

**Preliminary**

Messrs. \_\_\_\_\_

## Shock Sensor Specification

Part No. : PSCE242K-R090C

RoHS Compliant

Halogen-Free Compliant

16. Dec. 2010

Approved by \_\_\_\_\_ Kazuki Shimizu \_\_\_\_\_

Checked by \_\_\_\_\_ Yasuhiro Nakai \_\_\_\_\_

Issued by \_\_\_\_\_ Akira Oikawa \_\_\_\_\_

**KYOCERA CORPORATION**

KYOCERA CORPORATION

Modification Table

No.	Date	Change	Apploved	Checked	Issued
00	16 <sup>th</sup> .Dec 2010	The first edition	Kazuki Shimizu	Yasuhiro Nakai	Akira Oikawa

Downloaded from [Elcodis.com](http://Elcodis.com) electronic components distributor

Preliminary

**1.Scope**

This specification shall cover the characteristics of the shock sensor.

**2.Kyocera's Type Name**

**PSCE242K-R090C**

**3.Customer's Type Name**

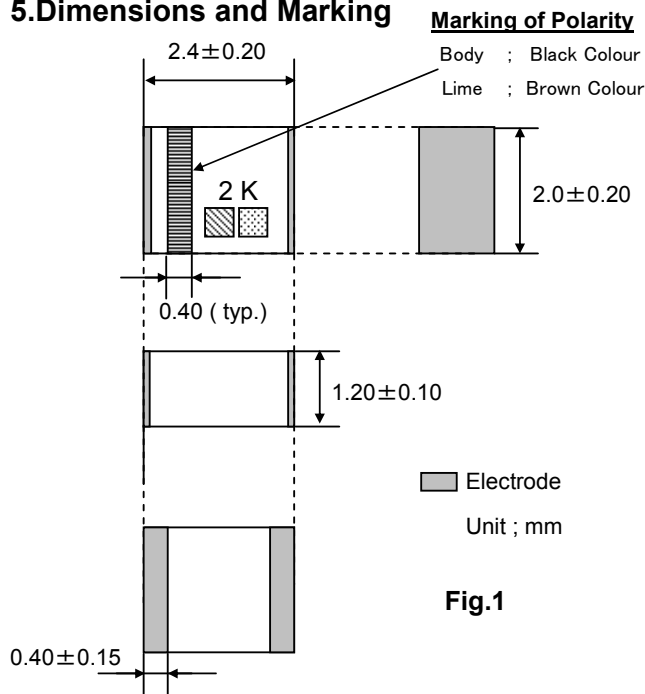
**4.Electrical Characteristics**

Items	Specifications
4-1 Primary Axis Inclined Angle	25 ± 3degree
4-2 Capacitance	315pF ± 30%, at 1Vrms, 1kHz
4-3 Charge Sensitivity	0.055pC/G ± 40 %, under vibration at 200Hz, 2G
4-4 Insulation Resistance	0.5Gohm minimum, at 10VDC(charging time 200msec)
4-5 Resonant Frequency	90.0 kHz ±20%
4-6 Non-linearity	5% maximum, under vibration at 25G
(Reference only) Voltage Sensitivity	0.175 mV/G, under vibration at 200Hz, 2G

<Measurement Condition>

The reference temperature shall be 25°C ± 5°C.

**5.Dimensions and Marking**



**Characteristic Spec**

- 2** : Initial Primary Axis Inclined Angle
- K** : Electrical Characteristics

**Manufacturing Day Code :**

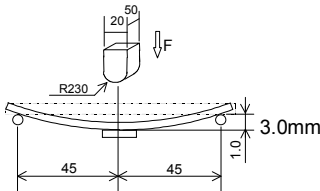
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Cade	A	B	C	D	E	F	G	H	J	K	
Day	11	12	13	14	15	16	17	18	19	20	
Cade	L	M	N	P	Q	R	S	T	U	V	
Day	21	22	23	24	25	26	27	28	29	30	31
Cade	W	X	Y	Z	a	b	c	d	e	f	g

**EIAJ Date Code :**

- 2009 Jan. ~ Dec. : A ~ M except "I"
- 2010 Jan. ~ Dec. : N ~ Z except "O"
- 2011 Jan. ~ Dec. : a ~ m except "i"
- 2012 Jan. ~ Dec. : n ~ z except "o"

Note : These alphabets should be repeated after Jan. 2013

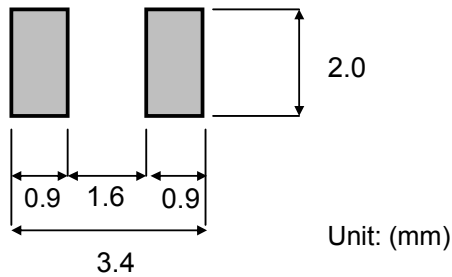
**6.Environmental Characteristics****Preliminary**

