1. Scope

This datasheet is applied to Picoleaf which is piezo film sensor product.

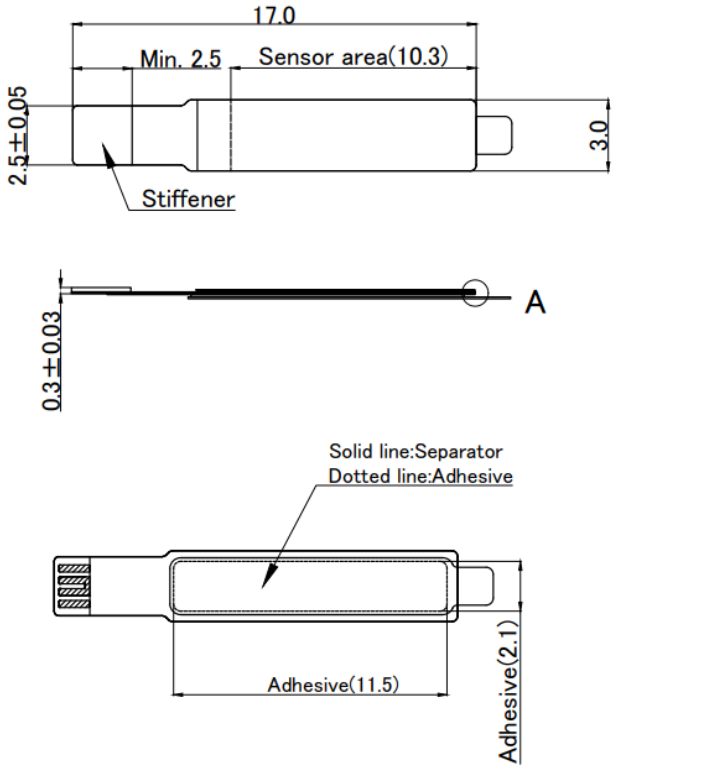
- Specific applications: consumer product
- Unsuitable Application: Applications listed in “Limitation of applications” in this datasheet.

2. Murata Part Number : FMPSABB015

3. Application/Features

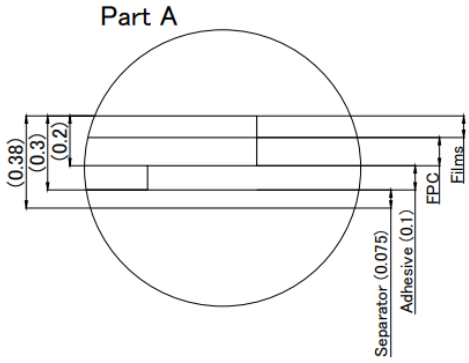
- Piezoelectric film sensor
- Size ：17x3mm
- Thickness ：typ0.3mm, connection area 0.3mm
- IF: ZIF type (FPC insert type connector shape)
- Generate the electric by displacement

4. Dimension: mm



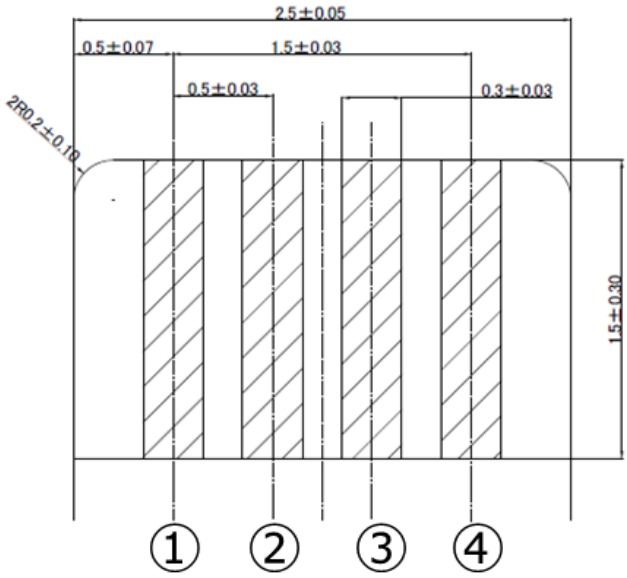
Global tolerance：0.2mm

Cross Section View



5. Interface information

FPC insert type design



No	Terminal name	Description
①	GND	GND
②	Signal output	Sensor output
③	Signal output	Sensor output
④	GND	GND

