

SPECIFICATION

Coin type POLYACENE CAPACITOR

PAS311HR-series

1. SCOPE

This document applies to Polyacene Capacitors PAS311HR series submitted by TAIYO YUDEN CO.,LTD.

2. DESIGNATION

The capacitor defined in this document is:

POLYACENE CAPACITOR PAS311HR series

Product Number:

1. PAS311HR-VA6R
2. PAS311HR-VG1

3. NOMINAL CHARACTERISTICS

	Characteristics		Nominal Value
1	Usable Temperature Range (°C)		-20~+60
2	Usable Voltage(V)		3.3
3	Capacity	(μAh)	10
		(F)	0.03
4	Internal Resistance(Ω)		130
5	Dimensions (Bulk Cell)	Diameter(mm)	3.8
		Height(mm)	1.1
6	Weight (Bulk Cell)(g)		0.035
7	Recommended Storage conditions	Temperature(°C)	+10~+30
		Humidity(%RH)	60 or less

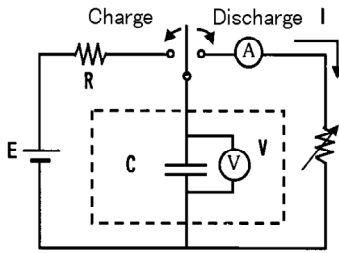
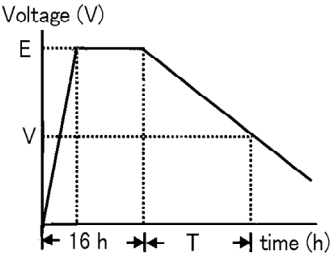
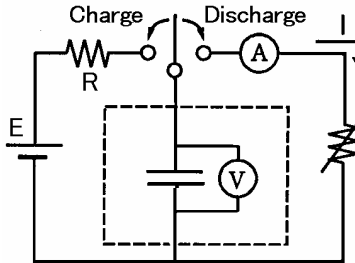
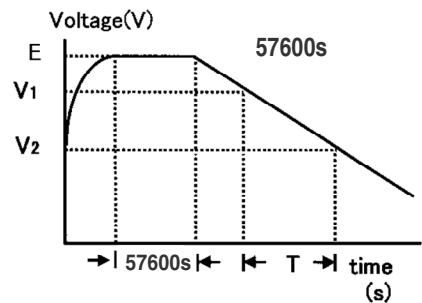
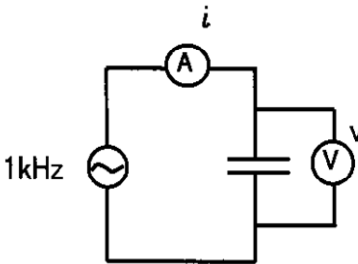
4. SPECIFICATIONS

	Items		Specifications	Test Conditions
1	Usable Temperature Range (°C)		-20 ~ +60	
2	Usable Voltage(V)		3.3	Within the range of usable temperature
3	Initial Capacity	(μAh)	Over 6	Test method “5-A”
	Initial Capacitance	(F)	Over 0.02	Test method “5-a”
4	Initial Internal Resistance(Ω)		Under 500	Test method “5-B”
5	Maximum Discharge current (μA)		10	
6	Initial Characteristics after Reflow	Capacity	Within initial spec.	Conduct reflow soldering under Test Condition “6-A”, and return to normal temperature and humidity. * conduct the reflow in the condition of the voltage of 0.3V or lower.
7	Temperature Characteristics	-20°C	Capacity	Over 50% of initial spec.
		60°C	Capacity	Over 90% of initial spec.
8	Floating Charge Characteristics	Capacity	Over 70% of initial spec.	Temperature:60±2°C Apply a voltage of 3.3V to the capacitor for 500 hours, and measure the floating charge characteristics after returning to normal temperature and humidity.
9	Charge/Discharge Cycle characteristics	Capacity	Over 50% of initial spec.	Temperature:25±5°C Charge/Discharge Cycle:10,000 times Charge: Apply a constant Voltage of 3.3V through resistance 3KΩ for 12min. Discharge: constant resistance of 3KΩ for 3min.
10	Thermal Durability	Capacity	Over 80% of initial spec.	Leave the capacitor in an atmosphere of +85±2°C and -30±2°C consecutively for 96 hours each, and return to normal temperature and humidity.
11	Humidity Durability	Capacity	Over 80% of initial spec.	Temperature:40±2°C Humidity:90~95%RH Leave the capacitor for 96 hours, and return to normal temperature and humidity.
12	Vibration Resistance		No exterior abnormality observed ; initial spec values retained.	Apply a sine wave vibration of 1.5mm amplitude and frequency 10~55Hz, for 2 hours per each direction (X, Y and Z), total 6 hours.
13	Appearance	Initial	No leakage or deformation; soiling; rust; burr in appearance, which is harmful for performance.	Naked eye Boundary samples are prepared as needed.
		After Test	No significant leakage or noticeable abnormality in appearance, which is harmful for performance.	Naked eye Item : 6,8,9,10,11 Boundary samples are prepared as needed.
14	Terminal Strength		No noticeable change in the welded portion; initial spec values retained.	Apply 4.9N of tensile strength to the terminal in the direction of pull-out axis continuously for 10±1 seconds.
15	Outer Dimensions		See in drawings.	-

