

Notice for TAIYO YUDEN products

Please read this notice before using the TAIYO YUDEN products.

REMINDERS

- Product information in this catalog is as of October 2016. All of the contents specified herein are subject to change without notice due to technical improvements, etc. Therefore, please check for the latest information carefully before practical application or use of our products.

Please note that TAIYO YUDEN shall not be in any way responsible for any damages and defects in products or equipment incorporating our products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact TAIYO YUDEN for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of our products in actual condition of mounting and operating environment before using our products.

- The products listed in this catalog are intended for use in general electronic equipment (e.g., AV equipment, OA equipment, home electric appliances, office equipment, information and communication equipment including, without limitation, mobile phone, and PC). Please be sure to contact TAIYO YUDEN for further information before using the products for any equipment which may directly cause loss of human life or bodily injury (e.g., transportation equipment including, without limitation, automotive powertrain control system, train control system, and ship control system, traffic signal equipment, disaster prevention equipment, medical equipment, highly public information network equipment including, without limitation, telephone exchange, and base station).

Please do not incorporate our products into any equipment requiring high levels of safety and/or reliability (e.g., aerospace equipment, aviation equipment, nuclear control equipment, undersea equipment, military equipment).

When our products are used even for high safety and/or reliability-required devices or circuits of general electronic equipment, it is strongly recommended to perform a thorough safety evaluation prior to use of our products and to install a protection circuit as necessary.

Please note that unless you obtain prior written consent of TAIYO YUDEN, TAIYO YUDEN shall not be in any way responsible for any damages incurred by you or third parties arising from use of the products listed in this catalog for any equipment requiring inquiry to TAIYO YUDEN or prohibited for use by TAIYO YUDEN as described above.

- Please note that TAIYO YUDEN shall have no responsibility for any controversies or disputes that may occur in connection with a third party's intellectual property rights and other related rights arising from use of our products. TAIYO YUDEN grants no license for such rights.
- Please note that unless otherwise agreed in writing, the scope of warranty for our products is limited to the delivered our products themselves and TAIYO YUDEN shall not be in any way responsible for any damages resulting from a fault or defect in our products.
- The contents of this catalog are applicable to our products which are purchased from our sales offices or authorized distributors (hereinafter "TAIYO YUDEN's official sales channel"). Please note that the contents of this catalog are not applicable to our products purchased from any seller other than TAIYO YUDEN's official sales channel.

■ Caution for Export

Some of our products listed in this catalog may require specific procedures for export according to "U.S. Export Administration Regulations", "Foreign Exchange and Foreign Trade Control Law" of Japan, and other applicable regulations. Should you have any questions on this matter, please contact our sales staff.

CYLINDER TYPE POLYACENE CAPACITORS



PARTS NUMBER

P	A	S	0	8	1	5	L	S	2	R	5	1	0	5
①	②	③	④	⑤	⑥									

① Series name

Code	Series name
PAS	Polyacene capacitor

② Dimensions (φD)

Code	Dimensions (φD) [mm]
08	8
10	10
12	12.5

③ Dimensions (L)

Code	Dimensions (L) [mm]
15	15
16	16
20	20
30	30
35	35

④ Characteristics spec

Code	Characteristics spec
LS	Low ESR type
LN	High Reliability type
LA	High Voltage type

⑤ Maximum usable voltage

Code	Maximum usable voltage [V]
2R3	2.3
2R5	2.5
2R7	2.7
3R0	3.0

※R=Decimal point

⑥ Nominal capacitance

Code (example)	Nominal capacitance [F]
105	$10 \times 10^5 \mu F = 1F$
5	5
206	$20 \times 10^6 \mu F = 20F$

