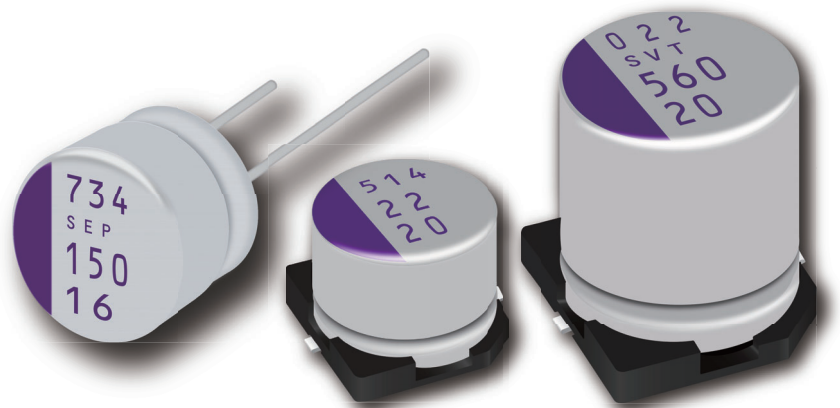


Products Catalog

Conductive Polymer Aluminum
Solid Capacitors

OS-CON



**IN Your
Future**



Conductive Polymer Aluminum Solid Capacitors INDEX

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Safety and Legal Matters to Be Observed

Product specifications and applications

- Please be advised that this product and product specifications are subject to change without notice for improvement purposes. Therefore, please request and confirm the latest delivery specifications that explain the specifications in detail before the final design, or purchase or use of the product, regardless of the application. In addition, do not use this product in any way that deviates from the contents of the company's delivery specifications.
- Unless otherwise specified in this catalog or the product specifications, this product is intended for use in general electronic equipment (AV products, home appliances, commercial equipment, office equipment, information and communication equipment, etc.).
When this product is used for the following special cases, the specification document suited to each application shall be signed/sealed (with Panasonic Industry and the user) in advance..These include applications requiring special quality and reliability, wherein their failures or malfunctions may directly threaten human life or cause harm to the human body (e.g.: space/aircraft equipment, transportation/traffic equipment, combustion equipment, medical equipment, disaster prevention/crime prevention equipment, safety equipment, etc.).

Safety design and product evaluation

- Please ensure safety through protection circuits, redundant circuits, etc., in the customer's system design so that a defect in our company's product will not endanger human life or cause other serious damage.
- This catalog shows the quality and performance of individual parts. The durability of parts varies depending on the usage environment and conditions. Therefore, please ensure to evaluate and confirm the state of each part after it has been mounted in your product in the actual operating environment before use.
If you have any doubts about the safety of this product, then please notify us immediately, and be sure to conduct a technical review including the above protection circuits and redundant circuits at your company.

Laws / Regulations / Intellectual property

- The transportation of dangerous goods as designated by UN numbers, UN classifications, etc., does not apply to this product. In addition, when exporting products, product specifications, and technical information described in this catalog, please comply with the laws and regulations of the countries to which the products are exported, especially those concerning security export control.
- Each model of this product complies with the RoHS Directive (Restriction of the use of hazardous substances in electrical and electronic equipment) (2011/65/EU and (EU) 2015/863). The date of compliance with the RoHS Directive and REACH Regulation varies depending on the product model.
Further, if you are using product models in stock and are not sure whether or not they comply with the RoHS Directive or REACH Regulation, please contact us by selecting "Sales Inquiry" from the inquiry form.
- During the manufacturing process of this product and any of its components and materials to be used, Panasonic Industry does not intentionally use ozone-depleting substances stipulated in the Montreal Protocol and specific bromine-based flame retardants such as PBBs (Poly-Brominated Biphenyls) / PBDEs (Poly-Brominated Diphenyl Ethers). In addition, the materials used in this product are all listed as existing chemical substances based on the Act on the Regulation of Manufacture and Evaluation of Chemical Substances.
- With regard to the disposal of this product, please confirm the disposal method in each country and region where it is incorporated into your company's product and used.
- The technical information contained in this catalog is intended to show only typical operation and application circuit examples of this product. This catalog does not guarantee that such information does not infringe upon the intellectual property rights of Panasonic Industry or any third party, nor imply that the license of such rights has been granted.
- Design, materials, or process related to technical owned by Panasonic Industry are subject to change without notice.

Panasonic Industry will assume no liability whatsoever if the use of our company's products deviates from the contents of this catalog or does not comply with the precautions. Please be advised of these restrictions.

Matters to Be Observed When Using This Product (Conductive Polymer Aluminum Solid Capacitors / OS-CON)

Use environments and cleaning conditions

- This product (capacitor) is intended for standard general-purpose use in electronic equipment, and is not designed for use in the specific environments described below. Using the product in such specific environments or service conditions, therefore, may affect the performance of the product.

Please check with us about the performance and reliability of the product first before using the product.

- (1) Used in liquid, such as water, oil, chemicals, and organic solvents.
- (2) Used in a place exposed to direct sunlight, an outdoor place with no shielding, or a dusty place.
- (3) Used in a wet place (dew concentration on a resistor, water leakage, etc.), a place exposed to sea breeze, or a place filled with a corrosive gas, such as Cl₂, H₂S, NH₃, SO₂, or NO_x.
- (4) Used in an environment where static electricity and electromagnetic waves are strong.
- (5) The product is located close to a heating component or a flammable material, such as a vinyl cable, is placed near the product.
- (6) The product is used sealed with a resin, etc.
- (7) Solder flux of the soldered product is cleansed with a solvent, water, and a water-soluble cleaner.
(Be careful with water soluble solder flux.)
- (8) Used in an environment where an acidic or alkali atmosphere is present.
- (9) Used in an environment where excessive vibration or impact is applied to the product.
- (10) Used under a low atmospheric pressure condition or depressurized condition.

- Cleaning can be performed with cleaning agents, including higher-grade alcohol-based cleaning solutions such as Pine Alpha ST-100S, Cleanthru 750H, 750L, 710M, 750K, Techno Care FRW14-17, CFC substitutes such as AK-225AES, and IPA. Please confirm the following precautions before cleaning.

- (1) Use an immersion, ultrasonic wave, or other cleaning method, and the cleaning time should not exceed 2 minutes.
- (2) The temperature of the cleaning solution should be less than or equal to 60°C.
- (3) Control contamination of cleaning agents (conductivity, pH, specific gravity, water content, etc.).
- (4) After cleaning, do not store the product in the atmosphere of the cleaning solution or in an airtight container.
- (5) When drying the circuit board or this product, use hot air below the upper limit temperature of their category.
- (6) Please be mindful that rubbing the printed surface of this product after cleaning may erase the markings depending on the cleaning agent used.
- (7) Please contact us separately for details on cleaning agents, cleaning methods, etc., and for cleaning solutions other than those listed above.

- Fixing agents and coating agents

- (1) Select appropriate materials for the outer packaging and sealing materials of this product. Do not use acetone, especially in fixing agents, coating agents, or diluents.
- (2) When using a fixing agent or coating agent, ensure that no flux residue or contamination remains between the circuit board and the sealing area of this product.
- (3) Allow cleaning agents, etc. to dry before using fixing agents or coating agents.
- (4) Please contact us for thermal curing conditions for fixing agents or coating agents.

- When the capacitor is used in a circuit where an impact voltage is applied or a high voltage is applied in a short period (transient phenomenon) or a high pulse voltage is applied, make sure to use the capacitor at a voltage equal to or lower than its rated voltage.

Response to anomalies and handling conditions

- The main failure mode is a short-circuit mode caused mainly by thermal stress, electrical stress, and mechanical stress due to soldering and operating temperature environments. To prevent the occurrence of short circuits, the following measures should be adequately taken to ensure safety.
 - (1) If odorous gases are generated, then turn off the main power of the set equipment and stop using it.
In this case, keep your face and hands away from the equipment.
 - (2) Depending on conditions, it may take several seconds to several minutes before odorous gases are generated.
When using a protection circuit, design it so that it operates during this period.
 - (3) If odorous gases get into your eyes or are inhaled, immediately wash your eyes with water or gargle.
 - (4) Do not lick the electrolyte of the product. If the electrolyte gets on your skin, then wash it off with soap.
 - (5) When a current value after the short of the product is extremely large, the shorted capacitor may spark out, which, in the worst scenario, may result in ignition. Ensure the safety of the circuit by, for example, giving it a redundant circuit structure or providing it with a protective circuit.

Reliability and product life

The failure rate of the capacitor is specified based on $0.5\%/1000$ h (reliability level 60%), a failure rate conforming to JIS C 5003 (failure rate level). This indicates that the possibility of occurrence of a failure is by no means zero. One of the failure modes is a wear out failure. This happens when the period of guaranteeing the durability and high-temperature/high-humidity resistance of the capacitor is over, changes in the electrical characteristics of the capacitor (product) get larger and its electrolyte gradually deteriorates into an insulating material to create an open mode. Another failure mode is a random failure in which a short mode results mainly because of thermal, electrical, or mechanical stress, etc.

Circuit design and circuit board design

- Due to reasons such as increased leakage currents, do not use this product in high impedance circuits, coupling circuits, time constant circuits, and circuits that are significantly affected by leakage currents.
- During circuit design, be mindful that the electrical characteristics of this product, such as capacitance and ESR, may fluctuate within the specified ranges even under conditions that meet the rated electrical and mechanical performance.
- Leakage currents may increase due to mechanical and thermal stress (soldering, high-temperature no-load test, etc.). However, when the voltage (lower than or equal to the category voltage and upper limit temperature) is applied, leakage currents gradually decrease due to the self-recovery function.
- If an excessive rush current flows due to rapid charging and discharging, then it may lead to short circuits and increased leakage currents. Therefore, apply a protection circuit to this product if the rush current value flowing through it is as follows.
 - (1) When a rush current of 10 A or more flows through a product whose tenfold allowable ripple current is less than 10 A.
 - (2) With regard to a product whose tenfold allowable ripple current is 10 A or more, when a rush current exceeding the tenfold value flows through the product.
- The resin on the surface of the case does not guarantee insulation. In addition, there is an indefinite resistance between the case and the cathode terminal, and they are not insulated. Therefore, completely isolate the case from the cathode terminal, anode terminal, and circuit pattern.

Mounting and storage conditions

- Soldering with a soldering iron
 - (1) Since the lead wire pitch dimension of the radial lead type capacitor and the printed circuit board hole pitch dimension do not match, when processing the lead wires, do not apply stress to the body before soldering.
 - (2) When soldering, do not apply excessive stress to the body of this product.
 - (3) Once the product has been soldered, when using a soldering iron to remove it, remove it after the solder has completely melted so as not to apply stress to the electrode terminals of the product.
 - (4) Do not allow the tip of the soldering iron to touch the body of this product.

■ Flow soldering

- (1) Do not apply flow soldering to the surface mount type model of this product.
- (2) Do not solder this product by immersing its body in molten solder.
- (3) Solder only on the opposite side of the circuit board surface where this product is mounted.
- (4) Do not allow flux to adhere to parts other than the electrode terminals.
- (5) Do not allow other parts to fall over and come into contact with this product during soldering.

■ Reflow soldering

- (1) Do not apply reflow soldering to the radial lead type model of this product.
- (2) Please contact us separately for soldering conditions for using the VPS method.

■ Handling after soldering

Observe the following precautions to avoid applying excessive stress on this product.

- (1) Do not tilt, knock over, or twist this product.
- (2) Do not move the circuit board by grabbing this product.
- (3) Do not hit this product with objects.
- (4) When stacking circuit boards, do not allow circuit boards or other parts to come in contact with this product.

- It is recommended that all components in the bag be used up by opening the bag immediately before use. However, if the remaining components are to be stored after opening the bag, please use them up within the following specified period* to maintain good solderability.

* The surface mount type does not comply with the JEDEC J-STD-020 specification.

- | | |
|---------------------------------------|--|
| (1) Surface mount type | : Within 24 months after shipment (before opening) and within 30 days after opening (packaged with carrier tape) |
| (2) Radial lead type (bagged product) | : Within 30 months after shipment (before opening) and within 7 days after opening |
| (3) Radial lead type (taped product) | : Within 24 months after shipment (before opening) and within 7 days after opening |

Reference information

Intellectual property

Panasonic Group provides customers with safe products and services. We are also making great efforts to protect our intellectual property rights for Panasonic Group products. Typical patents related to this product are as follows.

[U.S. patent]

USP No. 7158367

Line up

SMD type

| Series | Features | Small size/Low profile | Large cap. | Low ESR | High voltage | Long life/High reliability | Category tem. range (°C) | Rated voltage range (V) | ESR (mΩ) | Rated capacitance range (μF) | Size code | Size (mm) | |
|------------|--|------------------------|------------|---------|--------------|----------------------------|--------------------------|-------------------------|----------|------------------------------|-----------|-----------|------|
| | | | | | | | | | | | | øD | L |
| SVT | Low ESR Large capacitnce 125 °C 2000 h | | ● | ● | ● | ● | -55 to 125 | 2.5 to 16 | 15 to 24 | 100 to 820 | C65 | 6.3 | 6.4 |
| | | | | | | | -55 to 125 | 2.5 to 50 | 20 to 35 | 18 to 680 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 16 | 18 | 560 | E10 | 8.0 | 10.0 |
| | | | | | | | -55 to 125 | 2.5 to 50 | 10 to 25 | 39 to 1500 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 16 | 16 | 1000 | F10 | 10.0 | 10.0 |
| | | | | | | | -55 to 125 | 2.5 to 50 | 12 to 20 | 68 to 2700 | F12 | 10.0 | 12.6 |
| SVPT | Low ESR Large capacitnce 105 °C 20000 h | | ● | ● | ● | ● | -55 to 105 | 2.5 to 16 | 15 to 24 | 100 to 820 | C65 | 6.3 | 6.4 |
| | | | | | | | -55 to 105 | 2.5 to 50 | 20 to 35 | 18 to 680 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 16 | 18 | 560 | E10 | 8.0 | 10.0 |
| | | | | | | | -55 to 105 | 2.5 to 50 | 10 to 25 | 39 to 1500 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 16 | 16 | 1000 | F10 | 10.0 | 10.0 |
| | | | | | | | -55 to 105 | 2.5 to 50 | 12 to 20 | 68 to 2700 | F12 | 10.0 | 12.6 |
| SVF | High voltage Large capacitance 125 °C 1000 h | | ● | | ● | ● | -55 to 125 | 16 to 25 | 27 to 40 | 27 to 82 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 22 to 40 | 10 to 180 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 22 to 35 | 18 to 270 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 14 to 25 | 39 to 560 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 16 | 16 | 1000 | F10 | 10.0 | 10.0 |
| | | | | | | | -55 to 125 | 16 to 50 | 12 to 20 | 68 to 1000 | F12 | 10.0 | 12.6 |
| SVPK | High voltage Large capacitance 125 °C 1000 h | | ● | | ● | ● | -55 to 125 | 16 to 50 | 27 to 80 | 10 to 100 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 22 to 35 | 22 to 220 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 22 to 35 | 33 to 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 14 to 25 | 68 to 680 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 16 to 50 | 12 to 20 | 120 to 1200 | F12 | 10.0 | 12.6 |
| SXV | Super high voltage 125 °C 1000 h | | | | ● | ● | -55 to 125 | 63 to 100 | 60 | 6.8 to 18 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 50 to 60 | 15 to 39 | F8 | 10.0 | 7.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 25 to 40 | 15 to 56 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 25 to 30 | 18 to 100 | F12 | 10.0 | 12.6 |
| SVPG | Low ESR High ripple current 105 °C 5000 h | | | | ● | ● | -55 to 105 | 16 to 25 | 25 to 30 | 15 to 47 | B45 | 5.0 | 4.4 |
| | | | | | | | -55 to 105 | 16 | 15 | 100 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 16 | 14 | 220 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 16 | 10 | 270 | C8 | 6.3 | 7.9 |
| | | | | | | | -55 to 105 | 16 | 8 | 270 | C10 | 6.3 | 9.9 |
| | | | | | | | -55 to 105 | 16 | 6.5 | 330 | C10L | 6.3 | 10.4 |
| | | | | | | | -55 to 105 | 16 | 16 | 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 16 | 10 | 560 | E10 | 8.0 | 10.0 |
| | | | | | | | -55 to 105 | 16 | 8 | 680 | E12 | 8.0 | 11.9 |
| -55 to 105 | 16 | 9 | 820 | F10 | 10.0 | 10.0 | | | | | | | |
| -55 to 105 | 16 | 7 | 1200 | F12 | 10.0 | 12.6 | | | | | | | |
| SVPF | High voltage Large capacitance 105 °C 5000 h | | ● | | ● | ● | -55 to 105 | 16 to 25 | 27 to 40 | 27 to 82 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 16 to 50 | 22 to 40 | 10 to 180 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 16 to 50 | 22 to 35 | 18 to 270 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 16 | 18 | 560 | E10 | 8.0 | 10.0 |
| | | | | | | | -55 to 105 | 16 to 50 | 14 to 25 | 39 to 560 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 16 | 16 | 1000 | F10 | 10.0 | 10.0 |
| SVPA | Low ESR High ripple current | | | | ● | | -55 to 105 | 2.5 to 20 | 30 to 40 | 10 to 82 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 20 to 35 | 22 to 180 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 20 to 33 | 47 to 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 19 to 29 | 180 to 820 | F8 | 10.0 | 7.9 |

Line up

SMD type

| Series | Features | Small size/Low profile | Large cap. | Low ESR | High voltage | Long life/High reliability | Category tem. range (°C) | Rated voltage range (V) | ESR (mΩ) | Rated capacitance range (μF) | Size code | Size (mm) | |
|---|--|------------------------|------------|---------|--------------|----------------------------|--------------------------|-------------------------|------------|------------------------------|-----------|-----------|------|
| | | | | | | | | | | | | øD | L |
| NRFND SVPB | Low profile | ● | | | | | -55 to 105 | 2.5 to 20 | 40 to 45 | 15 to 120 | C5 | 6.3 | 4.9 |
| | | | | | | | -55 to 105 | 20 | 35 | 22 | C55 | 6.3 | 5.4 |
| SVPC | Low ESR Large capacitance | | ● | ● | | | -55 to 105 | 2.5 to 16 | 19 to 35 | 39 to 180 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 15 to 30 | 68 to 560 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 19 to 27 | 120 to 680 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 9 to 16 | 270 to 1500 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 2.5 | 12 | 2700 | F12 | 10.0 | 12.6 |
| SVPD | Guaranteed at 125°C High voltage 85 °C 85 % RH | | | | ● | ● | -55 to 125 | 10 to 25 | 45 to 65 | 10 to 56 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 35 | 40 to 70 | 8.2 to 82 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 25 to 35 | 45 to 60 | 18 to 39 | F8 | 10.0 | 7.9 |
| | | | | | | | -55 to 125 | 25 to 35 | 30 to 50 | 22 to 47 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 25 to 35 | 28 to 30 | 47 to 82 | F12 | 10.0 | 12.6 |
| SVPE | Low ESR Large capacitance | ● | ● | | | | -55 to 105 | 2.5 to 6.3 | 10 to 15 | 150 to 390 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 10 | 10 to 20 | 220 to 820 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 2.0 to 16 | 8 to 11 | 180 to 1200 | C10 | 6.3 | 9.9 |
| | | | | | | | -55 to 105 | 16 | 10 | 470 | F12 | 10.0 | 12.6 |
| SVPS | Long life | | | | ● | | -55 to 105 | 4.0 to 10 | 200 to 220 | 10 to 33 | A5 | 4.0 | 5.4 |
| | | | | | | | -55 to 105 | 4.0 to 16 | 30 to 90 | 22 to 68 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 22 to 60 | 22 to 150 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 4.0 to 25 | 22 to 60 | 10 to 270 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 4.0 to 16 | 20 to 35 | 100 to 680 | F8 | 10.0 | 7.9 |
| SVQP | Guaranteed at 125 °C | | | | ● | | -55 to 105 | 4.0 to 20 | 40 to 60 | 22 to 150 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 6.3 to 20 | 35 to 45 | 47 to 220 | E7 | 8.0 | 6.9 |
| SVP | Standard | | | | | | -55 to 105 | 4.0 to 16 | 200 to 260 | 3.3 to 33 | A5 | 4.0 | 5.4 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 60 to 120 | 10 to 68 | B6 | 5.0 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 23 to 60 | 22 to 220 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 35 to 45 | 33 to 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 25 to 40 | 56 to 680 | F8 | 10.0 | 7.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 13 to 24 | 100 to 680 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 12 to 20 | 150 to 1500 | F12 | 10.0 | 12.6 |

NRFND Not recommended for new design

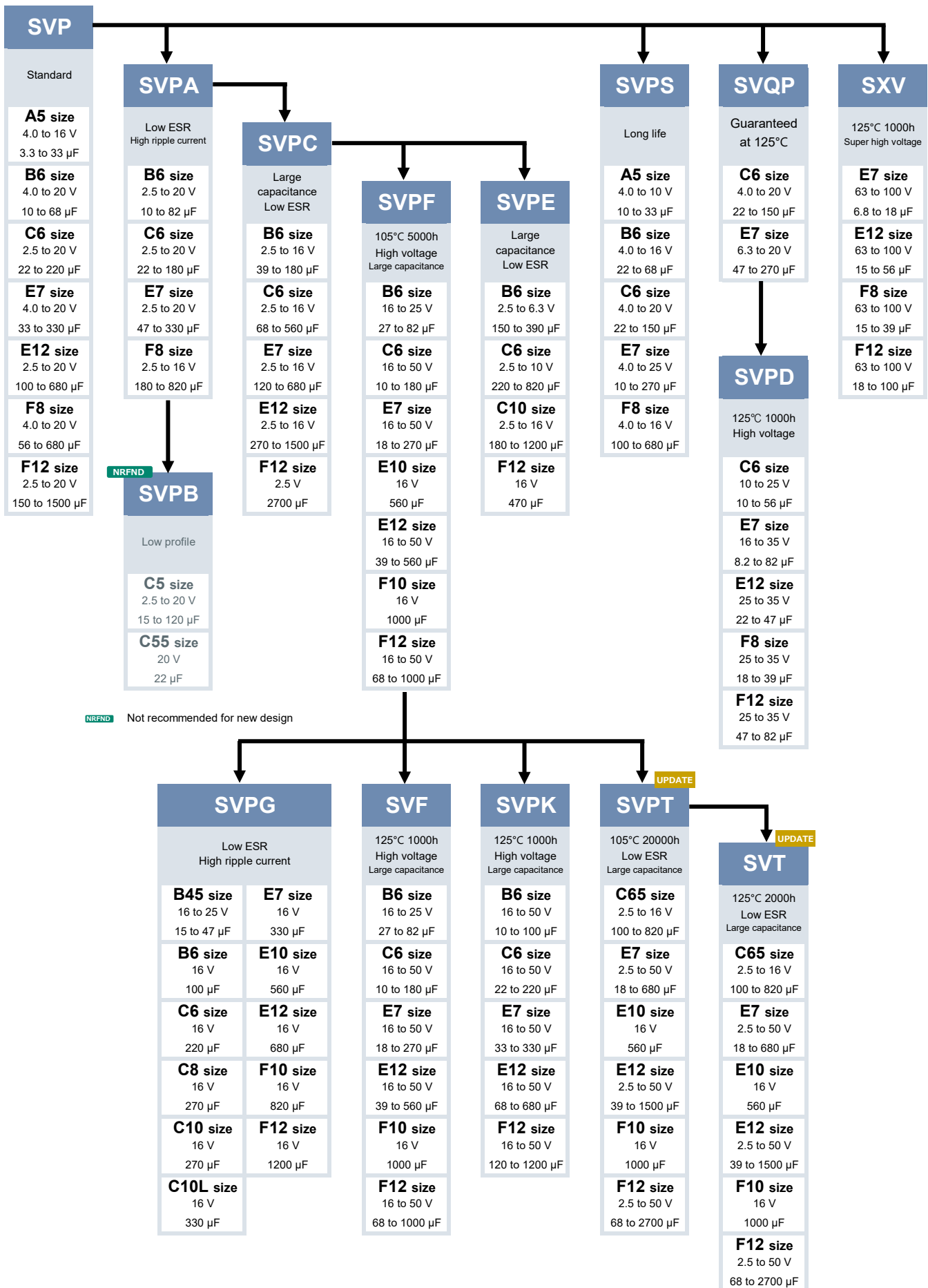
Line up

Radial lead type

| Series | Features | Small size/Low profile | Large cap. | Low ESR | High voltage | Long life/High reliability | Category tem. range (°C) | Rated voltage range (V) | ESR (mΩ) | Rated capacitance range (μF) | Size code | Size (mm) | |
|--------|--|------------------------|------------|---------|--------------|----------------------------|--------------------------|-------------------------|-----------|------------------------------|-----------|-----------|------|
| | | | | | | | | | | | | øD | L |
| SEF | High voltage Large capacitance 125 °C 1000 h | | ● | | ● | ● | -55 to 125 | 16 to 35 | 22 to 35 | 22 to 180 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 16 to 35 | 22 to 30 | 39 to 270 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 16 to 35 | 14 to 20 | 82 to 560 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 16 to 5 | 12 to 18 | 120 to 1000 | F13 | 8.0 | 12.9 |
| SEK | High voltage Large capacitance 125 °C 1000 h | | ● | | ● | ● | -55 to 125 | 25 to 50 | 25 to 35 | 22 to 82 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 25 to 50 | 24 to 35 | 33 to 120 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 25 to 50 | 16 to 25 | 68 to 270 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 25 to 50 | 14 to 20 | 120 to 470 | F13 | 8.0 | 12.9 |
| SEPG | Low ESR High ripple current 105 °C 5000 h | | | ● | ● | | -55 to 105 | 16 | 12 | 150 | B9 | 5.0 | 8.9 |
| | | | | | | | -55 to 105 | 16 | 10 | 270 | C9 | 10.0 | 8.9 |
| | | | | | | | -55 to 105 | 16 | 8 | 270 | C10 | 6.3 | 9.9 |
| | | | | | | | -55 to 105 | 16 | 8 | 470 | E9 | 8.0 | 8.9 |
| SXE | Super high voltage 125 °C 1000 h | | | | ● | ● | -55 to 125 | 63 to 100 | 60 | 6.8 to 18 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 50 to 60 | 15 to 39 | F8 | 8.0 | 7.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 25 to 40 | 15 to 56 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 63 to 100 | 25 to 30 | 18 to 100 | F13 | 8.0 | 12.9 |
| SEPF | Small size Low profile High voltage Large capacitance 105 °C 5000 h | ● | ● | | ● | ● | -55 to 105 | 16 to 32 | 30 to 35 | 22 to 150 | C55 | 6.3 | 5.4 |
| | | | | | | | -55 to 105 | 16 to 35 | 22 to 35 | 22 to 180 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 16 to 35 | 22 to 30 | 39 to 270 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 16 to 35 | 14 to 20 | 82 to 560 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 16 to 35 | 12 to 18 | 120 to 1000 | F13 | 10.0 | 12.9 |
| SEPC | Super low ESR Large capacitance Small size Low profile 105 °C 5000 h | ● | ● | ● | ● | ● | -55 to 105 | 2.5 | 7 | 100 to 560 | B9 | 5.0 | 8.9 |
| | | | | | | | -55 to 105 | 6.3 | 18 | 220 | C55 | 6.3 | 5.4 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 10 to 24 | 100 to 560 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 7 to 10 | 100 to 820 | C9 | 6.3 | 8.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 8 to 22 | 150 to 1000 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 2.5 to 16 | 5 to 10 | 180 to 1000 | E9 | 8.0 | 8.9 |
| | | | | | | | -55 to 105 | 16 | 11 to 16 | 180 to 270 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 2.5 to 6.3 | 7 to 8 | 470 to 820 | E13 | 8.0 | 12.9 |
| SEQP | 105 °C 5000 h Guaranteed at 125 °C Rated 32 V max. | | | | ● | ● | -55 to 125 | 4.0 to 20 | 40 to 60 | 22 to 150 | C6 | 6.3 | 5.9 |
| | | | | | | | -55 to 125 | 4.0 to 32 | 35 to 100 | 6.8 to 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 125 | 4.0 to 32 | 25 to 80 | 15 to 680 | F8 | 10.0 | 7.9 |
| | | | | | | | -55 to 125 | 4.0 to 32 | 13 to 50 | 18 to 560 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 125 | 4.0 to 20 | 12 to 20 | 150 to 1200 | F13 | 10.0 | 12.9 |
| | | | | | | | -55 to 125 | 4.0 to 20 | 40 to 60 | 22 to 150 | C6 | 6.3 | 5.9 |
| SEP | Standard | | | | ● | ● | -55 to 105 | 4.0 to 20 | 35 to 45 | 33 to 330 | E7 | 8.0 | 6.9 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 25 to 40 | 56 to 680 | F8 | 10.0 | 7.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 13 to 24 | 100 to 680 | E12 | 8.0 | 11.9 |
| | | | | | | | -55 to 105 | 2.5 to 20 | 12 to 20 | 150 to 1500 | F12 | 10.0 | 12.9 |
| | | | | | | | -55 to 105 | 4.0 to 20 | 40 to 60 | 22 to 150 | C6 | 6.3 | 5.9 |

