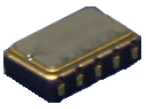
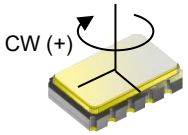
GYRO SENSOR (Digital Output)

XV7181BB

Product number
XV7181BB: X2A000401100200

- SPI or I2C serial interface
- Angular rate output (16-bit/24-bit)
- Excellent bias stability over temperature
- Operating temperature range -40 °C to +85 °C
- Built-in temperature sensor
- Built-in selectable digital filter





Recommended Application

- Anti-vibration and attitude control for industrial applications etc.
- Autonomous driving equipment such as AGVs and lawn mower

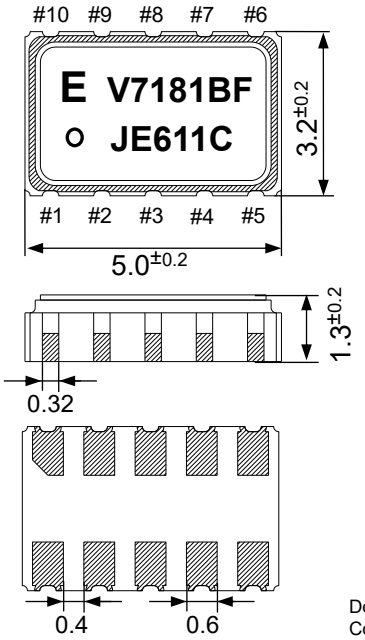
Specifications (characteristics)

Item		Symbol	Specifications	Conditions / Remarks
Supply Voltage		VDDM	2.7 to 3.6 V	
Supply Voltage for interface		VDDI	1.65 V to 3.60 V	
Temperature range	Storage Temperature	TSTG	-40 °C to +105 °C	
	Operating Temperature	TOPR	-40 °C to +85 °C	
Scale factor		S_o	264 LSB/(°/s), 66 LSB/(°/s) ±2.0 %	16bit, Ta = +25 °C, FS = 1, FS = 1/4
			67584 LSB/(°/s), 16896 LSB/(°/s) ±2.0 %	24bit, Ta = +25 °C, FS = 1, FS = 1/4
Scale factor variation over temperature		S_{pt}	±3.0 %	V_{DDM}=3 V, Ta = +25°C reference
Bias		ZRL	±1 °/s (0 LSB Typ.)	Ta = +25 °C
Bias over temperature A		ZRL_{ta}	±0.3 °/s	-10 °C to +50 °C, Ta = +25 ºC reference
Bias over temperature B		ZRL_{tb}	±1.0 °/s	-40 °C to +85 °C, Ta = +25 ºC reference
Bias temperature coefficient		ZRL_s	0.0024 (°/s)/ºC Typ.	VDDM = 3 V, Average of absolute value, ΔT = 1 ºC
Rate range		I	±115 °/s, ±460 °/s	FS = 1, FS = 1/4
Non-linearity		NI	±0.25 %FS	Ta = +25 °C
Cross axes		CS	±5 %	Ta = +25 °C
Current consumption		I_{op1}	1.4 mA Max.	Not communicating
Sleep current		I_{op3}	1 µA Typ.	
Noise Density		N_d	0.0015 (º/s)/√Hz	at 10Hz, LPF default setting
Angle random walk		ARW	0.065 °/√h Typ.	
Bias Instability		Bs	0.9 °/h Typ.	Bottom value of Allan deviation

Product Name (Standard form): XV718 1 B B * *
① ②③④ ⑤ ⑥

① Model ② Detection axis (1: Z axis) ③ Package type (B: Ceramics 5032 size)
④ Output (B: SPI/I²C) ⑤ Frequency ⑥ Custom recognition (not necessary to specify)

External Dimensions (Unit:mm)

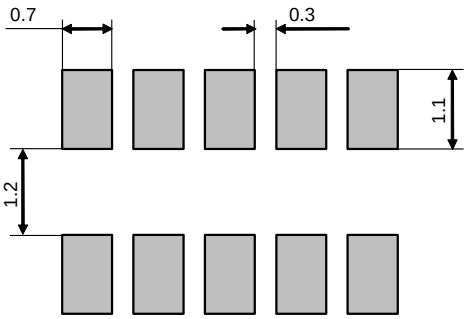


Pin map

Pin	Connection XV7181BB
1	MOSI/SDA
2	SS
3	VDDL
4	Reserved1
5	GND
6	VDDM
7	Reserved2
8	VDDI
9	MISO/SA0
10	SCLK/SCL

Do not connect “Reserved2” pin externally.
Connect “Reserved1” pin to GND.

Footprint (Recommended) (Unit:mm)



PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

WORKING FOR HIGH QUALITY

In order provide high quality and reliable products and services than meet customer needs, Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired IATF 16949 certification that is requested strongly by major automotive manufacturers as standard.

IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

►Explanation of the mark that are using it for the catalog

Pb Free	►Pb free.
RoHS Compliant	►Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).