



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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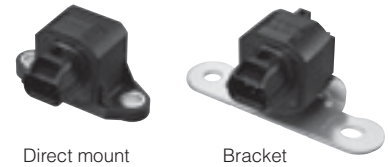
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## Electrostatic capacitance detection sensor 1-axis acceleration sensor

### GF1



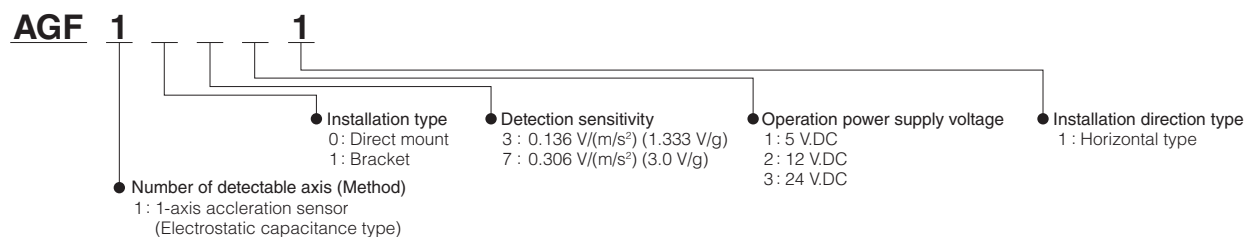
#### Features

- High precision, High reliability : Superior offset voltage temperature characteristics ( $\pm 33$  mg (Typ.))
- High sensitivity : 1.333 to 3.0 V/g
- Compact size : 58×36.5×33 mm 2.283×1.437×1.299 inch (Direct-mount type)
- RoHS compliant

#### Typical Applications

- Automobiles : 4WD-ABS control, neutral control, idling stop system and suspension control
- Special vehicles : Inclination detection (for enhanced safety and operating efficiency) of agricultural machine, construction machine and welfare vehicles
- Photovoltaic generation : Sun tracking panels

#### Ordering Information



#### Product Types

Carton : 80 pcs. (Bracket), 150 pcs. (Direct mount)

Product name	Operation power supply voltage	Acceleration detection range	Detection sensitivity	Installation type	Part number
1-axis acceleration sensor GF1	5 V.DC	$\pm 11.76$ m/s <sup>2</sup> ( $\pm 1.2$ g)	0.136 V/(m/s <sup>2</sup> ) (1.333 V/g)	Bracket	AGF11311
		$\pm 4.9$ m/s <sup>2</sup> ( $\pm 0.5$ g)	0.306 V/(m/s <sup>2</sup> ) (3.0 V/g)	Direct mount	AGF10711
	12 V.DC	$\pm 11.76$ m/s <sup>2</sup> ( $\pm 1.2$ g)	0.136 V/(m/s <sup>2</sup> ) (1.333 V/g)	Direct mount	AGF10321
		$\pm 4.9$ m/s <sup>2</sup> ( $\pm 0.5$ g)	0.306 V/(m/s <sup>2</sup> ) (3.0 V/g)	Direct mount	AGF10721
	24 V.DC	$\pm 11.76$ m/s <sup>2</sup> ( $\pm 1.2$ g)	0.136 V/(m/s <sup>2</sup> ) (1.333 V/g)	Direct mount	AGF10331
		$\pm 4.9$ m/s <sup>2</sup> ( $\pm 0.5$ g)	0.306 V/(m/s <sup>2</sup> ) (3.0 V/g)	Direct mount	AGF10731

#### Absolute Maximum Ratings

Product name	Unit	Absolute maximum ratings			Remarks
		AGF1□□11 (Power supply: 5 V.DC type)	AGF1□□21 (Power supply: 12 V.DC type)	AGF1□□31 (Power supply: 24 V.DC type)	
Maximum allowable voltage	V.DC	7	16	30	Max. Ta=25 °C 68 °F
Maximum applied acceleration	g	AGF1□3□1	15		Max.
		AGF1□7□1	5		Max.
Storage temperature range	°C °F	-30 to 85 -22 to 185			
Operation temperature range	°C °F	-30 to 85 -22 to 185			
Anti-shock characteristic	g	5,000			Max.
Grade of protection *		IP67			

Note : \* Performance when matching connector is connected.

## Electrical Characteristics

### ● AGF1□3□1 (Sensitivity : 1.333 V/g type)

Item	Unit	Performance			Remarks
		AGF1□□11 (Power supply: 5 V.DC type)	AGF1□□21 (Power supply: 12 V.DC type)	AGF1□□31 (Power supply: 24 V.DC type)	
Operation power supply voltage	V.DC	5 V.DC±5 %	12 V.DC±10 %	24 V.DC±10 %	-30 °C to +85 °C -22 °F to +185 °F
Acceleration detection range *1	g (°)	±1.2 (90)			
Current consumption	mA	10	15		0g, Ta=20 °C 68 °F, Max.
Sensitivity	V/g	1.333±3 %			-30 °C to +85 °C -22 °F to +185 °F
Offset voltage (0g)	V	2.5±0.1			Ta=20 °C 68 °F
Offset voltage temperature characteristic	V	±0.093			-30 °C to +85 °C -22 °F to +185 °F
Other axis sensitivity	%	±5			Ta=20 °C 68 °F
Non-linearity *2	%FS	±1			Ta=20 °C 68 °F
Frequency response	Hz	10 to 15			-3 dB point
Clamping voltage VH *3	V	4.5	-	-	Typ.
Clamping voltage VL *3	V	0.5	-	-	Typ.

