

One sensor,  
unlimited ideas

Standalone MEMS accelerometer with excellent durability

1-axis accelerometer GF1





AGF10711



AGF11311

Compliance with RoHS Directive

### FEATURES

- High reliability: superior offset voltage temperature characteristics (33 mg (typ.))
- Fast response: 100 m/s
- Compact size: 58×36.5×33mm 2.283×1.437×1.299inch (without bracket)

### APPLICATIONS

- Inclination detection (for improved safety and operability) in agricultural machine, construction machine and mobility vehicles
- Photovoltaic station power plant: Solar tracking for panels
- Automotive: 4WD ABS control and idling stop system

### ORDERING INFORMATION

|                                                                                                   |   |  |  |   |   |
|---------------------------------------------------------------------------------------------------|---|--|--|---|---|
| AGF                                                                                               | 1 |  |  | 1 | 1 |
| Number of detectable axis (Method)<br>1: 1-axis accelerometer<br>(Electrostatic capacitance type) |   |  |  |   |   |
| Shape<br>0: Without bracket<br>1: With bracket                                                    |   |  |  |   |   |
| Detection sensitivity<br>3: 1.333V/g<br>7: 3.0V/g                                                 |   |  |  |   |   |
| Operation power supply voltage<br>1: 5 V DC                                                       |   |  |  |   |   |
| Installation direction type<br>1: Horizontal type                                                 |   |  |  |   |   |

### PRODUCT TYPES

| Product name             | Operation power supply voltage | Acceleration detection range | Detection sensitivity | Part number |
|--------------------------|--------------------------------|------------------------------|-----------------------|-------------|
| 1-axis accelerometer GF1 | 5V DC                          | ±0.5g                        | 3.0V/g                | AGF10711    |
|                          |                                | ±1.2g                        | 1.333V/g              | AGF11311    |

Note: Carton: 80 pcs. (with bracket), Case: 150 pcs. (without bracket)

### MAXIMUM RATING

| Item                         | Unit                 | Standard value |      |                | Remarks      |
|------------------------------|----------------------|----------------|------|----------------|--------------|
|                              |                      | min.           | typ. | max.           |              |
| Maximum allowable voltage    | V                    | −0.3           | —    | 7              | Ta=20°C 68°F |
| Maximum applied acceleration | AGF10711             | —              | —    | 49 (5)         |              |
|                              | AGF11311             |                |      | 147 (15)       |              |
| Storage temperature range    | °C °F                | −30 −22        | —    | 85 185         |              |
| Operation temperature range  | °C °F                | −30 −22        | —    | 85 185         |              |
| Anti-shock characteristic    | m/s <sup>2</sup> (g) | —              | —    | 49,000 (5,000) |              |
| Grade of protection          |                      | IP67           |      |                |              |

## ELECTRICAL CHARACTERISTICS

| Item                                      | Unit                             | Standard value |                  |            |            |            |             | Remarks                       |
|-------------------------------------------|----------------------------------|----------------|------------------|------------|------------|------------|-------------|-------------------------------|
|                                           |                                  | min.           |                  | typ.       |            | max.       |             |                               |
|                                           |                                  | AGF10711       | AGF11311         | AGF10711   | AGF11311   | AGF10711   | AGF11311    |                               |
| Acceleration detection range*1            | m/s <sup>2</sup> (g)             | -4.9<br>(-0.5) | -11.76<br>(-1.2) | —          |            | 4.9 (0.5)  | 11.76 (1.2) |                               |
| Operation power supply voltage            | V                                | 4.75           |                  | 5          |            | 5.25       |             | -30 to +85°C<br>-22 to +185°F |
| Current consumption                       | mA                               | —              |                  | —          |            | 10         |             | 0g, Ta=20°C 68°F              |
| Sensitivity                               | mV/(m/s <sup>2</sup> )<br>(mV/g) | 297 (2910)     | 132 (1293)       | 306 (3000) | 136 (1333) | 315 (3090) | 140 (1373)  | -30 to +85°C<br>-22 to +185°F |
| Offset voltage (0 g)                      | V                                | 2.4            |                  | 2.5        |            | 2.6        |             | Ta=20°C 68°F                  |
| Offset voltage temperature characteristic | V (mg)                           | -0.21<br>(-70) | -0.093<br>(-70)  | —          |            | 0.21 (70)  | 0.093 (70)  | -30 to +85°C<br>-22 to +185°F |
| Other axis sensitivity                    | %                                | -5             |                  | —          |            | 5          |             | Ta=20°C 68°F                  |
| Non-linearity*2                           | %FS                              | -1             |                  | —          |            | 1          |             | Ta=20°C 68°F                  |
| Turn-on time                              | ms                               | —              |                  | 10         |            | —          |             | 0g, Ta=20°C 68°F              |
| Frequency response                        | Hz                               | DC             |                  | 15         |            | —          |             | -3dB point                    |
| Clamping voltage VH                       | V                                | 4.4            |                  | 4.5        |            | 4.6        |             |                               |
| Clamping voltage VL                       | V                                | 0.4            |                  | 0.5        |            | 0.6        |             |                               |