EXTERNAL DIMENSIONS



Characteristics spec	Part number	φD	L	φd	P
Low ESR type (LS series)	PAS0815LS2R5105	8	15	0.6	3.5
	PAS1016LS2R5205	10	16	0.6	5.0
High Reliability type (LN Series)	PAS0815LN2R7205	8	15	0.6	3.5
	PAS1020LN2R7405	10	20	0.6	5.0
	PAS1030LN2R7705	10	30	0.6	5.0
	PAS1030LN2R7905	10	30	0.6	5.0
	PAS1220LN2R7905	12.5	20	0.6	5.0
	PAS1235LN2R7206	12.5	35	0.6	5.0
High Voltage Type (LA Series)	PAS1020LA2R3475	10	20	0.6	5.0
	PAS1020LA3R0405	10	20	0.6	5.0
	PAS1220LA3R0905	12.5	20	0.6	5.0
	PAS1235LA3R0206	12.5	35	0.6	5.0

Unit: mm

PARTS NUMBER

Characteristics spec	Part number	Maximum usable voltage [V]	Nominal capacitance [F]	ESR@1KHz [mΩ]
Low ESR type (LS series)	PAS0815LS2R5105	2.5	1	70
	PAS1016LS2R5205	2.5	2	50
High Reliability type (LN Series)	PAS0815LN2R7205	2.7	2	180
	PAS1020LN2R7405	2.7	4	100
	PAS1030LN2R7705	2.7	7	80
	PAS1030LN2R7905	2.7	9	80
	PAS1220LN2R7905	2.7	9	60
	PAS1235LN2R7206	2.7	20	50
High Voltage Type (LA Series)	PAS1020LA2R3475	2.3	4.7	300
	PAS1020LA3R0405	3.0	4	300
	PAS1220LA3R0905	3.0	9	200
	PAS1235LA3R0206	3.0	20	100

► This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our website (<http://www.ty-top.com/>).

【LS series】

Part number	Operating temp. range [°C]	Maximum usable voltage [V]	Initial capacitance [F]	Initial ESR@1KHz [Ω]	Temperature characteristics
PAS0815LS2R5105	-25~+70	2.5	1.0±20%	Under 70	Lowest temperature (-25°C) Capacitance: Over 70% of initial spec. Internal resistance: Within 4 times of initial spec. Highest temperature (70°C) Capacitance: Within initial spec. Internal resistance: Within initial spec.
PAS1016LS2R5205	-25~+70	2.5	2.0±20%	Under 50	

【LN series】

Part number	Operating temp. range [°C]	Maximum usable voltage [V]	Initial capacitance [F]	Initial ESR@1KHz [m Ω]	Temperature characteristics
PAS0815LN2R7205	-40~+70 -40~+85	2.7 2.3	2.0±20%	Under 180	Lowest temperature (-40°C) Capacitance: Over 70% of initial spec. Internal resistance: Within 4 times of initial spec. Highest temperature (70°C/85°C) Capacitance: Within initial spec. Internal resistance: Within initial spec.
PAS1020LN2R7405	-40~+70 -40~+85	2.7 2.3	4.0±20%	Under 100	
PAS1030LN2R7705	-40~+70 -40~+85	2.7 2.3	7.0±20%	Under 80	
PAS1030LN2R7905	-40~+70 -40~+85	2.7 2.3	9.0±20%	Under 80	
PAS1220LN2R7905	-40~+70 -40~+85	2.7 2.3	9.0±20%	Under 60	
PAS1235LN2R7206	-40~+70 -40~+85	2.7 2.3	20±20%	Under 50	

【LA series】

Part number	Operating temp. range [°C]	Maximum usable voltage [V]	Initial capacitance [F]	Initial ESR@1KHz [m Ω]	Temperature characteristics
PAS1020LA2R3475	-25~+60	2.3	4.7±20%	Under 300	Lowest temperature (-25°C) Capacitance: Over 70% of initial spec. Internal resistance: Within 4 times of initial spec. Highest temperature (60°C/70°C) Capacitance: Within initial spec. Internal resistance: Within initial spec. Highest temperature (85°C) Capacitance: Over 90% of initial spec. Internal resistance: Within initial spec.
PAS1020LA3R0405	-25~+60	3.0	4.0±20%	Under 300	
	-25~+70 -25~+85	2.7 2.3			
PAS1220LA3R0905	-25~+60	3.0	9.0±20%	Under 200	
	-25~+70	2.7			
	-25~+85	2.3			
PAS1235LA3R0206	-25~+60	3.0	20±20%	Under 100	
	-25~+70	2.7			
	-25~+85	2.3			