### ● AGF1□7□1 (Sensitivity : 3.0 V/g type)

Item	Unit	Performance			Remarks
		AGF1□□11 (Power supply: 5 V.DC type)	AGF1□□21 (Power supply: 12 V.DC type)	AGF1□□31 (Power supply: 24 V.DC type)	
Operation power supply voltage	V.DC	5 V.DC±5 %	12 V.DC±10 %	24 V.DC±10 %	-30 °C to +85 °C -22 °F to +185 °F
Acceleration detection range *1	g (°)	±0.5 (30)			
Current consumption	mA	10	15		0g, Ta=20 °C 68 °F, Max.
Sensitivity	V/g	3.0±3 %			-30 °C to +85 °C -22 °F to +185 °F
Offset voltage (0g)	V	2.5±0.1			Ta=20 °C 68 °F
Offset voltage temperature characteristic	V	±0.21			-30 °C to +85 °C -22 °F to +185 °F
Other axis sensitivity	%	±5			Ta=20 °C 68 °F
Non-linearity *2	%FS	±1			Ta=20 °C 68 °F
Frequency response	Hz	10 to 15			-3 dB point
Clamping voltage VH *3	V	4.5	-	-	Typ.
Clamping voltage VL *3	V	0.5	-	-	Typ.

Note : \*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. (AGF1□3□1)

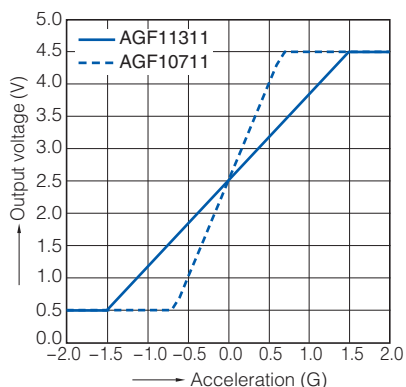
Maximum error from linear output that connects +0.5 g and -0.5 g output. (AGF1□7□1)

\*3 The 12 V and 24 V.DC operating power supply voltage types can also be compatible with the clamping voltage. Please consult us.

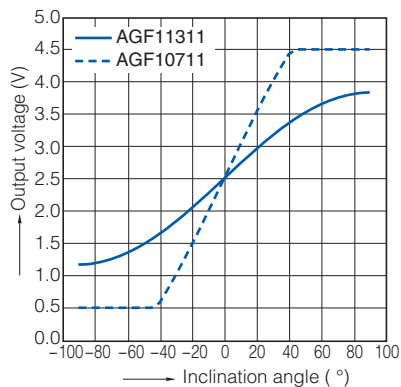


## Reference Data

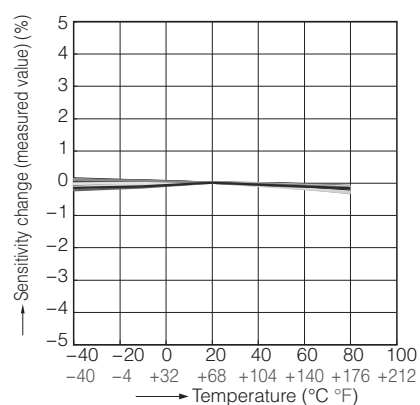
1. Output characteristics



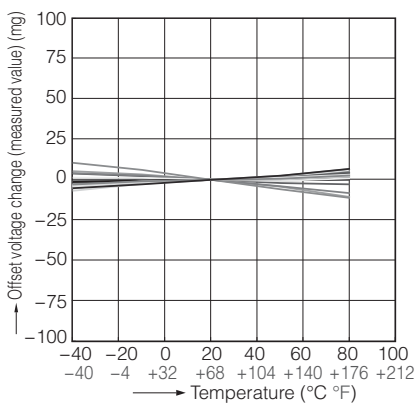
2. Inclination angle - Output voltage characteristics



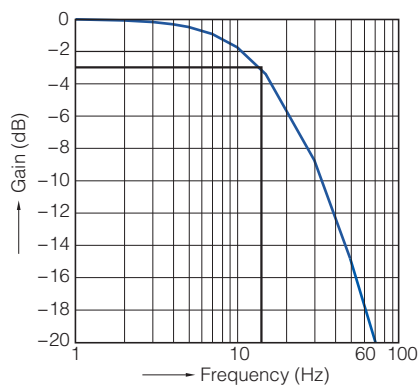
3. Sensitivity temperature characteristics