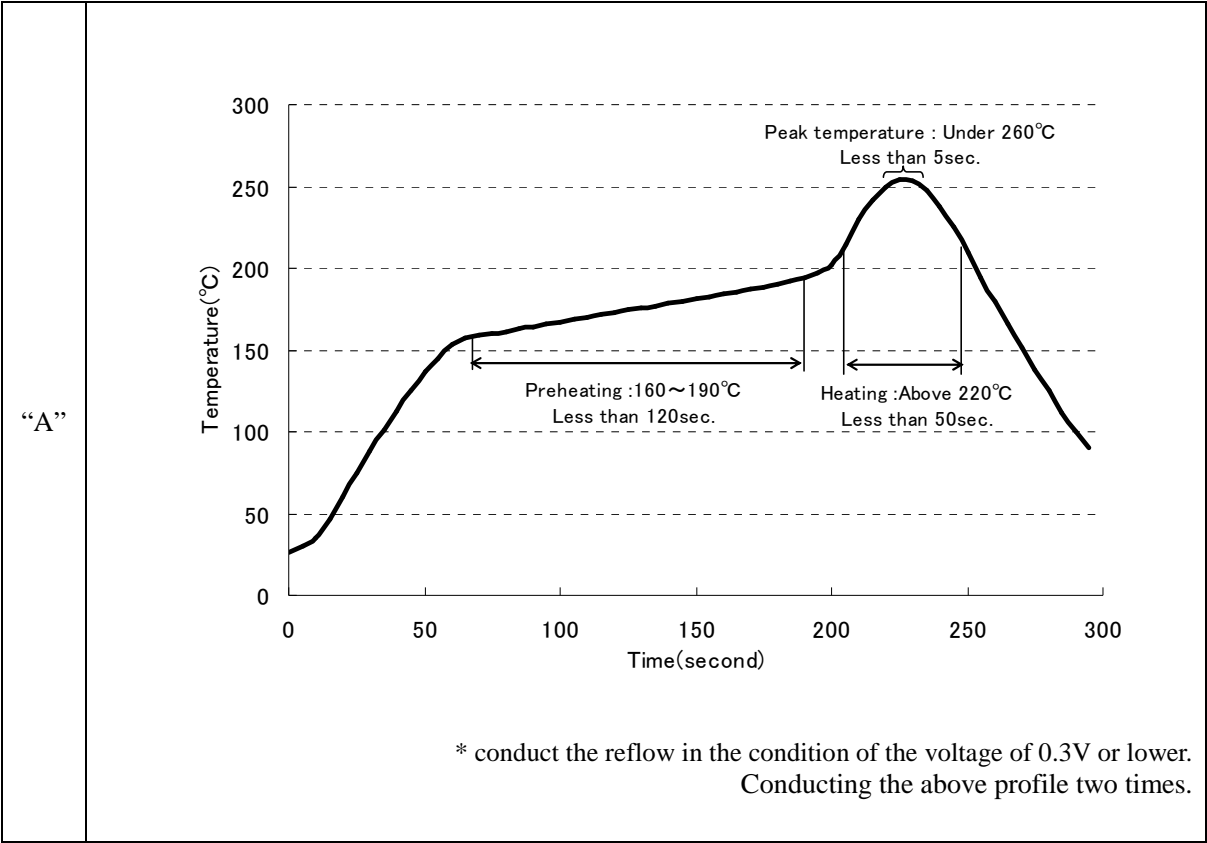
Note:

- 1.Unless otherwise stated, all tests are conducted under normal temperature (25±5°C) and normal humidity (60±20%RH) conditions.
- 2.The following measuring instruments are used.
DC Voltmeter : JIS (C1102) Class 0.5 or higher, with an impedance of 10MΩ or more.

5. TEST METHOD

		Test Conditions
"A"	Capacity	<div></div> <div></div> <div>$E = 3.3V$$R = 100\Omega$$I = 10\mu A$$V = 2.0V$$\text{Capacity}(\mu Ah) = I(\mu A) \times T(h)$</div>
"a"	Capacitance	<div></div> <div></div> <div>$E = 3.3V$$R = 100\Omega$$I = 10\mu A$$V1 = 3.0V$$V2 = 2.0V$$\text{Capacitance (F)} = \frac{I(A) \times T(S)}{V1 - V2}$</div>
"B"	Resistance	<div></div> <div>$i = \sim 1mA(A.C)$$\text{AC internal resistance } 0V$$Ri = \frac{v}{i} (\Omega)$</div>

6. REFLOW SOLDERING TEST CONDITION



7. SHIPPING INSPECTION

Item	Specification	Test Method	Acceptance Standard
Capacity	Over 6 μ Ah	Test Method "5-A"	n = 20, k = 2.44 Complies with JIS Z 9003
Internal Resistance	Under 500 Ω	Test Method "5-B"	n = 20, k = 2.44 Complies with JIS Z 9003

8. INSCRIPTION

The following inscriptions are imprinted on the cell.