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RELIABILITY DATA

Items	Specified value			Test methods and remark
	LS series	LN series	LA series	
1. Operating temperature range	-25~+70°C	-40~+70 / +85°C	-25~+60 / +70 / +85°C	
2. Maximum usable voltage	2.5V	2.7V / 2.3V	3.0V / 2.7V / 2.3V	
3.Soldering	Capacitance: Within initial spec. Internal resistance: Within initial spec. Appearance: No noticeable abnormality			Material: Sn-3Ag-0.5Cu Solder temperature: 260±5°C Dipping time: 10±1 sec. Dipping depth: 1.5~2mm from cell body
4.Floating charge characteristics	Capacitance: Over 70% of initial spec. Internal resistance: Within 4 times of initial spec. Appearance: No noticeable abnormality			Apply a max. usable voltage to capacitor for 1000 hours at max. operating temperature and measure the floating charge characteristics after returning to normal temperature and humidity.
5.Charge/Discharge cycle characteristics	Capacitance: Over 70% of initial spec. Internal resistance: Within 4 times of initial spec. Appearance: No noticeable abnormality			Measure the charge/discharge cycle characteristics after 10000 charge/discharge cycle at 25±5°C with under mentioned charge/discharge cycle test condition for each parts.
6.Thermal durability	Capacitance: Within initial spec. Internal resistance: Within initial spec. Appearance: No noticeable abnormality			Leave the capacitor in environment of the max. usable temperature ±2°C and -25±2°C consecutively for 96 hours each, and return to normal temperature and humidity.
7.Humidity durability	Capacitance: Within initial spec. Internal resistance: Within 4 times of initial spec. Appearance: No noticeable abnormality			Temperature: 40±2°C, humidity: 90~95%RH leave the capacitor for 500 hours, and return to normal temperature and humidity.
8.Impact durability	No exterior abnormality observed: initial spec. values retained			According to JIS C 60068-2-27 Half-sine wave A=294
9.Vibration durability	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.

Charge/Discharge cycle test condition

Part number	Charging voltage [V]	Charging time [s]	Max. charging current [A]	Discharging current [A]	Cut off voltage [V]
PAS0815LS2R5105	2.5	10	1	1	1.5
PAS1016LS2R5205	2.5	10	1	1	1.5
PAS0815LN2R7205	2.7	30	0.2	0.2	1.5
PAS1020LN2R7405	2.7	30	0.4	0.4	1.5
PAS1030LN2R7705	2.7	30	0.9	0.9	1.5
PAS1030LN2R7905	2.7	30	1	1	1.5
PAS1220LN2R7905	2.7	30	1	1	1.5
PAS1235LN2R7206	2.7	30	2	2	1.5
PAS1020LA2R3475	2.3	10	1	1	1.5
PAS1020LA3R0405	3.0	30	2	0.5	1.5
PAS1220LA3R0905	3.0	30	3	1	1.5
PAS1235LA3R0206	3.0	30	5	1	1.5

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CYLINDER TYPE POLYACENE CAPACITOR