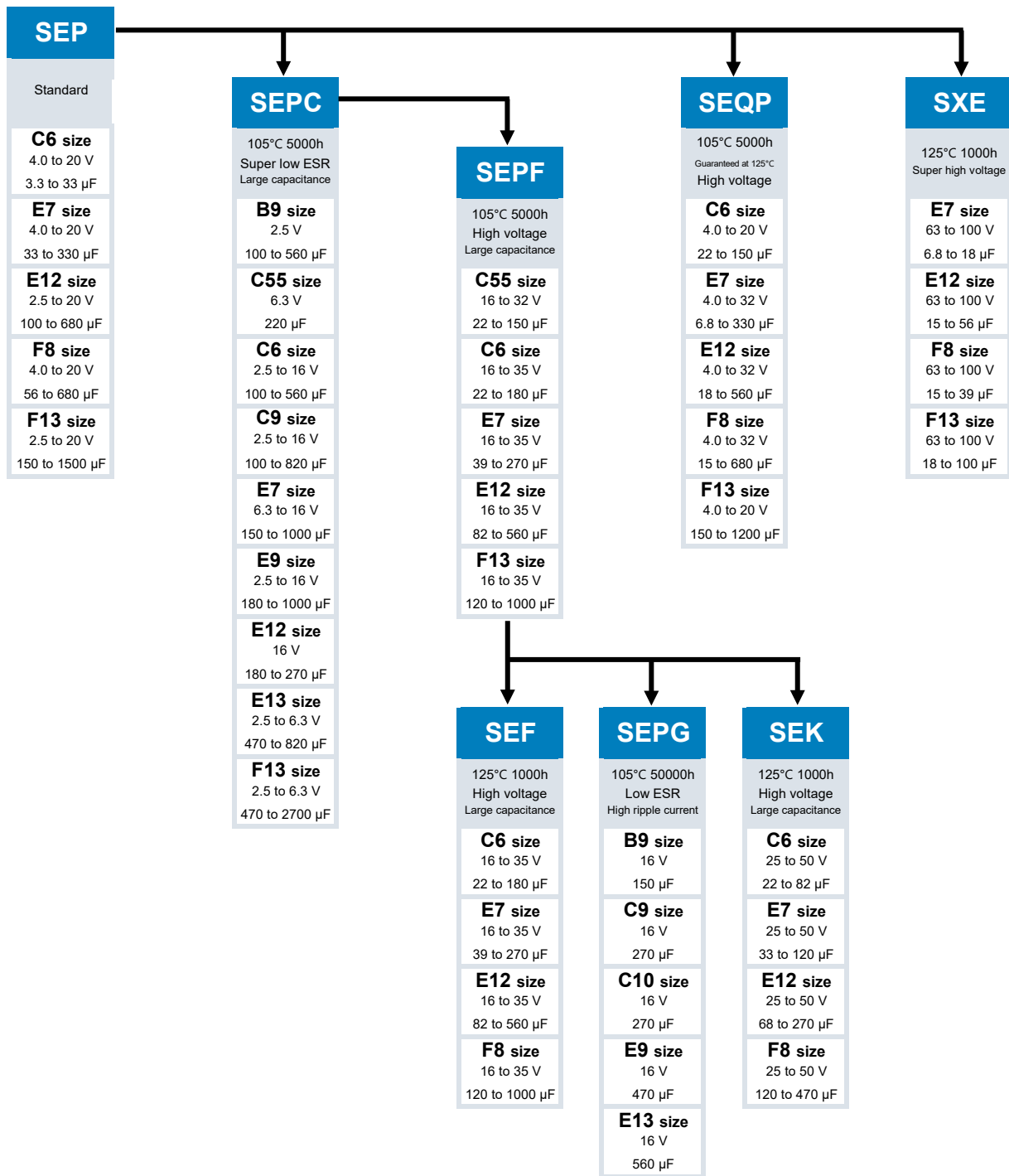
Series flow chart

● SMD type



Series flow chart

● Radial lead type



Voltage - Capacitance table (SMD type) (Vol. : 2.0 to 16 V / Cap. : 3.3 to 33 μ F)

Series [Size]
(ESR m Ω)

| V \ μ F | 3.3 | 4.7 | 6.8 | 8.2 | 10 | 12 | 15 | 18 | 22 | 27 | 33 |
|-------------|-------------------|-------------------|-------------------|-----|--------------------|----|--------------------|----|--------------------|----|-------------------|
| 2.0 | | | | | | | | | | | |
| 2.5 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 4.0 | | | | | | | | | SVPS [A5] (200) | | |
| | | | | | | | | | SVP [A5] (200) | | |
| | | | | | | | | | | | |
| 6.3 | | | | | | | | | SVPS [A5] (200) | | |
| | | | | | | | | | SVP [A5] (200) | | |
| | | | | | | | | | | | |
| 10 | | SVP [A5] (240) | SVP [A5] (240) | | SVPS [A5] (220) | | SVPS [A5] (200) | | | | SVPS [B6] (70) |
| | | | | | SVP [A5] (220) | | SVP [A5] (200) | | | | SVP [B6] (70) |
| | | | | | | | | | | | |
| 16 | SVP [A5] (260) | | | | | | SVP [B6] (120) | | SVPS [B6] (90) | | |
| | | | | | | | | | SVP [B6] (90) | | |
| | | | | | | | | | | | |

Size list ϕ x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (SMD type) (Vol. : 2.0 to 16 V / Cap. : 39 to 270 μF)

Series [Size]
(ESR mΩ)

| V | μF | 39 | 47 | 56 | 68 | 82 | 100 | 120 | 150 | 180 | 220 | 270 |
|-----|----|----------------------|--------------------|----------------------|----------------------|-------------------|----------------------|----------------------|-------------------------|-------------------------|----------------------|--------------------|
| 2.0 | | | | | | | | | | | | |
| | | | | | | SVPA [B6] (30) | | | | SVPA [C6] (20) | SVP [C6] (23) | SVPE [B6] (10) |
| 2.5 | | | | | | | | | | SVPC [B6] (30,24,19) | | |
| | | | | | | | | | | | | |
| 4.0 | | SVP [B6] (70) | | | SVPA [B6] (30) | | | | SVPA [C6] (22) | | | SVPA [E7] (22) |
| | | | | | SVPS [B6] (30) | | | | SVPC [B6] (30,23,20) | | | SVPS [E7] (22) |
| | | | | | SVP [B6] (60) | | | | SVPS [C6] (22) | | | |
| | | | | | | | | | SVQP [C6] (40) | | | |
| 6.3 | | | SVPA [B6] (30) | | | SVQP [C6] (45) | SVPC [B6] (30,25) | SVPA [C6] (22) | SVPE [B6] (12) | | SVPA [E7] (22) | |
| | | | SVPS [B6] (30) | | | SVP [C6] (45) | SVQP [C6] (40) | SVPC [B6] (21) | | | SVPC [C6] (27,15) | |
| | | | SVP [B6] (70) | | | | SVP [C6] (40) | SVPS [C6] (22) | | | SVPE [B6] (15) | |
| | | | | | | | | SVP [C6] (17) | | | SVPE [C6] (10) | |
| | | | | | | | | | | | SVPS [E7] (22) | |
| | | | | | | | | | | | SVQP [E7] (35) | |
| | | | | | | | | | | | SVP [E7] (35) | SVP [F8] (25) |
| 10 | | SVP [C6] (50) | SVPD [C6] (45) | SVPA [C6] (30) | | | | SVPC [C6] (27,22) | SVPA [E7] (30) | | SVPE [C6] (20) | SVPC [E7] (22) |
| | | | SVQP [C6] (45) | SVPC [B6] (30,23) | | | | SVQP [E7] (35) | SVPS [E7] (30) | | | SVP [F8] (25) |
| | | | SVP [C6] (45) | SVPS [C6] (30) | | | | SVP [E7] (35) | SVPS [F8] (30) | | | |
| | | | | | | | | | SVQP [E7] (35) | | | |
| | | | | | | | | | SVP [E7] (35) | SVP [F8] (30) | | |
| 16 | | SVPA [C6] (35,24) | SVPG [B45] (25) | SVP [E7] (45) | SVPC [C6] (30,25) | SVPA [E7] (30) | SVT [C65] (24) | SVPC [E7] (27) | SVPC [E7] (22) | SVPA [F8] (29) | SVPG [C6] (14) | SVT [E7] (22) |
| | | SVPC [B6] (35,27) | | | | SVPD [E7] (40) | SVPT [C65] (24) | | SVP [F8] (30) | SVPE [C10] (11) | SVPK [C6] (22) | SVPT [E7] (22) |
| | | SVPS [C6] (24) | | | | SVPF [B6] (24) | SVPC [C6] (24) | | | SVPF [C6] (22) | | SVPC [E12] (16) |
| | | SVQP [C6] (50) | | | | SVPS [E7] (30) | SVPG [B6] (15) | | | SVPS [F8] (29) | | SVPF [E7] (22) |
| | | SVP [C6] (50) | | | | SVQP [E7] (40) | SVPK [B6] (27) | | | SVP [F8] (30) | | SVPG [C8] (10) |
| | | | | | | SVP [E7] (40) | SVPS [F8] (35) | | | SVP [E12] (20) | | SVPG [C10] (8) |
| | | | | | | SVF [B6] (25) | SVP [F8] (35) | | | SVF [C6] (22) | | SVF [E7] (22) |

Size list ø x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (SMD type) (Vol. : 2.0 to 16 V / Cap. : 330 to 2700 μF)

Series [Size]
(ESR mΩ)

| V \ μF | 330 | 390 | 470 | 560 | 680 | 820 | 1000 | 1200 | 1500 | 2700 |
|--------|-------------------------|----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 2.0 | | | | | | | | SVPE [C10] (8) | | |
| | SVPA [E7] (20) | SVPC [C6] (25,15) | | SVT [C65] (16) | SVT [C65] (16) | SVPA [F8] (19) | | | SVT [E12] (10) | SVT [F12] (12) |
| 2.5 | SVPE [B6] (15,10) | SVPE [B6] (10) | | SVPT [C65] (16) | SVT [E7] (20) | SVPC [E12] (9) | | | SVPT [E12] (10) | SVPT [F12] (12) |
| | | SVPE [C6] (10) | | SVPC [C6] (16) | SVPT [C65] (16) | SVT [C65] (16) | | | SVPC [E12] (10) | SVPC [F12] (12) |
| | | | | | SVPT [E7] (20) | SVPT [C65] (16) | | | SVP [F12] (12) | |
| | | | | | SVPC [E7] (20) | | | | | |
| | | | | | SVP [E12] (13) | | | | | |
| 4.0 | SVPC [C6] (27,21,15) | | | SVT [E7] (22) | SVPA [F8] (20) | | | SVPC [E12] (12) | SVT [E12] (12) | |
| | SVP [E7] (35) | | | SVPT [E7] (22) | SVPS [F8] (20) | | | SVP [F12] (12) | SVPT [E12] (12) | |
| | | | | SVPC [E7] (22) | SVP [F8] (25) | | | | SVPC [E12] (12) | |
| | | | | SVPC [E12] (9) | | | | | | |
| | | | | SVP [E12] (13) | | | | | | |
| 6.3 | SVT [C65] (15) | SVT [E7] (22) | SVPA [F8] (20) | | | SVT [E12] (12) | | | | |
| | SVPT [C65] (15) | SVPT [E7] (22) | SVPS [F8] (20) | | | SVPT [E12] (12) | | | | |
| | SVPC [C6] (17) | SVPC [E7] (22) | SVP [E12] (15) | | | SVPC [E12] (12) | | | | |
| | SVP [F8] (25) | | SVP [F8] (25) | | | SVP [F12] (12) | | | | |
| | | | | | | | | | | |
| 10 | SVPA [F8] (24) | | | SVP [F12] (13) | | | | | | |
| | SVPC [E7] (19) | | | | | | | | | |
| | SVPS [F8] (24) | | | | | | | | | |
| | SVP [E12] (17) | | | | | | | | | |
| | SVP [F8] (25) | | | | | | | | | |
| 16 | SVPG [C10L] (6.5) | | SVPE [F12] (10) | SVT [E10] (18) | SVPG [E12] (8) | SVPG [F10] (9) | SVT [F10] (18) | SVPG [F12] (7) | | |
| | SVPG [E7] (16) | | | SVT [E12] (14) | SVPK [E12] (14) | | SVT [F12] (12) | SVPK [F12] (12) | | |
| | SVPK [E7] (22) | | | SVPT [E10] (16) | | | SVPT [F10] (16) | | | |
| | SVP [F12] (16) | | | SVPT [E12] (14) | | | SVPT [F12] (12) | | | |
| | | | | SVPF [E10] (18) | | | SVPF [F10] (16) | | | |
| | | | | SVPF [E12] (14) | | | SVPF [F12] (12) | | | |
| | | | | SVPG [E10] (10) | | | SVF [F10] (16) | | | |
| | | | | SVF [E12] (14) | | | SVF [F12] (12) | | | |

Size list ø x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (SMD type) (Vol. : 20 to 100 V / Cap. : 3.3 to 33 μ F)

Series [Size]
(ESR m Ω)

| V | μ F | 3.3 | 4.7 | 6.8 | 8.2 | 10 | 12 | 15 | 18 | 22 | 27 | 33 |
|-----|---------|-----|------------------|-----|-------------------|-------------------|------------------|--------------------|-------------------|--------------------|-------------------|--------------------|
| 20 | | | | | | SVPA [B6] (40) | | | | SVPA [C6] (35) | SVP [C6] (60) | SVPG [B45] (27) |
| | | | | | | SVP [B6] (120) | | | | SVPS [C6] (60) | | SVP [E7] (45) |
| | | | | | | | | | | SVQP [C6] (60) | | |
| | | | | | | | | | | SVP [C6] (60) | | |
| | | | | | | | | | | | | |
| 25 | | | | | | SVPD [C6] (65) | | SVPG [B45] (30) | | SVPD [E7] (48) | SVPF [B6] (40) | SVPK [B6] (35) |
| | | | | | | SVPS [E7] (60) | | | | | SVF [B6] (40) | |
| | | | | | | | | | | | | |
| 35 | | | | | SVPD [E7] (70) | | | | SVPD [F8] (60) | SVPD [E12] (50) | | |
| | | | | | | | | | | SVPF [C6] (35) | | |
| | | | | | | | | | | SVF [C6] (35) | | |
| | | | | | | | | | | SVPK [B6] (35) | | |
| 50 | | | | | | SVPF [C6] (40) | | | SVT [E7] (35) | SVPK [C6] (35) | | SVPK [E7] (35) |
| | | | | | | SVF [C6] (40) | | | SVPT [E7] (35) | | | |
| | | | | | | SVPK [B6] (80) | | | SVPF [E7] (35) | | | |
| | | | | | | | | | SVF [E7] (35) | | | |
| 63 | | | | | | | | | SXV [E7] (60) | | | SXV [E12] (25) |
| | | | | | | | | | | | | |
| 80 | | | | | | | SXV [E7] (60) | | | | SXV [E12] (35) | SXV [E12] (35) |
| | | | | | | | | | | | SXV [F8] (55) | |
| 100 | | | SXV [E7] (60) | | | | | SXV [E12] (40) | SXV [E12] (40) | SXV [F12] (30) | SXV [F12] (30) | |
| | | | | | | | | SXV [F8] (60) | SXV [F12] (30) | | | |
| | | | | | | | | | | | | |

Size list ϕ x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (SMD type) (Vol. : 20 to 100 V / Cap. : 39 to 270 μF)

Series [Size]
(ESR mΩ)

| V | μF | 39 | 47 | 56 | 68 | 82 | 100 | 120 | 150 | 180 | 220 | 270 | |
|-----|----|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|-------------------|--------------------|-------------------|--------------------|--|
| 20 | | | SVPA [E7] (33) | SVPF [B6] (30) | SVPK [B6] (30) | | SVP [E12] (24) | SVPF [C6] (25) | SVPK [C6] (25) | SVT [E7] (25) | SVPK [E7] (25) | | |
| | | | SVPS [E7] (45) | SVP [F8] (40) | SVP [F8] (40) | | | SVF [C6] (25) | SVP [F12] (20) | SVPT [E7] (25) | | | |
| | | | SVQP [E7] (45) | SVF [B6] (30) | | | | | | SVPF [E7] (25) | | | |
| | | | SVP [E7] (45) | | | | | | | | SVF [E7] (25) | | |
| | | | | | | | | | | | | | |
| 25 | | SVPD [F8] (45) | SVPD [E12] (30) | SVPF [C6] (30) | | SVPD [F12] (28) | SVT [E7] (24) | SVPK [E7] (24) | | SVT [E12] (16) | | SVPK [E12] (16) | |
| | | | SVPF [C6] (30) | SVF [C6] (30) | | SVPF [E7] (28) | SVPT [E7] (24) | | | SVPT [E12] (16) | | | |
| | | | SVF [C6] (30) | | | SVPK [C6] (25) | SVPF [E7] (24) | | | SVPF [E12] (16) | | | |
| | | | | | | SVF [E7] (28) | SVF [E7] (24) | | | SVF [E12] (16) | | | |
| 35 | | SVT [E7] (30) | SVPD [F12] (30) | | | SVT [E12] (20) | | SVT [F12] (18) | | SVPK [E12] (20) | | | |
| | | SVPT [E7] (30) | SVPK [C6] (27) | | | SVPT [E12] (20) | | SVPT [F12] (18) | | | | | |
| | | SVPF [E7] (30) | | | | SVPF [E12] (20) | | SVPF [F12] (18) | | | | | |
| | | SVF [E7] (30) | | | | SVF [E12] (20) | | SVF [F12] (18) | | | | | |
| | | | | | | SVPK [E7] (25) | | | | | | | |
| 50 | | SVT [E12] (25) | | | SVT [F12] (20) | | | SVPK [F12] (20) | | | | | |
| | | SVPT [E12] (25) | | | SVPT [F12] (20) | | | | | | | | |
| | | SVPF [E12] (25) | | | SVPF [F12] (20) | | | | | | | | |
| | | SVF [E12] (25) | | | SVF [F12] (20) | | | | | | | | |
| 63 | | SXV [E12] (25) | | SXV [E12] (25) | SXV [F12] (25) | | SXV [F12] (25) | | | | | | |
| | | SXV [F8] (50) | | | | | | | | | | | |
| 80 | | | SXV [F12] (28) | SXV [F12] (28) | | | | | | | | | |
| | | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Size list ø x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (SMD type) (Vol. : 20 to 100 V / Cap. : 330 to 2700 μ F)

Series [Size]
(ESR m Ω)

| V | μ F | 330 | 390 | 470 | 560 | 680 | 820 | 1000 | 1200 | 1500 | 2700 |
|-----|---------|--------------------|--------------------|--------------------|--------------------|--------------------|-----|------|------|------|------|
| 20 | | | SVT [E12] (14) | SVPK [E12] (14) | SVT [F12] (12) | SVPK [F12] (12) | | | | | |
| | | | SVPT [E12] (14) | | SVPT [F12] (12) | | | | | | |
| | | | SVPF [E12] (14) | | SVPF [F12] (12) | | | | | | |
| | | | SVF [E12] (14) | | SVF [F12] (12) | | | | | | |
| | | | | | | | | | | | |
| 25 | | SVT [F12] (14) | | SVPK [F12] (14) | | | | | | | |
| | | SVPT [F12] (14) | | | | | | | | | |
| | | SVPF [F12] (14) | | | | | | | | | |
| | | SVF [F12] (14) | | | | | | | | | |
| 35 | | SVPK [F12] (18) | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 50 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 63 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 80 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 100 | | | | | | | | | | | |
| | | | | | | | | | | | |

Size list ϕ x L (mm)

| | | | | | | | | | | | |
|----|---------|-----|---------|-----|---------|------|----------|-----|----------|-----|-----------|
| A5 | 4.0x5.4 | B45 | 5.0x4.4 | C6 | 6.3x5.9 | C8 | 6.3x7.9 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | B6 | 5.0x5.9 | C65 | 6.3x6.4 | C10 | 6.3x9.9 | E10 | 8.0x10.0 | F10 | 10.0x10.0 |
| | | | | | | C10L | 6.3x10.4 | E12 | 8.0x11.9 | F12 | 10.0x12.6 |

Voltage - Capacitance table (Radial lead type) (Vol. : 2.5 to 16 V / Cap. : 6.8 to 68 μ F)

Series [Size]
(ESR m Ω)

| V μ F | 6.8 | 12 | 15 | 18 | 22 | 27 | 33 | 39 | 47 | 56 | 68 |
|-----------|-----|----|----|----|----|----|----|-------------------|----|-------------------|----|
| 2.5 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 4.0 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 6.3 | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 10 | | | | | | | | | | SEQP [C6] (45) | |
| | | | | | | | | | | SEP [C6] (45) | |
| | | | | | | | | | | | |
| 16 | | | | | | | | SEQP [C6] (50) | | | |
| | | | | | | | | SEP [C6] (50) | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

Size list ϕ x L (mm)

| | | | | | | | |
|-----------|---------|------------|---------|------------|----------|------------|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

Voltage - Capacitance table (Radial lead type) (Vol. : 2.5 to 16 V / Cap. : 82 to 560 μF)

Series [Size]
(ESR mΩ)

| V | μF | 82 | 100 | 120 | 150 | 180 | 220 | 270 | 330 | 390 | 470 | 560 | |
|-----|----|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|--------------------|--------------------|--|
| 2.5 | | | SEPC [B9] (7) | | | | | | SEPC [B9] (7) | SEPC [C6] (10) | SEPC [B9] (7) | SEPC [B9] (7) | |
| | | | | | | | | | | | | SEPC [C6] (10) | |
| | | | | | | | | | | | | SEPC [C9] (7) | |
| | | | | | | | | | | | | SEPC [E9] (8) | |
| | | | | | | | | | | | | | |
| 4.0 | | | SEP [C6] (40) | | SEQP [C6] (35) | | SEP [E7] (35) | | SEQP [E7] (35) | | SEP [F7] (25) | SEPC [C9] (7) | |
| | | | | | SEP [E7] (35) | | | | SEP [E7] (35) | | | SEPC [E9] (7) | |
| | | | | | | | | | | | | SEPC [E13] (7) | |
| | | | | | | | | | | | | SEQP [E12] (13) | |
| | | | | | | | | | | | | SEP [E12] (13) | |
| 6.3 | | SEQP [C6] (45) | | | SEQP [E7] (40) | | SEPC [C55] (18) | | SEQP [F8] (25) | | SEPC [C9] (7) | SEPC [C9] (7) | |
| | | SEP [C6] (45) | | | SEP [E7] (40) | | | | SEP [F8] (25) | | SEPC [E9] (8) | SEPC [E9] (7) | |
| | | | | | | | | | | | SEPC [E13] (8) | | |
| | | | | | | | | | | | SEQP [E12] (15) | | |
| | | | | | | | | | | | SEP [E12] (15) | | |
| 10 | | | | SEQP [E7] (35) | | | | SEPC [E7] (22) | SEQP [E12] (17) | | | SEQP [F13] (13) | |
| | | | | SEP [E7] (35) | | | | SEQP [F8] (25) | SEP [E12] (17) | | | SEP [F13] (13) | |
| | | | | | | | | SEP [F8] (25) | | | | | |
| 16 | | SEQP [E7] (40) | SEPC [C6] (24) | | SEPC [E7] (22) | SEF [C6] (22) | SEPC [E7] (13) | SEF [E7] (22) | SEQP [F13] (16) | | SEPG [E9] (8) | SEF [E12] (14) | |
| | | SEP [E7] (40) | SEPC [C9] (10) | | SEPG [B9] (12) | SEPC [E9] (10) | | SEPG [C9] (10) | SEP [F13] (16) | | SEPC [F13] (10) | SEPG [E13] (8) | |
| | | | | | SEPF [C55] (30) | SEPC [E12] (16) | | SEPG [C10] (8) | | | | SEPF [E12] (14) | |
| | | | | | SEQP [F8] (30) | SEPF [C6] (22) | | SEPC [E9] (10) | | | | | |
| | | | | | SEP [F8] (30) | SEQP [E12] (20) | | SEPC [E12] (11) | | | | | |
| | | | | | | SEP [E12] (20) | | SEPF [E7] (22) | | | | | |

Size list ø x L (mm)

| | | | | | | | |
|-----------|---------|------------|---------|------------|----------|------------|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

Voltage - Capacitance table (Radial lead type) (Vol. : 2.5 to 16 V / Cap. : 680 to 2700 μF)

Series [Size]
(ESR mΩ)

| V \ μF | 680 | 820 | 1000 | 1200 | 1500 | 2700 |
|--------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 2.5 | SEP [E12] (13) | SEPC [C9] (7) | SEPC [E9] (7) | | SEP [F13] (12) | SEPC [F13] (10) |
| | | SEPC [E7] (8) | | | | |
| | | SEPC [E9] (5,7) | | | | |
| | | SEPC [E13] (7) | | | | |
| 4.0 | SEPC [E13] (7) | SEPC [F13] (7) | | SEQP [F13] (12) | | |
| | SEQP [F8] (25) | | | SEP [F13] (12) | | |
| | SEP [F8] (25) | | | | | |
| | | | | | | |
| 6.3 | SEPC [F13] (7) | SEQP [F13] (12) | SEPC [E7] (18) | | SEPC [F13] (10) | |
| | | SEP [F13] (12) | | | | |
| | | | | | | |
| | | | | | | |
| 10 | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| 16 | | | SEF [F13] (12) | | | |
| | | | SEPF [F13] (12) | | | |
| | | | | | | |
| | | | | | | |

Size list ø x L (mm)

| | | | | | | | |
|-----------|---------|------------|---------|------------|----------|------------|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

Voltage - Capacitance table (Radial lead type) (Vol. : 20 to 100 V / Cap. : 6.8 to 68 μ F)

Series [Size]
(ESR m Ω)

| V | μ F | 6.8 | 12 | 15 | 18 | 22 | 27 | 33 | 39 | 47 | 56 | 68 |
|-----|---------|--------------------|----|-------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 20 | | | | | | SEQP [C6] (60) | | SEP [E7] (45) | | SEQP [E7] (45) | SEP [F8] (40) | SEQP [F8] (40) |
| | | | | | | SEP [C6] (60) | | | | SEP [E7] (45) | | SEP [F8] (40) |
| | | | | | | | | | | | | |
| 25 | | | | | | | | | | | SEF [C6] (30) | |
| | | | | | | | | | | | SEPF [C6] (30) | |
| | | | | | | | | | | | | |
| 32 | | SEQP [E7] (100) | | SEQP [F8] (80) | SEQP [E12] (50) | SEPF [C55] (35) | | | | | | SEF [E7] (25) |
| | | | | | | | | | | | | SEPF [E7] (25) |
| | | | | | | | | | | | | |
| 35 | | | | | | SEF [C6] (35) | | | SEF [E7] (30) | SEK [C6] (27) | | |
| | | | | | | SEPF [C6] (35) | | | SEPF [E7] (30) | | | |
| | | | | | | | | | | | | |
| 50 | | | | | | SEK [C6] (35) | | SEK [E7] (35) | | | | SEK [E12] (25) |
| | | | | | | | | | | | | |
| 63 | | | | | SXE [E7] (60) | | | SXE [E12] (25) | SXE [E12] (25) | | SXE [E12] (25) | SXE [F13] (25) |
| | | | | | | | | | SXE [F8] (50) | | | |
| | | | | | | | | | | | | |
| 80 | | SXE [E7] (60) | | | | | SXE [E12] (35) | SXE [E12] (35) | | SXE [F13] (28) | SXE [F13] (28) | |
| | | | | | | | SXE [F8] (55) | | | | | |
| | | | | | | | | | | | | |
| 100 | | SXE [E7] (60) | | SXE [E12] (40) | SXE [E12] (40) | SXE [F13] (30) | SXE [F13] (30) | | | | | |
| | | | | SXE [F8] (60) | SXE [F13] (30) | | | | | | | |
| | | | | | | | | | | | | |