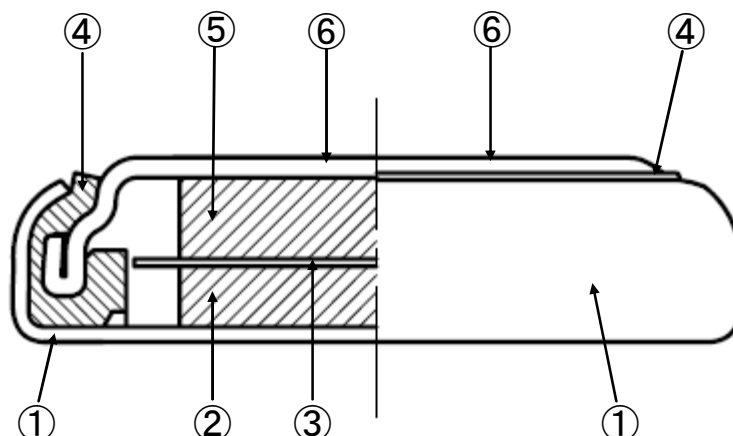
- 1: Model Code.....3 1 H
- 2: Plus Sign.....+

Production lot is written on the side of the cell in the following manner.

[Example]

- 01□.....Manufactured in 201 0 ,January(1)
- 12□.....Manufactured in 201 1 , February(2)
- 20□.....Manufactured in 201 2 , October(10)
- 3Y□.....Manufactured in 201 3 , November(Y)
- 4Z□.....Manufactured in 201 4 , December(Z)
- *□: sub-lot in alphabetical order. (A, B, C..... Z)
- and followed by sub-lot in numerical order (1, 2, 3..... 9)

9. Cell COMPONENT



No.	Parts Name	Material	Remark
①	Positive Can	SUS316L	Ni coated outer surface
②	Positive Electrode	PAS and others	
③	Separator	Glass fiber and others	
④	Gasket	Engineering plastics	
⑤	Negative Electrode	PAS and others	
⑥	Negative Top	SUS304	Ni coated outer surface
-	Electrolyte	Organic electrolyte	impregnated electrode and separator

10. PACKING

Packing is entrusted to the manufacturer as long as quality is unimpaired.

11. RoHS compliance

This product conforms to “RoHS compliance”.

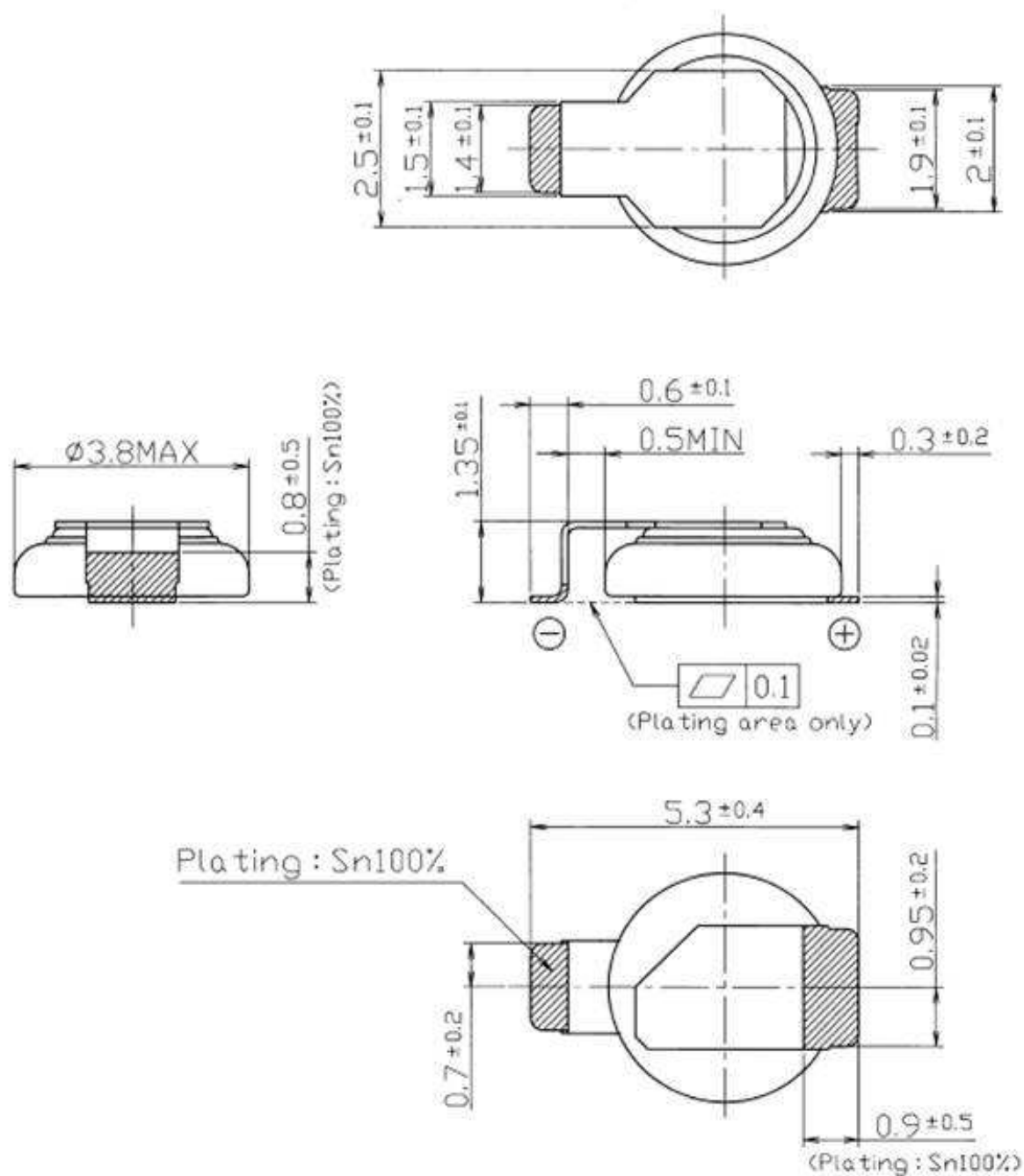
12. TREATMENT OF THIS DOCUMENT

- (1) Any amendment or modification requires the agreement of both parties.
- (2) If problems occur with anything not stipulated in this document both parties shall discuss and settle matter in good faith.

