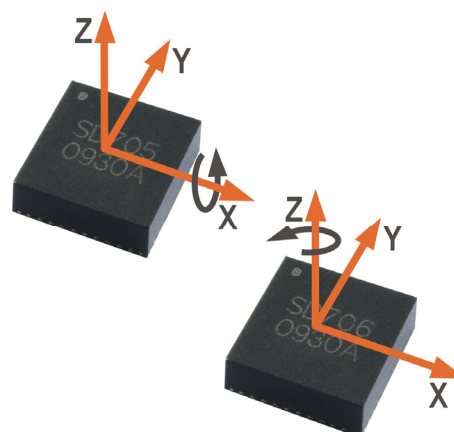


## SD705/ 706/ 707/ 708: FAMILY OF TINY ROBUST SINGLE AXIS GYROSCOPES FOR HIGH END APPLICATIONS

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  $\pm 100^\circ/\text{s}$  and  $\pm 300^\circ/\text{s}$
- :: Provide over range up to  $\pm 128^\circ/\text{s}$  and  $\pm 512^\circ/\text{s}$ , respectively
- :: Available as 3.3V or 5V version



### PRODUCT SELECTION TABLE

PART NAME	GYROSCOPE AXIS	SUPPLY VOLTAGE
SD705	X	3.3V
SD706	Z	3.3V
SD707	X	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)

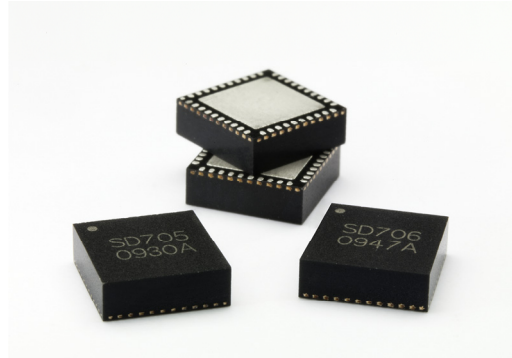
PARAMETER	MR1	MR2	UNIT	CONDITION
Calibrated measurement range	$\pm 100$	$\pm 300$	$^\circ/\text{s}$	
Output value range	$\pm 128$	$\pm 512$	$^\circ/\text{s}$	
Resolution	0.0039	0.0156	$(^\circ/\text{s})/\text{LSB}$	True 16 bit
RMS noise	0.3	0.8	$^\circ/\text{s}$	
Bandwidth (-3dB)	10	75	Hz	$\pm 25\%$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

## 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

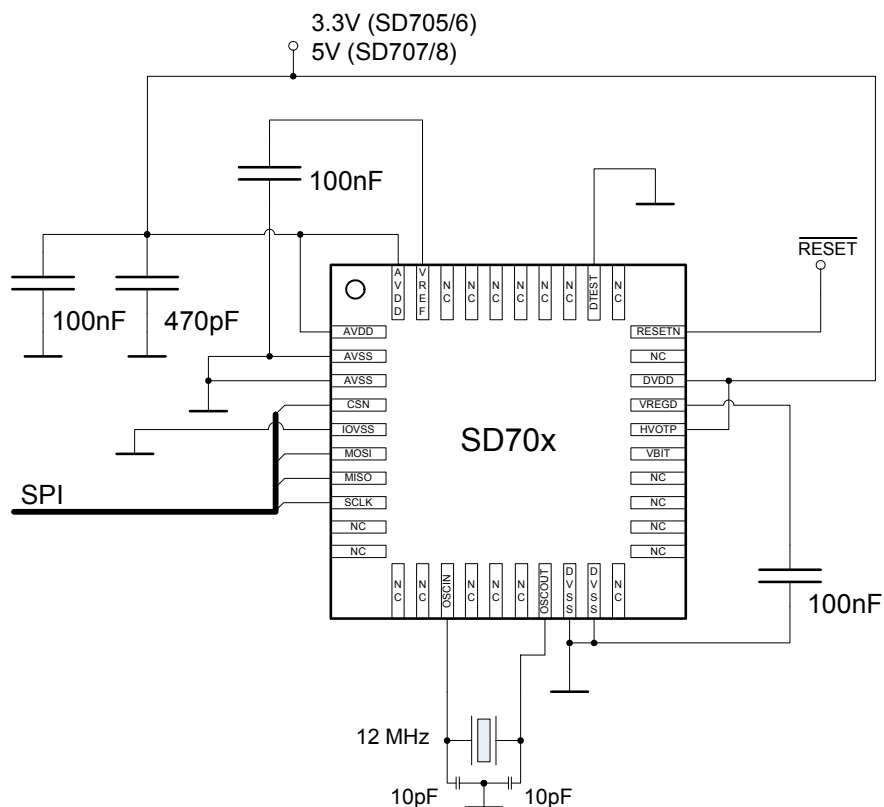
## APPLICATIONS

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



## 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!**