Size list ϕ x L (mm)

| | | | | | | | |
|----|---------|-----|---------|-----|----------|-----|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

Voltage - Capacitance table (Radial lead type) (Vol. : 20 to 80 V / Cap. : 82 to 560 μF)

Series [Size]
(ESR mΩ)

| V | μF | 82 | 100 | 120 | 150 | 180 | 220 | 270 | 330 | 390 | 470 | 560 |
|-----|----|--------------------|--------------------|--------------------|--------------------|--------------------|-----|-------------------|--------------------|--------------------|-------------------|--------------------|
| 20 | | | SEQP [E12] (24) | SEF [C6] (25) | SEQP [F13] (20) | SEF [E7] (25) | | | | SEF [E12] (24) | | SEF [F13] (12) |
| | | | SEP [E12] (24) | SEPF [C6] (25) | SEP [F13] (20) | SEPF [E7] (25) | | | | SEPF [E12] (24) | | SEPF [F13] (12) |
| | | | SEP [F8] (35) | | | | | | | | | |
| 25 | | SEK [C6] (25) | | SEK [E7] (24) | | SEF [E12] (16) | | SEK [E12] (16) | SEF [F13] (14) | | SEK [F13] (14) | |
| | | SEF [E7] (28) | | | | SEPF [E12] (16) | | | SEPF [F13] (14) | | | |
| | | SEPF [E7] (28) | | | | | | | | | | |
| 32 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 35 | | SEK [E7] (25) | | SEF [F13] (18) | | SEK [E12] (20) | | | SEK [F13] (18) | | | |
| | | SEF [E12] (20) | | SEPF [F13] (18) | | | | | | | | |
| | | SEPF [E12] (20) | | | | | | | | | | |
| 50 | | | SEK [F13] (20) | | | | | | | | | |
| | | | | | | | | | | | | |
| 63 | | SXE [F13] (25) | | | | | | | | | | |
| | | | | | | | | | | | | |
| 80 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 100 | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Size list ø x L (mm)

| | | | | | | | |
|----|---------|-----|---------|-----|----------|-----|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

Voltage - Capacitance table (Radial lead type) (Vol. : 20 to 100 V / Cap. : 680 to 2700 μ F)

Series [Size]
(ESR m Ω)

| V \ μ F | 680 | 820 | 1000 | 1200 | 1500 | 2700 |
|-------------|-----|-----|------|------|------|------|
| 20 | | | | | | |
| | | | | | | |
| | | | | | | |
| 25 | | | | | | |
| | | | | | | |
| | | | | | | |
| 32 | | | | | | |
| | | | | | | |
| | | | | | | |
| 35 | | | | | | |
| | | | | | | |
| | | | | | | |
| 50 | | | | | | |
| | | | | | | |
| | | | | | | |
| 63 | | | | | | |
| | | | | | | |
| | | | | | | |
| 80 | | | | | | |
| | | | | | | |
| | | | | | | |
| 100 | | | | | | |
| | | | | | | |
| | | | | | | |

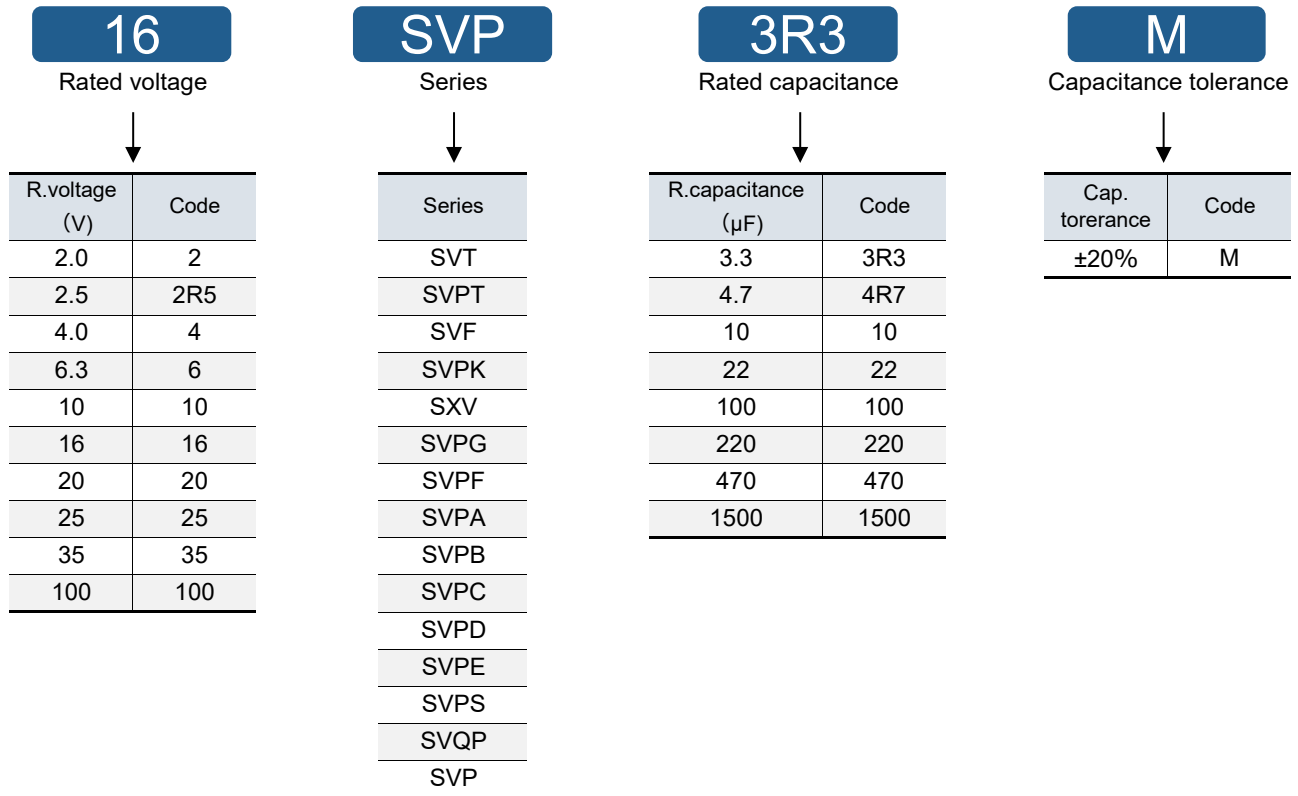
Size list ϕ x L (mm)

| | | | | | | | |
|-----------|---------|------------|---------|------------|----------|------------|-----------|
| B9 | 5.0x8.9 | C55 | 6.3x5.4 | E7 | 8.0x6.9 | F8 | 10.0x7.9 |
| | | C6 | 6.3x5.9 | E9 | 8.0x8.9 | F13 | 10.0x12.9 |
| | | C9 | 6.3x8.9 | E12 | 8.0x11.9 | | |
| | | C10 | 6.3x9.9 | E13 | 8.0x12.9 | | |

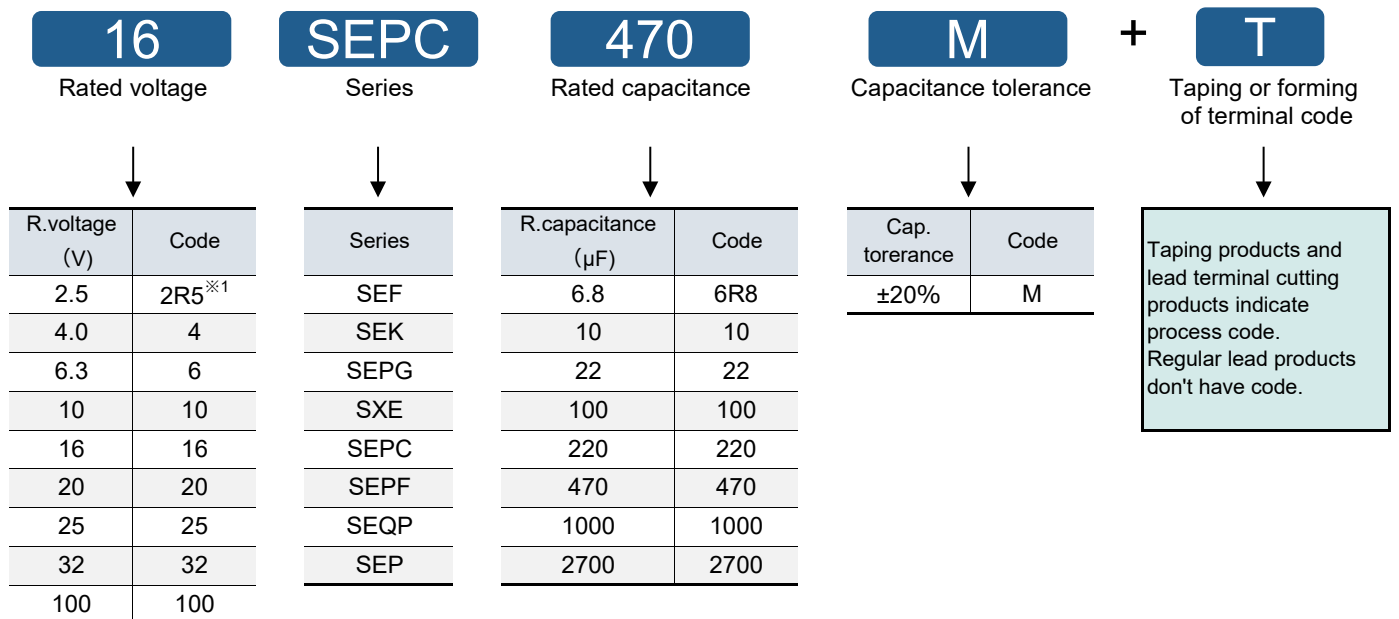
Explanation of part numbers

◇ Part number system

• Surface mount type



• Radial lead type



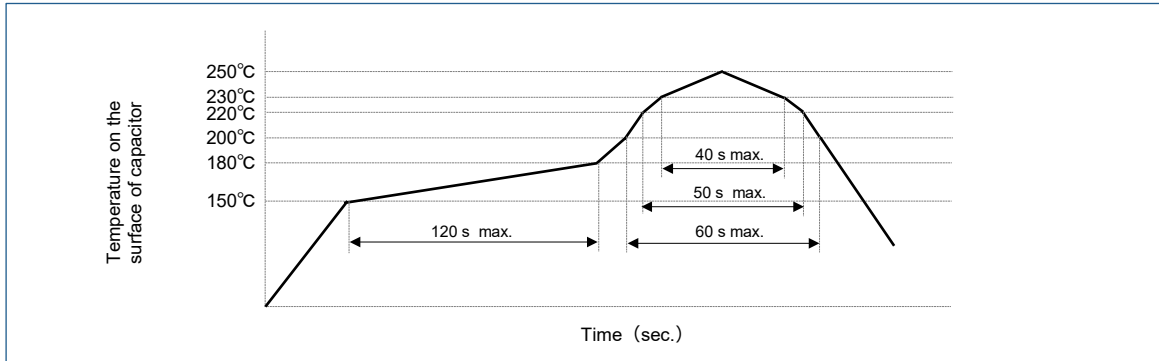
※1 Code 2 is used for 2.5 V products of B9, C6, C9, E7, E9 and F13 size in SEPC series.

Mounting specifications

◇ **Recommendable reflow soldering (SMD type)**

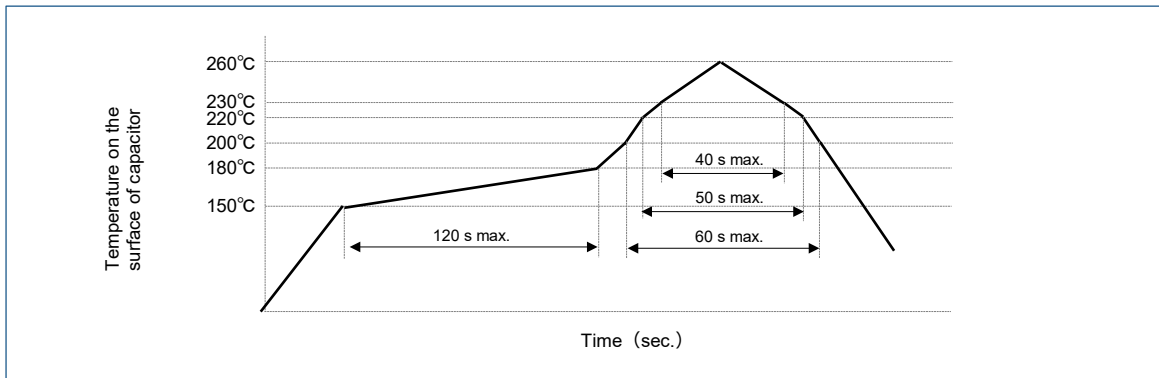
- Peak temperature 250 °C lead free reflow soldering profile

The cycle of reflow soldering : 2 max.



- Peak temperature 260 °C lead free reflow soldering profile

The cycle of reflow soldering : 1 max.



◇ **Flow soldering (Radial lead type)**

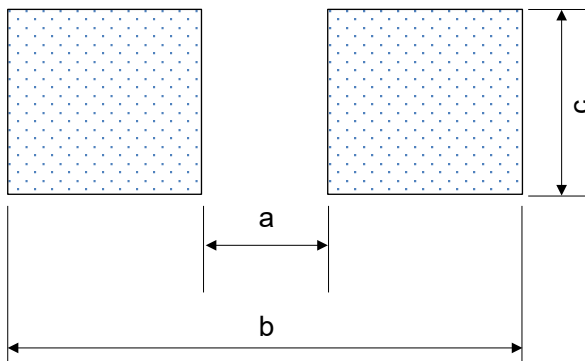
| | Temperature | Time | Flow number |
|---------------------|---|-------------------|-------------------------------|
| Preheating | 120 °C or less (ambient temperature) | 120 sec. or less | 1 time |
| Soldering condition | 260 °C+5 °C or less | 10+1 sec. or less | 2 times or less ^{*1} |

*1 : When soldering 2 times, total immersion time should be 10+1 sec. or less.

◇ **Soldering with a soldering iron**

- Tip of a soldering iron : 400 °C±10 °C
- Working time : 5 sec. max.

Land Pattern



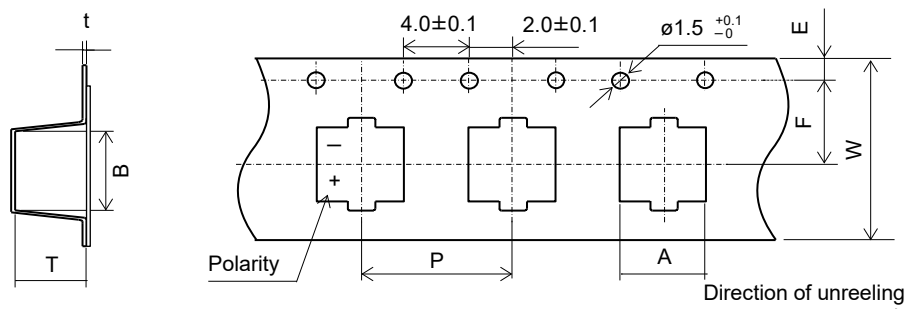
| Size code | a | b | c |
|-----------|-----|------|-----|
| A5 | 1.0 | 6.2 | 1.6 |
| B45 | 1.4 | 7.4 | 1.6 |
| B6 | 1.4 | 7.4 | 1.6 |
| C5 | 2.1 | 9.1 | 1.6 |
| C55 | 2.1 | 9.1 | 1.6 |
| C6 | 2.1 | 9.1 | 1.6 |
| C65 | 2.1 | 9.1 | 1.6 |
| C8 | 2.1 | 9.1 | 1.6 |
| C10 | 2.1 | 9.1 | 1.6 |
| C10L | 2.1 | 9.1 | 2.5 |
| E7 | 2.8 | 11.1 | 1.9 |
| E10 | 2.8 | 11.1 | 1.9 |
| E12 | 2.8 | 11.1 | 1.9 |
| F8 | 4.3 | 13.1 | 1.9 |
| F10 | 4.3 | 13.1 | 1.9 |
| F12 | 4.3 | 13.1 | 1.9 |

Packing specifications

◇ SMD type

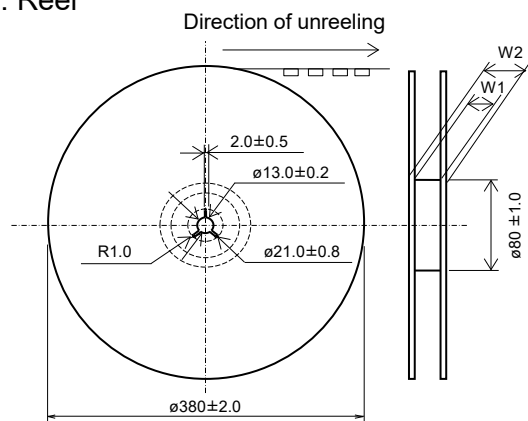
● Taping

1-1. Carrier tape



| Size code | A ± 0.2 | B ± 0.2 | W ± 0.3 | F ± 0.1 | E ± 0.1 | P ± 0.1 | t ± 0.1 | T ± 0.2 |
|-----------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| A5 | 4.7 | 4.7 | 12.0 | 5.5 | 1.75 | 8.0 | 0.4 | 5.8 |
| B45 | 5.6 | 5.6 | 16.0 | 7.5 | 1.75 | 8.0 | 0.4 | 4.8 |
| B6 | 5.6 | 5.6 | 16.0 | 7.5 | 1.75 | 8.0 | 0.4 | 6.2 |
| C5 | 6.9 | 6.9 | 16.0 | 7.5 | 1.75 | 12.0 | 0.4 | 5.3 |
| C55 | 6.9 | 6.9 | 16.0 | 7.5 | 1.75 | 12.0 | 0.4 | 6.2 |
| C6 | 6.9 | 6.9 | 16.0 | 7.5 | 1.75 | 12.0 | 0.4 | 6.2 |
| C65 | 6.9 | 6.9 | 16.0 | 7.5 | 1.75 | 12.0 | 0.4 | 6.7 |
| C8 | 7.0 | 7.0 | 16.0 | 7.5 | 1.75 | 12.0 | 0.5 | 8.2 |
| C10 | 7.0 | 7.0 | 24.0 | 11.5 | 1.75 | 16.0 | 0.5 | 10.5 |
| C10L | 7.0 | 7.0 | 16.0 | 7.5 | 1.75 | 12.0 | 0.5 | 11.0 |
| E7 | 8.6 | 8.6 | 24.0 | 11.5 | 1.75 | 12.0 | 0.4 | 7.2 |
| E10 | 8.6 | 8.6 | 24.0 | 11.5 | 1.75 | 16.0 | 0.5 | 11.0 |
| E12 | 8.6 | 8.6 | 24.0 | 11.5 | 1.75 | 16.0 | 0.5 | 12.3 |
| F8 | 10.7 | 10.7 | 24.0 | 11.5 | 1.75 | 16.0 | 0.4 | 8.2 |
| F10 | 10.7 | 10.7 | 24.0 | 11.5 | 1.75 | 16.0 | 0.4 | 11.0 |
| F12 | 10.7 | 10.7 | 24.0 | 11.5 | 1.75 | 16.0 | 0.4 | 13.0 |

1-2. Reel



| Size code | W1 ± 0.5 | W2 ± 1.0 |
|-------------------------------------|--------------|--------------|
| A5 | 13.0 | 17.5 |
| B45, B6, C5, C55, C6, C65, C8, C10L | 17.0 | 21.5 |
| C10, E7, E10, E12, F8, F10, F12 | 25.0 | 29.5 |

● Minimum packing quantity and weight

| Size code | Quantity (pcs./Reel, $\phi 380$) | Typical weight (g) |
|-----------|-----------------------------------|--------------------|
| A5 | 2000 | 700 |
| B45 | 2500 | 900 |
| B6 | 1500 | 800 |
| C5 | 1300 | 800 |
| C55 | 1000 | 800 |
| C6 | 1000 | 800 |
| C65 | 1000 | 800 |
| C8 | 900 | 800 |
| C10 | 500 | 700 |
| C10L | 700 | 900 |

| Size code | Quantity (pcs./Reel, $\phi 380$) | Typical weight (g) |
|-----------|-----------------------------------|--------------------|
| E7 | 1000 | 1100 |
| E10 | 500 | 900 |
| E12 | 400 | 800 |
| F8 | 500 | 1000 |
| F10 | 500 | 1000 |
| F12 | 400 | 1000 |

Packing specifications

◇ Radial lead type

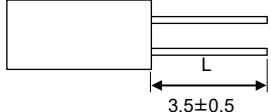
● Lead terminal process

1-1. Correspondence list

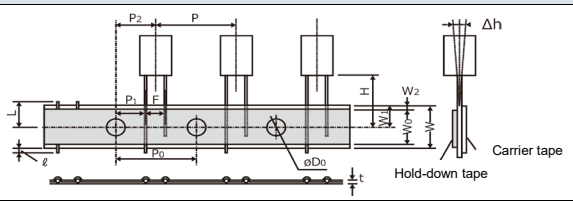
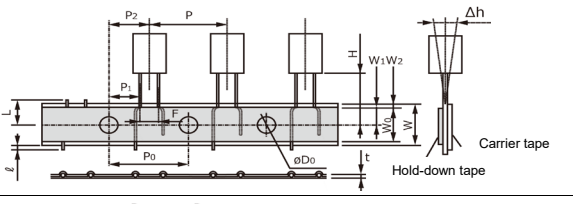
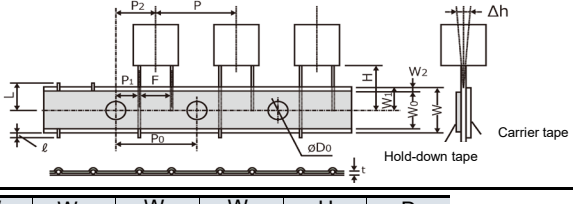
※ The following table is a standard specification. Please contact us separately concerning specifications except for that mentioned below.
 Because of a limit on the length of a model name, the part of process name changes to +S from +TSS, +D from +TS,
 +3 from +C3. Please contact us for details.

| Series | Size code | Bag-packed products (lead terminal cutting) | | Taping products |
|-----------------|-----------------------------------|---|--------------|-----------------|
| | | Not processed | Straight cut | |
| SEP, SEQP, SEPC | B9, C55, C6, C9, C10, E7, E9, E12 | No code | +C3 (+3) | +TSS (+S) |
| SEPF, SXE, SEPG | E13 | No code | +C3 (+3) | +TS (+D) |
| SEF, SEK | F8, F13 | No code | +C3 (+3) | +T |

1-2. Lead terminal cutting specifications

| Process names | Size code | Lead terminal cutting code | Lead terminal dimensions |
|---------------|---|----------------------------|--|
| Straight cut | B9 C55, C6, C9, C10 E7, E9, E12, E13 F8, F13 | +C3 (+3) |  Unit : mm |

1-3. Taping specifications for automatic insertion

| Size code | Case size | F | Taping code | Taping dimensions |
|------------------|-----------|----------|-------------|--|
| B9 | ø5 | F=2.0 mm | +TSS (+S) |  |
| C55, C6, C9, C10 | ø6.3 | F=2.5 mm | | |
| E7, E9, E12 | ø8 | F=3.5 mm | | |
| E13 | ø8 | F=3.5 mm | +TS (+D) |  |
| F8, F13 | ø10 | F=5.0 mm | +T |  |

| Taping code | Case size | F | P | P ₀ | P ₁ | P ₂ | Δh | W | W ₀ | W ₁ | W ₂ | H | øD ₀ |
|-------------|-----------|-----------------------------------|------|----------------|----------------|----------------|------|------|----------------|----------------|----------------|-------|-----------------|
| | | ^{+0.8} / _{-0.2} | ±1.0 | ±0.2 | ±0.5 | ±1.0 | ±1.0 | ±0.5 | min. | ±0.5 | max. | ±0.75 | ±0.2 |
| +TSS (+S) | ø5 | 2.0 | 12.7 | 12.7 | 5.35 | 6.35 | 0 | 18.0 | 9.5 | 9.0 | 2.5 | 17.5 | 4.0 |
| | ø6.3 | 2.5 | 12.7 | 12.7 | 5.10 | 6.35 | 0 | 18.0 | 9.5 | 9.0 | 2.5 | 17.5 | 4.0 |
| | ø8 | 3.5 | 12.7 | 12.7 | 4.60 | 6.35 | 0 | 18.0 | 9.5 | 9.0 | 2.5 | 17.5 | 4.0 |
| +TS (+D) | ø8 | 3.5 | 12.7 | 12.7 | 4.60 | 6.35 | 0 | 18.0 | 9.5 | 9.0 | 2.5 | 17.5 | 4.0 |
| +T | ø10 | 5.0 | 12.7 | 12.7 | 3.85 | 6.35 | 0 | 18.0 | 9.5 | 9.0 | 2.5 | 18.5 | 4.0 |

| Taping code | Case size | t | ℓ | L |
|-------------|-----------|------|------|------|
| | | ±0.3 | max. | max. |
| +TSS (+S) | ø5 | 0.6 | 0 | 11.0 |
| | ø6.3 | 0.6 | 0 | 11.0 |
| | ø8 | 0.6 | 0 | 11.0 |
| +TS (+D) | ø8 | 0.6 | 0 | 11.0 |
| +T | ø10 | 0.6 | 0 | 11.0 |

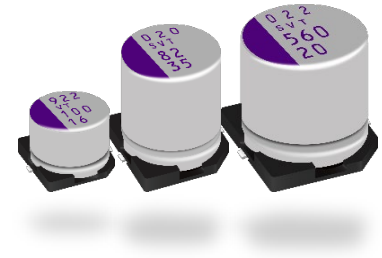
Unit : mm

● Minimum packing quantity and weight

| Size code | Case size | Bag-packed products | | Taping products | |
|-----------|-----------|---------------------|-------------------|--------------------|-------------------|
| | | Quantity(pcs./Bag) | Typical weight(g) | Quantity(pcs./Bag) | Typical weight(g) |
| B9 | ø5 | 500 | 180 | 2000 | 1000 |
| C55 | ø6.3 | 500 | 150 | 1500 | 650 |
| C6 | ø6.3 | 500 | 160 | 1500 | 700 |
| C9 | ø6.3 | 500 | 240 | 1500 | 1000 |
| C10 | ø6.3 | 500 | 260 | 1500 | 1100 |

| Size code | Case size | Bag-packed products | | Taping products | |
|-----------|-----------|---------------------|-------------------|--------------------|-------------------|
| | | Quantity(pcs./Bag) | Typical weight(g) | Quantity(pcs./Bag) | Typical weight(g) |
| E7 | ø8 | 200 | 110 | 1000 | 820 |
| E9 | ø8 | 200 | 130 | 1000 | 900 |
| E12 | ø8 | 200 | 200 | 1000 | 980 |
| E13 | ø8 | 200 | 160 | 1000 | 1060 |
| F8 | ø10 | 200 | 180 | 500 | 890 |
| F13 | ø10 | 200 | 280 | 500 | 940 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVT series



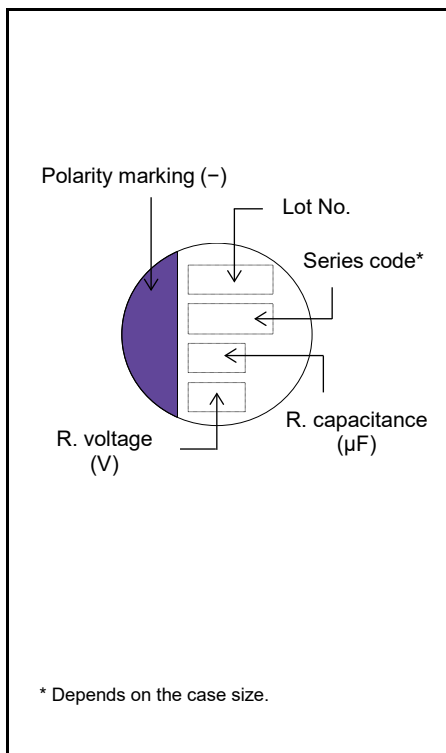
Features

- Low ESR (10 mΩ max.)
- Large capacitance (2700 μF max.)
- 125 °C 2000 h
- RoHS compliance, Halogen free