13. GUARANTEE

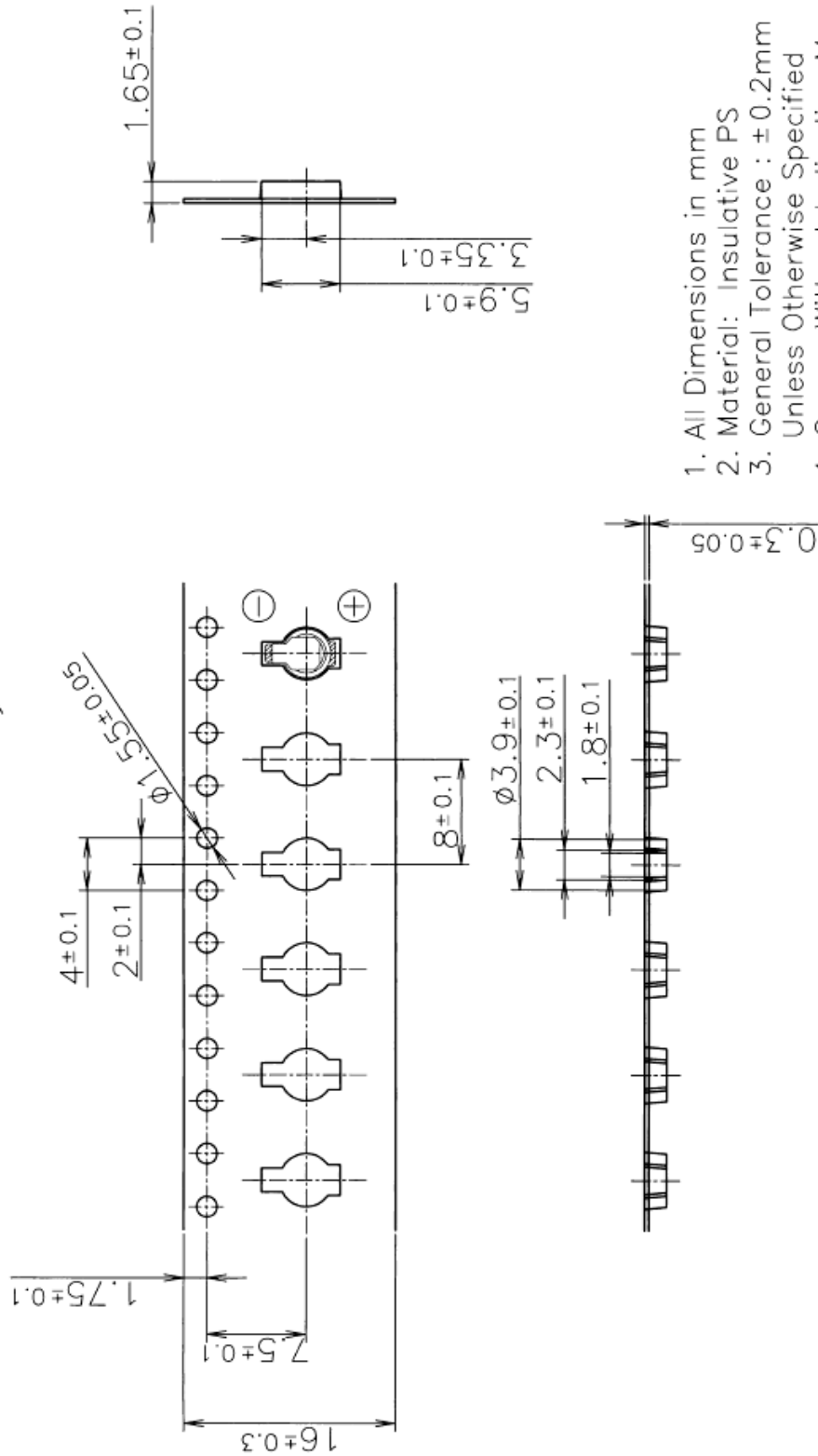
The operating conditions for the guarantee of this product are as shown in the drawing for specification.

Please note that Taiyo Yuden Co.,Ltd. shall not be responsible for a failure and/or abnormality which is caused by use under conditions other than the aforesaid operating conditions.



			General tolerances		Designed	Drawing Title	
▲			1.5 - 6	±0.1	Y. Masuzawa	Polyacene Capacitor	
			6 - 30	±0.2	Checked	PAS311HR-VA6R	
			30 - 120	±0.3	Approved	Drawing No.	
			120 - 400	±0.5	Date	CP01-1099-HR0311VA6R	
			400 - 1000	±0.8	2010.02.01	Ver.	
Remark	Update	Approved			Scale	10/1	TAIYO YUDEN Co.,Ltd.