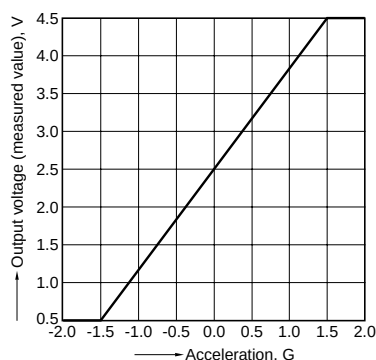
Notes: 1. The acceleration unit "g" means 9.8 m/s<sup>2</sup>.

2. Maximum error from linear output that connects +1.2 g and -1.2 g output. (AGF11311)

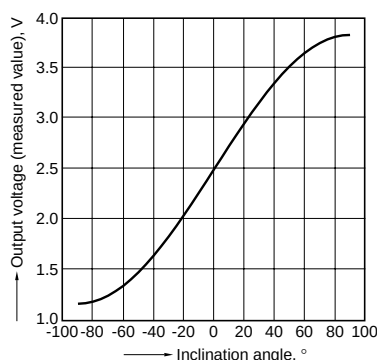
Maximum error from linear output that connects +0.5 g and -0.5 g output. (AGF10711)

## REFERENCE DATA

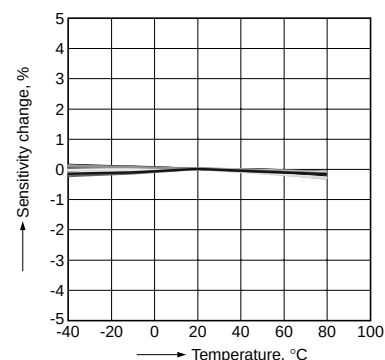
### 1. Output characteristics



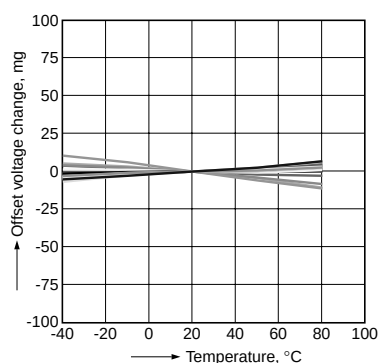
### 2. Inclination angle - Output voltage characteristics



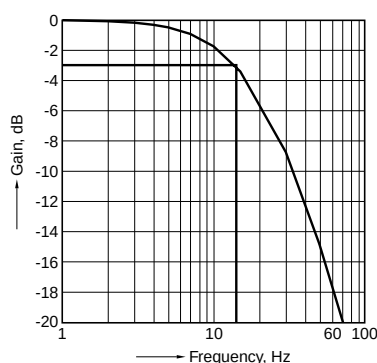
### 3. Sensitivity temperature characteristics



