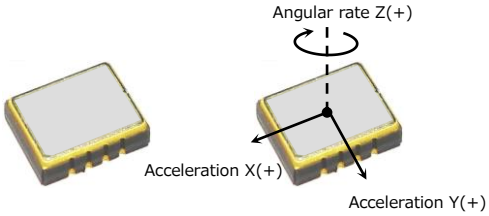
COMBINED SENSOR FOR AUTOMOTIVE

XC1011SD

Product number
XC1011SD: X2E0000210002xx

- Combined sensor integrating gyro sensor and dual-axis G sensor in one package
- Ultra-small and low power consumption using the original Double-T structure quartz crystal element
- High reliability by installing the diagnosis function
- Excellent performance of shock-resistance and vibration-resistance
- Digital output: angular rate (Yaw) / acceleration (X, Y-axis) 16bit, Temperature 11bit with SPI
- Conforms to AEC-Q100, Support evaluation of hardware elements in ISO26262 (ASIL D)



Recommended Application
- Electric Stability Control System

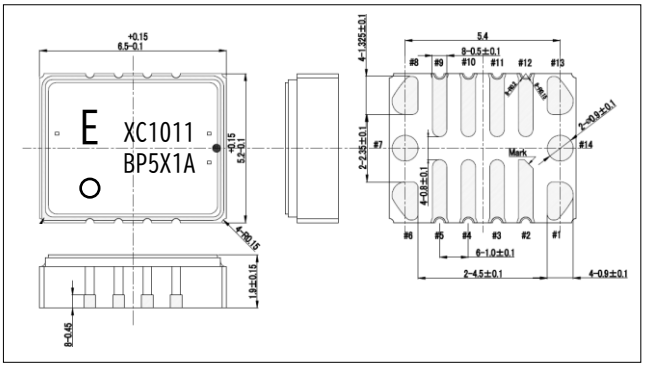
Specifications (characteristics)

Item		Symbol	Specifications	Conditions / Remarks
Supply Voltage		V_{DD}	3.3 V ±0.165 V	
Storage Temperature		T_{STG}	-40 °C ~ +105 °C	
Operating Temperature		T_{OPR}	-40 °C ~ +105 °C	
Angular rate sensor	Sensitivity	Sy	175 ±5 LSB/(°/s)	Ta=+25°C
	Bias	V_0	±525 LSB (±3 °/s)	Ta=+25°C, So=175 LSB/(°/s)
	Rate range	DRy	±160 °/s	
	Non-linearity	NLy	±1 % FS	FS= ±160 °/s
	Frequency characteristic	Fcy	52.6 ±2.6 Hz	-3dB bandwidth
	Cross axis sensitivity	CSy	±5 %	
Acceleration sensor	Sensitivity	Sa	1092±22 LSB/G	
	Zero G offset	0G	±57 mG	Ta=+25°C, Sa=1092LSB/G, without PCB mount
	Acceleration range	DRa	±30 G	Lo-range, Mid-range
	Non-linearity	NLa	±43 LSB	±1G
	Frequency characteristic	Fc1	52.6±2.6 Hz	Lo-range, -3dB bandwidth
		Fc2	200±10 Hz	Mid-range, -3dB bandwidth
	Cross axis sensitivity	CSa	±3 %	
Current consumption		Iop	20 mA Max.	Stationary and No-communication
Start-up time		T_{ACT}	300 ms Max.	from V_{DD} rise-up 90%

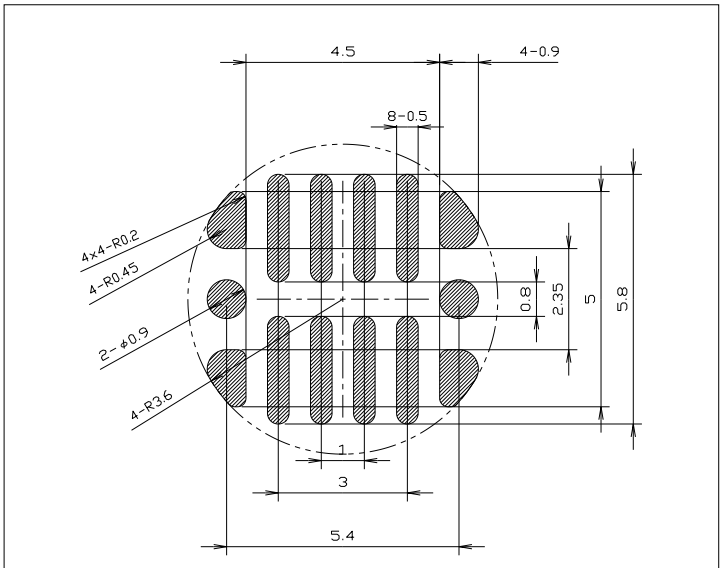
Product Name (Standard form): XC1011SD ① 50.300 kHz ②③

① Model ② Package type ③ Frequency (not necessary to specify)

External Dimensions (Unit: mm)



Footprint (Recommended) (Unit: mm)



Pin Function

Pin	Connection	Pin	Connection
1	N.C.	8	N.C.
2	SS	9	V_{DDL}
3	MISO	10	V_{DD}
4	SCLK	11	VREFAD
5	MOSI	12	GND
6	N.C.	13	N.C.
7	N.C.	14	N.C.

Do not connect “N.C.” pins externally devices.

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).