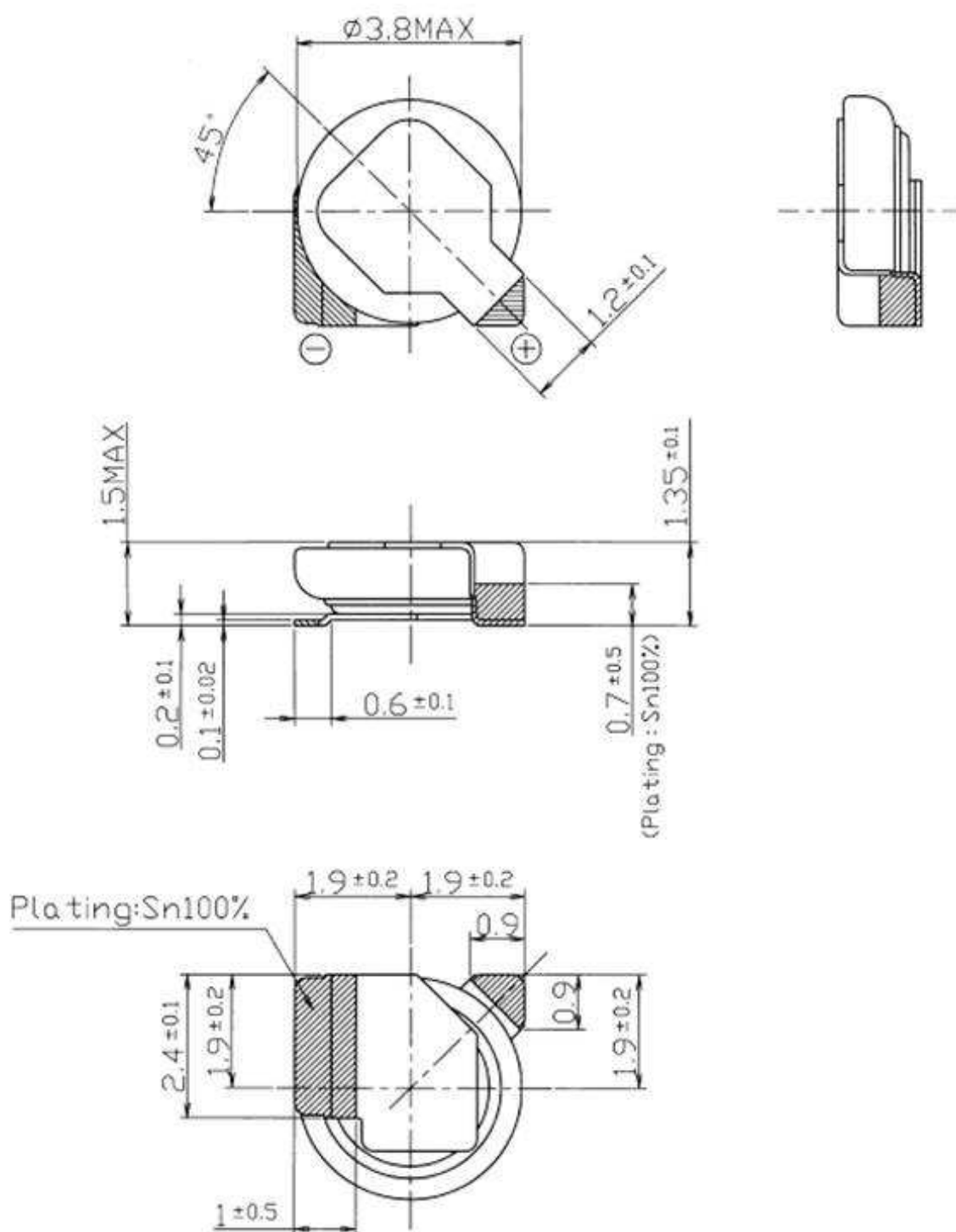
feeding direction



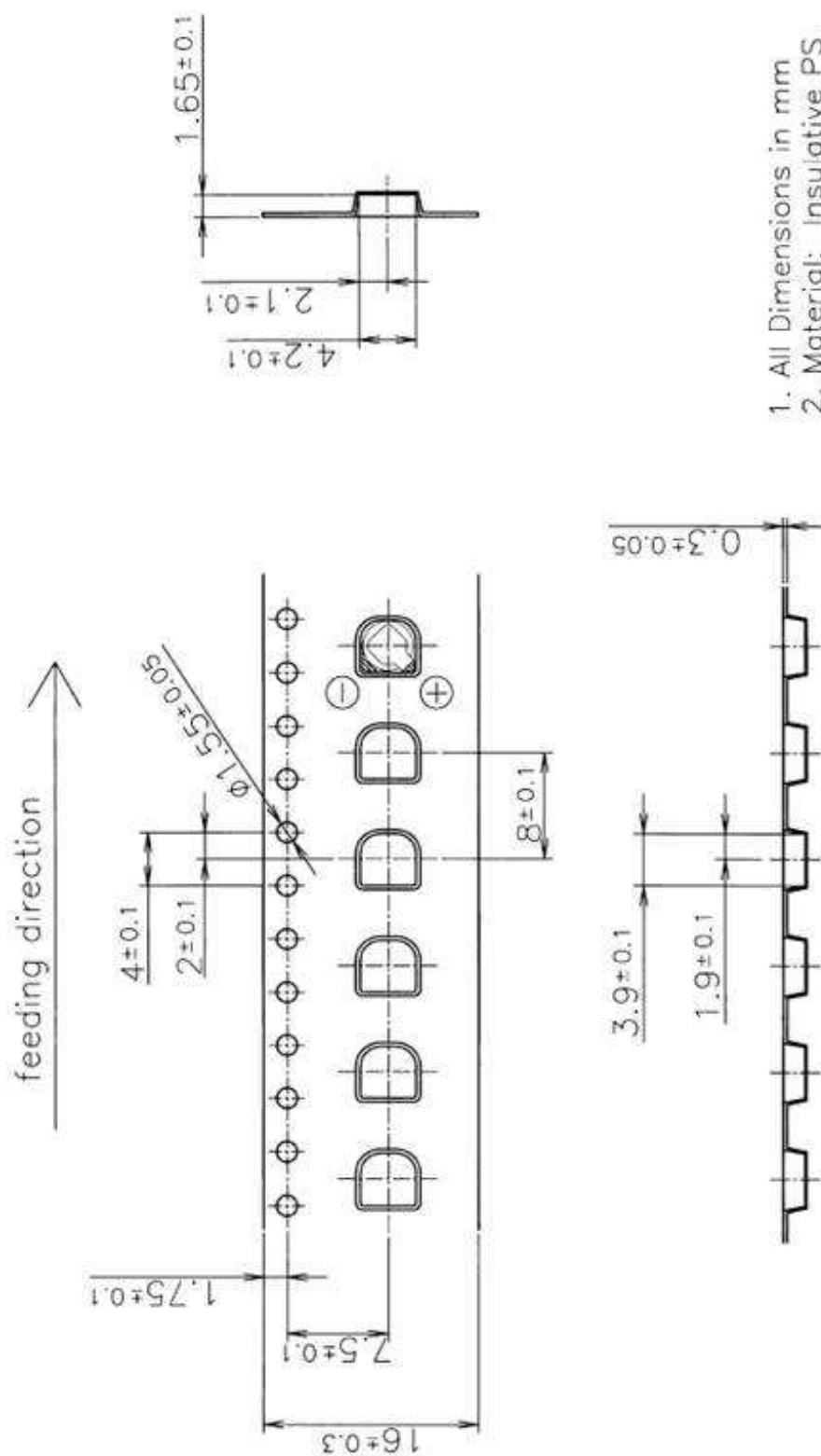
1. All Dimensions in mm
2. Material: Insulative PS
3. General Tolerance : ± 0.2 mm
Unless Otherwise Specified
4. Corner Without Indication Max Radius 0.5

Drawing Title		Drawing No.	