FPC ZIF connector reference

Hirose: FH34SRJ-4S-0.5SH

(0.5mm pitch and 4 terminals)

6. Maximum Ratings (Environmental capability)

Rating	Symbol	Value	Unit
Rated Voltage	VDD	-0.3 to 6.0	V
Operating Temperature (TBD)	T_{OP}	0 to 50	°C
Storage Temperature (TBD)	T_{STO}	-10 to 70	°C

7. Electrical characteristics

7-1) output voltage(reference)

Parameter	Symbol	Conditions	MIN	TYP	MAX	Units
Output voltage @28um displacement	Vout	Test circuit: Fig.1	0.09	0.18	0.27	V/N

By applying the specified displacement to the measurement stage with the Piezo Actuator, displacement is applied to the piezoelectric sensor, then measure the output value.

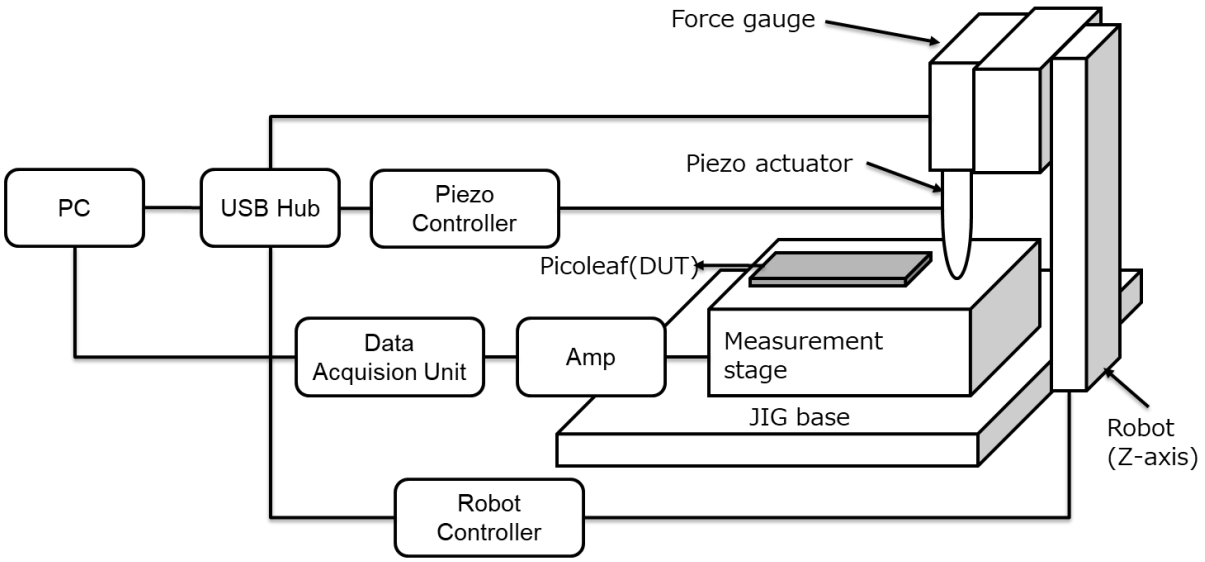


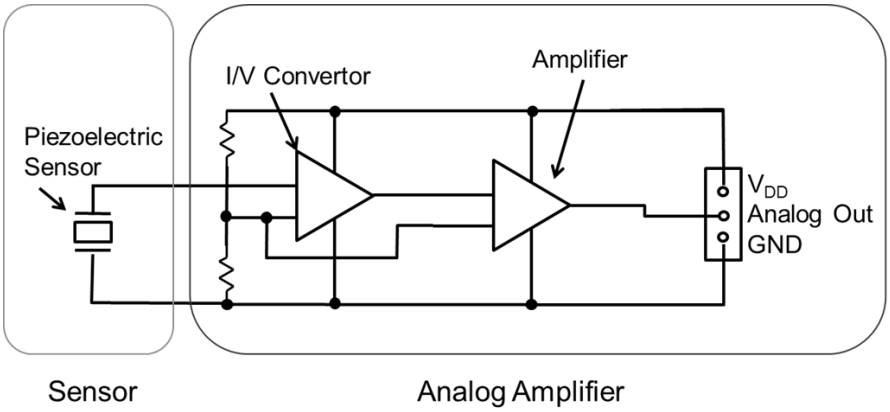
Fig.1 Measurement Jig

8. Reliability Test Result

No	Items	Test condition		Specification	QTY	Judge
1	Temperature cycling	Temperature	1)-30℃ 30min 2)+85℃ 30min	Electrical characteristics in 7-1)	22	OK
		Cycle	50 cycles			
2	High temperature storage	Temperature	+80℃	Electrical characteristics in 7-1)	22	OK
		Period	240hrs			
3	Low temperature storage	Temperature	-30℃	Electrical characteristics in 7-1)	22	OK
		Period	240hrs			
4	Temperature humidity storage	Temperature	+60℃	Electrical characteristics in 7-1)	22	OK
		Humidity	90%RH			
		Time	240hrs			
5	Temperature humidity bias	Temperature	+60℃	Electrical characteristics in 7-1)	22	OK
		Humidity	90%RH			
		Time	120hrs			
		Condition	Supply voltage			
6	Vibration test	Condition	10～55Hz Amplitude:1.5mm, 1octave/min	Electrical characteristics in 7-1)	5	OK
		Test time	24times/direction, 3directions Round-trip sweep time: 5min			
7	Shock test	Condition	500G, 1sec	Electrical characteristics in 7-1)	5	OK
		Test time	3times/area total:18times			
8	ESD	Condition Test times	HBM: ±1000V 5times	Electrical characteristics in 7-1)	5	OK
			CDM: ±1000V 5times	Electrical characteristics in 7-1)	5	OK
9	Operational durability	Condition	3N pre-load, 20um stroke	Electrical characteristics in 7-1)	3	OK
		Test times	500k times			

9. Reference circuit information

Murata can provide reference circuit information.



