

# 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 2010. 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 usage of the Products.

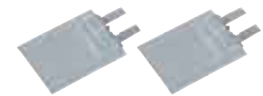
Please note that Taiyo Yuden Co., Ltd. shall not be responsible for any defects in products or equipment incorporating such products, which are caused under the conditions other than those specified in this catalog or individual specification.

- Please contact Taiyo Yuden Co., Ltd. for further details of product specifications as the individual specification is available.
- Please conduct validation and verification of products in actual condition of mounting and operating environment before commercial shipment of the equipment.
- All electronic components or functional modules listed in this catalog are developed, designed and intended for use in general electronics equipment.(for AV, office automation, household, office supply, information service, telecommunications, (such as mobile phone or PC) etc.). Before incorporating the components or devices into any equipment in the field such as transportation,( automotive control, train control, ship control), transportation signal, disaster prevention, medical, public information network (telephone exchange, base station) etc. which may have direct influence to harm or injure a human body, please contact Taiyo Yuden Co., Ltd. for more detail in advance. Do not incorporate the products into any equipment in fields such as aerospace, aviation, nuclear control, submarine system, military, etc. where higher safety and reliability are especially required.

In addition, even electronic components or functional modules that are used for the general electronic equipment, if the equipment or the electric circuit require high safety or reliability function or performances, a sufficient reliability evaluation check for safety shall be performed before commercial shipment and moreover, due consideration to install a protective circuit is strongly recommended at customer's design stage.

- The contents of this catalog are applicable to the products which are purchased from our sales offices or distributors (so called "TAIYO YUDEN' s official sales channel"). It is only applicable to the products purchased from any of TAIYO YUDEN' s official sales channel.
- Please note that Taiyo Yuden Co., Ltd. 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 your usage of products in this catalog. Taiyo Yuden Co., Ltd. grants no license for such rights.
- Caution for export**  
Certain items in this catalog may require specific procedures for export according to "Foreign Exchange and Foreign Trade Control Law" of Japan, "U.S. Export Administration Regulations", and other applicable regulations. Should you have any question or inquiry on this matter, please contact our sales staff.

# THIN FILM TYPE PAS CAPACITOR



Manual Soldering

## FEATURES

- PAS can store a large number of ions into its amorphous structure (doping), therefore PAS capacitor has much larger capacitance than conventional electric double layer capacitors.
- Quick-charge with ampere measure is possible with its Low internal resistance.
- Possible to charge/discharge more than 100,000 times with less deterioration caused by charging/discharging compared to secondary battery which involves chemical reaction, and that enables to more than 100,000 times charge/discharge and large excellence of durability for over charge/discharge.
- PAS capacitor is environmentally friendly power source, which does not contain any heavy metals such as Cd, Hg and Pb. (RoHS compliant)

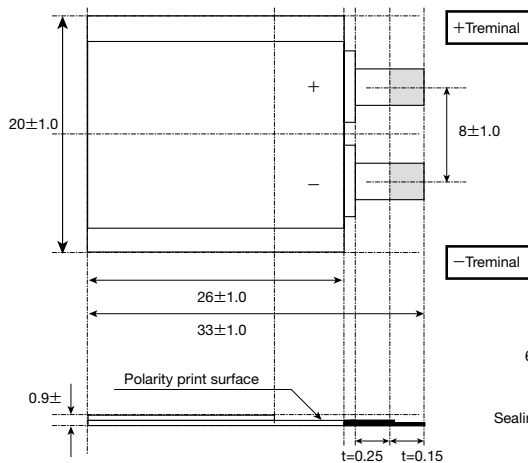
## APPLICATIONS

- Back-up power source for CPU, microcomputer, and flash memory writing when shutting off the power.
- Load change leveling (life lengthening of main power source such as dry battery, Lithium primary battery)
- Power source storage combined with solar cell, fuel cell, generator, and so on.
- Main power source for small devices (toys, measuring equipments and so on).

## ORDERING CODE

P	A	S	2	1	2	6	F	R	2	R	5	5	0	4
① Type		② Dimensions/ W [mm]		③ Dimensions/ L [mm]		④ Shape		⑤ Maximum Usable Voltage [VDC]		⑥ Nominal Capacitance [F]				
PAS Polyacene Capacitors		21 20.0		26 26.0		FR Thin Film Type		2R5 2.5		504 0.5F				
												※R=decimal point		

## EXTERNAL DIMENSIONS



Part Number	W	L	T
PAS2126FR2R5504	20.0	26.0	0.9

Unit : mm

## PART NUMBERS

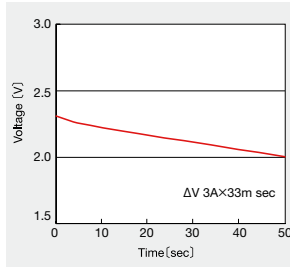
Part Number	Maximum Usable Voltage (V,DC)	Nominal Capacitance (F)	Internal Resistance (mΩ)
PAS2126FR2R5504	2.5	0.5	80