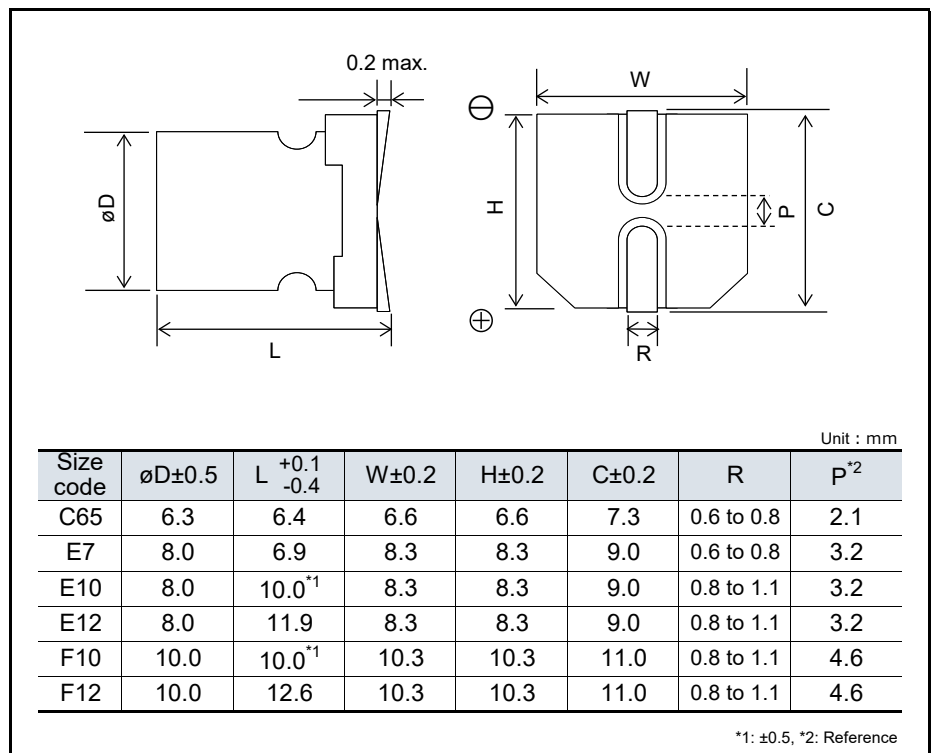
Specifications

| Size code | C65 | E7 | E10 | E12 | F10 | F12 |
|-----------------------------|---|---|-----|------------|------|------------|
| Category temp. range | -55 °C to +125 °C | | | | | |
| Rated voltage range (V) | 2.5 to 16 | 2.5 to 50 | 16 | 2.5 to 50 | 16 | 2.5 to 50 |
| Nominal cap. range (μF) | 100 to 820 | 18 to 680 | 560 | 39 to 1500 | 1000 | 68 to 2700 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | |
| Endurance | +125 °C 2000 h, rated voltage applied | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|---|-------------------------------------|------------------------------|------------------------------------|------------------------------------|---------------------------|
| | | ϕD | L | | Ripple current* ¹ (mA rms) | Allowable ripple current* ¹ (mA rms) | ESR* ² (m Ω max.) | $\tan \delta$ * ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 2.5 | 560 | 6.3 | 6.4 | C65 | 1100 | 3500 | 16 | 0.12 | 300 | 2R5SVT560M | 1000 |
| | 680 | 6.3 | 6.4 | | 1000 | 3500 | 16 | 0.12 | 850 | 2R5SVT680MX | 1000 |
| | | | 8.0 | 6.9 | E7 | 1060 | 3370 | 20 | 0.12 | 500 | 2R5SVT680M |
| | 820 | 6.3 | 6.4 | C65 | 1100 | 3500 | 16 | 0.12 | 1020 | 2R5SVT820M | 1000 |
| | 1500 | 8.0 | 11.9 | E12 | 1620 | 5150 | 10 | 0.12 | 750 | 2R5SVT1500M | 400 |
| | 2700 | 10.0 | 12.6 | F12 | 1600 | 5070 | 12 | 0.12 | 1350 | 2R5SVT2700M | 400 |
| 4.0 | 560 | 8.0 | 6.9 | E7 | 1010 | 3220 | 22 | 0.12 | 500 | 4SVT560M | 1000 |
| | 1500 | 8.0 | 11.9 | E12 | 1480 | 4700 | 12 | 0.12 | 1200 | 4SVT1500M | 400 |
| 6.3 | 330 | 6.3 | 6.4 | C65 | 1070 | 3390 | 15 | 0.12 | 415 | 6SVT330M | 1000 |
| | 390 | 8.0 | 6.9 | E7 | 1010 | 3220 | 22 | 0.12 | 491 | 6SVT390M | 1000 |
| | 820 | 8.0 | 11.9 | E12 | 1480 | 4700 | 12 | 0.12 | 1033 | 6SVT820M | 400 |
| 16 | 100 | 6.3 | 6.4 | C65 | 780 | 2490 | 24 | 0.12 | 300 | 16SVT100M | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 1040 | 3300 | 22 | 0.12 | 864 | 16SVT270M | 1000 |
| | 560 | 8.0 | 10.0 | E10 | 1230 | 3900 | 18 | 0.12 | 1792 | 16SVT560MX | 500 |
| | 560 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 1792 | 16SVT560M | 400 |
| | 1000 | 10.0 | 10.0 | F10 | 1350 | 4300 | 16 | 0.12 | 3200 | 16SVT1000MX | 500 |
| | 1000 | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 3200 | 16SVT1000M | 400 |
| 20 | 180 | 8.0 | 6.9 | E7 | 1010 | 3200 | 25 | 0.12 | 720 | 20SVT180M | 1000 |
| | 390 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 1560 | 20SVT390M | 400 |
| | 560 | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 2240 | 20SVT560M | 400 |
| 25 | 100 | 8.0 | 6.9 | E7 | 1010 | 3200 | 24 | 0.12 | 500 | 25SVT100M | 1000 |
| | 180 | 8.0 | 11.9 | E12 | 1470 | 4650 | 16 | 0.12 | 900 | 25SVT180M | 400 |
| | 330 | 10.0 | 12.6 | F12 | 1580 | 5000 | 14 | 0.12 | 1650 | 25SVT330M | 400 |
| 35 | 39 | 8.0 | 6.9 | E7 | 880 | 2800 | 30 | 0.12 | 273 | 35SVT39M | 1000 |
| | 82 | 8.0 | 11.9 | E12 | 1260 | 4000 | 20 | 0.12 | 574 | 35SVT82M | 400 |
| | 120 | 10.0 | 12.6 | F12 | 1390 | 4400 | 18 | 0.12 | 840 | 35SVT120M | 400 |
| 50 | 18 | 8.0 | 6.9 | E7 | 850 | 2700 | 35 | 0.12 | 180 | 50SVT18M | 1000 |
| | 39 | 8.0 | 11.9 | E12 | 1200 | 3800 | 25 | 0.12 | 390 | 50SVT39M | 400 |
| | 68 | 10.0 | 12.6 | F12 | 1350 | 4300 | 20 | 0.12 | 680 | 50SVT68M | 400 |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < T_x \leq +125\text{ }^\circ\text{C}$) / Allowable ripple current (100 kHz / $T_x \leq +105\text{ }^\circ\text{C}$)

Tx: Temperature measured at the top surface of aluminum case including self-heating by ripple current

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

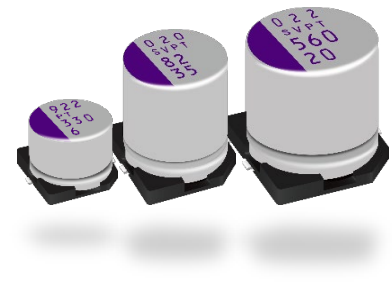
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | $120\text{ Hz} \leq f < 1\text{ kHz}$ | $1\text{ kHz} \leq f < 10\text{ kHz}$ | $10\text{ kHz} \leq f < 100\text{ kHz}$ | $100\text{ kHz} \leq f < 500\text{ kHz}$ |
|--------------|---------------------------------------|---------------------------------------|---|--|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPT series



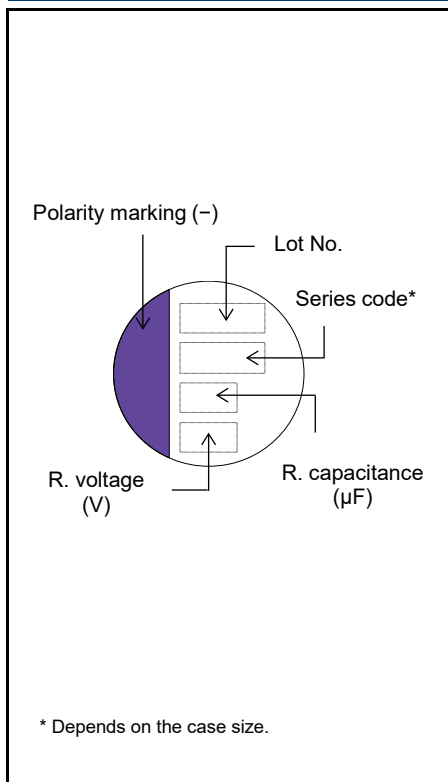
Features

- Low ESR (10 mΩ max.)
- Large capacitance (2700 μF max.)
- 105 °C 20000 h
- RoHS compliance, Halogen free

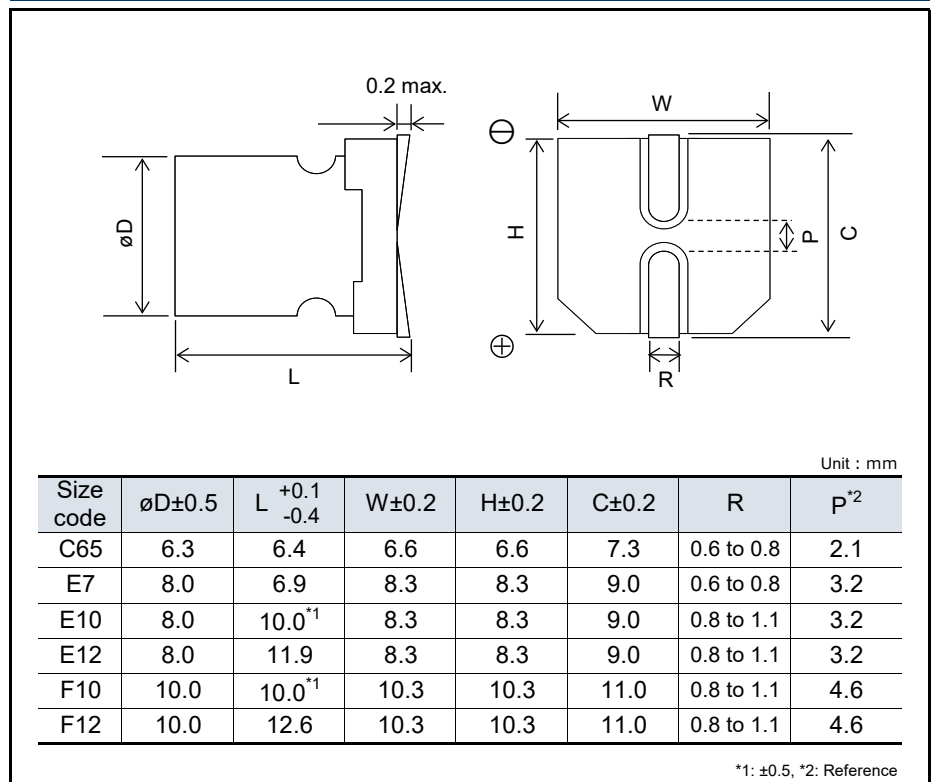
Specifications

| Size code | C65 | E7 | E10 | E12 | F10 | F12 |
|-----------------------------|---|---|-----|------------|------|------------|
| Category temp. range | -55 °C to +105 °C | | | | | |
| Rated voltage range (V) | 2.5 to 16 | 2.5 to 50 | 16 | 2.5 to 50 | 16 | 2.5 to 50 |
| Nominal cap. range (μF) | 100 to 820 | 18 to 680 | 560 | 39 to 1500 | 1000 | 68 to 2700 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | |
| Endurance | +105 °C 20000 h, rated voltage applied | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|------------------------------------|---------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 2.5 | 560 | 6.3 | 6.4 | C65 | 3500 | 16 | 0.12 | 300 | 2R5SVPT560M | 1000 |
| | 680 | 6.3 | 6.4 | | 3500 | 16 | 0.12 | 850 | 2R5SVPT680MX | 1000 |
| | | 8.0 | 6.9 | E7 | 3370 | 20 | 0.12 | 500 | 2R5SVPT680M | 1000 |
| | 820 | 6.3 | 6.4 | C65 | 3500 | 16 | 0.12 | 1020 | 2R5SVPT820M | 1000 |
| | 1500 | 8.0 | 11.9 | E12 | 5150 | 10 | 0.12 | 750 | 2R5SVPT1500M | 400 |
| 4.0 | 2700 | 10.0 | 12.6 | F12 | 5070 | 12 | 0.12 | 1350 | 2R5SVPT2700M | 400 |
| | 560 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 500 | 4SVPT560M | 1000 |
| 6.3 | 1500 | 8.0 | 11.9 | E12 | 4700 | 12 | 0.12 | 1200 | 4SVPT1500M | 400 |
| | 330 | 6.3 | 6.4 | C65 | 3390 | 15 | 0.12 | 415 | 6SVPT330M | 1000 |
| | 390 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 491 | 6SVPT390M | 1000 |
| 16 | 820 | 8.0 | 11.9 | E12 | 4700 | 12 | 0.12 | 1033 | 6SVPT820M | 400 |
| | 100 | 6.3 | 6.4 | C65 | 2490 | 24 | 0.12 | 300 | 16SVPT100M | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 3300 | 22 | 0.12 | 864 | 16SVPT270M | 1000 |
| | 560 | 8.0 | 10.0 | E10 | 3900 | 18 | 0.12 | 1792 | 16SVPT560MX | 500 |
| | 560 | 8.0 | 11.9 | E12 | 4950 | 14 | 0.12 | 1792 | 16SVPT560M | 400 |
| | 1000 | 10.0 | 10.0 | F10 | 4300 | 16 | 0.12 | 3200 | 16SVPT1000MX | 500 |
| 20 | 1000 | 10.0 | 12.6 | F12 | 5400 | 12 | 0.12 | 3200 | 16SVPT1000M | 400 |
| | 180 | 8.0 | 6.9 | E7 | 3200 | 25 | 0.12 | 720 | 20SVPT180M | 1000 |
| | 390 | 8.0 | 11.9 | E12 | 4950 | 14 | 0.12 | 1560 | 20SVPT390M | 400 |
| 25 | 560 | 10.0 | 12.6 | F12 | 5400 | 12 | 0.12 | 2240 | 20SVPT560M | 400 |
| | 100 | 8.0 | 6.9 | E7 | 3200 | 24 | 0.12 | 500 | 25SVPT100M | 1000 |
| | 180 | 8.0 | 11.9 | E12 | 4650 | 16 | 0.12 | 900 | 25SVPT180M | 400 |
| 35 | 330 | 10.0 | 12.6 | F12 | 5000 | 14 | 0.12 | 1650 | 25SVPT330M | 400 |
| | 39 | 8.0 | 6.9 | E7 | 2800 | 30 | 0.12 | 273 | 35SVPT39M | 1000 |
| | 82 | 8.0 | 11.9 | E12 | 4000 | 20 | 0.12 | 574 | 35SVPT82M | 400 |
| 50 | 120 | 10.0 | 12.6 | F12 | 4400 | 18 | 0.12 | 840 | 35SVPT120M | 400 |
| | 18 | 8.0 | 6.9 | E7 | 2700 | 35 | 0.12 | 180 | 50SVPT18M | 1000 |
| | 39 | 8.0 | 11.9 | E12 | 3800 | 25 | 0.12 | 390 | 50SVPT39M | 400 |
| | 68 | 10.0 | 12.6 | F12 | 4300 | 20 | 0.12 | 680 | 50SVPT68M | 400 |

*1: Ripple current (100 kHz / +105 °C)

The surface temperature of aluminum case top must not exceed 105 °C. A rise in temperature due to self-heating by ripple current should be factored in.

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

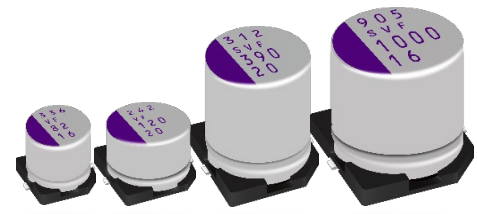
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVF series



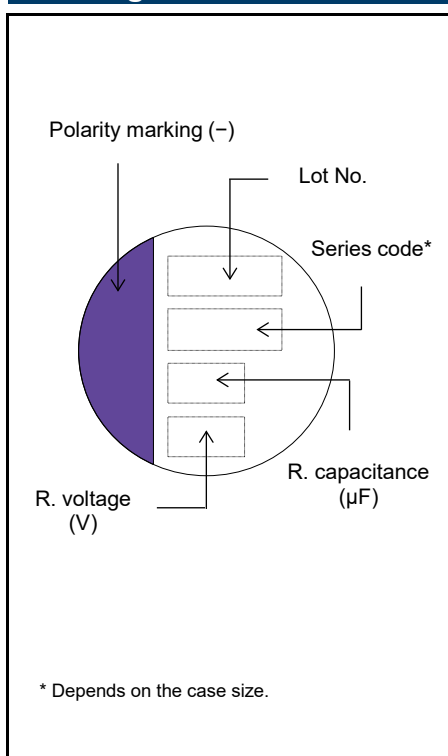
Features

- High voltage (50 V max.)
- Large capacitance (1000 μF max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

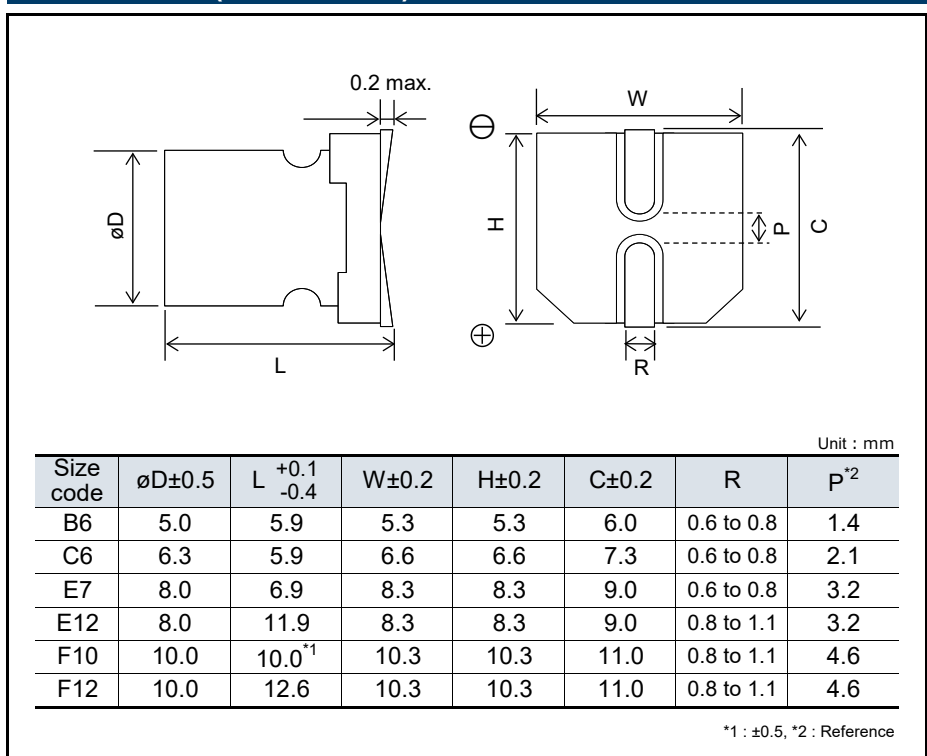
Specifications

| Size code | B6 | C6 | E7 | E12 | F10 | F12 |
|-----------------------------|---|---|-----------------|-----------------|---------|------------------|
| Category temp. range | -55 °C to +125 °C | | | | | |
| Rated voltage range | 16 V to 25 V | 16 V to 50 V | | | 16 V | 16 V to 50 V |
| Nominal cap.range | 27 μF to 82 μF | 10 μF to 180 μF | 18 μF to 270 μF | 39 μF to 560 μF | 1000 μF | 68 μF to 1000 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|---|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | Allowable ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 16 | 82 | 5.0 | 5.9 | B6 | 940 | 3000 | 27 | 0.12 | 262 | 16SVF82M | 1500 |
| | 180 | 6.3 | 5.9 | C6 | 1040 | 3300 | 22 | 0.12 | 576 | 16SVF180M | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 1040 | 3300 | 22 | 0.12 | 864 | 16SVF270M | 1000 |
| | 560 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 1792 | 16SVF560M | 400 |
| | 1000 | 10.0 | 10.0 | F10 | 1350 | 4300 | 16 | 0.12 | 3200 | 16SVF1000MX | 500 |
| | | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 3200 | 16SVF1000M | 400 |
| 20 | 56 | 5.0 | 5.9 | B6 | 880 | 2800 | 30 | 0.12 | 224 | 20SVF56M | 1500 |
| | 120 | 6.3 | 5.9 | C6 | 1010 | 3200 | 25 | 0.12 | 480 | 20SVF120M | 1000 |
| | 180 | 8.0 | 6.9 | E7 | 1010 | 3200 | 25 | 0.12 | 720 | 20SVF180M | 1000 |
| | 390 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 1560 | 20SVF390M | 400 |
| | 560 | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 2240 | 20SVF560M | 400 |
| 25 | 27 | 5.0 | 5.9 | B6 | 770 | 2450 | 40 | 0.12 | 135 | 25SVF27M | 1500 |
| | 47 | 6.3 | 5.9 | C6 | 880 | 2800 | 30 | 0.12 | 235 | 25SVF47M | 1000 |
| | 56 | 6.3 | 5.9 | | 880 | 2800 | 30 | 0.12 | 280 | 25SVF56M | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 940 | 3000 | 28 | 0.12 | 410 | 25SVF82M | 1000 |
| | 100 | 8.0 | 6.9 | | 1010 | 3200 | 24 | 0.12 | 500 | 25SVF100M | 1000 |
| | 180 | 8.0 | 11.9 | E12 | 1470 | 4650 | 16 | 0.12 | 900 | 25SVF180M | 400 |
| | 330 | 10.0 | 12.6 | F12 | 1580 | 5000 | 14 | 0.12 | 1650 | 25SVF330M | 400 |
| 35 | 22 | 6.3 | 5.9 | C6 | 820 | 2600 | 35 | 0.12 | 154 | 35SVF22M | 1000 |
| | 39 | 8.0 | 6.9 | E7 | 880 | 2800 | 30 | 0.12 | 273 | 35SVF39M | 1000 |
| | 82 | 8.0 | 11.9 | E12 | 1260 | 4000 | 20 | 0.12 | 574 | 35SVF82M | 400 |
| | 120 | 10.0 | 12.6 | F12 | 1390 | 4400 | 18 | 0.12 | 840 | 35SVF120M | 400 |
| 50 | 10 | 6.3 | 5.9 | C6 | 790 | 2500 | 40 | 0.12 | 100 | 50SVF10M | 1000 |
| | 18 | 8.0 | 6.9 | E7 | 850 | 2700 | 35 | 0.12 | 180 | 50SVF18M | 1000 |
| | 39 | 8.0 | 11.9 | E12 | 1200 | 3800 | 25 | 0.12 | 390 | 50SVF39M | 400 |
| | 68 | 10.0 | 12.6 | F12 | 1350 | 4300 | 20 | 0.12 | 680 | 50SVF68M | 400 |

*1: Ripple current (100 kHz / +105 °C < Tx ≤ +125 °C) / Allowable ripple current (100 kHz / Tx ≤ +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPK series



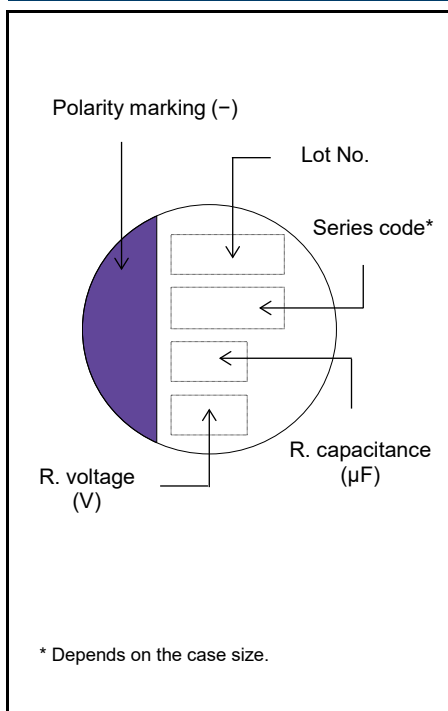
Features

- High voltage (50 V max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

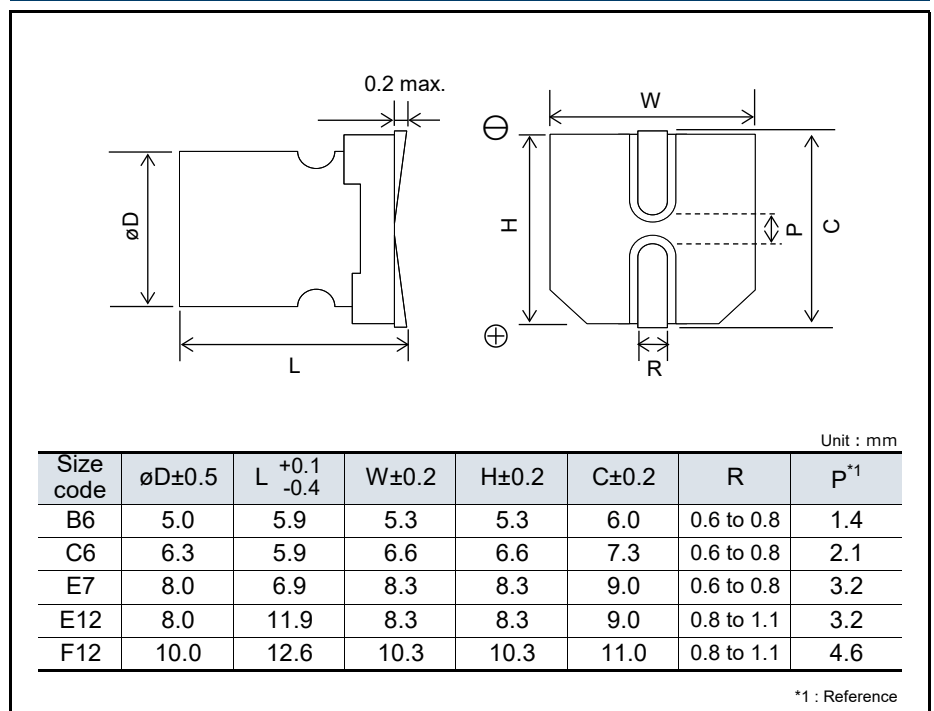
Specifications

| Size code | B6 | C6 | E7 | E12 | F12 |
|-----------------------------|---|---|-----------------|-----------------|-------------------|
| Category temp. range | -55 °C to +125 °C | | | | |
| Rated voltage range | 16 V to 50 V | | | | |
| Nominal cap.range | 10 µF to 100 µF | 22 µF to 220 µF | 33 µF to 330 µF | 68 µF to 680 µF | 120 µF to 1200 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | |
| | DC leakage current | Within the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|---|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | Allowable ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 16 | 100 | 5.0 | 5.9 | B6 | 940 | 3000 | 27 | 0.12 | 320 | 16SVPK100M | 1500 |
| | 220 | 6.3 | 5.9 | C6 | 1040 | 3300 | 22 | 0.12 | 704 | 16SVPK220M | 1000 |
| | 330 | 8.0 | 6.9 | E7 | 1040 | 3300 | 22 | 0.12 | 1056 | 16SVPK330M | 1000 |
| | 680 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 2176 | 16SVPK680M | 400 |
| | 1200 | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 3840 | 16SVPK1200M | 400 |
| 20 | 68 | 5.0 | 5.9 | B6 | 880 | 2800 | 30 | 0.12 | 272 | 20SVPK68M | 1500 |
| | 150 | 6.3 | 5.9 | C6 | 1010 | 3200 | 25 | 0.12 | 600 | 20SVPK150M | 1000 |
| | 220 | 8.0 | 6.9 | E7 | 1010 | 3200 | 25 | 0.12 | 880 | 20SVPK220M | 1000 |
| | 470 | 8.0 | 11.9 | E12 | 1560 | 4950 | 14 | 0.12 | 1880 | 20SVPK470M | 400 |
| | 680 | 10.0 | 12.6 | F12 | 1700 | 5400 | 12 | 0.12 | 2720 | 20SVPK680M | 400 |
| 25 | 33 | 5.0 | 5.9 | B6 | 820 | 2600 | 35 | 0.12 | 165 | 25SVPK33M | 1500 |
| | 82 | 6.3 | 5.9 | C6 | 960 | 3060 | 25 | 0.12 | 410 | 25SVPK82M | 1000 |
| | 120 | 8.0 | 6.9 | E7 | 1010 | 3200 | 24 | 0.12 | 600 | 25SVPK120M | 1000 |
| | 270 | 8.0 | 11.9 | E12 | 1470 | 4650 | 16 | 0.12 | 1350 | 25SVPK270M | 400 |
| | 470 | 10.0 | 12.6 | F12 | 1590 | 5000 | 14 | 0.12 | 2350 | 25SVPK470M | 400 |
| 35 | 22 | 5.0 | 5.9 | B6 | 820 | 2600 | 35 | 0.12 | 154 | 35SVPK22M | 1500 |
| | 47 | 6.3 | 5.9 | C6 | 930 | 2950 | 27 | 0.12 | 329 | 35SVPK47M | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 960 | 3060 | 25 | 0.12 | 574 | 35SVPK82M | 1000 |
| | 180 | 8.0 | 11.9 | E12 | 1260 | 4000 | 20 | 0.12 | 1260 | 35SVPK180M | 400 |
| | 330 | 10.0 | 12.6 | F12 | 1390 | 4400 | 18 | 0.12 | 2310 | 35SVPK330M | 400 |
| 50 | 10 | 5.0 | 5.9 | B6 | 550 | 1750 | 80 | 0.12 | 100 | 50SVPK10M | 1500 |
| | 22 | 6.3 | 5.9 | C6 | 820 | 2600 | 35 | 0.12 | 220 | 50SVPK22M | 1000 |
| | 33 | 8.0 | 6.9 | E7 | 850 | 2700 | 35 | 0.12 | 330 | 50SVPK33M | 1000 |
| | 68 | 8.0 | 11.9 | E12 | 1200 | 3800 | 25 | 0.12 | 680 | 50SVPK68M | 400 |
| | 120 | 10.0 | 12.6 | F12 | 1350 | 4300 | 20 | 0.12 | 1200 | 50SVPK120M | 400 |