Items	Conditions
6-1.High Temperature Storage Test	Keep in a chamber at $85 \pm 2^{\circ}\text{C}$ for $1000 +12/-0$ hours, and then keep at room temperature for 1 hour. The characteristics of shock sensor shall meet the specifications.
6-2.Low Temperature Storage Test	Keep in a chamber at $-40 \pm 2^{\circ}\text{C}$ for $1000 +12/-0$ hours, and then keep at room temperature for 1 hour. The characteristics of shock sensor shall meet the specifications.
6-3.Moisture Resistance Test	Keep in a chamber at 90 to 95 % R.H. and $60 \pm 2^{\circ}\text{C}$ for $500 +12/-0$ hours, and then keep at room temperature for 1 hour. The characteristics of shock sensor shall meet the specifications.
6-4.Temperature Cycling Test	Apply 100 thermal cycles with the following temperatures: <ul style="list-style-type: none"> <li>- upper temperature <math>85^{\circ}\text{C}</math> for 20 minutes and transfer time 10 minutes</li> <li>- lower temperature <math>-40^{\circ}\text{C}</math> for 20 minutes and transfer time 10 minutes</li> <li>- total cycle time is 1hour</li> </ul> and then left at room temperature for 1 hour. The characteristics of shock sensor shall meet the specifications.
6-5.Mechanical Shock Test	After applying the acceleration at $29430\text{m}/\text{sec}^2$ {3000G} in each of X, Y and Z axis (each 3 times). The characteristics of shock sensor shall meet the specifications.
6-6.Solderability Test	At first, being soaked in the Methanol solution containing Rosin for 5 seconds and then being dipped in a bath of Pb/Sn solder at $250 \pm 5^{\circ}\text{C}$ for $4 \pm 0.5$ seconds. The surface of the electrode terminal shall be soldered more than 95%.
6-7.Resistance to Soldering Heat Test	Pre-heat temperature is 150 to $180^{\circ}\text{C}$ for 1 minute. High temperature is $250 \pm 5^{\circ}\text{C}$ , over $200^{\circ}\text{C}$ for 20 seconds max.(2times). Then keep at room temperature for 1 hour. The characteristics of shock sensor shall meet the specifications.
6-8.Board Flex Test	After soldered on the circuit board specified as below, then the load which cause 3 mm bend to the board is applied. The characteristics of shock sensor shall meet the specifications. The shock sensor cause no defect in the appearance. (Circuit Board: FR4, 100 x 40 x 1.6 ) <div style="text-align: center;">  </div>

**<Measurement Condition>**The reference temperature shall be  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ .

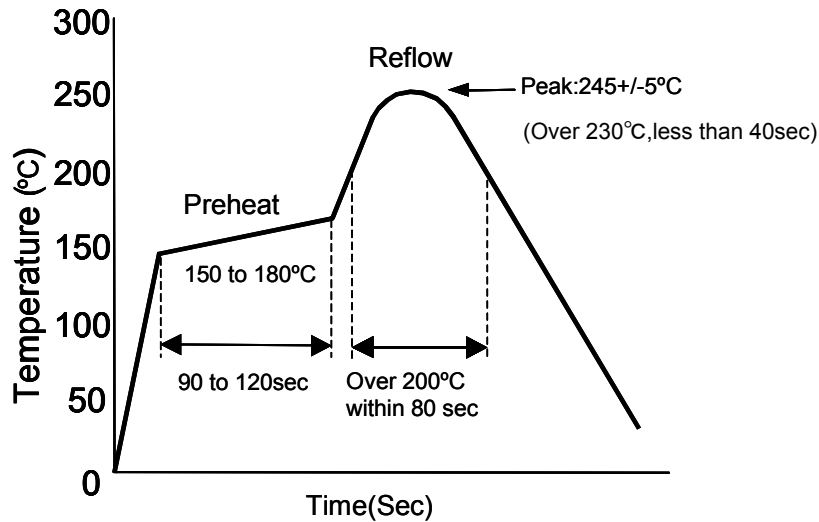
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**7. Recommended Land pattern**



**Fig.2 Recommended Land pattern**

**8. Recommended Convection Reflow profile**

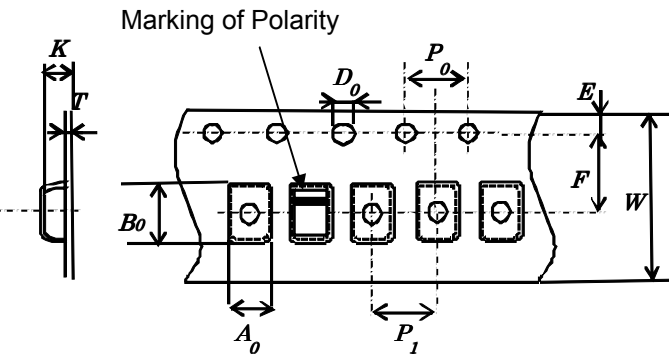


**Fig.3 Recommended Convection Reflow profile**

**9. Taping Specifications**

9-1. Carrier Tape

9-1-1. Dimensions



Sym bol	Dimensions	Sym bol	Dimensions
$A_0$	$2.3 \pm 0.1$	$P_0$	$4.0 \pm 0.1$
$B_0$	$2.7 \pm 0.1$	$P_1$	$4.0 \pm 0.1$
$W$	$12.0 \pm 0.2$	$D_0$	$1.5 +0.1/-0$
$E$	$1.75 \pm 0.1$	$K$	$1.5 \pm 0.1$
$F$	$5.5 \pm 0.1$	$T$	$0.3 \pm 0.1$

Unit: (mm)

**Fig.4 Emboss Carrier Tape Dimensions**

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9-2. Taping

9-2-1. Taping Quantity

One reel of the carrier tape shall pack 3000 pcs. Shock sensor shall be contained in pocket continuously.

