

# Piezoelectric Vibrating Gyroscopes (GYROSTAR®)

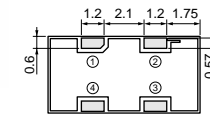
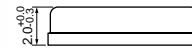
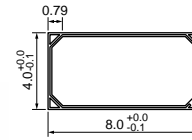


## Piezoelectric Vibrating Gyroscopes (GYROSTAR®)

This product is an angular velocity sensor that uses the phenomenon of Coriolis force, which is generated when a rotational angular velocity is applied to the vibrator.

Murata's original, small ceramic bimorph vibrator and simple Cap-Base structure realize their ultra-small size, under 0.1cc. Their small and lightweight shape increase flexibility of installment and help your apparatuses to be downsized.

They are surface mountable device, can be mounted by automatic surface mounter.



① Vref	Reference voltage
② Gnd	Ground
③ Vcc	Supply voltage
④ Output	Sensor output

( in mm  
Tolerance ±0.2 )

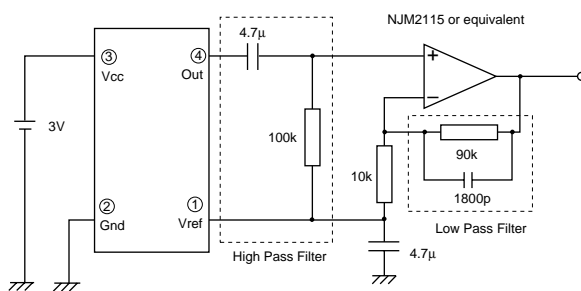
### ■ Features

1. Ultra-small and ultra-lightweight
2. Quick response
3. Low driving voltage, low current consumption
4. Lead type: SMD
5. Reflow soldering (standard peak temp. 245 deg. C)

Part Number	Supply Voltage	Maximum Angular Velocity (deg./sec.)	Output (at Angular Velocity=0) (Vdc)	Scale Factor (mV/deg./sec.)	Linearity (%FS)	Response (Hz)	Weight (g)
ENC-03R	2.7 to 5.25 Vdc	+/-300	1.35	0.67	+/-5	50	0.2

Operating Temperature Range: -5°C to 75°C    Storage Temp. Range: -30°C to 85°C

### ■ Sample Amplifier Circuit

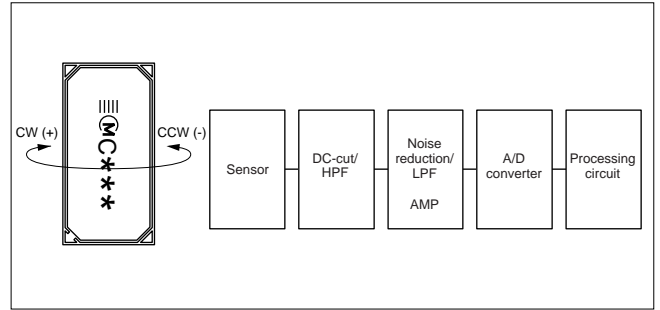


The High-pass Filter's Cut-off frequency in this circuit is approx. 0.3Hz.  
 The Low-pass Filter's Cut-off frequency in this circuit is approx. 1kHz.

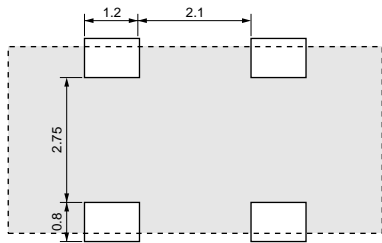
## Application/Packaging

### Application

1. One sensor detects rotation on one axis. If two axes are to be detected in the same equipment, two different types of sensors (EMC-03RC and EMC-03RD) should be used.
2. To reduce the effect of temperature drift (due to change of ambient temperature), a high pass filter must be connected to sensor output to eliminate DC component.
3. To suppress output noise component around 30-33kHz (resonant frequency of sensor element), a low pass filter which has higher cut-off frequency than required response frequency must be connected to sensor output.

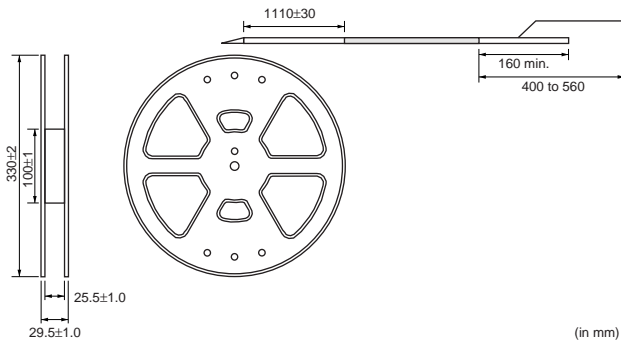


### Dimensions of Land Pattern



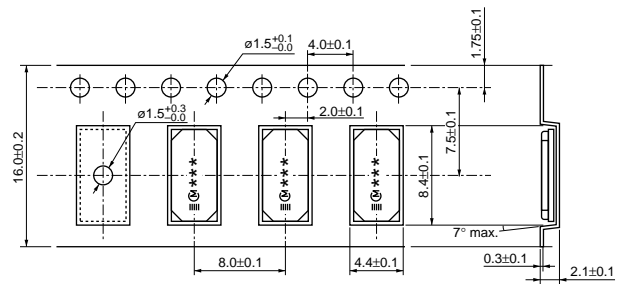
(in mm)

### Dimensions of Reel



(in mm)

### Dimensions of Plastic Tape



(in mm)

## Notice

### ■ Notice (Storage and Operating Condition)

1. Do not install the sensor in a location in which condensation is likely to form on it.
2. This sensor must be installed where temperature does not vary significantly.
3. Do not use under excessive shocked or vibrated condition.

### ■ Notice (Soldering and Mounting)

This sensor must be installed in the correct position relative to the direction of rotation to be detected.

### ■ Notice (Handling)

1. Incorrect handling may affect sensor characteristics. Please note the following precautions;
  - (1) Do not subject the sensor to shock that exceeds the rated limit.
  - (2) Do not wash the sensor.
2. Precision electronic parts, such as ICs, are used for the sensor; therefore, it is necessary to take anti-static measures when handling.

#### ● Part Numbering

##### Piezoelectric Gyroscopes (GYROSTAR®)

(Part Number)    

EN	C-03RC	-02	
①	②	③	④

① Product ID

② Type

③ Individual Specification Code

④ Packaging

\* "(Part Number)" shows only an example which might be different from actual part number.

\* Any other definitions than "① Product ID" might have a different digit number from actual part number.

**△Note:**

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**2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.**

- |                             |  |
|-----------------------------|--|
| ① Aircraft equipment        | ② Aerospace equipment  |
| ③ Undersea equipment        | ④ Power plant equipment  |
| ⑤ Medical equipment         | ⑥ Transportation equipment (vehicles, trains, ships, etc.)   |
| ⑦ Traffic signal equipment  | ⑧ Disaster prevention / crime prevention equipment   |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

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**4. Please read rating and △CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.**

**5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.**

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