	3.15V to 3.45V	
Current consumption	8.0mA	-
Mass	0.4g (CMS300) 0.6g (CMS390)	



Orion™ Evaluation Board - CMS300 (P/N CMS300-02-0302)



Orion™ Evaluation Board - CMS390 (P/N CMS390-02-0302)

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Specification subject to change without notice.

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