10. Reference circuit Electrical Characteristics (T=25 °C)

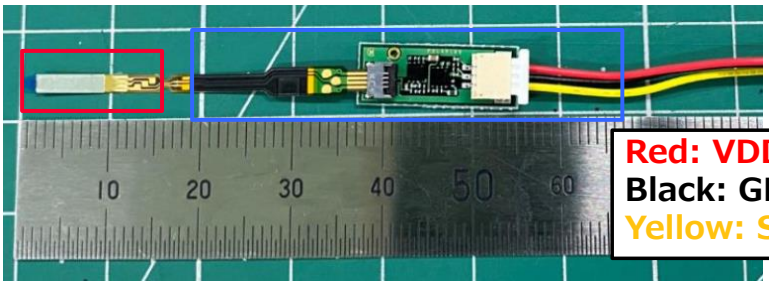
1) Power Supply specification

Parameter	Symbol	Min.	Typ.	Max.	unit
Operating voltage	V_{DD}		3.3		V

11. Measurement data

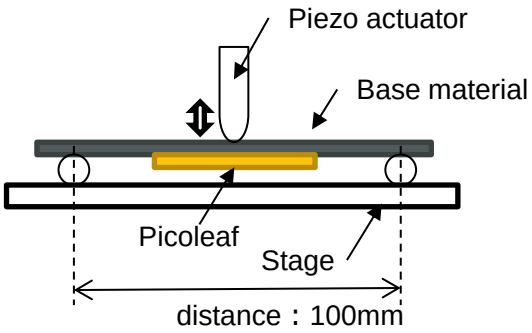
11.1 DUT: Picoleaf sensor sample kit

Sensor element **Evaluation kit (FPC Line, AMP circuit, cable)**



Red: VDD(3.3V)
Black: GND
Yellow: Signal→Oscilloscope

11.2 Evaluation condition



Test condition
Base material: SUS
Amplitude:20um
Frequency :5Hz
Pre-Load:5N

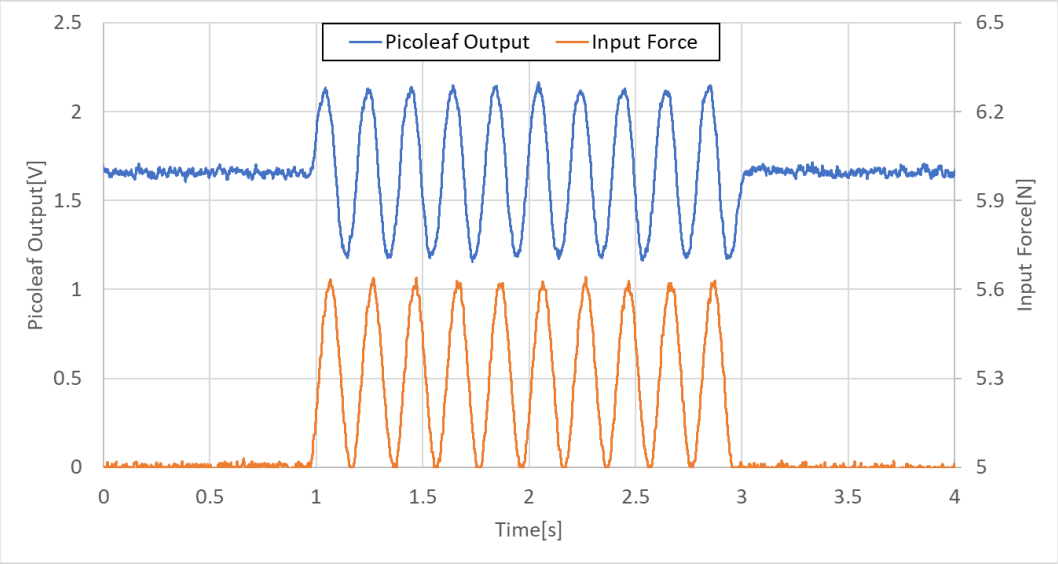
11.3 Evaluation result

Below figure shows Picoleaf Output signal.1.65 is base output which is defined by Vdd/2.

Picoleaf output value is changed depend on displacement direction.

Press timing: positive from 1.65V

Release timing: negative from 1.65V



Below table shows Output characteristics according to base material.

Base material	Vout_pp [Vpp]
SUS	1.5

12. Attachment procedure (reference)

-remove separator from sensor element

-attach to target area

-1 round trip by 2kg roller in room temperature condition

-curing time is over 1hour

Picoleaf output performance is different based on attachment condition and base material. Output value is defined by displacement of Picoleaf sensor area.

⚠Precautions for use

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   WE DISCLAIM ANY LOSS AND DAMAGES ARISING FROM OR IN CONNECTION WITH THE PRODUCTS INCLUDING BUT NOT LIMITED TO THE CASE SUCH LOSS AND DAMAGES CAUSED BY THE UNEXPECTED ACCIDENT, IN EVENT THAT (i) THE PRODUCT IS APPLIED FOR THE PURPOSE WHICH IS NOT SPECIFIED AS THE PARTICULAR APPLICATION FOR THE PRODUCT, AND/OR (ii) THE PRODUCT IS APPLIED FOR ANY FOLLOWING APPLICATION PURPOSES FROM (1) TO (11) (EXCEPT THAT SUCH APPLICATION PURPOSE IS UNAMBIGUOUSLY SPECIFIED AS PARTICULAR APPLICATION FOR THE PRODUCT IN OUR DATASHEET SPECIFICATION FORMS, DATASHEETS, OR OTHER DOCUMENTS OFFICIALLY ISSUED BY US**).
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   (4) Power plant control equipment (5) Medical equipment
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   (8) Disaster prevention/security equipment (9) Industrial data-processing equipment
   (10) Combustion/explosion control equipment
   (11) Equipment with complexity and/or required reliability equivalent to the applications listed in the above.
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   Contact form: https://www.murata.com/contactform

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