## SPECIFICATIONS

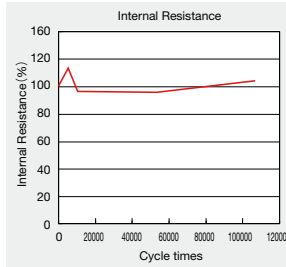
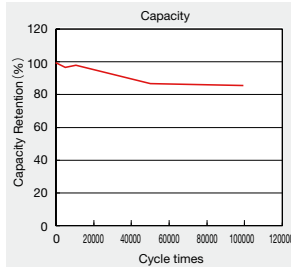
Part Number	Operation Temp. Range (°C)	Max. Usable Voltage (V)	Initial Capacitance (F)	Initial Internal Resistance (mΩ)
PAS2126FR2R5504	-25~+60	2.5	0.5±20	80

## ELECTRICAL CHARACTERISTICS

### Discharging Characteristics



### Discharging Cycle Characteristics



\* 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 Web site (<http://www.ty-top.com/>) or CD catalogs.



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## RELIABILITY DATA

Items	Specifications	Test Conditions, Remark
1. Operating Temperature range	-25~+60°C	
2. Max. Usable Voltage	2.5V	
3. Floating Charge Characteristics	$\Delta V$ : Below 0.7V Internal Resistance : Within 2 times of initial spec. Appearance : No leakage/Thickness within 1.1mm	Apply the max. Usable voltage to the capacitors for 500hours at max. operating temp. and measure the floating charge characteristics after returning to normal temperature and humidity. $\Delta V$ is measured by charge: Max.3A 2.5V×5sec Discharge: 3A×33msec
4. Charge/Discharge Cycle Characteristics	$\Delta V$ : Below 0.7V Internal Resistance : Within 4 times of initial spec. Appearance : No leakage/Thickness within 1.1mm	After 100,000 times charge/discharge cycles at following Charge/Discharge Cycle Test condition. $\Delta V$ is measured by charge: Max.3A 2.5V×5sec Discharge: 3A×33msec
5. Thermal Durability	Capacitance : Within 0.4~0.6F Internal Resistance : Within 2 times of initial spec. Appearance : No leakage/Thickness within 1.1mm	Leave in the atmosphere of 60±2°C and -25°C±2°C for 96 hours each and return to normal temp. and pressure.
6. Humidity Durability	Capacitance : Within 0.28~0.6F. Internal Resistance : Within 2 times of initial spec. Appearance : No leakage/Thickness within 1.1mm	Leave in the atmosphere of temp. 40±2 °C humidity 90~95 %RH for 500h and return to normal temperature.
9. Solder Heat Resistance	Capacitance : Within 0.4~0.6F Internal Resistance : Within 2 times of initial spec. Appearance : No leakage/Thickness within 1.1mm	Manual Soldering : Heating condition : After 380 °C × 10sec×2times, return to normal temp. and pressure.

### ● Charge/Discharge Cycle Test Condition

Part Number	Charging Voltage[V]	Charging Time [sec.]	Charging Current [A]	Discharging Current[A]	Discharging Time[sec.]
PAS2126FR2R5504	2.5	0.4sec.	0.3	0.3	0.3

## PRECAUTIONS

- Use under the maximum usable voltage.  
If over maximum usable voltage is applied, it might cause abnormal current flow which shortens lifetime and sometimes damages PAS capacitor.
- Use under maximum operating temperature.  
Not only shorten the lifetime but also leakage and damage could happen by increasing internal pressure if PAS is used beyond max operating temperature.
- Limited life time.  
Lifetime of PAS capacitor is greatly affected by surrounding temperature. 10°C drop in temperature extends 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.
- 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.
- PAS capacitor has polarity.  
Please check the polarity before use. It will be damaged if it is reverse charged.
- Pay sufficient attention to use PAS capacitor in a circuit with high ripple current or with a very frequent charge/discharge rapidly.  
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.
- Mind voltage drop when discharging.  
When the discharge starts, voltage drop occurs if discharge current is high. Consult us about the discharging current.
- Series connection.  
In case of using PAS capacitors in a series connection, the voltage may be different in these capacitors, the difference of the voltages could shorten the lifetime of the capacitors or break them down.  
Take a margin against a rated voltage or add a balancing resistor.
- Environmental of usage  
In case PAS capacitor is used in the 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, that may cause a deterioration of its performance or a leakage by dew condensation.
- Do not apply shock or pressure.  
PAS capacitor is sensitive to shock. Do not drop PAS capacitor and not apply strong pressure to a body, terminals and lead.  
Soldering part or lead terminal will be damaged if applying vibration, shock and stress such as pinch, tip, push and twist after mounting.
- Do not apply excessive heat when soldering.  
If excessive heat stress applied, electronic degradation or leakage might occur.  
Do not solder over solder conditions in the spec. sheet.
- Consult us about cleaning condition when cleaning circuit-board after soldering.  
Cleaning may affect PAS capacitor. Consult us about cleaning conditions beforehand.
- Other Notice
  - Do not heat or throw into fire.
  - Do not short-circuit.
  - Do not solder directly to a cell body.
  - Do not dismantle.
  - Do not deform.

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