



Piezoresistive 3-Axis Acceleration Sensor

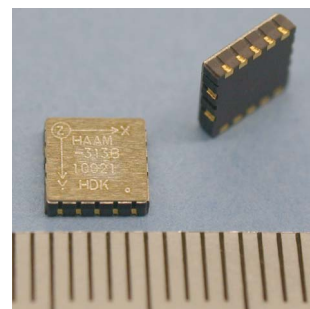
HAAM-313B

New

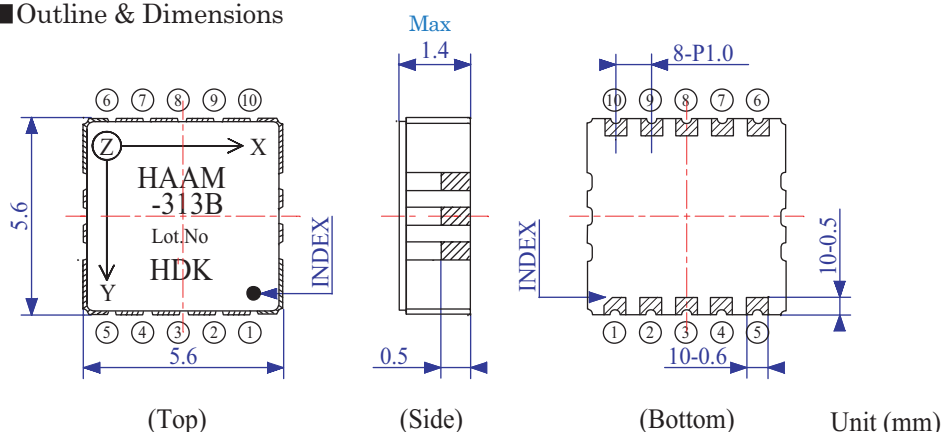
Piezoresistive type 3-axis acceleration sensor, produced by latest semiconductor process, micromachining technology achieved low voltage operation, high sensitivity and high precision, and suits all users' needs.

■ Features

- It is possible to detect dynamic acceleration (vibration , shock , etc) in the directions of X, Y & Z (3-axis) and static acceleration (tilt , gravitational acceleration) simultaneously.
- High sensitivity in low acceleration range. ($\pm 2G$).
- Low voltage operation is possible. (as low as 2.5V)
- Small, low profile and light weight made possible high density mounting.
Package size : $5.6 \times 5.6 \times 1.4$ Max. mm
- Shock resistance surpasses 5000G and strong against damage.
- Low current consumption
Operating : 0.7mA Typ. at 3V
Standby : $1 \mu A$ Typ.



■ Outline & Dimensions



Terminal

| | |
|------|--------|
| (1) | GND |
| (2) | NC |
| (3) | STANBY |
| (4) | NC |
| (5) | NC |
| (6) | Vcc |
| (7) | Cset |
| (8) | X out |
| (9) | Y out |
| (10) | Z out |