9-2-2. Dimensions

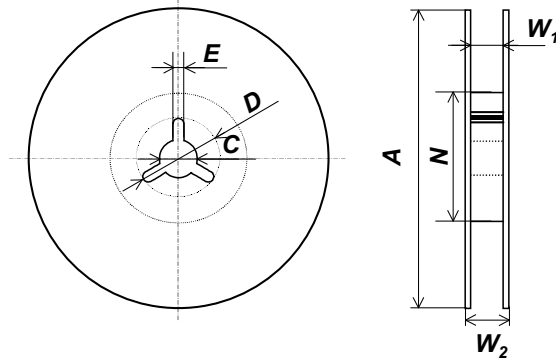


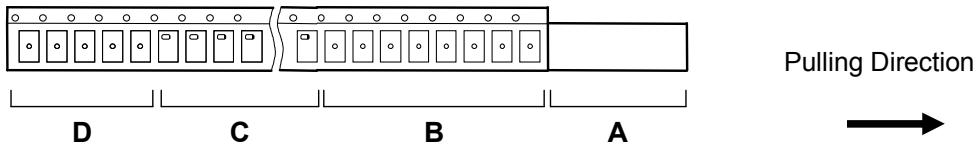
Fig.5 Reel

Unit: (mm)

Symbol	<b>A</b>	<b>N</b>	<b>W<sub>1</sub></b>	<b>W<sub>2</sub></b>
Dimensions	180±5.0	60min.	12.5 +2.0/-0.0	20.5 max.
Symbol	<b>C</b>	<b>D</b>	<b>E</b>	
Dimensions	13.0±0.2	21.0±0.8	2.0±0.5	

9-2-3. Leader and Blank Pocket

Package shall consist of leader, blank pocket and loaded pocket as follows. (fig.6)



- A) Leader
- B) Blank Pocket (160mm Min.)  
A+B: 400mm to 560mm
- C) Load Pocket
- D) Blank Pocket (40 to 190mm )

Fig.6 Packing Method

Peeling load of top tape shall be 0.1N {10gf} to 0.7N {70gf} from Carrier Tape.

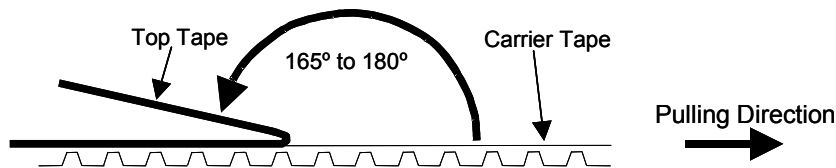


Fig.7 Peeling Strength

**9-2-4. Reel label****Preliminary**

A reel label shall be contained as below: (Based on EIAJ C-3 format)

- A) Customer P/N
- B) Lot No.
- C) Quantity
- D) Shipping date
- E) Vender Name

**9-2-5. Exterior Package label**

Shock sensor shall be packed properly to avoid defect in transportation and the marking of exterior package shall be contained as below:

- A) Name of Customer
- B) P/O No.
- C) Customer P/N
- D) Lot No.
- E) Quantity
- F) Shipping Date

**10. The agreement of this specifications**

Should any part of the content of this specification become questionable, it shall be settled by mutual deliberations.

**11. Caution for handling**

- A) Shock and or vibration to piece parts shall not be exceed the defined specification.
- B) This parts cannot washing and cleaning after soldering process.
- C) Maximum temperature is 280 degree.
- D) Notes in soldering

Solder iron temp:  $350 \pm 10$  degrees C

Heat time:Max 3 seconds (Accumulated time)

- Please take care of solder iron not to attach products directly.
- Please use new product attached no solder when you rework.

**12.RoHS Compliant**

- A) Sensor Case: Epoxy resin
- B) Terminal: Ag paste (thickness 30 um)  
Plating: Ni(2um), Sn(5 um)
- C) Element: Piezo Ceramic, contains lead-oxide, however, piezo-electronic devices are exempted from RoHS compliant requirement of article 4(1).  
(Refer to Annex, Section 7)

**All materials meet to RoHS Compliant.**

**13. Halogen-Free Compliant****Preliminary**

- A) Bromine(Br) <900ppm(0.09%)
- B) Chlorine(Cl) <900ppm(0.09%)
- C) Total concentration of Chlorine(Cl) + Bromine(Br) < 1500ppm(0.15%)
- D) Antimony Trioxide(Sb<sub>2</sub>O<sub>3</sub>) <1000ppm(0.1%)
- E) Red Phosphorus <1000ppm(0.1%)

**All materials meet to Halogen-Free Compliant.**

**14. Others**

**There is a possibility of changing the specification by the result of review in the future.**