*1: Ripple current (100 kHz / +105 °C < Tx ≤ +125 °C) / Allowable ripple current (100 kHz / Tx ≤ +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SXV series



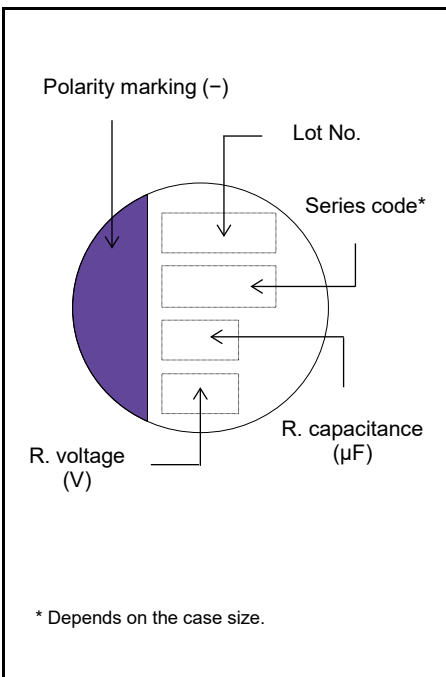
Features

- Super high voltage (100 V max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

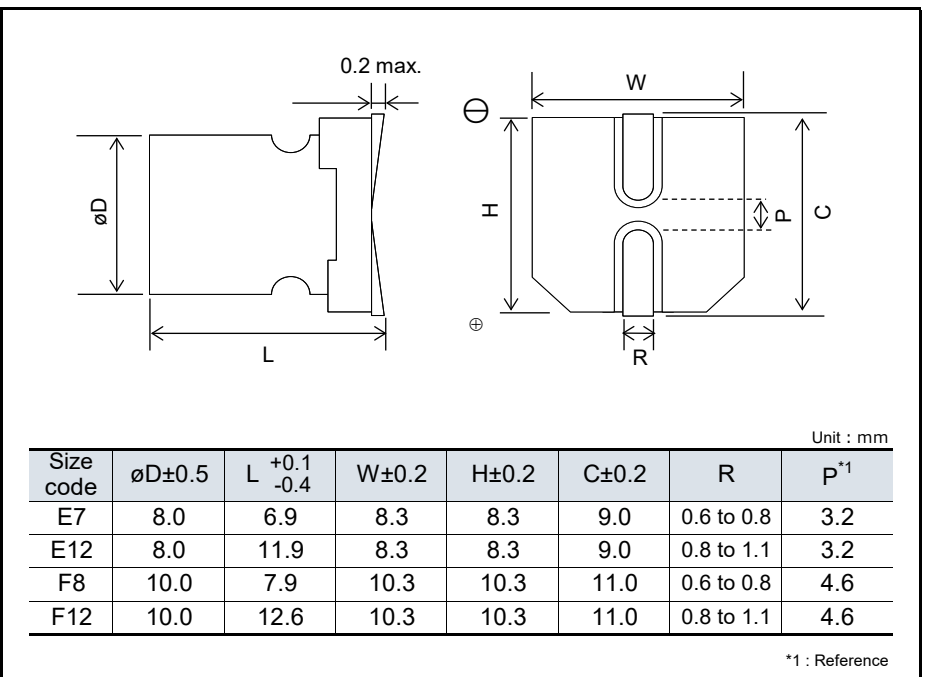
Specifications

| Size code | E7 | E12 | F8 | F12 |
|----------------------------|---|---|----------------|-----------------|
| Category temp. range | -55 °C to +125 °C | | | |
| Rated voltage range | 63 V to 100 V | | | |
| Nominal cap.range | 6.8 μF to 18 μF | 15 μF to 56 μF | 15 μF to 39 μF | 18 μF to 100 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|---|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | Allowable ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 63 | 18 | 8.0 | 6.9 | E7 | 340 | 1100 | 60 | 0.12 | 56 | 63SXV18M | 1000 |
| | 33 | 8.0 | 11.9 | E12 | 930 | 2950 | 25 | 0.12 | 104 | 63SXV33M | 400 |
| | 39 | 8.0 | 11.9 | E12 | 930 | 2950 | 25 | 0.12 | 122 | 63SXV39M | 400 |
| | | 10.0 | 7.9 | F8 | 690 | 2190 | 50 | 0.12 | 122 | 63SXV39MX | 500 |
| | 56 | 8.0 | 11.9 | E12 | 930 | 2950 | 25 | 0.12 | 176 | 63SXV56M | 400 |
| | 68 | 10.0 | 12.6 | F12 | 1030 | 3280 | 25 | 0.12 | 214 | 63SXV68M | 400 |
| | 100 | 10.0 | 12.6 | F12 | 1030 | 3280 | 25 | 0.12 | 315 | 63SXV100M | 400 |
| 72 | 82 | 10.0 | 12.6 | F12 | 980 | 3100 | 28 | 0.12 | 295 | 72SXV82M | 400 |
| 80 | 12 | 8.0 | 6.9 | E7 | 340 | 1100 | 60 | 0.12 | 48 | 80SXV12M | 1000 |
| | 27 | 8.0 | 11.9 | E12 | 780 | 2490 | 35 | 0.12 | 108 | 80SXV27M | 400 |
| | | 10.0 | 7.9 | F8 | 660 | 2080 | 55 | 0.12 | 108 | 80SXV27MX | 500 |
| | 33 | 8.0 | 11.9 | E12 | 780 | 2490 | 35 | 0.12 | 132 | 80SXV33M | 400 |
| | 47 | 10.0 | 12.6 | F12 | 980 | 3100 | 28 | 0.12 | 188 | 80SXV47M | 400 |
| | 56 | 10.0 | 12.6 | F12 | 980 | 3100 | 28 | 0.12 | 224 | 80SXV56M | 400 |
| 100 | 6.8 | 8.0 | 6.9 | E7 | 340 | 1100 | 60 | 0.12 | 34 | 100SXV6R8M | 1000 |
| | 15 | 10.0 | 7.9 | F8 | 630 | 2000 | 60 | 0.12 | 75 | 100SXV15MX | 500 |
| | | 8.0 | 11.9 | E12 | 730 | 2350 | 40 | 0.12 | 75 | 100SXV15M | 400 |
| | 18 | 10.0 | 12.6 | F12 | 940 | 3000 | 30 | 0.12 | 90 | 100SXV18M | 400 |
| | | 8.0 | 11.9 | E12 | 730 | 2350 | 40 | 0.12 | 90 | 100SXV18MX | 400 |
| | 22 | 10.0 | 12.6 | F12 | 940 | 3000 | 30 | 0.12 | 110 | 100SXV22M | 400 |
| | 27 | 10.0 | 12.6 | F12 | 940 | 3000 | 30 | 0.12 | 135 | 100SXV27M | 400 |

*1: Ripple current (100 kHz / +105 °C < Tx ≤ +125 °C) / Allowable ripple current (100 kHz / Tx ≤ +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

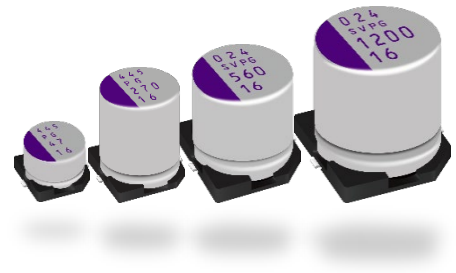
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPG series



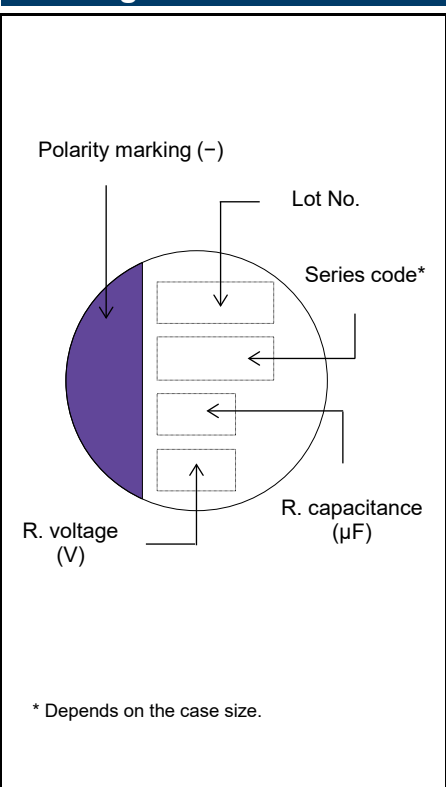
Features

- Low profile (Height 4.5 mm max.)
- Low ESR (6.5 mΩ max.)
- High ripple current (7500 mA rms max.)
- RoHS compliance, Halogen free

Specifications

| Size code | B45 | B6 | C6 | C8 | C10 | C10L | E7 | E10 | E12 | F10 | F12 |
|----------------------------|---|---|-----|-----|-----|------|----|-----|-----|-----|------|
| Category temp. range | -55 °C to +105 °C | | | | | | | | | | |
| Rated voltage range (V) | 16 to 25 | 16 | | | | | | | | | |
| Nominal cap.range (μF) | 15 to 47 | 100 | 220 | 270 | | 330 | | 560 | 680 | 820 | 1200 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | | | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied | | | | | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | | | | | |
| | DC leakage current | Within the initial limit | | | | | | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | | | | | | |

Marking



Dimensions (not to scale)

| Size code | øD±0.5 | L ^{+0.1} _{-0.4} | W±0.2 | H±0.2 | C±0.2 | R | P ^{*2} |
|-----------|--------|-----------------------------------|-------|-------|-------|------------|-----------------|
| B45 | 5.0 | 4.4 | 5.3 | 5.3 | 6.0 | 0.6 to 0.8 | 1.4 |
| B6 | 5.0 | 5.9 | 5.3 | 5.3 | 6.0 | 0.6 to 0.8 | 1.4 |
| C6 | 6.3 | 5.9 | 6.6 | 6.6 | 7.3 | 0.6 to 0.8 | 2.1 |
| C8 | 6.3 | 7.9 | 6.6 | 6.6 | 7.3 | 0.6 to 0.8 | 2.1 |
| C10 | 6.3 | 9.9 | 6.6 | 6.6 | 7.3 | 0.6 to 0.8 | 2.1 |
| C10L | 6.3 | 10.4 | 6.6 | 6.6 | 7.3 | 1.5 to 1.8 | 2.1 |
| E7 | 8.0 | 6.9 | 8.3 | 8.3 | 9.0 | 0.6 to 0.8 | 3.2 |
| E10 | 8.0 | 10.0 ^{*1} | 8.3 | 8.3 | 9.0 | 0.8 to 1.1 | 3.2 |
| E12 | 8.0 | 11.9 | 8.3 | 8.3 | 9.0 | 0.8 to 1.1 | 3.2 |
| F10 | 10.0 | 10.0 ^{*1} | 10.3 | 10.3 | 11.0 | 0.8 to 1.1 | 4.6 |
| F12 | 10.0 | 12.6 | 10.3 | 10.3 | 11.0 | 0.8 to 1.1 | 4.6 |

Unit : mm
*1 : ±0.5, *2 : Reference

Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 16 | 47 | 5.0 | 4.4 | B45 | 3200 | 25 | 0.12 | 150 | 16SVPG47M | 2500 |
| | 100 | 5.0 | 5.9 | B6 | 4000 | 15 | 0.12 | 320 | 16SVPG100M | 1500 |
| | 220 | 6.3 | 5.9 | C6 | 4100 | 14 | 0.12 | 704 | 16SVPG220M | 1000 |
| | 270 | 6.3 | 7.9 | C8 | 5080 | 10 | 0.12 | 864 | 16SVPG270MX | 900 |
| | | 6.3 | 9.9 | C10 | 5800 | 8 | 0.12 | 864 | 16SVPG270M | 500 |
| | 330 | 6.3 | 10.4 | C10L | 7500 | 6.5 | 0.12 | 1056 | 16SVPG330M | 700 |
| | | 8.0 | 6.9 | E7 | 4100 | 16 | 0.12 | 1056 | 16SVPG330MX | 1000 |
| | 560 | 8.0 | 10.0 | E10 | 5200 | 10 | 0.12 | 1792 | 16SVPG560M | 500 |
| | 680 | 8.0 | 11.9 | E12 | 6500 | 8 | 0.12 | 2176 | 16SVPG680M | 400 |
| 820 | 10.0 | 10.0 | F10 | 5700 | 9 | 0.12 | 2624 | 16SVPG820M | 500 | |
| 1200 | 10.0 | 12.6 | F12 | 7000 | 7 | 0.12 | 3840 | 16SVPG1200M | 400 | |
| 20 | 33 | 5.0 | 4.4 | B45 | 3000 | 27 | 0.12 | 132 | 20SVPG33M | 2500 |
| 25 | 15 | 5.0 | 4.4 | | 2800 | 30 | 0.12 | 75 | 25SVPG15M | 2500 |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

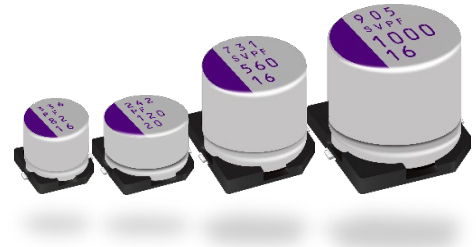
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPF series



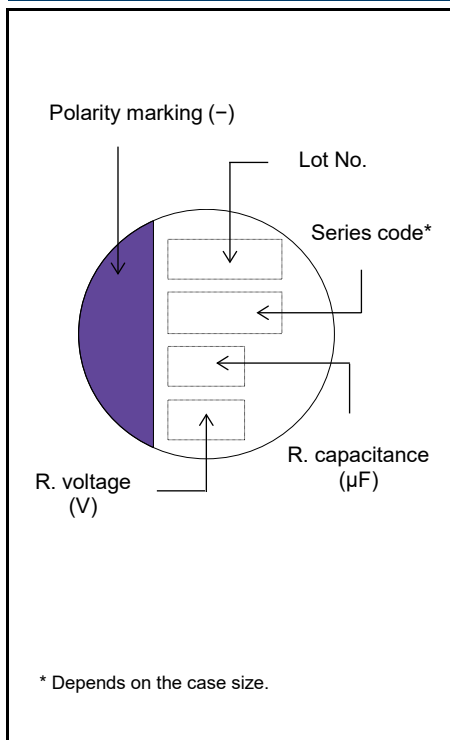
Features

- High voltage (50 V max.)
- Large capacitance (1000 µF max.)
- 105 °C 5000 h
- RoHS compliance, Halogen free

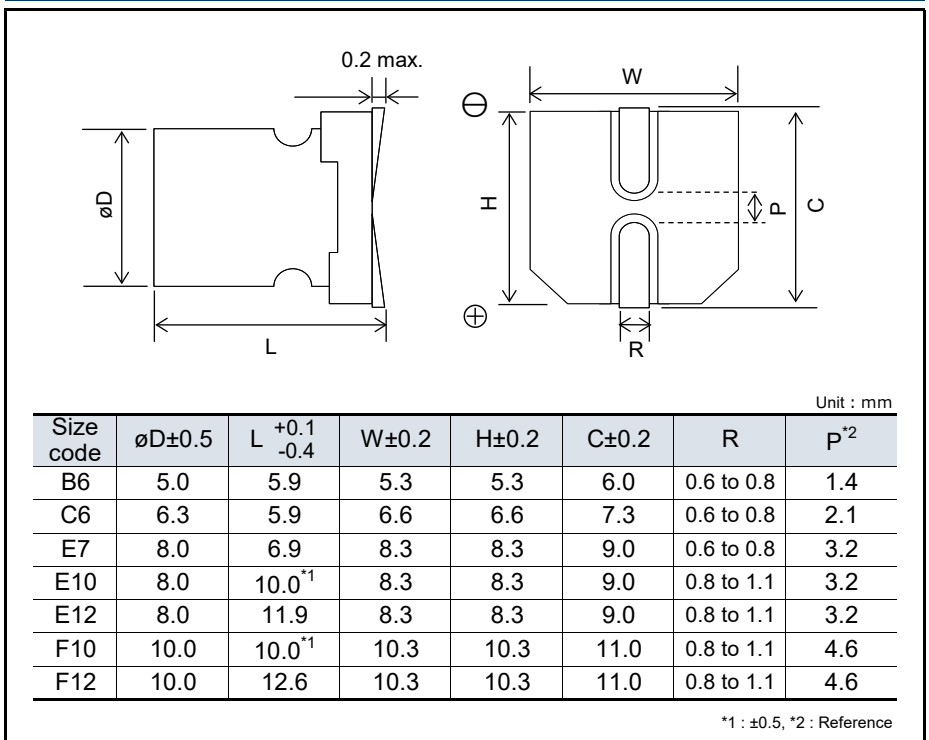
Specifications

| Size code | B6 | C6 | E7 | E10 | E12 | F10 | F12 |
|----------------------------|---|---|-----------|-----|-----------|------|------------|
| Category temp. range | -55 °C to +105 °C | | | | | | |
| Rated voltage range (V) | 16 to 25 | 16 to 50 | | 16 | 16 to 50 | 16 | 16 to 50 |
| Nominal cap.range (µF) | 27 to 82 | 10 to 180 | 18 to 270 | 560 | 39 to 560 | 1000 | 68 to 1000 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | |
| | DC leakage current | Within the initial limit | | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 16 | 82 | 5.0 | 5.9 | B6 | 3000 | 27 | 0.12 | 262 | 16SVPF82M | 1500 |
| | 180 | 6.3 | 5.9 | C6 | 3300 | 22 | 0.12 | 576 | 16SVPF180M | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 3300 | 22 | 0.12 | 864 | 16SVPF270M | 1000 |
| | 560 | 8.0 | 10.0 | E10 | 3900 | 18 | 0.12 | 1792 | 16SVPF560MX | 500 |
| | | 8.0 | 11.9 | E12 | 4950 | 14 | 0.12 | 1792 | 16SVPF560M | 400 |
| | 1000 | 10.0 | 10.0 | F10 | 4300 | 16 | 0.12 | 3200 | 16SVPF1000MX | 500 |
| 10.0 | | 12.6 | F12 | 5400 | 12 | 0.12 | 3200 | 16SVPF1000M | 400 | |
| 20 | 56 | 5.0 | 5.9 | B6 | 2800 | 30 | 0.12 | 224 | 20SVPF56MX | 1500 |
| | 120 | 6.3 | 5.9 | C6 | 3200 | 25 | 0.12 | 480 | 20SVPF120M | 1000 |
| | 180 | 8.0 | 6.9 | E7 | 3200 | 25 | 0.12 | 720 | 20SVPF180M | 1000 |
| | 390 | 8.0 | 11.9 | E12 | 4950 | 14 | 0.12 | 1560 | 20SVPF390M | 400 |
| | 560 | 10.0 | 12.6 | F12 | 5400 | 12 | 0.12 | 2240 | 20SVPF560M | 400 |
| 25 | 27 | 5.0 | 5.9 | B6 | 2450 | 40 | 0.12 | 135 | 25SVPF27MX | 1500 |
| | 47 | 6.3 | 5.9 | C6 | 2800 | 30 | 0.12 | 235 | 25SVPF47M | 1000 |
| | 56 | 6.3 | 5.9 | | 2800 | 30 | 0.12 | 280 | 25SVPF56M | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 3000 | 28 | 0.12 | 410 | 25SVPF82M | 1000 |
| | 100 | 8.0 | 6.9 | | 3200 | 24 | 0.12 | 500 | 25SVPF100M | 1000 |
| | 180 | 8.0 | 11.9 | E12 | 4650 | 16 | 0.12 | 900 | 25SVPF180M | 400 |
| | 330 | 10.0 | 12.6 | F12 | 5000 | 14 | 0.12 | 1650 | 25SVPF330M | 400 |
| 35 | 22 | 6.3 | 5.9 | C6 | 2600 | 35 | 0.12 | 154 | 35SVPF22M | 1000 |
| | 39 | 8.0 | 6.9 | E7 | 2800 | 30 | 0.12 | 273 | 35SVPF39M | 1000 |
| | 82 | 8.0 | 11.9 | E12 | 4000 | 20 | 0.12 | 574 | 35SVPF82M | 400 |
| | 120 | 10.0 | 12.6 | F12 | 4400 | 18 | 0.12 | 840 | 35SVPF120M | 400 |
| 50 | 10 | 6.3 | 5.9 | C6 | 2500 | 40 | 0.12 | 100 | 50SVPF10M | 1000 |
| | 18 | 8.0 | 6.9 | E7 | 2700 | 35 | 0.12 | 180 | 50SVPF18M | 1000 |
| | 39 | 8.0 | 11.9 | E12 | 3800 | 25 | 0.12 | 390 | 50SVPF39M | 400 |
| | 68 | 10.0 | 12.6 | F12 | 4300 | 20 | 0.12 | 680 | 50SVPF68M | 400 |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

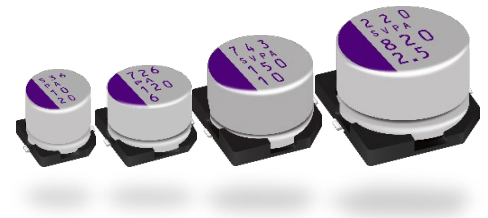
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPA series



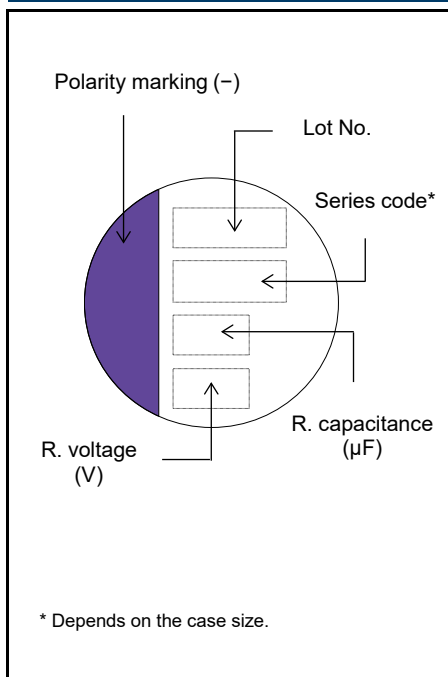
Features

- Low ESR (19 mΩ max.)
- High ripple (4240 mA rms)
- RoHS compliance, Halogen free

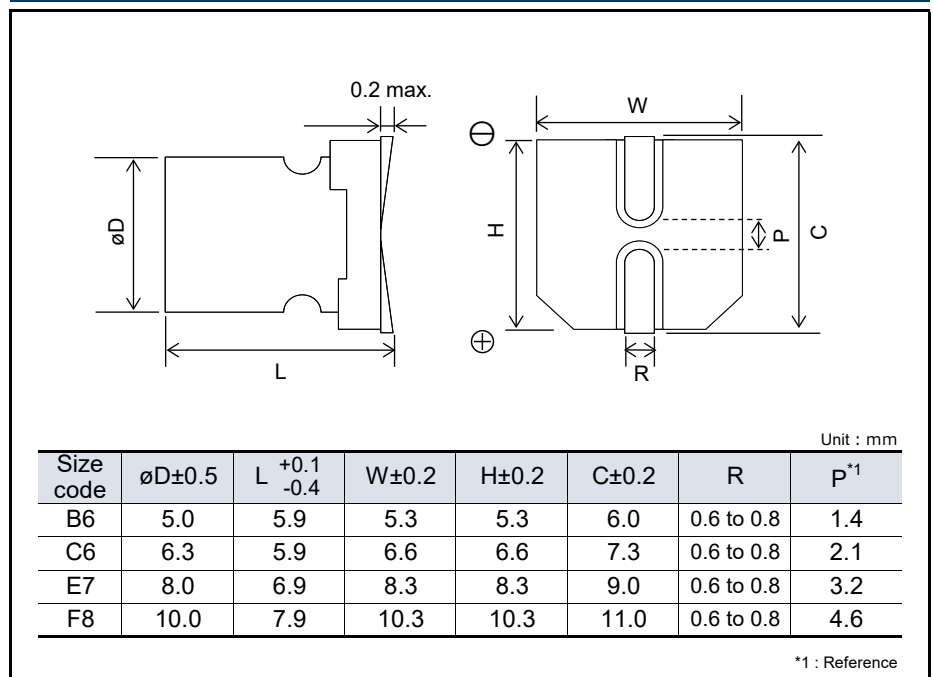
Specifications

| Size code | B6 | C6 | E7 | F8 |
|----------------------------|---|---|-----------------|------------------|
| Category temp. range | -55 °C to +105 °C | | | |
| Rated voltage range | 2.5 V to 20 V | | | 2.5 V to 16 V |
| Nominal cap.range | 10 μF to 82 μF | 22 μF to 180 μF | 47 μF to 330 μF | 180 μF to 820 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +105 °C 2000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|-----|-----------|---------------------------------------|-----------------------------|---------------------|-----------------------|-----------------------------|--------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Qty (pcs) |
| 2.5 | 82 | 5.0 | 5.9 | B6 | 1970 | 30 | 0.12 | 300 | 2R5SVPA82MAA | 1500 |
| | 180 | 6.3 | 5.9 | C6 | 2690 | 20 | 0.12 | 300 | 2R5SVPA180MAA | 1000 |
| | 330 | 8.0 | 6.9 | E7 | 3370 | 20 | 0.12 | 500 | 2R5SVPA330MAA | 1000 |
| | 820 | 10.0 | 7.9 | F8 | 4240 | 19 | 0.12 | 500 | 2R5SVPA820M | 500 |
| 4.0 | 68 | 5.0 | 5.9 | B6 | 1970 | 30 | 0.12 | 300 | 4SVPA68MAA | 1500 |
| | 150 | 6.3 | 5.9 | C6 | 2570 | 22 | 0.12 | 300 | 4SVPA150MAA | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 500 | 4SVPA270MAA | 1000 |
| | 680 | 10.0 | 7.9 | F8 | 4130 | 20 | 0.12 | 544 | 4SVPA680M | 500 |
| 6.3 | 47 | 5.0 | 5.9 | B6 | 1970 | 30 | 0.12 | 300 | 6SVPA47MAA | 1500 |
| | 120 | 6.3 | 5.9 | C6 | 2570 | 22 | 0.12 | 300 | 6SVPA120MAA | 1000 |
| | 220 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 500 | 6SVPA220MAA | 1000 |
| | 470 | 10.0 | 7.9 | F8 | 4130 | 20 | 0.12 | 592 | 6SVPA470M | 500 |
| 10 | 68 | 6.3 | 5.9 | C6 | 2200 | 30 | 0.12 | 300 | 10SVPA68MAA | 1000 |
| | 150 | 8.0 | 6.9 | E7 | 2760 | 30 | 0.12 | 500 | 10SVPA150MAA | 1000 |
| | 330 | 10.0 | 7.9 | F8 | 3770 | 24 | 0.12 | 660 | 10SVPA330M | 500 |
| 16 | 39 | 6.3 | 5.9 | C6 | 2040 | 35 | 0.12 | 300 | 16SVPA39MAA | 1000 |
| | | 6.3 | 5.9 | | 2460 | 24 | 0.12 | 300 | 16SVPA39MAAY | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 2760 | 30 | 0.12 | 262 | 16SVPA82MAA | 1000 |
| | 180 | 10.0 | 7.9 | F8 | 3430 | 29 | 0.12 | 576 | 16SVPA180M | 500 |
| 20 | 10 | 5.0 | 5.9 | B6 | 1700 | 40 | 0.12 | 80 | 20SVPA10M | 1500 |
| | 22 | 6.3 | 5.9 | C6 | 2040 | 35 | 0.12 | 88 | 20SVPA22M | 1000 |
| | 47 | 8.0 | 6.9 | E7 | 2630 | 33 | 0.12 | 188 | 20SVPA47M | 1000 |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |



Conductive Polymer Aluminum Solid Capacitors

Surface Mount Type

SVPB series

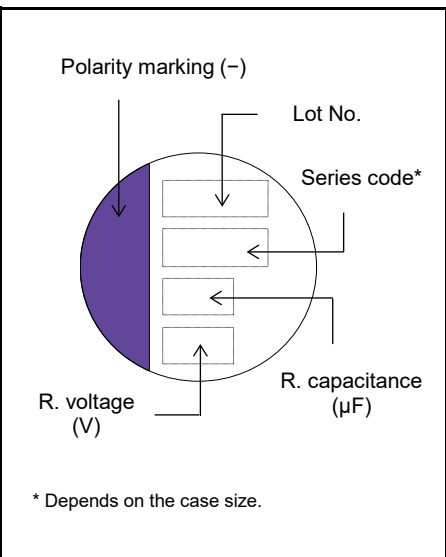
Features

- Low profile (Height 5 mm max.)
- RoHS compliance, Halogen free

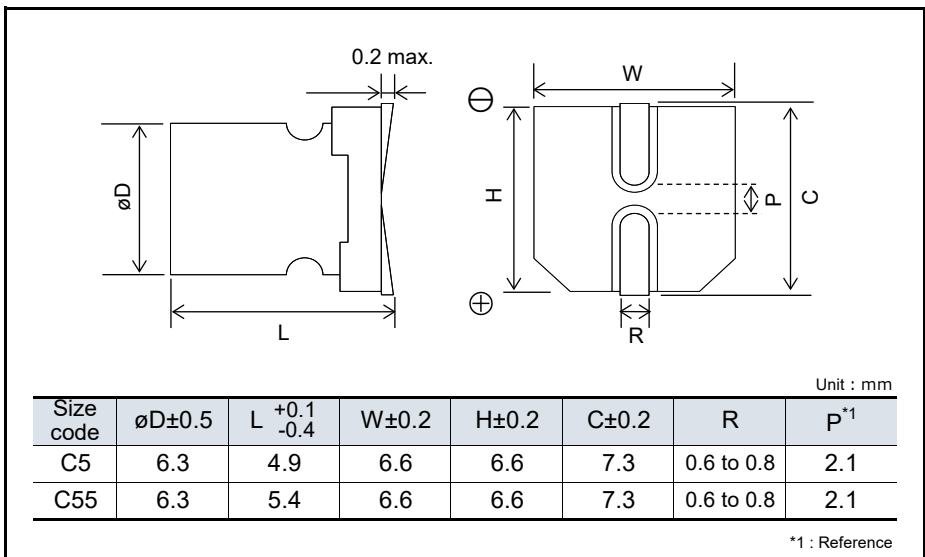
Specifications

| | | |
|----------------------------|---|---|
| Size code | C5 | C55 |
| Category temp. range | -55 °C to +105 °C | |
| Rated voltage range | 2.5 V to 20 V | 20 V |
| Nominal cap.range | 15 µF to 120 µF | 22 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | |
| DC leakage current | Please see the attached characteristics list | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | |
| Endurance | +105 °C 1000 h, rated voltage applied | |
| | Capacitance change | Within ±20 % of the initial value (±30 % for C5 size) |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit |
| | DC leakage current | Within the initial limit |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | |
| | Capacitance change | Within ±20 % of the initial value |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit |
| | DC leakage current | Within the initial limit (after voltage processing) |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : $\varnothing 380$) | |
|-------------------|--|-----------------|-----|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|---|--------------------------|
| | | $\varnothing D$ | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| 2.5 | 120 | 6.3 | 4.9 | C5 | 1670 | 40 | 0.12 | 120 | 2R5SVPB120M | 1300 |
| 4.0 | 100 | 6.3 | 4.9 | | 1670 | 40 | 0.12 | 160 | 4SVPB100M | 1300 |
| 6.3 | 82 | 6.3 | 4.9 | | 1670 | 40 | 0.12 | 207 | 6SVPB82M | 1300 |
| 10 | 56 | 6.3 | 4.9 | | 1670 | 40 | 0.12 | 224 | 10SVPB56M | 1300 |
| 16 | 33 | 6.3 | 4.9 | | 1670 | 40 | 0.12 | 211 | 16SVPB33M | 1300 |
| 20 | 15 | 6.3 | 4.9 | | 2000 | 45 | 0.12 | 120 | 20SVPB15M | 1300 |
| | 22 | 6.3 | 5.4 | C55 | 2000 | 35 | 0.12 | 88 | 20SVPB22M | 1000 |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

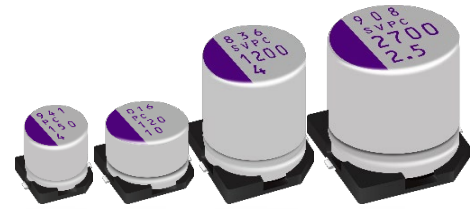
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPC series



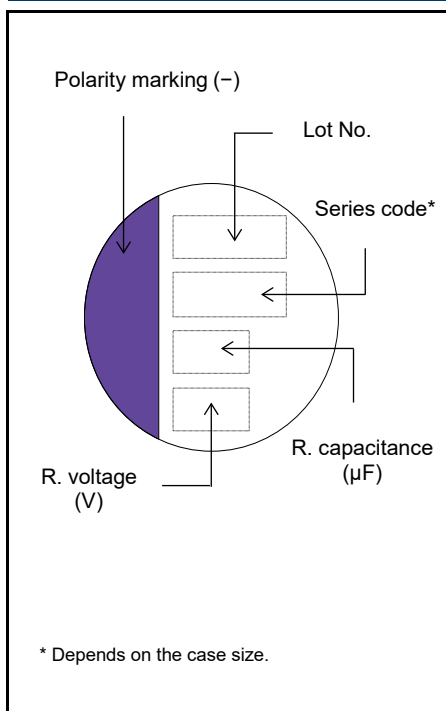
Features

- Low ESR (9 mΩ max.)
- Large capacitance (2700 μF max.)
- RoHS compliance, Halogen free

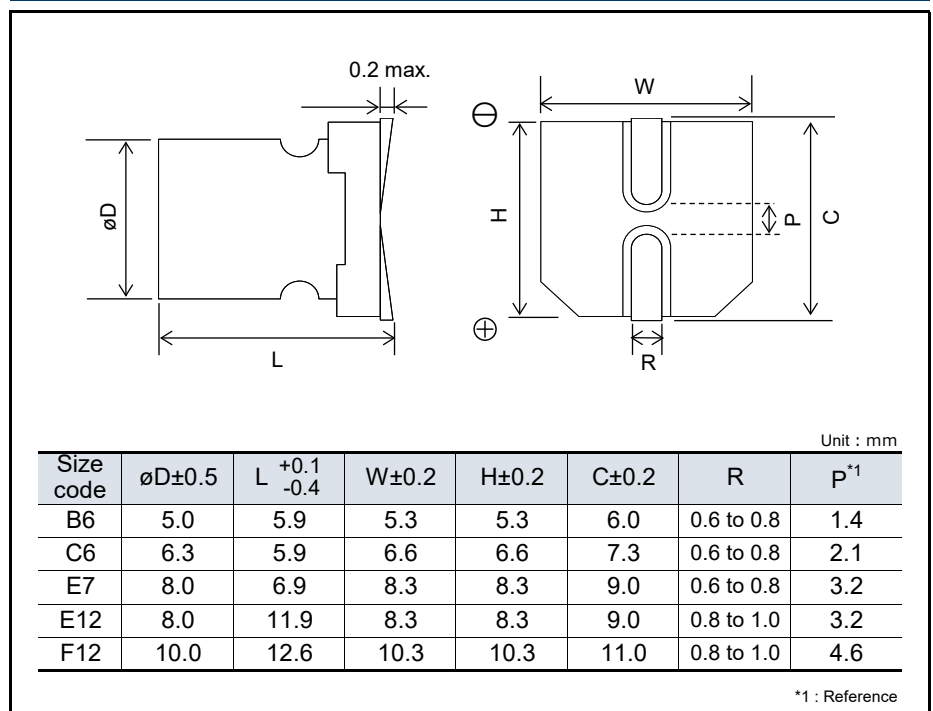
Specifications

| Size code | B6 | C6 | E7 | E12 | F12 |
|-----------------------------|---|---|------------------|-------------------|---------|
| Category temp. range | -55 °C to +105 °C | | | | |
| Rated voltage range | 2.5 V to 16 V | | | | 2.5 V |
| Nominal cap.range | 39 μF to 180 μF | 68 μF to 560 μF | 120 μF to 680 μF | 270 μF to 1500 μF | 2700 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +105 °C 2000 h, rated voltage applied | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|-----------------------|-------------------------------|-----------------------------|------------------------------------|------------------------------------|--------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | ESR (m Ω max.) | | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| | | | | | | 100 kHz / 20 °C | 300 kHz ^{*2} / 20 °C | | | | |
| 2.5 | 180 | 5.0 | 5.9 | B6 | 1970 | 30 | 26 | 0.12 | 300 | 2R5SVPC180M | 1500 |
| | | 5.0 | 5.9 | | 2200 | 24 | 20 | 0.12 | 300 | 2R5SVPC180MY | 1500 |
| | | 5.0 | 5.9 | | 2800 | 19 | 16 | 0.12 | 300 | 2R5SVPC180MV | 1500 |
| | 390 | 6.3 | 5.9 | C6 | 2410 | 25 | 22 | 0.12 | 300 | 2R5SVPC390M | 1000 |
| | | 6.3 | 5.9 | | 3160 | 15 | 13 | 0.12 | 300 | 2R5SVPC390MV | 1000 |
| | | 6.3 | 5.9 | | 3500 | 16 | 14 | 0.12 | 300 | 2R5SVPC560M | 1000 |
| | 680 | 8.0 | 6.9 | E7 | 3370 | 20 | 17 | 0.12 | 500 | 2R5SVPC680M | 1000 |
| | 820 | 8.0 | 11.9 | E12 | 5380 | 9 | 8 | 0.15 | 500 | 2R5SVPC820M | 400 |
| | 1500 | 8.0 | 11.9 | | 5150 | 10 | 9 | 0.15 | 750 | 2R5SVPC1500M | 400 |
| 2700 | 10.0 | 12.6 | F12 | 5070 | 12 | 10 | 0.15 | 1350 | 2R5SVPC2700M | 400 | |
| 4.0 | 150 | 5.0 | 5.9 | B6 | 1970 | 30 | 26 | 0.12 | 300 | 4SVPC150M | 1500 |
| | | 5.0 | 5.9 | | 2240 | 23 | 20 | 0.12 | 300 | 4SVPC150MY | 1500 |
| | | 5.0 | 5.9 | | 2730 | 20 | 17 | 0.12 | 300 | 4SVPC150MV | 1500 |
| | 330 | 6.3 | 5.9 | C6 | 2320 | 27 | 23 | 0.12 | 300 | 4SVPC330M | 1000 |
| | | 6.3 | 5.9 | | 2630 | 21 | 18 | 0.12 | 300 | 4SVPC330MY | 1000 |
| | | 6.3 | 5.9 | | 3160 | 15 | 13 | 0.12 | 300 | 4SVPC330MV | 1000 |
| | 560 | 8.0 | 6.9 | E7 | 3220 | 22 | 19 | 0.12 | 500 | 4SVPC560M | 1000 |
| | | 8.0 | 11.9 | E12 | 5380 | 9 | 8 | 0.15 | 500 | 4SVPC560MX | 400 |
| | 1200 | 8.0 | 11.9 | | 4700 | 12 | 10 | 0.15 | 960 | 4SVPC1200M | 400 |
| 1500 | 8.0 | 11.9 | 4700 | | 12 | 10 | 0.15 | 1200 | 4SVPC1500M | 400 | |
| 6.3 | 100 | 5.0 | 5.9 | B6 | 1970 | 30 | 26 | 0.12 | 300 | 6SVPC100M | 1500 |
| | | 5.0 | 5.9 | | 2150 | 25 | 21 | 0.12 | 300 | 6SVPC100MY | 1500 |
| | 120 | 5.0 | 5.9 | C6 | 2660 | 21 | 18 | 0.12 | 300 | 6SVPC120MV | 1500 |
| | 220 | 6.3 | 5.9 | | 2320 | 27 | 23 | 0.12 | 300 | 6SVPC220M | 1000 |
| | | 6.3 | 5.9 | | 3160 | 15 | 13 | 0.12 | 300 | 6SVPC220MV | 1000 |
| | 330 | 6.3 | 5.9 | 3390 | 17 | 15 | 0.12 | 415 | 6SVPC330M | 1000 | |
| | 390 | 8.0 | 6.9 | E7 | 3220 | 22 | 19 | 0.12 | 491 | 6SVPC390M | 1000 |
| 820 | 8.0 | 11.9 | E12 | 4700 | 12 | 10 | 0.15 | 1033 | 6SVPC820M | 400 | |
| 10 | 68 | 5.0 | 5.9 | B6 | 1970 | 30 | 26 | 0.12 | 300 | 10SVPC68M | 1500 |
| | | 5.0 | 5.9 | | 2540 | 23 | 20 | 0.12 | 300 | 10SVPC68MV | 1500 |
| | 120 | 6.3 | 5.9 | C6 | 2320 | 27 | 23 | 0.12 | 300 | 10SVPC120M | 1000 |
| | | 6.3 | 5.9 | | 2600 | 22 | 19 | 0.12 | 300 | 10SVPC120MV | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 3220 | 22 | 19 | 0.12 | 500 | 10SVPC270M | 1000 |
| 330 | 8.0 | 6.9 | E7 | 3460 | 19 | 17 | 0.12 | 660 | 10SVPC330M | 1000 | |
| 16 | 39 | 5.0 | 5.9 | B6 | 1820 | 35 | 30 | 0.12 | 300 | 16SVPC39M | 1500 |
| | | 5.0 | 5.9 | | 2350 | 27 | 23 | 0.12 | 300 | 16SVPC39MV | 1500 |
| | 68 | 6.3 | 5.9 | C6 | 2200 | 30 | 26 | 0.12 | 300 | 16SVPC68M | 1000 |
| | | 6.3 | 5.9 | | 2440 | 25 | 22 | 0.12 | 300 | 16SVPC68MV | 1000 |
| | 100 | 6.3 | 5.9 | 2490 | 24 | 23 | 0.12 | 300 | 16SVPC100M | 1000 | |
| | 120 | 8.0 | 6.9 | E7 | 2900 | 27 | 23 | 0.12 | 500 | 16SVPC120M | 1000 |
| | 150 | 8.0 | 6.9 | | 3220 | 22 | 21 | 0.12 | 500 | 16SVPC150M | 1000 |
| 270 | 8.0 | 11.9 | E12 | 4070 | 16 | 14 | 0.15 | 864 | 16SVPC270M | 400 | |

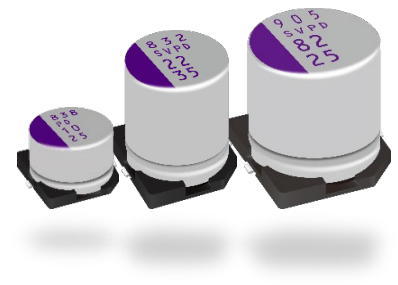
*1: Ripple current (100 kHz / +105 °C) *2: Reference value at 300 kHz *3: $\tan \delta$ (120 Hz / +20 °C) *4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPD series



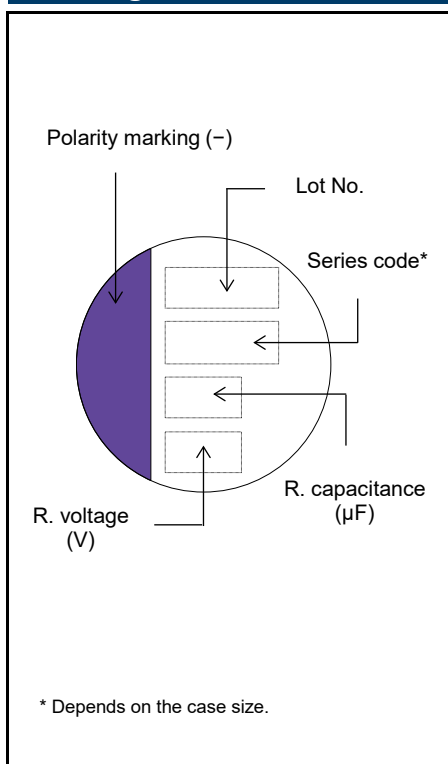
Features

- 125 °C 2000 h
- Guaranteed at 85 °C 85 %
- RoHS compliance, Halogen free

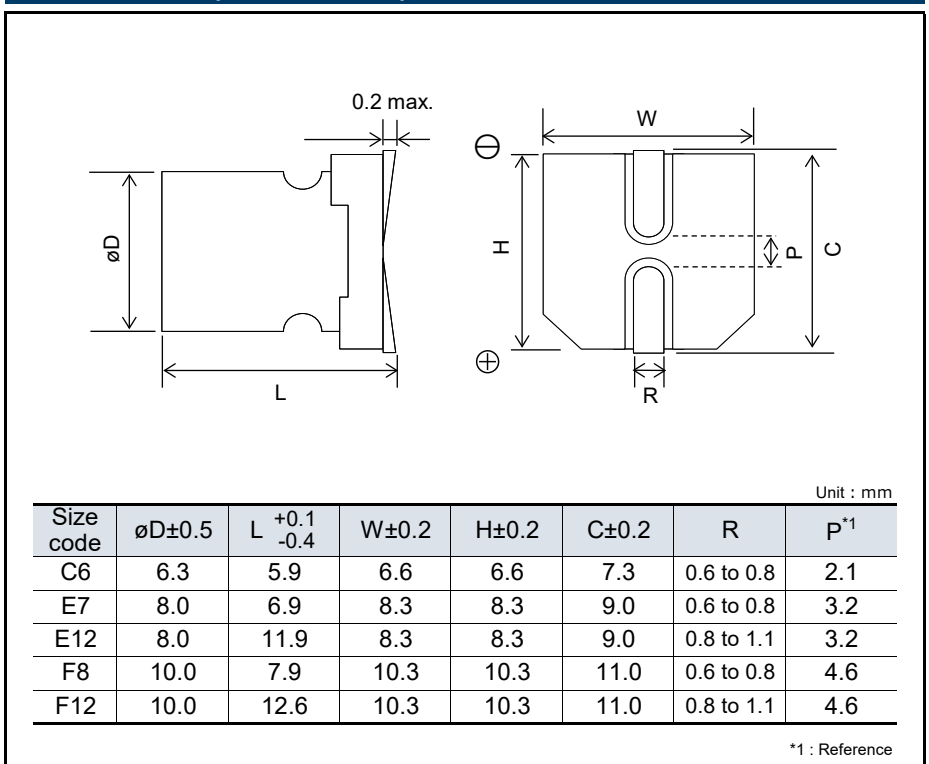
Specifications

| Size code | C6 | E7 | E12 | F8 | F12 |
|----------------------------|---|---|----------------|----------------|----------------|
| Category temp. range | -55 °C to +125 °C | | | | |
| Rated voltage range | 10 V to 25 V | 16 V to 35 V | 25 V to 35 V | | |
| Nominal cap.range | 10 μF to 56 μF | 8.2 μF to 82 μF | 22 μF to 47 μF | 18 μF to 39 μF | 47 μF to 82 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +125 °C 2000 h, rated voltage applied | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | |
| Damp heat (Steady state) | +85 °C, 80 % to 90 % RH, 1000 h, rated voltage applied. | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|---|-------------------------------------|-----------------------------|------------------------------------|------------------------------------|--------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | Allowable ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| 10 | 56 | 6.3 | 5.9 | C6 | 538 | 1700 | 45 | 0.12 | 112 | 10SVPD56M | 1000 |
| 16 | 82 | 8.0 | 6.9 | E7 | 670 | 2120 | 40 | 0.12 | 262 | 16SVPD82M | 1000 |
| 25 | 10 | 6.3 | 5.9 | C6 | 474 | 1500 | 65 | 0.10 | 50 | 25SVPD10M | 1000 |
| | 22 | 8.0 | 6.9 | E7 | 580 | 1835 | 48 | 0.10 | 110 | 25SVPD22M | 1000 |
| | 39 | 10.0 | 7.9 | F8 | 664 | 2100 | 45 | 0.10 | 195 | 25SVPD39M | 500 |
| | 47 | 8.0 | 11.9 | E12 | 943 | 2980 | 30 | 0.12 | 235 | 25SVPD47M | 400 |
| | 82 | 10.0 | 12.6 | F12 | 1202 | 3800 | 28 | 0.12 | 410 | 25SVPD82M | 400 |
| 35 | 8.2 | 8.0 | 6.9 | E7 | 400 | 1300 | 70 | 0.10 | 57 | 35SVPD8R2M | 1000 |
| | 18 | 10.0 | 7.9 | F8 | 550 | 1800 | 60 | 0.10 | 126 | 35SVPD18M | 500 |
| | 22 | 8.0 | 11.9 | E12 | 700 | 2300 | 50 | 0.12 | 154 | 35SVPD22M | 400 |
| | 47 | 10.0 | 12.6 | F12 | 1150 | 3650 | 30 | 0.12 | 329 | 35SVPD47M | 400 |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < T_x \leq +125\text{ }^\circ\text{C}$), Allowable ripple current (100 kHz / $T_x \leq +105\text{ }^\circ\text{C}$)

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

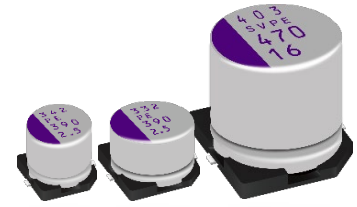
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | $120\text{ Hz} \leq f < 1\text{ kHz}$ | $1\text{ kHz} \leq f < 10\text{ kHz}$ | $10\text{ kHz} \leq f < 100\text{ kHz}$ | $100\text{ kHz} \leq f < 500\text{ kHz}$ |
|--------------|---------------------------------------|---------------------------------------|---|--|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPE series



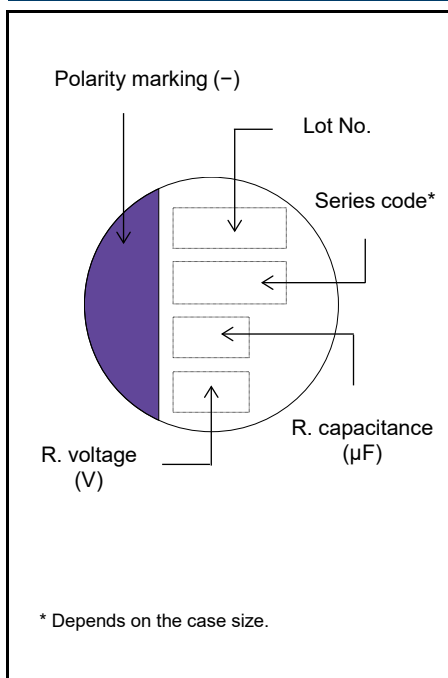
Features

- Low ESR (8 mΩ max.)
- Large capacitance (1200 μF max.)
- RoHS compliance, Halogen free

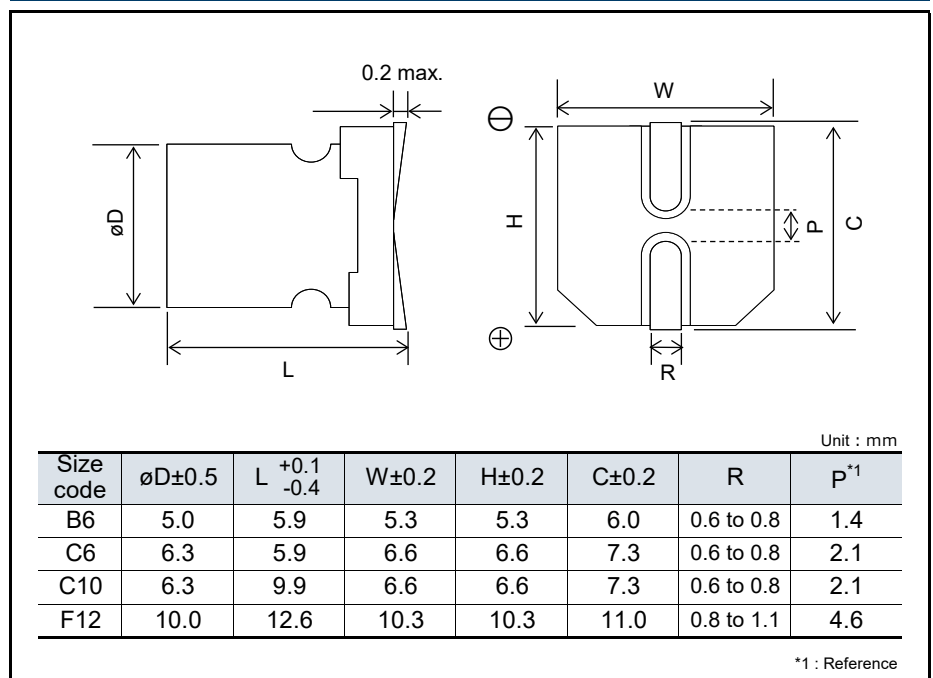
Specifications

| Size code | B6 | C6 | C10 | F12 |
|----------------------------|---|---|-------------------|--------|
| Category temp. range | -55 °C to +105 °C | | | |
| Rated voltage range | 2.5 V to 6.3 V | 2.5 V to 10 V | 2.0 V to 16 V | 16 V |
| Nominal cap.range | 150 μF to 390 μF | 220 μF to 820 μF | 180 μF to 1200 μF | 470 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +105 °C 2000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|-----------------------|-------------------------------|-----------------------------|------------------------------------|------------------------------------|--------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | ESR (m Ω max.) | | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| | | | | | | 100 kHz / 20 °C | 300 kHz ^{*2} / 20 °C | | | | |
| 2.0 | 1200 | 6.3 | 9.9 | C10 | 5230 | 8 | 8 | 0.12 | 500 | 2SVPE1200M | 500 |
| 2.5 | 270 | 5.0 | 5.9 | B6 | 3860 | 10 | 9 | 0.12 | 500 | 2R5SVPE270M | 1500 |
| | 330 | 5.0 | 5.9 | | 3150 | 15 | 13 | 0.12 | 500 | 2R5SVPE330M | 1500 |
| | | 5.0 | 5.9 | | 3860 | 10 | 9 | 0.12 | 500 | 2R5SVPE330MY | 1500 |
| | 390 | 5.0 | 5.9 | | 3860 | 10 | 9 | 0.12 | 700 | 2R5SVPE390MX | 1500 |
| | | 6.3 | 5.9 | C6 | 3900 | 10 | 9 | 0.12 | 500 | 2R5SVPE390M | 1000 |
| | 820 | 6.3 | 5.9 | 3900 | 10 | 9 | 0.12 | 1020 | 2R5SVPE820M | 1000 | |
| 6.3 | 150 | 5.0 | 5.9 | B6 | 3520 | 12 | 10 | 0.12 | 500 | 6SVPE150M | 1500 |
| | 180 | 5.0 | 5.9 | | 3150 | 15 | 13 | 0.12 | 500 | 6SVPE180M | 1500 |
| | 220 | 5.0 | 5.9 | | 3150 | 15 | 13 | 0.12 | 500 | 6SVPE220MW | 1500 |
| | | 6.3 | 5.9 | C6 | 3900 | 10 | 9 | 0.12 | 500 | 6SVPE220M | 1000 |
| | 390 | 6.3 | 5.9 | 3900 | 10 | 9 | 0.12 | 1220 | 6SVPE390M | 1000 | |
| 10 | 220 | 6.3 | 5.9 | C6 | 2700 | 20 | 18 | 0.12 | 500 | 10SVPE220M | 1000 |
| 16 | 180 | 6.3 | 9.9 | C10 | 4460 | 11 | 10 | 0.12 | 576 | 16SVPE180M | 500 |
| | 470 | 10.0 | 12.6 | F12 | 6100 | 10 | 9 | 0.12 | 1504 | 16SVPE470M | 400 |