(3)Lo:Standby
Hi(Vcc):Operating

■ Specifications

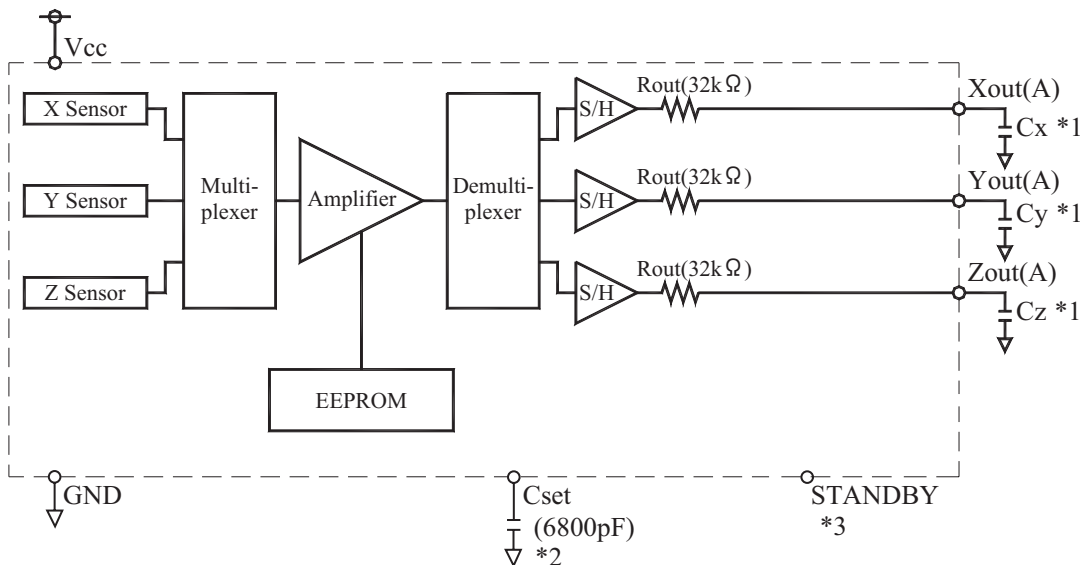
| Item | | Rating | | | Unit | Note |
|---------------------------------|---|-----------------|-----|-------|-------|-----------------------------------|
| | | Min | Typ | Max | | |
| Operating Condition | | | | | | |
| Temperature Range | Storage Temperture Range | -40 | | 85 | °C | |
| | Operating Temperature Range | -25 | | 75 | °C | |
| Power Supply | Operation Voltage Range | 2.5 | | 5.25 | V | Ratiometric |
| | Consumption Current | | 0.7 | 1 | mA | Vcc=3.0V |
| | Standby Current | | 1 | 5 | μ A | |
| Voltage | Turn-On Time | 160× C(X,Y,Z)+2 | | | ms | Until it becomes 99% |
| Shock Resistance | | 5000 | | | G | |
| Output Rating (Ta=25℃ Vcc=3.0V) | | | | | | |
| Measurement Range | Rated Acceleration | -2 | | 2 | G | |
| | Tilt Detection Range | -90 | | 90 | deg | |
| Analog Output | Offset Voltage (Xout,Yout,Zout) | 1.425 | 1.5 | 1.575 | V | Ratiometric against Input Voltage |
| | Offset Temperature Characteristics | -10 | | 10 | %FS/G | Δ from +25℃ |
| | Sensitivity | 360 | 400 | 440 | mV/G | Ratiometric against Input Voltage |
| | Linearity | -2 | | 2 | %FS | |
| | Sensitivity Temperature Characteristics | -3 | | 3 | %FS/G | Δ from +25℃ |
| | Cross-Axis Sensitivity | -5 | | 5 | % | |
| Frequency Characteristics | Frequency Response | DC | | 500 | Hz | |
| | Sensor Resonancr Frequency | 1 | | | KHz | |



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HAAM-313B

■ Block Diagram



*1 ★Band setting of Analog Output

It is possible to limit bandwidth for each analog output on HAAM-313B. It is done by connecting a capacitor to each output terminal and forming low-pass filter with inner resistor. 3dB bandwidth is calculated by the following formula.

$$F_{-3dB} = \frac{1}{(2\pi (32k\Omega) \times C_{(X,Y,Z)})}$$

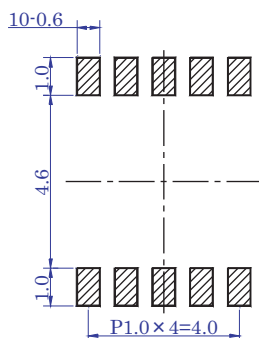
Table. Capacitor Selection (C_X, C_Y, C_Z)

| Bandwidth | Capacitor Value |
|-----------|-----------------|
| 2Hz | 2.20μF |
| 10Hz | 0.47μF |
| 50Hz | 0.10μF |

*2 ★Capacitor to cut internal noise Please connect 6800pF.

*3 ★Mode selection (Operating or Standby) can be done by setting Standby terminal, which High sets Operating mode and Low sets Standby mode.

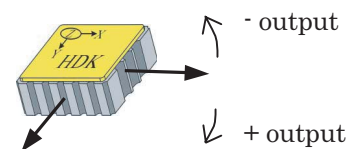
■ Recommended Footprint



This dimensional information does not guarantee soldering. Please use it upon checking in advance at customer side.

■ Output Direction

tilt (gravitational acceleration)



dynamic acceleration