### 4. Offset voltage temperature characteristics



### 5. Frequency characteristics



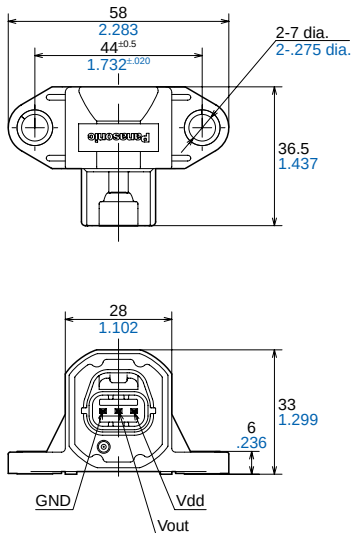
# AGF1

## DIMENSIONS (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://panasonic-electric-works.net/ac>

### Without bracket (AGF10711)

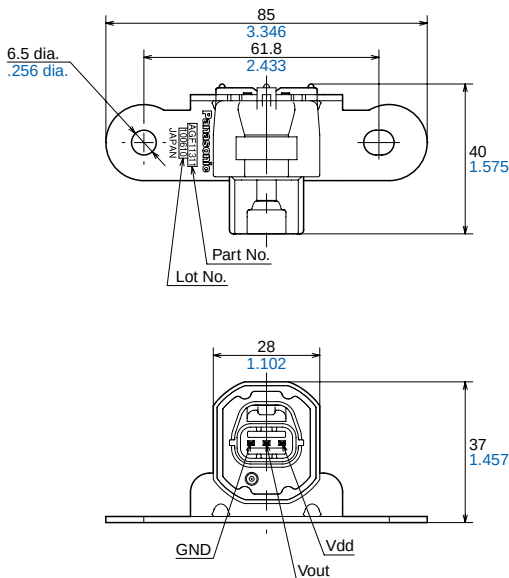
**CAD Data**



Connector:  
Manufacturing company: Yazaki Corporation  
Housing: 7283-8730-30

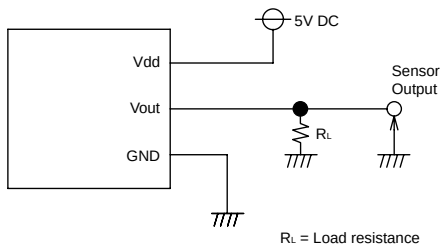
### With bracket (AGF11311)

**CAD Data**



Connector:  
Manufacturing company: Yazaki Corporation  
Housing: 7283-8730-30

## WIRING DIAGRAM



## NOTES

**1. To ensure reliability, please verify quality under conditions of actual use**

### **2. Connections**

- Please perform connections correctly in accordance with the terminal connection diagram. In particular, be careful not to reverse wire the power supply as this will cause damage or degrade to the product.

### **3. Cleaning**

- Avoid ultrasonic cleaning since this may cause breaks or disconnections in the wiring.

### **4. Environment**

- Please avoid using or storing the sensor in a place exposed to corrosive gases (such as the gases given off by organic solvents, sulfurous acid gas, hydrogen sulfides, etc.) which will adversely affect the performance of the sensor.
- Since the internal circuitry may be destroyed if an external surge voltage is supplied, provide an element which will absorb the surges.
- Malfunctioning may occur if the product is in the vicinity of electrical noise such as that from static electricity, lightning, a broadcasting station, an amateur radio, or a mobile phone.
- Avoid using the sensor in an environment where condensation may form. Furthermore, its output may fluctuate if any moisture adhering to it freezes.
- Avoid using the sensor where it will be susceptible to ultrasonic or other high-frequency vibration.
- Please do not use the sensor in a location subject to direct sunlight or in a location subject to a similar strong light source.

### **5. Other handling precautions**

To assure reliability, check the sensor under actual loading conditions. Avoid any situation that may adversely affect its performance.

- Caution is required because differences in the acceleration detection range and the method of connection can lead to accidents.
- The actual acceleration should be within the rated acceleration range. Damage may occur if it is outside of this range.
- This product may become damaged if exposed to static electricity. Therefore, please be careful when handling.