Carrier Tape PAS311-VA6R		CP01-6042-CTS0311VA6R	Ver. 2.0
	Scale	2/1	
	Scale	2/1	
Remark	Update	Approved	Date
		Y. Masuzawa	2010.02.01
		Checked <i>[Signature]</i>	
		Approved <i>[Signature]</i>	

TAIYO YUDEN Co.,Ltd.

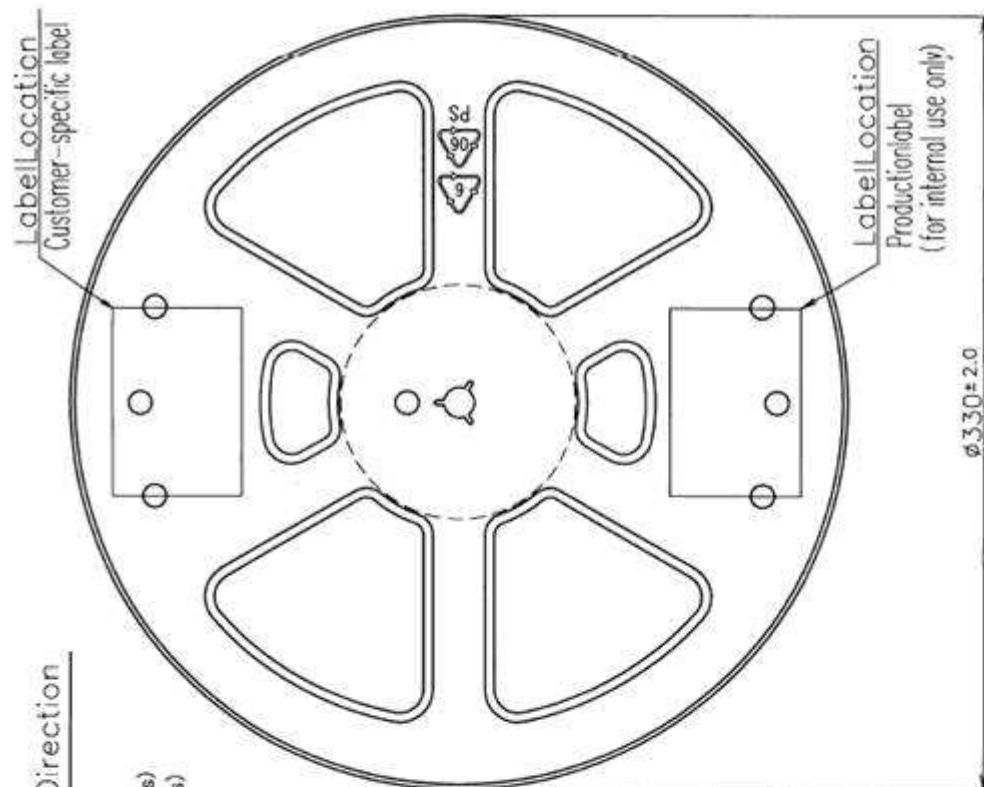
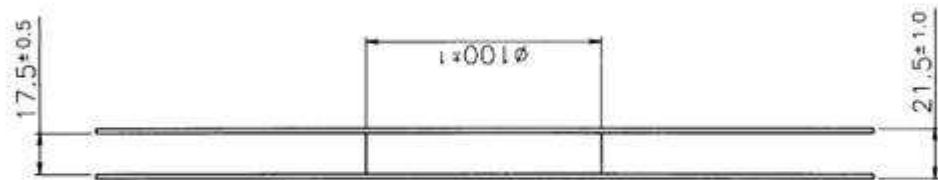


