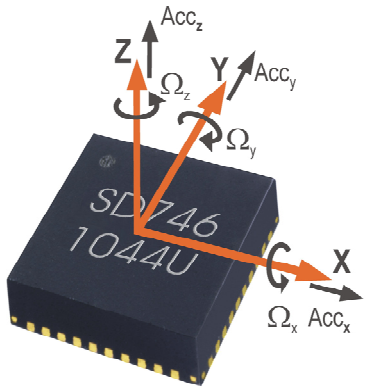
SD746 ROBUST 6DOF-IMU FOR CONSUMER AND INDUSTRIAL APPLICATIONS

The SD746 combines a 3D accelerometer with a 3D gyroscope and signal conditioning circuitry in a tiny QFN package. It provides calibrated and temperature compensated rotation-rate and acceleration output signals via SPI or I²C and offers wide measurement ranges.

- Tiny QFN40 package of only 6x6x1.2 mm³
- 2.55V to 3.6V power supply, 6.5 mA current consumption (typ.)
- Provides standby mode (<100µA) and power off mode
- Fully calibrated and temperature-compensated from -40°C to +85°C
- User selectable rate measurement ranges from ±2048°/s to ±256 °/s
- Wide accelerometer measurement range of ±8 g
- 16 bit digital outputs: 40 MHz SPI and 400 kHz I²C
- Digital bus operating from 1.8V t 3.3V
- Continuously working self diagnosis feature



OPERATION SPECIFICATION

PARAMETER	MIN	MAX	UNIT	CONDITION
Supply voltage	2.55	3.6	V	
Supply current	6.5		mA	Typical
Power up time	300		ms	Typical
Communication speed		40 / 0.4	MHz	SPI / I²C

GYROSCOPE PERFORMANCE (over full temperature range, all axes)

PARAMETER	MIN TYP MAX	UNIT	CONDITION
Rate measurement range	±2048, ±1024, ±512, ±256	°/s	User programmable
Noise density	0.06	°/s/√Hz	
Bandwidth (-3dB)	10, 20, 40, 80	Hz	User programmable
Bias at 25°C	±5	°/s	
Bias drift over temperature	±5	°/s	
Sensitivity error at 25°C	±2	%	
Sensitivity drift over temp.	±5	%	
Cross axis sensitivity	± 5	%	Against angular rates about other axis

ACCELEROMETER PERFORMANCE (over full temperature range, all axes)

PARAMETER	MIN TYP MAX	UNIT	CONDITION
Rate measurement range	±8	g	
Noise density	0.28	mg/√Hz	
Bandwidth (-3dB)	10, 20, 40, 80	Hz	User programmable
Bias at 25°C	±0.1	g	
Bias drift over temperature	±0.2	G	
Sensitivity error at 25°C	±2	%	
Sensitivity drift over temp.	±5	%	
Cross axis sensitivity	± 5	%	Against angular rates about other axis

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ENVIRONMENTAL SPECIFICATION

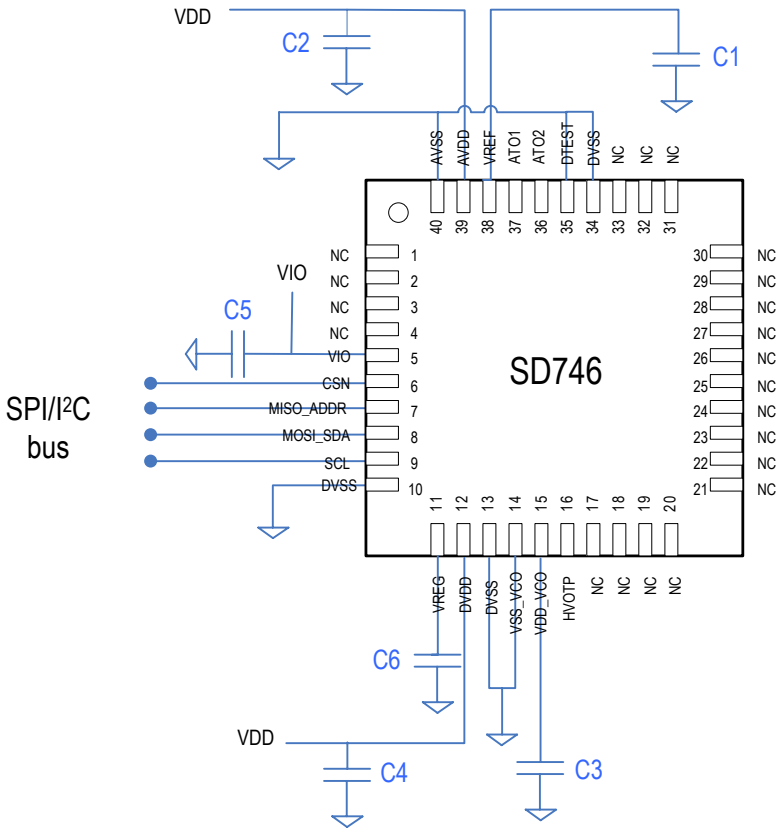
PARAMETER	MIN	MAX	UNIT	CONDITION
Operation temperature range	-40	+85	°C	
Storage temperature	-55	+155	°C	
ESD protection	2		kV	HBM at any pin
Mechanical shock survival		10000	G	(preliminary)

APPLICATIONS

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

APPLICATION SCHEMATIC

This application circuit for SPI operation 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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