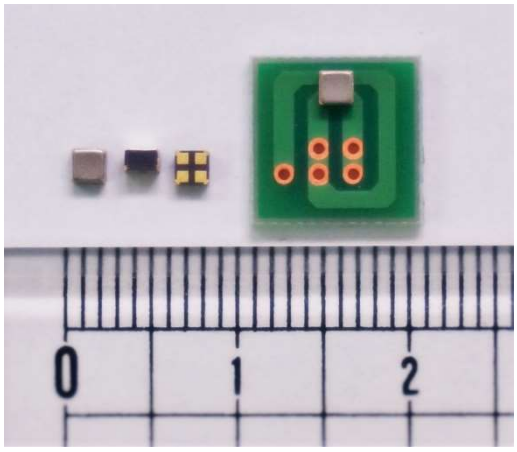
Model:CMN200
Date Sheet

※This data sheet is subject to change without notice.



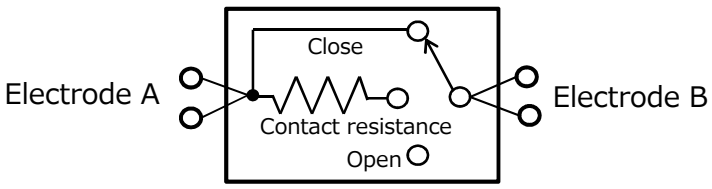
◆Overview
- **I**nnovative sensor utilizing a new manufacturing technology.
- **S**ave energy and extend battery life

◆Key Features:
- **T**his sensor device quickly detects vibration and motion from all directions**.**
- **S**ensing with high sensitivity
- **H**ighly reliable performance with multilayer ceramic
- **E**asy circuit design
- **U**ltra low power consumption
- **A**EC-200 compliant / RoHS compliant
- **R**eflow compatible (Pb free)

◆Applications and Use case:
Static motion detection switch (power saving of wireless communication equipment)
- **W**earable equipment
- **I**ot equipment
- **A**ctive type IC tag
- **S**mart key
- **A**nti-theft device

◆Equivalent circuit

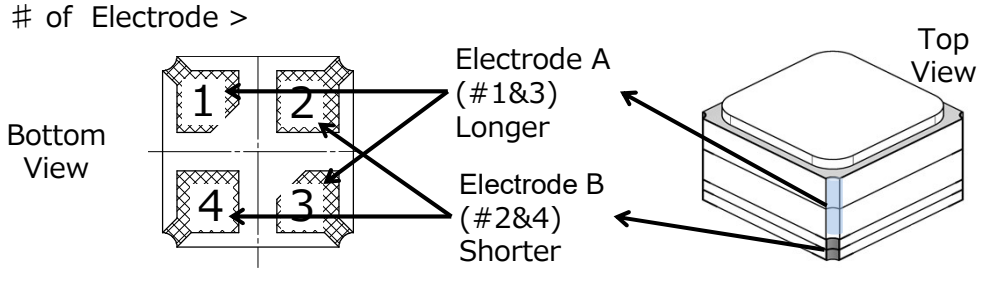
<Inside of circuit>



◆Electrode (Terminal) function

No	Electrode	Function
1 3	A	・Switch of A contact ・Pin ＃1 & Pin ＃3 are connected inside
2 4	B	・Switch of B contact ・Pin ＃2 & Pin ＃4 are connected inside

<shape and ＃ of Electrode >



◆Ratings

Parameter	Symbol	Rating	unit
Electrode Voltage	Vdd	≦6	V
Electrode Current	Idd	(0.01) *1～ 100	μA

*1 ( ) Values are reference values of evaluation range

◆Characteristics

Parameter	Condition	NIN.	TYP.	MAX.	単位
sensitivity*1	10Hz	(0.1)*2	0.5	(2) *2	G
	0.5G	(5) *2	10	(50) *2	Hz
Resistance	Closed	-	-	100	Ω
	Open	100M	-	-	
	Contact resistance	100	-	100M	