			General tolerances		Designed	Drawing Title	
▲			15 - 6	±0.1	Y.Masuzawa	Polyacene Capacitor	
▲			6 - 30	±0.2	Checked <i>Y. Saito</i>	PAS311-VG1	
▲			30 - 120	±0.3	Approved <i>Y. Saito</i>	Drawing No.	
▲			120 - 400	±0.5	Date	2010.02.01	Ver.
▲			400 - 1000	±0.8		CP01-1104-0311VG1	3.0
Remark			Update	Approved	Scale	TAIYO YUDEN Co.,Ltd.	



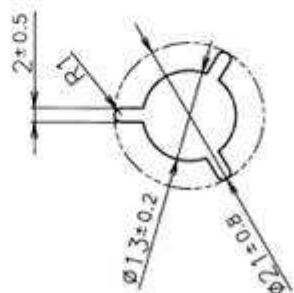
1. All Dimensions in mm
2. Material: Insulative PS
3. General Tolerance : ± 0.2 mm
Unless Otherwise Specified
4. Corner Without Indication Max Radius 0.5

[illegible]



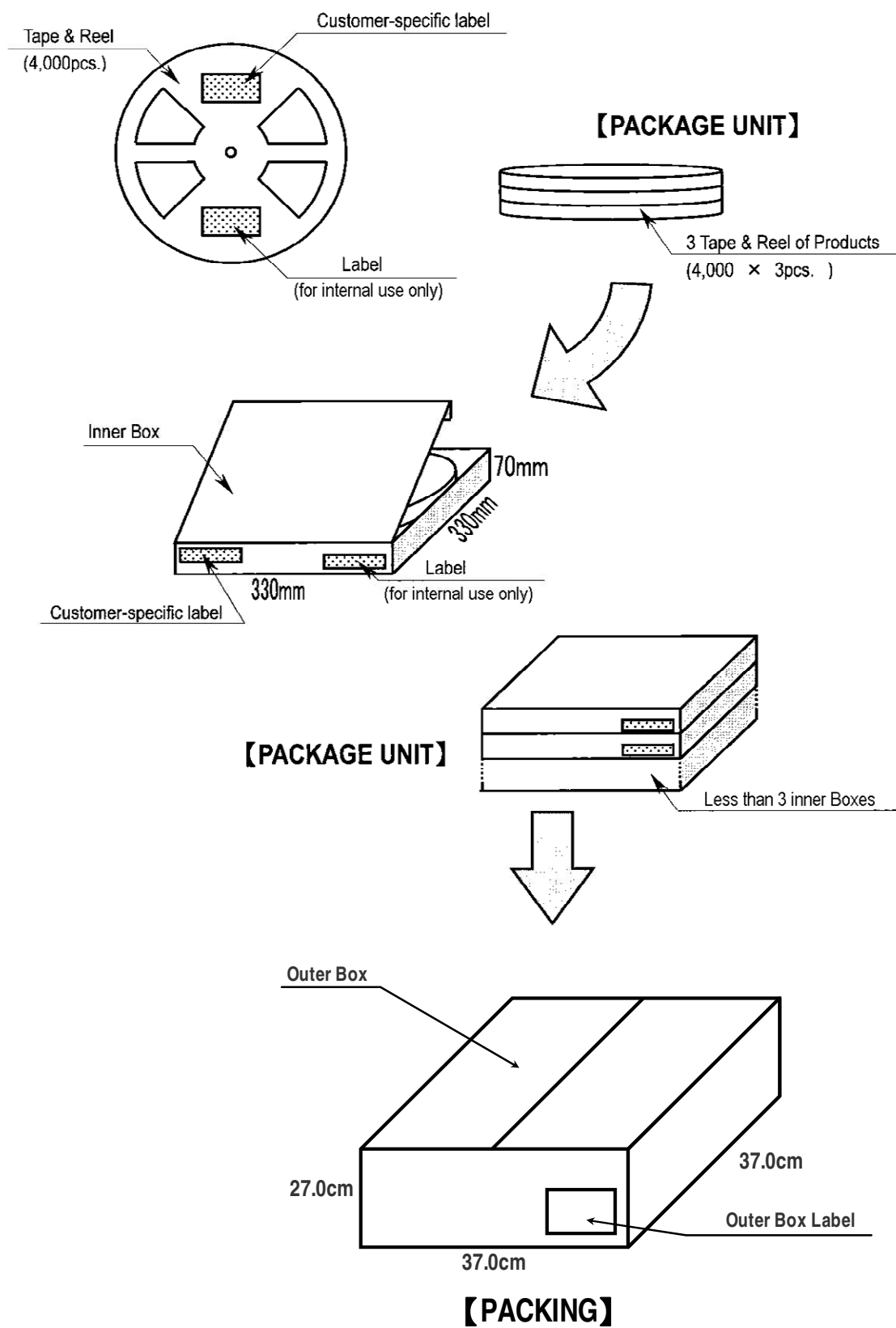
Feeding Direction

Leader Section: 416mm (52 empty pockets)
Trailer Section: 200mm (25 empty pockets)
Quantity / package (reel): 4000



Centerpiece of the Reel (X1)

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Precautions

1. Use under the maximum usable voltage

If over maximum usable voltage is applied, it might cause abnormal current flow, which shorten lifetime and sometimes damage PAS capacitor

2. Use under maximum operating temperature

Not only shorter life time but also leakage and damage will happen by increasing internal pressure if PAS capacitor use in over max operating temperature.

3. Limited life time

Lifetime of PAS capacitor is greatly affected by surrounding temperature. 10°C drop in temperature extend its expected lifetime approximately twice as much. Design a circuit under consideration of deterioration of electrical characteristics after long time usage, decreasing in capacitance and increasing in internal resistance.

4. The electrical characteristics of capacitors vary with respect to temperature

The electrical characteristics of PAS capacitors temporarily vary with respect to temperature separately from secular change mentioned above. Design a circuit under consideration of temperature characteristics.

5. PAS capacitor has polarity

PAS capacitor has polarity. Please check the polarity before use. It will be damage if it is reverse charged.

6. Pay sufficient attention to use PAS capacitor in circuit with high ripple current or that requires rapid and very frequent charge / discharge

In circuit with high ripple current or that requires rapid and very frequent charge / discharge, the lifetime of PAS capacitors might be shortened by self-heating. Please consult us in case of using PAS capacitor in such circuit.

7. Mind voltage drop when back-up

When back-up (discharging) starts, voltage drop because of active current and internal resistance.

Consult us about if current is over 10μA for 311type, over 20μA for 414/409 and over 50μA for 614.

8. Series connection

In case of using PAS capacitor in series connection, the voltage of each capacitor is not always equal and it may be occurred excessive voltage in a part of capacitor, which may lead to shortening lifetime and breakdown. Take a margin against a rated voltage or add a balancing resistor. Consult us about using PAS capacitor in series connection.