*1: Ripple current (100 kHz / +105 °C)

*2: Reference value at 300 kHz

*3: $\tan \delta$ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz $\leq f < 1$ kHz | 1 kHz $\leq f < 10$ kHz | 10 kHz $\leq f < 100$ kHz | 100 kHz $\leq f < 500$ kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVPS series



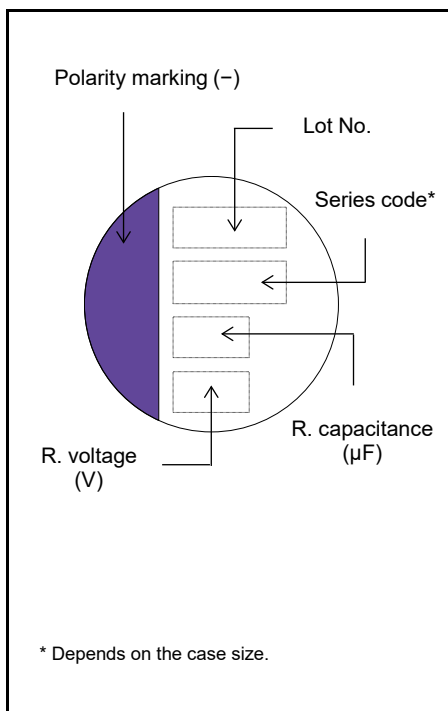
Features

- 105 °C 5000 h
- RoHS compliance, Halogen free

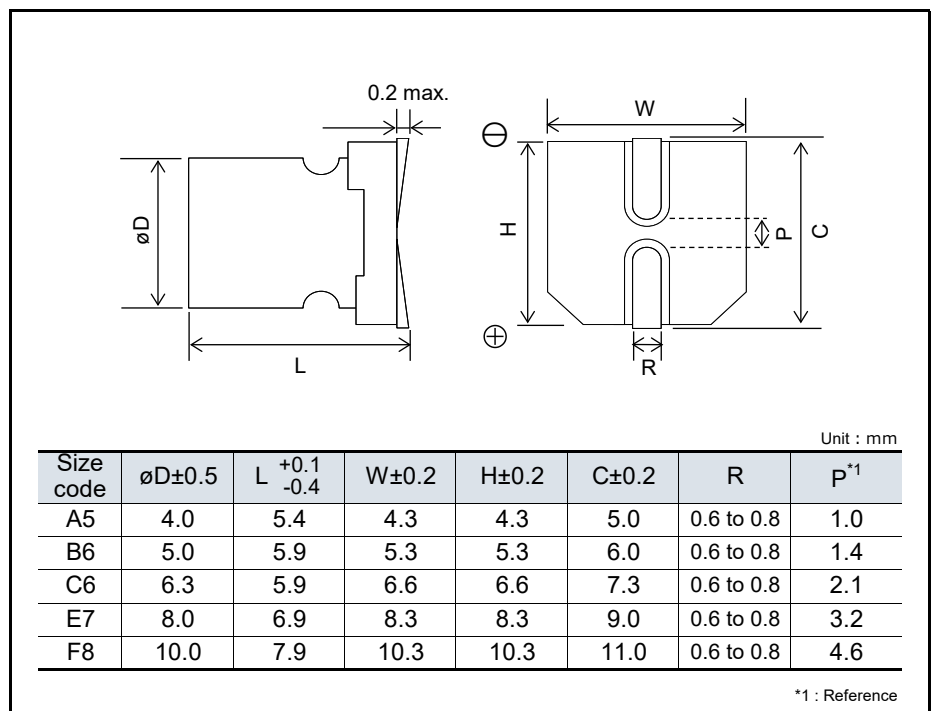
Specifications

| Size code | A5 | B6 | C6 | E7 | F8 |
|----------------------------|---|---|-----------------|-----------------|------------------|
| Category temp. range | -55 °C to +105 °C | | | | |
| Rated voltage range | 4.0 V to 10 V | 4.0 V to 16 V | 4.0 V to 20 V | 4.0 V to 25 V | 4.0 V to 16 V |
| Nominal cap.range | 10 µF to 33 µF | 22 µF to 68 µF | 22 µF to 150 µF | 10 µF to 270 µF | 100 µF to 680 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied (25 V product : 20 V applied) | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : ø380) | |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|-----------------------------|---------------------|-----------------------|-----------------------------|---------------------------|
| | | øD | L | | Ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | Part number | Min. Packaging Q'ty (pcs) |
| 4.0 | 33 | 4.0 | 5.4 | A5 | 740 | 200 | 0.15 | 66 | 4SVPS33M | 2000 |
| | 68 | 5.0 | 5.9 | B6 | 1970 | 30 | 0.12 | 300 | 4SVPS68M | 1500 |
| | 150 | 6.3 | 5.9 | C6 | 2570 | 22 | 0.12 | 300 | 4SVPS150M | 1000 |
| | 270 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 500 | 4SVPS270M | 1000 |
| | 680 | 10.0 | 7.9 | F8 | 4130 | 20 | 0.12 | 544 | 4SVPS680M | 500 |
| 6.3 | 22 | 4.0 | 5.4 | A5 | 740 | 200 | 0.12 | 69.3 | 6SVPS22M | 2000 |
| | 47 | 5.0 | 5.9 | B6 | 1970 | 30 | 0.12 | 300 | 6SVPS47M | 1500 |
| | 120 | 6.3 | 5.9 | C6 | 2570 | 22 | 0.12 | 300 | 6SVPS120M | 1000 |
| | 220 | 8.0 | 6.9 | E7 | 3220 | 22 | 0.12 | 500 | 6SVPS220M | 1000 |
| | 470 | 10.0 | 7.9 | F8 | 4130 | 20 | 0.12 | 592 | 6SVPS470M | 500 |
| 10 | 10 | 4.0 | 5.4 | A5 | 700 | 220 | 0.10 | 50 | 10SVPS10M | 2000 |
| | 15 | 4.0 | 5.4 | | 740 | 200 | 0.10 | 75 | 10SVPS15M | 2000 |
| | 33 | 5.0 | 5.9 | B6 | 1100 | 70 | 0.12 | 165 | 10SVPS33M | 1500 |
| | 68 | 6.3 | 5.9 | C6 | 2200 | 30 | 0.12 | 300 | 10SVPS68M | 1000 |
| | 150 | 8.0 | 6.9 | F8 | 2760 | 30 | 0.12 | 500 | 10SVPS150MX | 1000 |
| | | 10.0 | 7.9 | | 3020 | 30 | 0.12 | 300 | 10SVPS150M | 500 |
| | 330 | 10.0 | 7.9 | | 3770 | 24 | 0.12 | 660 | 10SVPS330M | 500 |
| 16 | 22 | 5.0 | 5.9 | B6 | 1060 | 90 | 0.10 | 176 | 16SVPS22M | 1500 |
| | 39 | 6.3 | 5.9 | C6 | 2460 | 24 | 0.12 | 300 | 16SVPS39M | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 2760 | 30 | 0.12 | 262 | 16SVPS82M | 1000 |
| | 100 | 10.0 | 7.9 | F8 | 2670 | 35 | 0.12 | 320 | 16SVPS100M | 500 |
| | | 180 | 10.0 | | 7.9 | 3430 | 29 | 0.12 | 576 | 16SVPS180M |
| 20 | 22 | 6.3 | 5.9 | C6 | 1450 | 60 | 0.10 | 88 | 20SVPS22M | 1000 |
| | 47 | 8.0 | 6.9 | E7 | 1890 | 45 | 0.12 | 188 | 20SVPS47M | 1000 |
| 25 | 10 | 8.0 | 6.9 | E7 | 1500 | 60 | 0.10 | 125 | 25SVPS10M | 1000 |

*1: Ripple current (100 kHz / +105 °C)

: The surface temperature of aluminum case top must not exceed 105 °C.

A rise in temperature due to self-heating by ripple current should be factored in.

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

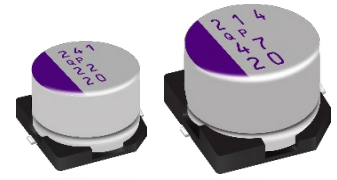
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVQP series



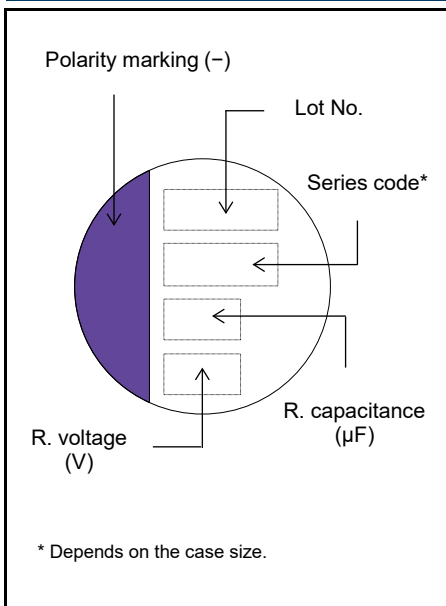
Features

- 125 °C 1000 h
- RoHS compliance, Halogen free

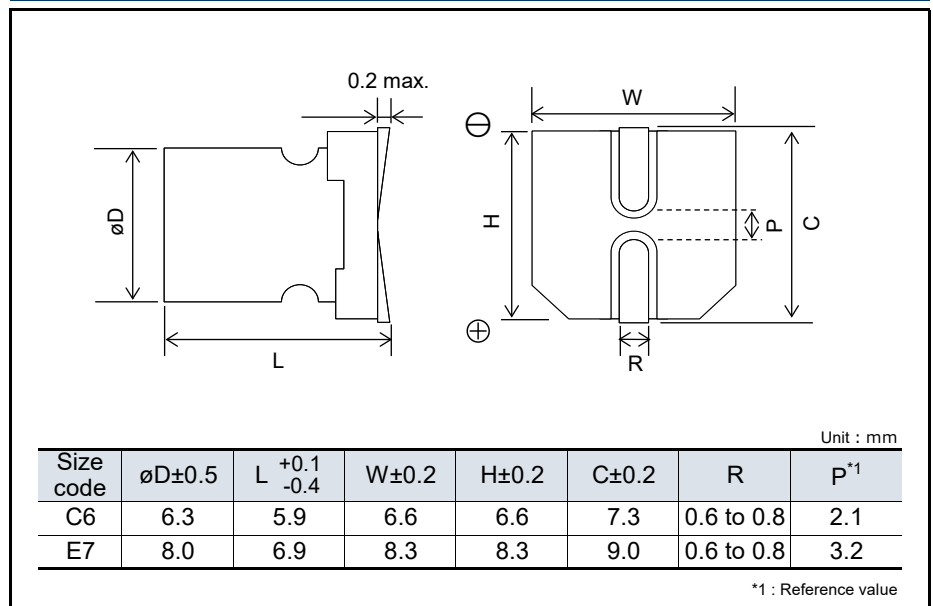
Specifications

| Size code | C6 | E7 |
|----------------------------|---|---|
| Category temp. range | -55 °C to +125 °C | |
| Rated voltage range | 4.0 V to 20 V | 6.3 V to 20 V |
| Nominal cap.range | 22 µF to 150 µF | 47 µF to 220 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | |
| DC leakage current | Please see the attached characteristics list | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | |
| Endurance | +125 °C 1000 h, rated voltage applied | |
| | Capacitance change | Within ±20 % of the initial value |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit |
| | DC leakage current | Within the initial limit |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | |
| | Capacitance change | Within ±20 % of the initial value |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit |
| | DC leakage current | Within the initial limit (after voltage processing) |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|-----|-----------|---------------------------------------|---|-------------------------------------|-----------------------------|------------------------------------|------------------------------------|--------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | Allowable ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| 4.0 | 150 | 6.3 | 5.9 | C6 | 572 | 1810 | 40 | 0.12 | 300 | 4SVQP150M | 1000 |
| | 82 | 6.3 | 5.9 | | 538 | 1700 | 45 | 0.12 | 258 | 6SVQP82M | 1000 |
| 6.3 | 100 | 6.3 | 5.9 | E7 | 572 | 1810 | 40 | 0.12 | 315 | 6SVQP100M | 1000 |
| | 220 | 8.0 | 6.9 | | 810 | 2560 | 35 | 0.12 | 693 | 6SVQP220M | 1000 |
| 10 | 56 | 6.3 | 5.9 | C6 | 538 | 1700 | 45 | 0.12 | 280 | 10SVQP56M | 1000 |
| | 120 | 8.0 | 6.9 | E7 | 810 | 2560 | 35 | 0.12 | 600 | 10SVQP120M | 1000 |
| | 150 | 8.0 | 6.9 | | 810 | 2560 | 35 | 0.12 | 750 | 10SVQP150M | 1000 |
| 16 | 39 | 6.3 | 5.9 | C6 | 512 | 1620 | 50 | 0.10 | 312 | 16SVQP39M | 1000 |
| | 82 | 8.0 | 6.9 | E7 | 670 | 2120 | 40 | 0.12 | 656 | 16SVQP82M | 1000 |
| 20 | 22 | 6.3 | 5.9 | C6 | 459 | 1450 | 60 | 0.10 | 220 | 20SVQP22M | 1000 |
| | 47 | 8.3 | 6.9 | E7 | 598 | 1890 | 45 | 0.12 | 470 | 20SVQP47M | 1000 |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < \text{Tx} \leq +125\text{ }^\circ\text{C}$), Allowable ripple current (100 kHz / $\text{Tx} \leq +105\text{ }^\circ\text{C}$)

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz $\leq f < 1$ kHz | 1 kHz $\leq f < 10$ kHz | 10 kHz $\leq f < 100$ kHz | 100 kHz $\leq f < 500$ kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Surface Mount Type
SVP series



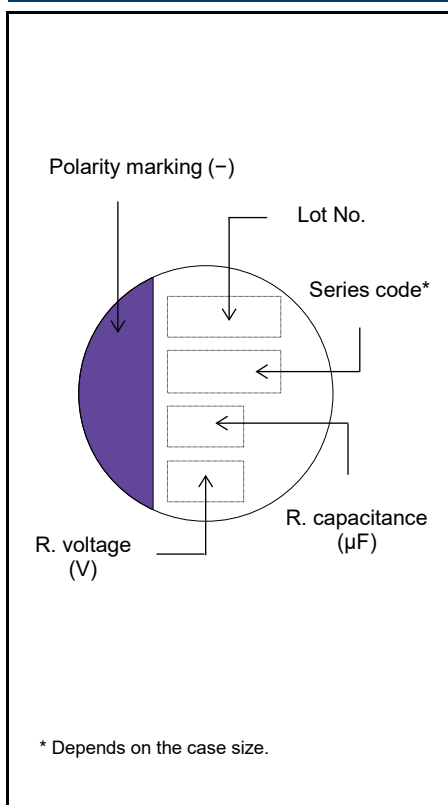
Features

- Standard
- RoHS compliance, Halogen free

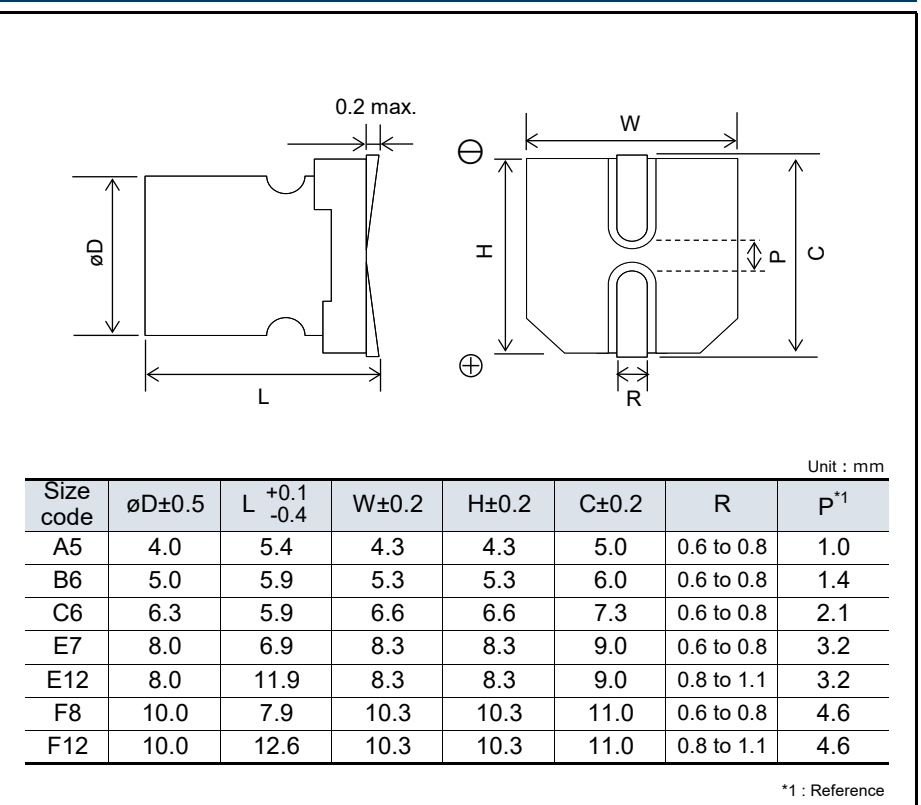
Specifications

| Size code | A5 | B6 | C6 | E7 | E12 | F8 | F12 |
|----------------------------|---|---|-----------|-----------|------------|-----------|-------------|
| Category temp. range | -55 °C to +105 °C | | | | | | |
| Rated voltage range (V) | 4.0 to 16 | 4.0 to 20 | 2.5 to 20 | 4.0 to 20 | 2.5 to 20 | 4.0 to 20 | 2.5 to 20 |
| Nominal cap.range (µF) | 3.3 to 33 | 10 to 68 | 22 to 220 | 33 to 330 | 100 to 680 | 56 to 680 | 150 to 1500 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | | |
| Endurance | +105 °C 2000 h, rated voltage applied | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | |
| | DC leakage current | Within the initial limit | | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Standard (Reel size : $\phi 380$) | |
|-------------------|--|----------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|------------------------------------|--------------------------|
| | | ϕD | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | Part number | Min. Packaging Qty (pcs) |
| 2.5 | 220 | 6.3 | 5.9 | C6 | 2390 | 23 | 0.12 | 110 | 2R5SVP220M | 1000 |
| | 680 | 8.0 | 11.9 | E12 | 4520 | 13 | 0.15 | 340 | 2R5SVP680M | 400 |
| | 1500 | 10.0 | 12.6 | F12 | 5440 | 12 | 0.18 | 750 | 2R5SVP1500M | 400 |
| 4.0 | 33 | 4.0 | 5.4 | A5 | 740 | 200 | 0.15 | 66 | 4SVP33M | 2000 |
| | 39 | 5.0 | 5.9 | B6 | 1100 | 70 | 0.12 | 78 | 4SVP39M | 1500 |
| | 68 | 5.0 | 5.9 | | 1400 | 60 | 0.12 | 136 | 4SVP68M | 1500 |
| | 150 | 6.3 | 5.9 | C6 | 1810 | 40 | 0.12 | 120 | 4SVP150MX | 1000 |
| | 330 | 8.0 | 6.9 | E7 | 2560 | 35 | 0.12 | 264 | 4SVP330M | 1000 |
| | 560 | 8.0 | 11.9 | E12 | 4520 | 13 | 0.15 | 448 | 4SVP560M | 400 |
| | 680 | 10.0 | 7.9 | F8 | 3700 | 25 | 0.12 | 544 | 4SVP680M | 500 |
| | 1200 | 10.0 | 12.6 | F12 | 5440 | 12 | 0.18 | 960 | 4SVP1200M | 400 |
| 6.3 | 22 | 4.0 | 5.4 | A5 | 740 | 200 | 0.12 | 69.3 | 6SVP22M | 2000 |
| | 47 | 5.0 | 5.9 | B6 | 1100 | 70 | 0.12 | 148 | 6SVP47M | 1500 |
| | 82 | 6.3 | 5.9 | C6 | 1700 | 45 | 0.12 | 103 | 6SVP82M | 1000 |
| | 100 | 6.3 | 5.9 | | 1810 | 40 | 0.12 | 126 | 6SVP100M | 1000 |
| | 120 | 6.3 | 5.9 | | 2780 | 17 | 0.12 | 151 | 6SVP120MV | 1000 |
| | 220 | 8.0 | 6.9 | E7 | 2560 | 35 | 0.12 | 277 | 6SVP220MX | 1000 |
| | 330 | 10.0 | 7.9 | F8 | 3700 | 25 | 0.12 | 277 | 6SVP220M | 500 |
| | | 10.0 | 7.9 | | 3700 | 25 | 0.12 | 416 | 6SVP330M | 500 |
| | 470 | 10.0 | 7.9 | E12 | 3700 | 25 | 0.12 | 592 | 6SVP470MX | 500 |
| | | 8.0 | 11.9 | | 4210 | 15 | 0.15 | 592 | 6SVP470M | 400 |
| | 820 | 10.0 | 12.6 | F12 | 5440 | 12 | 0.15 | 775 | 6SVP820M | 400 |
| 10 | 4.7 | 4.0 | 5.4 | A5 | 670 | 240 | 0.08 | 23.5 | 10SVP4R7M | 2000 |
| | 6.8 | 4.0 | 5.4 | | 670 | 240 | 0.09 | 34 | 10SVP6R8M | 2000 |
| | 10 | 4.0 | 5.4 | | 700 | 220 | 0.10 | 50 | 10SVP10M | 2000 |
| | 15 | 4.0 | 5.4 | | 740 | 200 | 0.10 | 75 | 10SVP15M | 2000 |
| | 33 | 5.0 | 5.9 | B6 | 1100 | 70 | 0.12 | 165 | 10SVP33M | 1500 |
| | 47 | 6.3 | 5.9 | C6 | 1620 | 50 | 0.12 | 94 | 10SVP47M | 1000 |
| | 56 | 6.3 | 5.9 | | 1700 | 45 | 0.12 | 112 | 10SVP56M | 1000 |
| | 120 | 8.0 | 6.9 | E7 | 2560 | 35 | 0.12 | 240 | 10SVP120M | 1000 |
| | 150 | 8.0 | 6.9 | F8 | 2560 | 35 | 0.12 | 300 | 10SVP150MX | 1000 |
| | | 10.0 | 7.9 | | 3020 | 30 | 0.12 | 300 | 10SVP150M | 500 |
| | 270 | 10.0 | 7.9 | E12 | 3700 | 25 | 0.12 | 540 | 10SVP270M | 500 |
| | 330 | 10.0 | 7.9 | | 3700 | 25 | 0.12 | 660 | 10SVP330MX | 500 |
| | | 8.0 | 11.9 | 3950 | 17 | 0.15 | 660 | 10SVP330M | 400 | |
| | 560 | 10.0 | 12.6 | F12 | 5230 | 13 | 0.15 | 840 | 10SVP560M | 400 |
| | 16 | 3.3 | 4.0 | 5.4 | A5 | 660 | 260 | 0.07 | 26.4 | 16SVP3R3M |
| 15 | | 5.0 | 5.9 | B6 | 1020 | 120 | 0.10 | 120 | 16SVP15M | 1500 |
| 22 | | 5.0 | 5.9 | | 1060 | 90 | 0.10 | 176 | 16SVP22M | 1500 |
| 39 | | 6.3 | 5.9 | C6 | 1620 | 50 | 0.10 | 125 | 16SVP39M | 1000 |
| 56 | | 8.0 | 6.9 | E7 | 1890 | 45 | 0.12 | 179 | 16SVP56M | 1000 |
| 82 | | 8.0 | 6.9 | | 2120 | 40 | 0.12 | 262 | 16SVP82M | 1000 |
| 100 | | 10.0 | 7.9 | F8 | 2670 | 35 | 0.12 | 320 | 16SVP100M | 500 |
| 150 | | 10.0 | 7.9 | | 3020 | 30 | 0.12 | 480 | 16SVP150M | 500 |
| 180 | | 10.0 | 7.9 | | 3020 | 30 | 0.12 | 576 | 16SVP180MX | 500 |
| | | 8.0 | 11.9 | E12 | 3640 | 20 | 0.15 | 576 | 16SVP180M | 400 |
| 330 | | 10.0 | 12.6 | F12 | 4720 | 16 | 0.15 | 792 | 16SVP330M | 400 |
| 20 | 10 | 5.0 | 5.9 | B6 | 1020 | 120 | 0.10 | 100 | 20SVP10M | 1500 |
| | 22 | 6.3 | 5.9 | C6 | 1450 | 60 | 0.10 | 88 | 20SVP22M | 1000 |
| | 27 | 6.3 | 5.9 | | 1450 | 60 | 0.10 | 108 | 20SVP27M | 1000 |
| | 33 | 8.0 | 6.9 | E7 | 1890 | 45 | 0.12 | 132 | 20SVP33M | 1000 |
| | 47 | 8.0 | 6.9 | | 1890 | 45 | 0.12 | 188 | 20SVP47M | 1000 |
| | 56 | 10.0 | 7.9 | F8 | 2400 | 40 | 0.12 | 224 | 20SVP56M | 500 |
| | 68 | 10.0 | 7.9 | | 2400 | 40 | 0.12 | 272 | 20SVP68M | 500 |
| | 100 | 8.0 | 11.9 | | E12 | 3320 | 24 | 0.15 | 400 | 20SVP100M |
| | 150 | 10.0 | 12.6 | F12 | 4320 | 20 | 0.15 | 600 | 20SVP150M | 400 |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz/+20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Reflow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEF series



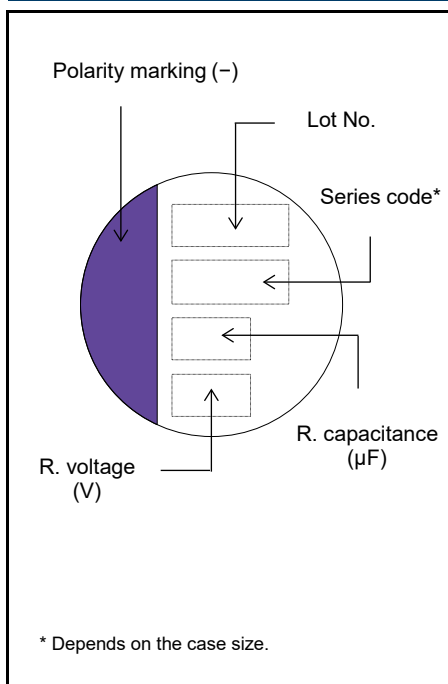
Features

- High voltage (35 V max.)
- Large capacitance (1000 μF max.)
- RoHS compliance, Halogen free

