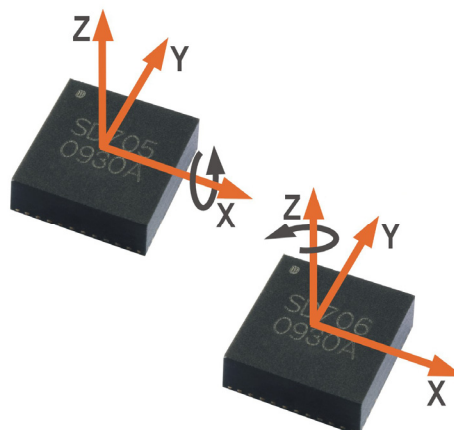


SD705/ 706/ 707/ 708: FAMILY OF TINY ROBUST SINGLE AXIS GYROSCOPES FOR HIGH END APPLICATIONS

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 mm³
- :: 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)

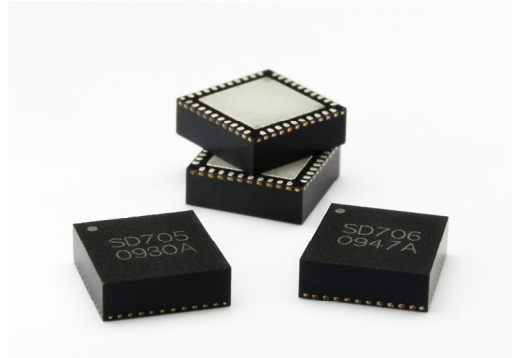
PARAMETER	MR1	MR2	UNIT	CONDITION
Calibrated measurement range	± 100	± 300	$^\circ/\text{s}$	
Output value range	± 128	± 512	$^\circ/\text{s}$	
Resolution	0.0039	0.0156	$(^\circ/\text{s})/\text{LSB}$	True 16 bit
RMS noise	0.3	0.8	$^\circ/\text{s}$	
Bandwidth (-3dB)	10	75	Hz	$\pm 25\%$ tolerance
Zero rate bias at RT	± 1.5		$^\circ/\text{s}$	Zero setting at 25°C
Total zero rate bias	± 5		$^\circ/\text{s}$	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 $^\circ/\text{s}$ 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

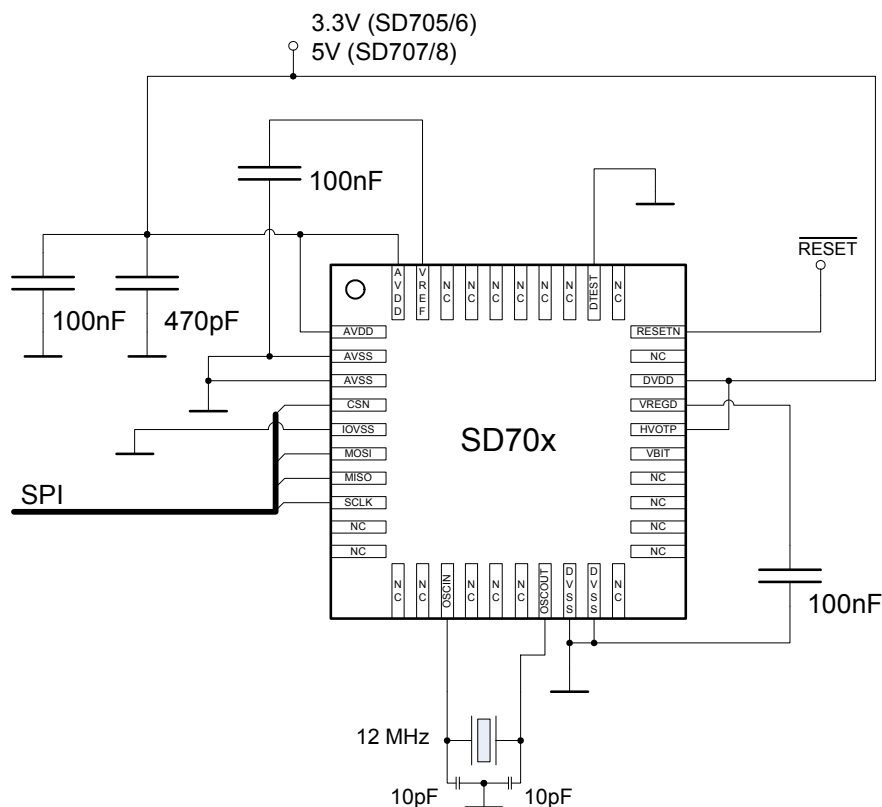
APPLICATIONS

- ⋮ 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!