



## 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 <sub>o</sub>	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 <sub>pt</sub>	±3.0 %	V <sub>DDM</sub> =3 V, Ta = +25°C reference
Bias	ZRL	±1 °/s (0 LSB Typ.)	Ta = +25 °C
Bias over temperature A	ZRL <sub>ta</sub>	±0.3 °/s	-10 °C to +50 °C, Ta = +25 °C reference
Bias over temperature B	ZRL <sub>tb</sub>	±1.0 °/s	-40 °C to +85 °C, Ta = +25 °C reference
Bias temperature coefficient	ZRL <sub>s</sub>	0.0024 (°/s)/°C Typ.	VDDM = 3 V, Average of absolute value, ΔT = 1 °C
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 <sub>op1</sub>	1.4 mA Max.	Not communicating
Sleep current	I <sub>op3</sub>	1 μA Typ.	
Noise Density	N <sub>d</sub>	0.0015 (°/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 \* \*

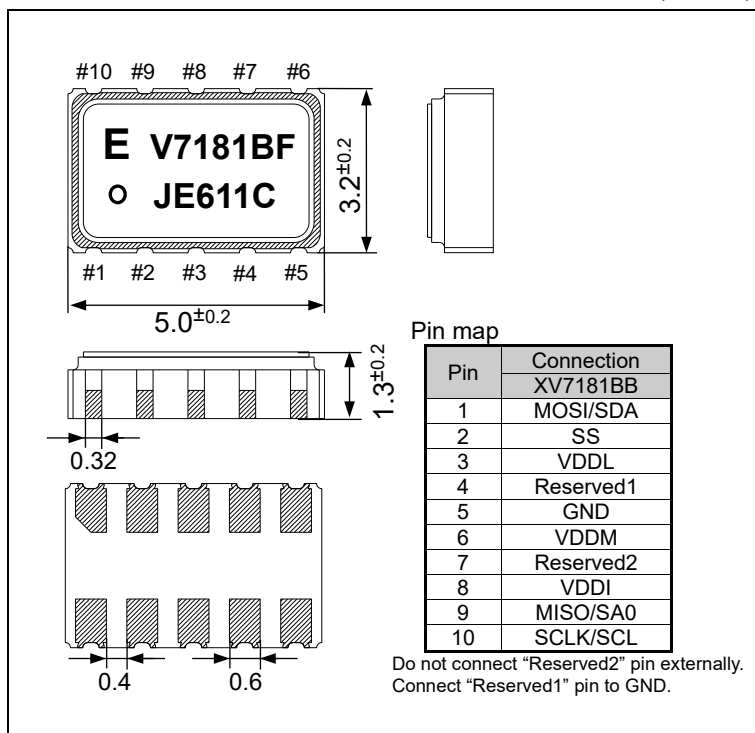
- ① Model    ② Detection axis (1: Z axis)  
④ Output (B: SPI/I<sup>2</sup>C)    ⑤ Frequency    ⑥ Custom recognition (not necessary to specify)

③ Package type (B: Ceramics 5032 size)

⑥ Custom recognition (not necessary to specify)

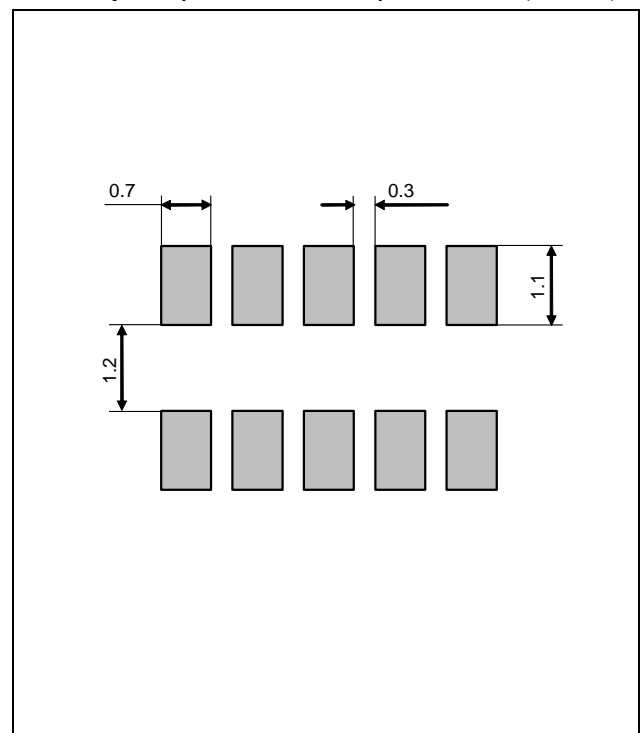
## External Dimensions

(Unit:mm)



## 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.
	► 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.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc ).

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