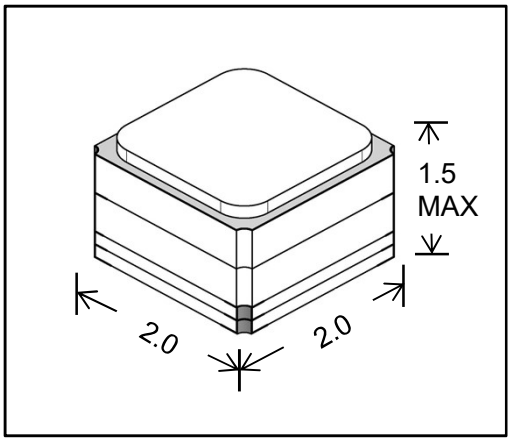
*1 Evaluation condition : Ambient temperature 20～25℃, VDD=3V
*2 ( ) Values are reference values of evaluation range

◆Material

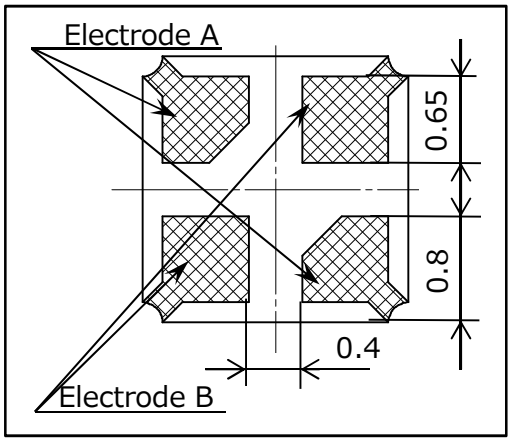
Item	Description
Contact material	Electrode A/B : Fe-Ni-Co alloy Conductive ball : SUS304
Electrode/Conductive ball	Gold plate
Case material	Alumina ceramic
Gas inclusion	Inert gas

◆External Dimensions

Drawing（Unit : mm）



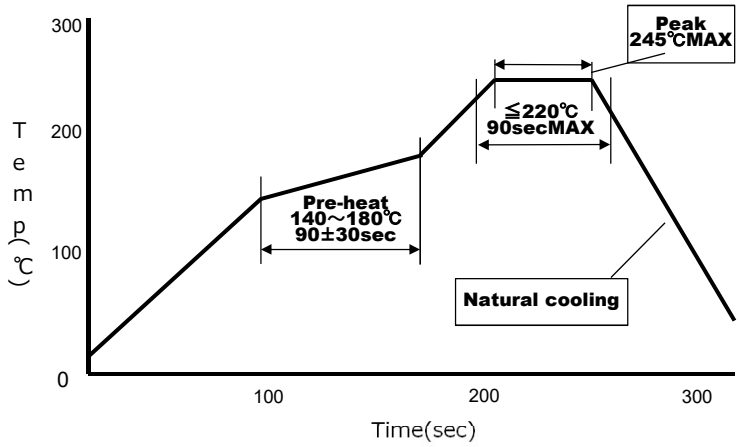
Electrode Pattern（Unit : mm）



Notes :
We assume no responsibility whatsoever for the use of any circuits described herein. Conveys no license under any patent or other rights and makes no representations whether the circuits are free from patent infringement or not.

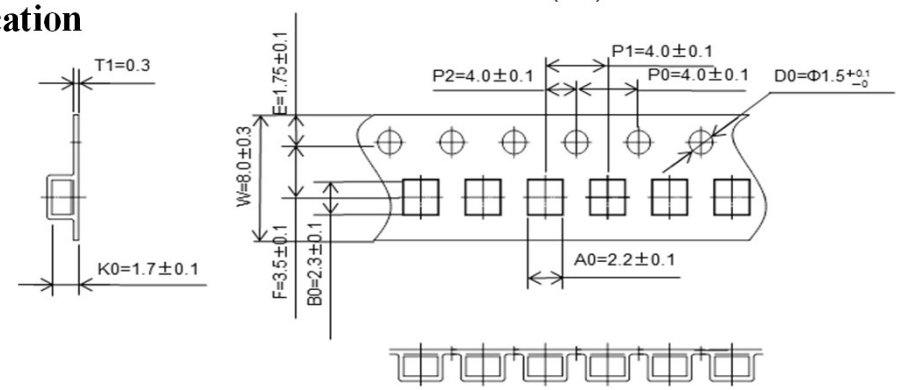
◆Recommended soldering conditions

Reflow
Temperature Profile
for reference



◆Packing specification

Packaging Minimum
Quantity:
1,000pcs/reel



◆Storage condition

Temperature：+5～40℃
Humidity：20～70% RH

◆Performance

Item	Conditions
Temperature range	-40 ～ 125℃
Humidity range	20～85% RH
Vibration durability	50Hz, 1G, ≧300M
ESD(HBM)	Pass Voltage(±V) : 2000 V
ESD(CDM)	Pass Voltage(±V) : 500 V
Impact resistance	1,500G, 6 directions, 3 times each