■ PRECAUTIONS

- 1. Use under the maximum usable voltage**
If over maximum usable voltage is applied, it might cause abnormal current flow, which cause shorter lifetime and leakage, and sometimes damage Polyacene capacitor.
- 2. Use under maximum operating temperature**
Not only shorter lifetime but also leakage and damage will happen by increasing internal pressure if Polyacene capacitor is used in over maximum operating temperature.
- 3. Limited life time**
Lifetime of Polyacene capacitor is greatly affected by surrounding temperature. 10°C rise in temperature shorten its expected lifetime approximately half as much. Design a circuit under consideration of deterioration of electrical characteristics after long time usage, decreasing in capacity and increasing in internal resistance.
- 4. The electrical characteristics of capacitor vary with respect to temperature**
The electrical characteristics of Polyacene capacitor temporarily vary with respect to temperature separately from secular change mentioned above. Design a circuit under consideration of temperature characteristics.
- 5. Polyacene capacitor has polarity**
Polyacene capacitor has polarity. Please check the polarity before use. It will be damage if it is reversely charged.
- 6. Mind high ripple current or rapid charge / discharge**
In circuit with high ripple current or rapid charge / discharge, the lifetime of Polyacene capacitor might be shortened by self-heating.
- 7. Mind voltage drop when back-up**
When back-up (discharging) starts, voltage drop will occur because of active current and internal resistance.
- 8. Series connection**
In case of using Polyacene 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 the maximum usable voltage or add a balancing resistor.
- 9. Polyacene capacitor has the pressure release vent**
In case of inside pressure of capacitor excessively rising, the pressure release vent will be opened in order to release inner gas. Following clearance (Diameter $\phi 18$: over 2mm, Diameter $\geq \phi 18$: over 3mm) should be made above the pressure release vent.
Don't set up wiring or a pattern in the upper part of the pressure release vent, so that the high temperature gas is gushed when the pressure release vent open.
The product which open the pressure release vent can not use.
- 10. The sleeve of the Polyacene capacitor is not guaranteed insulation**
Short circuit might happen if circuit pattern is set underneath of Polyacene capacitor or it fixed by a metal or it contact with other component.
- 11. Environmental of usage**
In case Polyacene 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 electrolyte leak by dew condensation.
- 12. Don't apply shock and vibration or pressure**
Polyacene capacitor is sensitive to shock. Don't drop Polyacene capacitor and not apply strong pressure to a body and lead terminals. Soldering part or lead terminal might be damaged if applying vibration, shock and stress such as pinch, tip, push and twist after installed.
- 13. Soldering**
If next each item is not minded, it may cause deteriorating of its performance, leak, shortening lifetime.
 - Don't contact soldering iron to a cell body.
 - Don't solder over solder conditions in the spec. sheet.
- 14. Mind cleaning condition when cleaning circuit-board after soldering**
Cleaning may affect Polyacene capacitor. Consult us about cleaning conditions beforehand.
Some cleaning conditions cause detrimental influence.

15. Storage

Keep following cautions for storage of Polyacene capacitor.

- Don't store in the high temperature and the high humidity condition and a place where receiving direct sunlight. Storing Polyacene capacitor in the room condition of 10 °C – 35 °C and less than 65% relative humidity is recommended. Sudden temperature change or high humidity may cause deteriorating of its characteristics and solderability.
- Don't store Polyacene capacitor near water, salt water or oil, and in the dew condensation, gasified oil or salinity filled place.
- Don't store Polyacene capacitor in the hazardous gas (hydrogen sulfide, sulfurous, chlorine, ammonia, bromine, methyl bromine and etc.) .
- Don't fumigate by halogen fumigant.
- Don't store Polyacene capacitor near acid or alkaline solvent.
- Don't store Polyacene capacitor in a place where exposed to ozone, ultraviolet or radioactive rays.
- Don't store Polyacene capacitor in a place where vibration and shock might occur.

16. Disposal

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

17. Usage

Polyacene capacitor is developed on the assumption that this product will be used in the memory-backup & RTC for usage of information & communication equipment, home electronics, audio & visual equipment, office equipment, 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, etc.

18. Other Notice

- Don't heat or throw Polyacene capacitor into fire.
- Don't short-circuit.
- Don't solder directly to a cell body.
- Don't open a body.
- Don't deform.
- Don't apply pressure.

※All of the contents specified herein are subject to change without notice due to technical improvements, etc.

※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〕