9. Don't contact with wiring pattern during installing

If PAS capacitor contact with wiring pattern, it will be short circuit, and if there is wiring pattern underneath of PAS capacitor, short circuit would occur by damage of resist.

10. Environmental of usage

In case PAS capacitor is used in high humidity, alkaline or acid air, it may cause deteriorating of its performance and short circuit by corrosion of outer can or lead terminal. In addition, used in sudden temperature change or high humidity, it may cause deteriorating of its performance and leakage by dew condensation.

11. Don't apply vibration.

If excessive vibration is applied, soldering part might be broken or lead terminal part might be damaged.

12. Precaution of soldering

Don't solder over solder conditions in the spec. sheet.

Don't charge/discharge before reflow

Consult us if other reflow condition is required.

13. Consult us about cleaning condition when cleaning circuit-board after soldering

Cleaning may affect PAS capacitor. Consult us about cleaning conditions beforehand. Some cleaning conditions cause detrimental influence.

14. Storage

Keep following cautions for storage of PAS capacitor

- Don't store in the high temperature and the high humidity condition and a place where receiving direct sunlight. Storing PAS capacitor in the room condition of 5 °C - 35 °C temperature and 60% relative humidity is recommended. Sudden temperature change or high humidity may cause deteriorating of its characteristics and Soldering.
- Don't store PAS capacitor near water, salt water or oil, and in the dew condensation, gasified oil or salinity filled place.
- Don't store PAS capacitor in the hazardous gas (hydrogen sulfide, sulfurous, ammonia, bromine, methyl bromine and etc) .
- Don't fumigate by halogen fumigant.
- Don't store PAS capacitor near acid or alkaline solvent.
- Don't store PAS capacitor in a place where exposed to ozone, ultraviolet or x-ray.
- Don't store PAS capacitor in a place where vibration and shock might occur in.

15. Disposal

Dispose PAS capacitor in accordance with local and country rules and regulations.

16. Usage

PAS capacitor is produced for usage of information & communication equipment, home electronics, audio & visual equipment and etc. Consult us about using high reliability and safety required products such as medical equipment, transportation equipment, industrial equipment, flight / space equipment and emergency equipment.

17. Other Notice

Don't heat or throw PAS capacitor into fire.

Don't short.

Don't solder directly to a cell body.

Don't open a body.

Don't apply pressure.

※Please see JEITA RCR-2370C for details.

JEITA RCR-2370C

「Safety application guide of electric double layer capacitor (EDLC)(Directions guideline of electric double layer capacitor)」

〔Corporation Electronic Industries Association of Japan.

Enactment in March 1995 and revision in July 2008〕