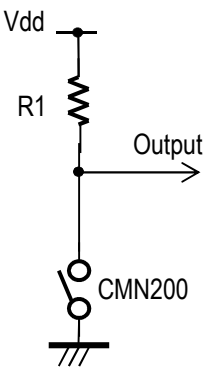
◆Other

Please contact us for details on the AEC-Q 200 test items

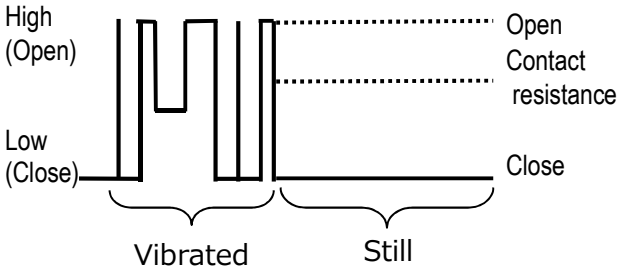
【Caution on handling】
・Please refrain from using this board and installing in other devices in the environment where ultrasound, static electricity and magnetic force may influence.
・Please do not use if failure or malfunction is likely to harm human body directly.
・For questions, please contact G-DEVICE Corp.
・Contact information：web@catch-sensor.co.jp

◆Application Circuit Example

Base Circuit

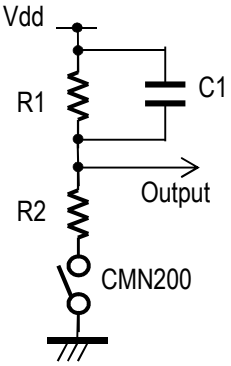


Output (chattering) Waveform



・Judgment condition of ON(vibrated) or OFF(still) is chattering waveform.
・Please design chattering not to open state or closed state judge switching of edge from low to high and high to low.

Sensitivity Adjustment Circuit



・Capacitor(C1) and Resister(R1) cancel tiny chattering signals.
・While the capacitor charges and discharges, R2 is inserted to prevent rush current to the sensor.

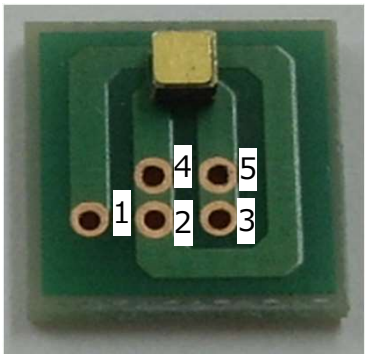
Note : We are not responsible for any infringement of patents or other rights of third parties arising from the use of information in this material or by use.

◆Evaluation Board

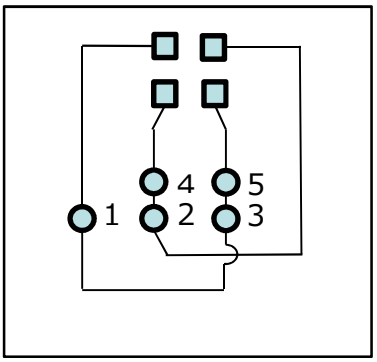
The board has mounted the parts to carry out evaluation of the sensor.

Part Number : CMN200-K

Picture of CMN200-K



Circuit Diagram



PCB Size : 10mm x 10mm
Terminal hole Size : φ1.2 mm
Terminal hole Pitch : 1.5 mm (2-4,3-5)

Note :
- Electrode numbers are not printed on the PCB.
- Orientation of the sensors mounted on the substrate(the position of A/B electrode) is optional.
- There is not polarity to the sensor.

TOKYO VENTURE TECHNOLOGY AWARD