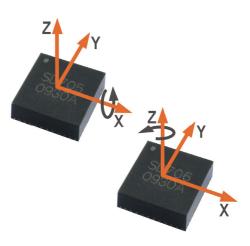
# SD705/ 706/ 707/ 708: FAMILY OF TINY ROBUST SINGLE AXIS GYROSCOPES FOR HIGH END APPLICATIONS

The low cost gyroscopes with SP-Interface provide a stable rate signal in the short as well as the long time range due to their good noise performance making them well suited for ambitious measurement and control applications.

- Tiny QFN40 package of only 6x6x2 mm<sup>3</sup>
- Temperature operating range -40°C to +85°C
- Fully calibrated over the whole operating temperature range
- Continuously working self diagnosis
- Sensitive gyroscope axis either in-plane or out-of-plane
- Simultaneously two measurement ranges of ±100°/s and ±300°/s
- Provide over range up to  $\pm 128^{\circ}$ /s and  $\pm 512^{\circ}$ /s, respectively
- Available as 3.3V or 5V version



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Leading in micro and wireless sensor products

#### **PRODUCT SELECTION TABLE**

PART NAME	GYROSCOPE AXIS	SUPPLY VOLTAGE
SD705	Х	3.3V
SD706	Z	3.3V
SD707	Х	5V
SD708	Z	5V

#### **OPERATION SPECIFICATION**

PARAMETER	MIN	MAX	UNIT	CONDITION
Supply voltage	3.10 (4.75)	3.50 (5.25)	V	5V version in brackets
Supply current		18 (20)	mA	over full temp. range -40 to +85°C
Start up time		400	ms	including start up checks
SPI communication speed	100	10000	kHz	64 bit telegram

#### **GYROSCOPE PERFORMANCE** (max values over full temperature range)

PARAMETER	MR1	MR2	UNIT	CONDITION
Calibrated measurement range	± 100	± 300	°/s	
Output value range	± 128	± 512	°/s	
Resolution	0.0039	0.0156	(°/s)/LSB	True 16 bit
RMS noise	0.3	0.8	°/s	
Bandwidth (-3dB)	10	75	Hz	± 25% tolerance
Zero rate bias at RT	± 1.5		°/s	Zero setting at 25°C
Total zero rate bias	± 5		°/s	Including temperature drift and aging
Sensitivity error	± 5.0		%	
Linearity error	± 1		%	Versus best fit
Cross axis sensitivity	± 2.0		%	Against angular rates about other axis
Recovery time after over range	50		ms	Time to normal operation after 300 °/s for MR1 and 900 °/s for MR2
Acceleration cross sensitivity	0.1		°/s/g	

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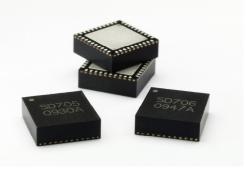
1\_9b\_SD705to708\_single\_axis\_gyroscope\_QFN40\_V1\_0.doc

## **ENVIRONMENTAL SPECIFICATION**

PARAMETER	MIN	MAX	UNIT	CONDITION
Operation temperature range	-40	+18	°C	
Storage temperature	-40	+125	°C	
Mechanical shock survival	-2000	2000	g	
ESD	2		kV	HBM at any pin

## **APPLICATIONS**

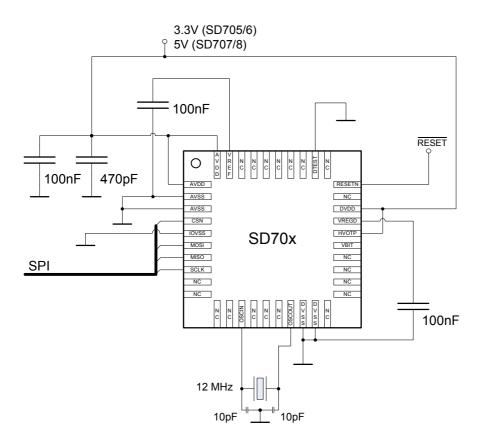
- Navigational systems
- Platform stabilization
- High end toys (e.g. helicopters)
- Image stabilization
- Motion control



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## **APPLICATION SCHEMATIC**

This application circuit with minimum number of components applies for regulated and filtered supply voltage



### COMPLETE MICROSENSOR SOLUTION - MODELLED, DESIGNED, FABRICATED, PACKAGED AND TESTED - READY TO GO!

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