4. Offset voltage temperature characteristics



5. Frequency characteristics

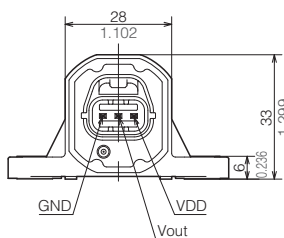
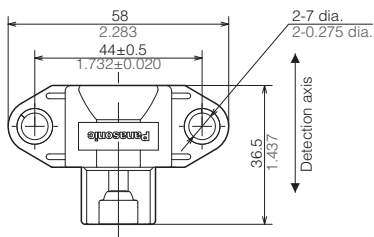


## Dimensions

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/>

### ● Direct mount (AGF10□□1)

#### CAD Data

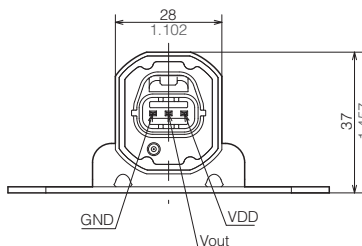
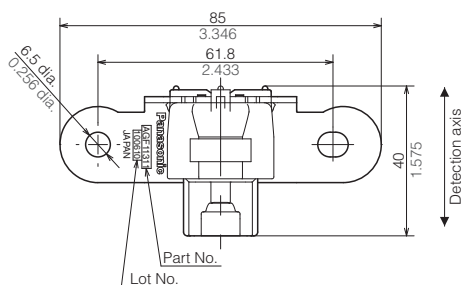
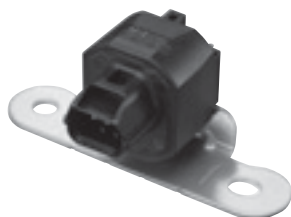


Matching connector:  
Manufacturing company : Yazaki Corporation  
Housing : 7283-8730-30

unit : mm inch

### ● Bracket (AGF11□□1)

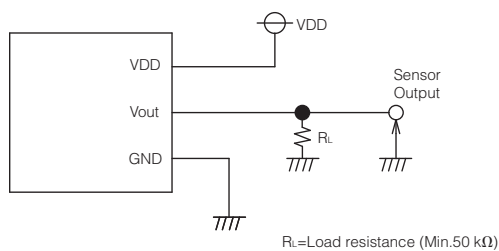
#### CAD Data



Matching connector :  
Manufacturing company : Yazaki Corporation  
Housing : 7283-8730-30

unit : mm inch

## Wiring Diagram



## NOTES

■ Before using the products, carefully check the quality under actual use conditions to enhance stability.

■ Wire connection

Correctly wire as in the connection diagram. Reverse connection may damage the product and degrade the performance.

■ Cleaning

Avoid ultrasonic cleaning as this may cause disconnection of the wire.

■ Environment

- Avoid use and storage in the corrosive gas (organic solvent, sulfurous acid and hydrogen sulfide gases) which negatively affects the product.
- Use surge absorbers as applying the external surge voltage may damage the internal circuit.
- Malfunction may occur near electric noises from static electricity, lightning, broadcast or amateur radio stations and mobile phones.
- Avoid use in an environment where these products cause dew condensation. When water attached to the sensor chip freezes, the sensor output may be fluctuated or damaged.
- Do not apply high-frequency oscillation, such as ultrasonic waves, to the product.
- Do not use in direct sunlight or other comparable light.

■ Other precautions

These specifications are for individual components. Before use, carefully check the performance and quality under actual use conditions to enhance stability.

- Misconnection and the wrong range of acceleration detection may invite the risk of accidents.
- Avoid use beyond the specified acceleration range, as such use may damage the product.
- Carefully handle as static electricity may damage the product.

■ Special notes

We exert maximum efforts for quality control of the product, Please mind also about the following.

- 1) To prevent occurrence of unexpected circumstances, please inform us of the specifications of your product, customers, use conditions and details of the attachment position.
- 2) Have sufficient margin values of driving/performance guarantee described in the specifications and apply safety measures with double circuits, if serious effects on human lives or property are predicted due to a quality failure of the product. Those countermeasures are also for the product liability.
- 3) A warranty period is one year after the delivery to your company. Quality assurance is limited to the items and the scopes described in the specifications.

If a defect is found after the delivery, we will promptly provide a replacement or change/repair the defect part at the place of delivery in good faith. Exceptions are below.

- Damages by a failure or a defect which arose after the delivery.
- After the delivery, when storing and transporting, if conditions other than conditions in the specifications are applied to the product.
- Damages by unforeseen phenomenon which cannot be predicted with the technologies available at the time of delivery.
- Damages by natural and anthropogenic disasters, such as earthquake, flood, fire and war, which are beyond our reasonable control.