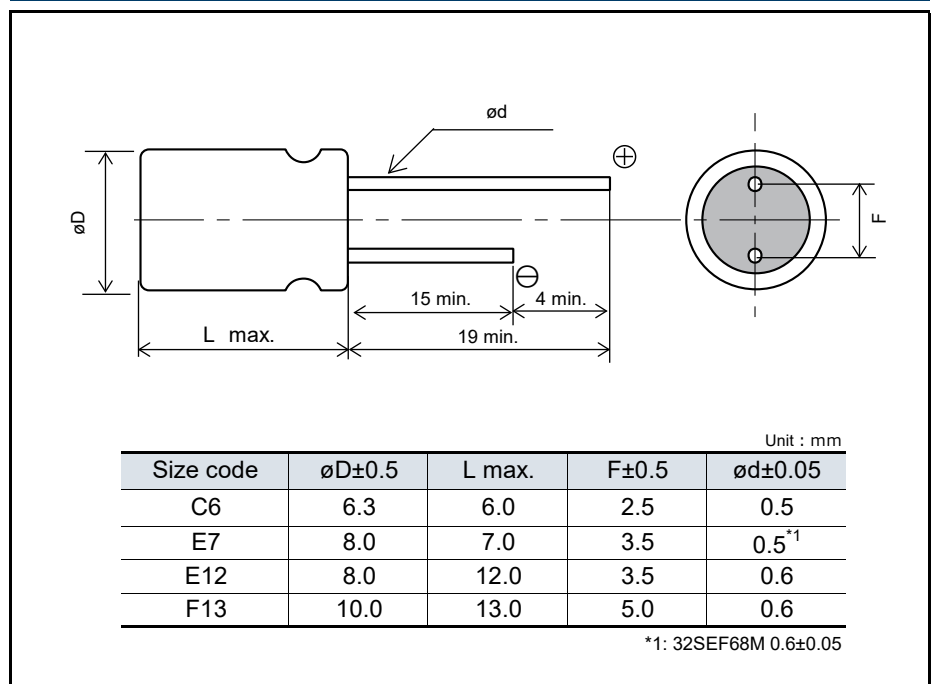
Specifications

| Size code | C6 | E7 | E12 | F13 |
|----------------------------|---|---|-----------------|-------------------|
| Category temp. range | -55 °C to +125 °C | | | |
| Rated voltage range | 16 V to 35 V | | | |
| Nominal cap.range | 22 μF to 180 μF | 39 μF to 270 μF | 82 μF to 560 μF | 120 μF to 1000 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|---|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | Allowable ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 16 | 180 | 6.3 | 6.0 | C6 | 1040 | 3300 | 22 | 0.12 | 576 | 16SEF180M |
| | 270 | 8.0 | 7.0 | E7 | 1040 | 3300 | 22 | 0.12 | 864 | 16SEF270M |
| | 560 | 8.0 | 12.0 | E12 | 1560 | 4950 | 14 | 0.12 | 1792 | 16SEF560M |
| | 1000 | 10.0 | 13.0 | F13 | 1700 | 5400 | 12 | 0.12 | 3200 | 16SEF1000M |
| 20 | 120 | 6.3 | 6.0 | C6 | 1010 | 3200 | 25 | 0.12 | 480 | 20SEF120M |
| | 180 | 8.0 | 7.0 | E7 | 1010 | 3200 | 25 | 0.12 | 720 | 20SEF180M |
| | 390 | 8.0 | 12.0 | E12 | 1560 | 4950 | 14 | 0.12 | 1560 | 20SEF390M |
| | 560 | 10.0 | 13.0 | F13 | 1700 | 5400 | 12 | 0.12 | 2240 | 20SEF560M |
| 25 | 56 | 6.3 | 6.0 | C6 | 880 | 2800 | 30 | 0.12 | 280 | 25SEF56M |
| | 82 | 8.0 | 7.0 | E7 | 940 | 3000 | 28 | 0.12 | 410 | 25SEF82M |
| | 180 | 8.0 | 12.0 | E12 | 1470 | 4650 | 16 | 0.12 | 900 | 25SEF180M |
| | 330 | 10.0 | 13.0 | F13 | 1580 | 5000 | 14 | 0.12 | 1650 | 25SEF330M |
| 32 | 68 | 8.0 | 7.0 | E7 | 1010 | 3200 | 25 | 0.10 | 435 | 32SEF68M |
| 35 | 22 | 6.3 | 6.0 | C6 | 820 | 2600 | 35 | 0.12 | 154 | 35SEF22M |
| | 39 | 8.0 | 7.0 | E7 | 880 | 2800 | 30 | 0.12 | 273 | 35SEF39M |
| | 82 | 8.0 | 12.0 | E12 | 1260 | 4000 | 20 | 0.12 | 574 | 35SEF82M |
| | 120 | 10.0 | 13.0 | F13 | 1390 | 4400 | 18 | 0.12 | 840 | 35SEF120M |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < \text{Tx} \leq +125\text{ }^\circ\text{C}$) / Allowable ripple current (100 kHz / $\text{Tx} \leq +105\text{ }^\circ\text{C}$)

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | $120\text{ Hz} \leq f < 1\text{ kHz}$ | $1\text{ kHz} \leq f < 10\text{ kHz}$ | $10\text{ kHz} \leq f < 100\text{ kHz}$ | $100\text{ kHz} \leq f < 500\text{ kHz}$ |
|--------------|---------------------------------------|---------------------------------------|---|--|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEK series



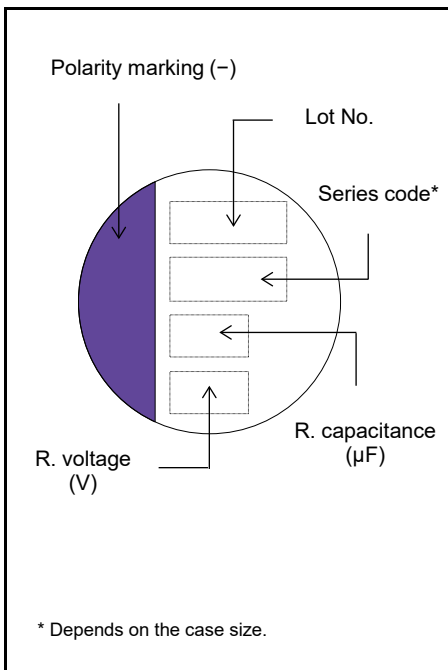
Features

- High voltage (50 V max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

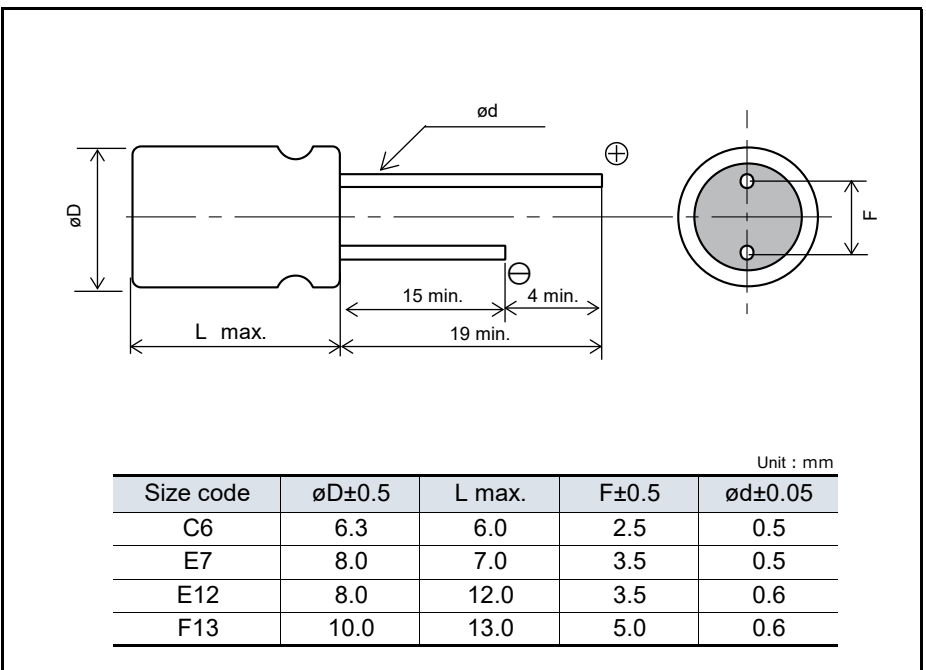
Specifications

| Size code | C6 | E7 | E12 | F13 |
|----------------------------|---|---|-----------------|------------------|
| Category temp. range | -55 °C to +125 °C | | | |
| Rated voltage range | 25 V to 50 V | | | |
| Nominal cap.range | 22 µF to 82 µF | 33 µF to 120 µF | 68 µF to 270 µF | 120 µF to 470 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|---|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | Allowable ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 25 | 82 | 6.3 | 6.0 | C6 | 960 | 3060 | 25 | 0.12 | 410 | 25SEK82M |
| | 120 | 8.0 | 7.0 | E7 | 1010 | 3200 | 24 | 0.12 | 600 | 25SEK120M |
| | 270 | 8.0 | 12.0 | E12 | 1470 | 4650 | 16 | 0.12 | 1350 | 25SEK270M |
| | 470 | 10.0 | 13.0 | F13 | 1590 | 5000 | 14 | 0.12 | 2350 | 25SEK470M |
| 35 | 47 | 6.3 | 6.0 | C6 | 930 | 2950 | 27 | 0.12 | 329 | 35SEK47M |
| | 82 | 8.0 | 7.0 | E7 | 960 | 3060 | 25 | 0.12 | 574 | 35SEK82M |
| | 180 | 8.0 | 12.0 | E12 | 1260 | 4000 | 20 | 0.12 | 1260 | 35SEK180M |
| | 330 | 10.0 | 13.0 | F13 | 1390 | 4400 | 18 | 0.12 | 2310 | 35SEK330M |
| 50 | 22 | 6.3 | 6.0 | C6 | 820 | 2600 | 35 | 0.12 | 220 | 50SEK22M |
| | 33 | 8.0 | 7.0 | E7 | 850 | 2700 | 35 | 0.12 | 330 | 50SEK33M |
| | 68 | 8.0 | 12.0 | E12 | 1200 | 3800 | 25 | 0.12 | 680 | 50SEK68M |
| | 120 | 10.0 | 13.0 | F13 | 1350 | 4300 | 20 | 0.12 | 1200 | 50SEK120M |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < \text{T}_x \leq +125\text{ }^\circ\text{C}$) / Allowable ripple current (100 kHz / $\text{T}_x \leq +105\text{ }^\circ\text{C}$)

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz $\leq f < 1$ kHz | 1 kHz $\leq f < 10$ kHz | 10 kHz $\leq f < 100$ kHz | 100 kHz $\leq f < 500$ kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEPG series



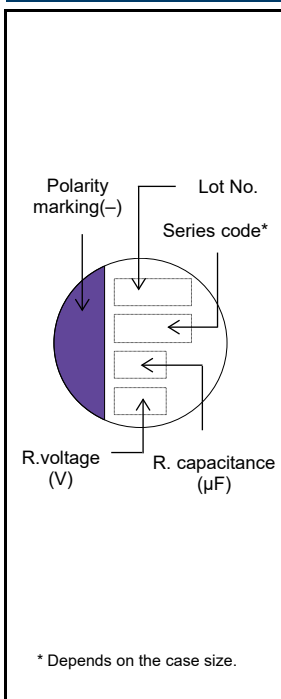
Features

- High ripple current (6100 mA rms max.)
- RoHS compliance, Halogen free

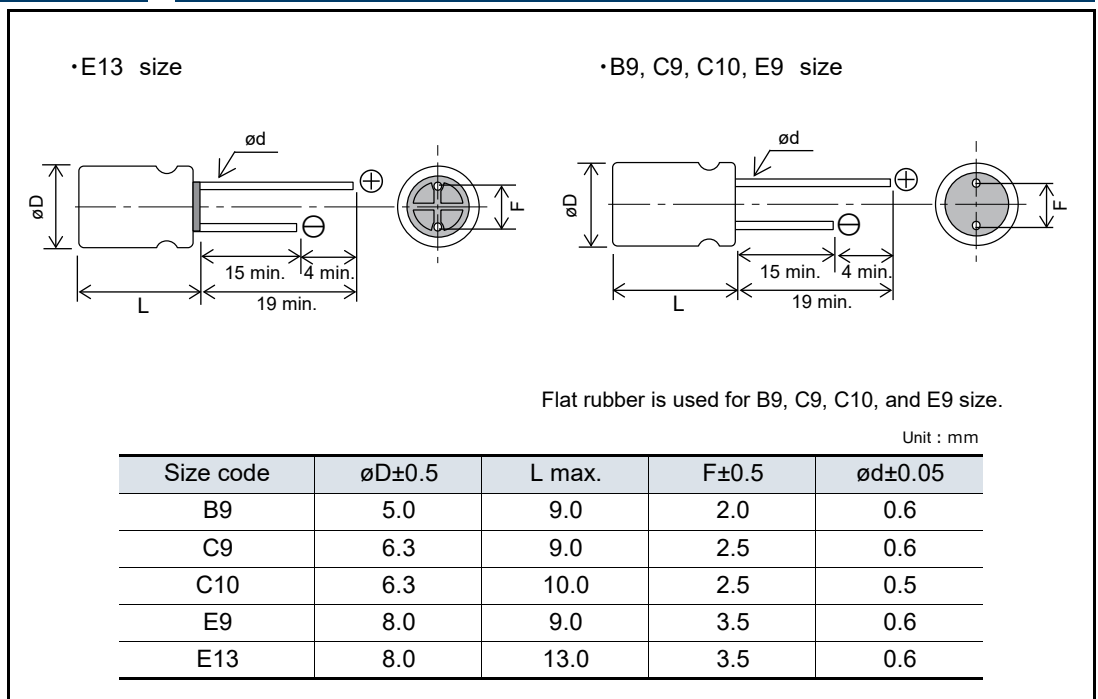
Specifications

| Size code | B9 | C9 | C10 | E9 | E13 |
|----------------------------|---|-----------------------------------|-----|--------|--------|
| Category temp. range | -55 °C to +105 °C | | | | |
| Rated voltage range | 16 V | | | | |
| Rated cap. range | 150 μF | 270 μF | | 470 μF | 560 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| Leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tan δ) | ≤ 200 % of the initial limit | | | |
| Damp heat (Steady State) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tan δ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | | | | |
| | Within the initial limit (after voltage processing) | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 16 | 150 | 5.0 | 9.0 | B9 | 4500 | 12 | 0.12 | 480 | 16SEPG150M |
| | 270 | 6.3 | 9.0 | C9 | 5040 | 10 | 0.12 | 864 | 16SEPG270W |
| | | 6.3 | 10.0 | C10 | 5800 | 8 | 0.12 | 864 | 16SEPG270M |
| | 470 | 8.0 | 9.0 | E9 | 5400 | 8 | 0.12 | 1504 | 16SEPG470M |
| | 560 | 8.0 | 13.0 | E13 | 6100 | 8 | 0.12 | 1792 | 16SEPG560M |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

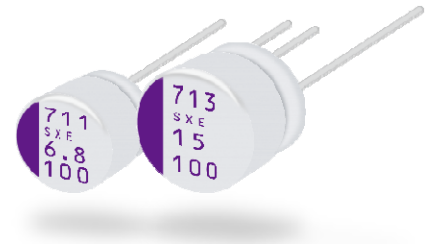
*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz $\leq f < 1$ kHz | 1 kHz $\leq f < 10$ kHz | 10 kHz $\leq f < 100$ kHz | 100 kHz $\leq f < 500$ kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SXE series



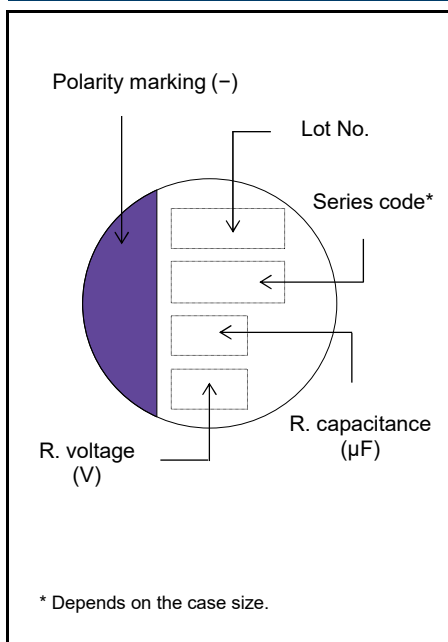
Features

- Super high voltage (100 V max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

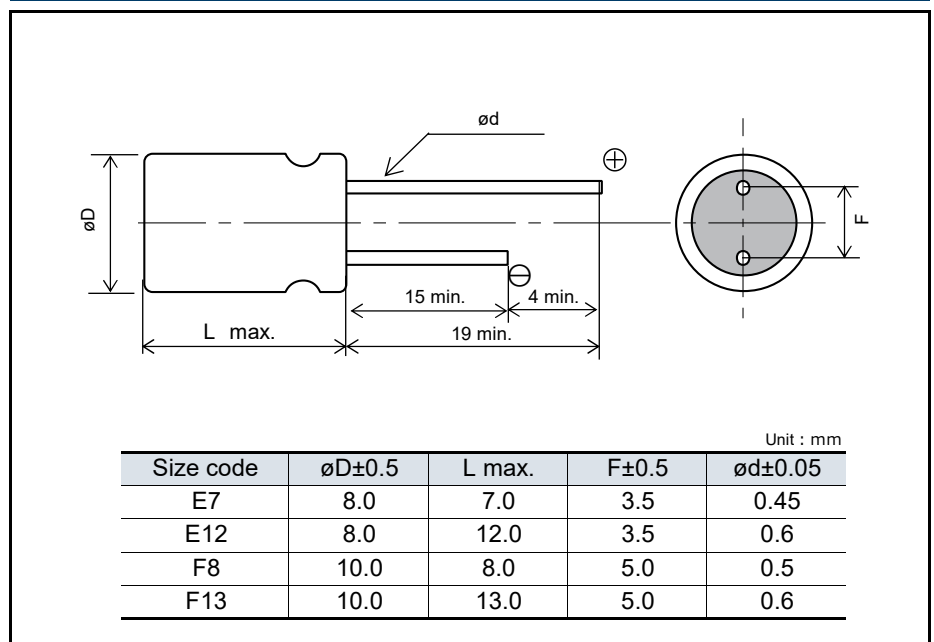
Specifications

| Size code | E7 | E12 | F8 | F13 |
|----------------------------|---|---|----------------|-----------------|
| Category temp. range | -55 °C to +125 °C | | | |
| Rated voltage range | 63 V to 100 V | | | |
| Nominal cap.range | 6.8 μF to 18 μF | 15 μF to 56 μF | 15 μF to 39 μF | 18 μF to 100 μF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | |
| DC leakage current | Please see the attached characteristics list | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | |
| Endurance | +125 °C 1000 h, rated voltage applied | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | |
| | Capacitance change | Within ±20 % of the initial value | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance (±20 %) (μF) | Case size (mm) | | Size code | Specifications | | | | | Part number Click here for part number list of lead terminal cutting and lead terminal taping |
|-------------------|--------------------------------|----------------|------|-----------|---------------------------------------|---|-----------------------------|---------------------|-----------------------|--|
| | | øD | L | | Ripple current* ¹ (mA rms) | Allowable ripple current* ¹ (mA rms) | ESR* ² (mΩ max.) | tan δ* ³ | LC* ⁴ (μA) | |
| 63 | 18 | 8.0 | 7.0 | E7 | 340 | 1100 | 60 | 0.12 | 56 | 63SXE18M |
| | 33 | 8.0 | 12.0 | E12 | 930 | 2950 | 25 | 0.12 | 104 | 63SXE33M |
| | 39 | 8.0 | 12.0 | E12 | 930 | 2950 | 25 | 0.12 | 122 | 63SXE39M |
| | | 10.0 | 8.0 | F8 | 690 | 2190 | 50 | 0.12 | 122 | 63SXE39MX |
| | 56 | 8.0 | 12.0 | E12 | 930 | 2950 | 25 | 0.12 | 176 | 63SXE56M |
| | 68 | 10.0 | 13.0 | F13 | 1030 | 3280 | 25 | 0.12 | 214 | 63SXE68M |
| | 100 | 10.0 | 13.0 | F13 | 1030 | 3280 | 25 | 0.12 | 315 | 63SXE100M |
| 72 | 82 | 10.0 | 13.0 | F13 | 980 | 3100 | 28 | 0.12 | 295 | 72SXE82M |
| 80 | 12 | 8.0 | 7.0 | E7 | 340 | 1100 | 60 | 0.12 | 48 | 80SXE12M |
| | 27 | 8.0 | 12.0 | E12 | 780 | 2490 | 35 | 0.12 | 108 | 80SXE27M |
| | | 10.0 | 8.0 | F8 | 660 | 2080 | 55 | 0.12 | 108 | 80SXE27MX |
| | 33 | 8.0 | 12.0 | E12 | 780 | 2490 | 35 | 0.12 | 132 | 80SXE33M |
| | 47 | 10.0 | 13.0 | F13 | 980 | 3100 | 28 | 0.12 | 188 | 80SXE47M |
| | 56 | 10.0 | 13.0 | F13 | 980 | 3100 | 28 | 0.12 | 224 | 80SXE56M |
| 100 | 6.8 | 8.0 | 7.0 | E7 | 340 | 1100 | 60 | 0.12 | 34 | 100SXE6R8M |
| | 15 | 10.0 | 8.0 | F8 | 630 | 2000 | 60 | 0.12 | 75 | 100SXE15MX |
| | | 8.0 | 12.0 | E12 | 730 | 2350 | 40 | 0.12 | 75 | 100SXE15M |
| | 18 | 10.0 | 13.0 | F13 | 940 | 3000 | 30 | 0.12 | 90 | 100SXE18M |
| | | 8.0 | 12.0 | E12 | 730 | 2350 | 40 | 0.12 | 90 | 100SXE18MX |
| | 22 | 10.0 | 13.0 | F13 | 940 | 3000 | 30 | 0.12 | 110 | 100SXE22M |
| | 27 | 10.0 | 13.0 | F13 | 940 | 3000 | 30 | 0.12 | 135 | 100SXE27M |

*1: Ripple current (100 kHz / +105 °C < Tx ≤ +125 °C) / Allowable ripple current (100 kHz / Tx ≤ +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz ≤ f < 1 kHz | 1 kHz ≤ f < 10 kHz | 10 kHz ≤ f < 100 kHz | 100 kHz ≤ f < 500 kHz |
|--------------|--------------------|--------------------|----------------------|-----------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEPF series



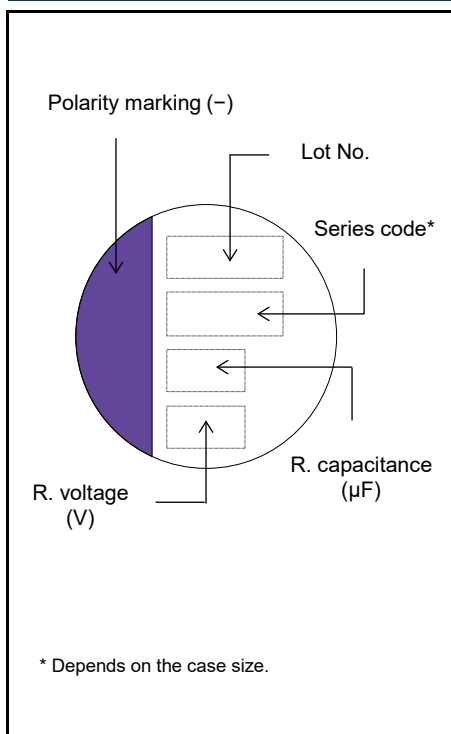
Features

- High voltage (35 V max.)
- Large capacitance (1000 μF max.)
- RoHS compliance, Halogen free

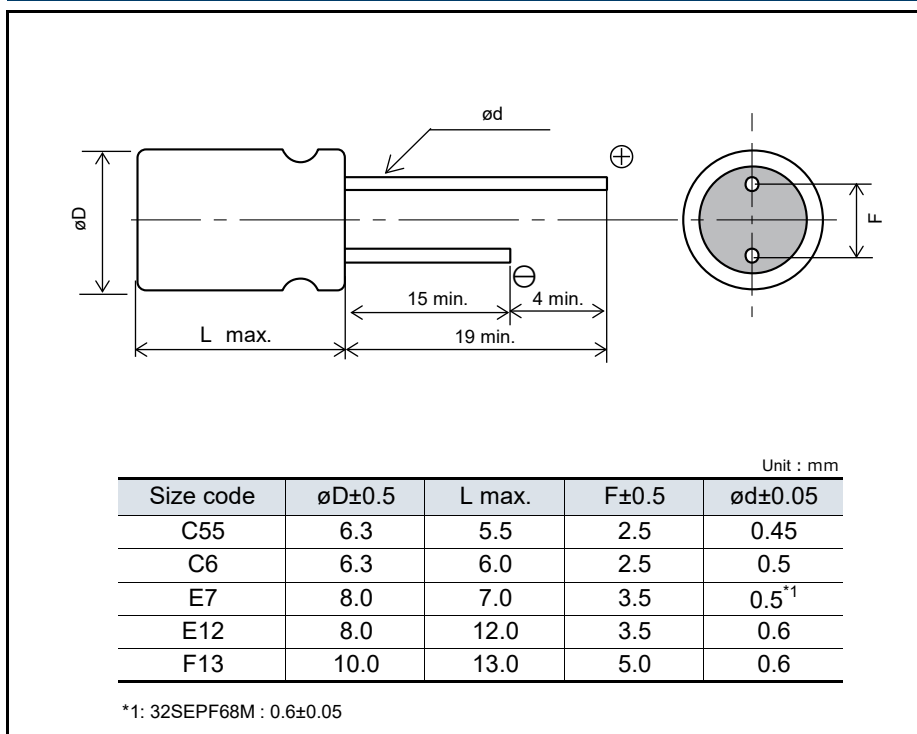
Specifications

| Size code | C55 | C6 | E7 | E12 | F13 |
|------------------------------------|---|---|---------------------------------------|---------------------------------------|---|
| Category temp. range | -55 °C to +105 °C | | | | |
| Rated voltage range | 16 V to 32 V | 16 V to 35 V | | | |
| Nominal cap.range | 22 μF to 150 μF | 22 μF to 180 μF | 39 μF to 270 μF | 82 μF to 560 μF | 120 μF to 1000 μF |
| Capacitance tolerance | $\pm 20\%$ (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied | | | | |
| | Capacitance change | Within $\pm 20\%$ of the initial value | | | |
| | Dissipation factor (tan δ) | $\leq 150\%$ of the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within $\pm 20\%$ of the initial value | | | |
| | Dissipation factor (tan δ) | $\leq 150\%$ of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 16 | 150 | 6.3 | 5.5 | C55 | 2590 | 30 | 0.12 | 480 | 16SEPF150M |
| | 180 | 6.3 | 6.0 | C6 | 3300 | 22 | 0.12 | 576 | 16SEPF180M |
| | 270 | 8.0 | 7.0 | E7 | 3300 | 22 | 0.12 | 864 | 16SEPF270M |
| | 560 | 8.0 | 12.0 | E12 | 4950 | 14 | 0.12 | 1792 | 16SEPF560M |
| | 1000 | 10.0 | 13.0 | F13 | 5400 | 12 | 0.12 | 3200 | 16SEPF1000M |
| 20 | 120 | 6.3 | 6.0 | C6 | 3200 | 25 | 0.12 | 480 | 20SEPF120M |
| | 180 | 8.0 | 7.0 | E7 | 3200 | 25 | 0.12 | 720 | 20SEPF180M |
| | 390 | 8.0 | 12.0 | E12 | 4950 | 14 | 0.12 | 1560 | 20SEPF390M |
| | 560 | 10.0 | 13.0 | F13 | 5400 | 12 | 0.12 | 2240 | 20SEPF560M |
| 25 | 56 | 6.3 | 6.0 | C6 | 2800 | 30 | 0.12 | 280 | 25SEPF56M |
| | 82 | 8.0 | 7.0 | E7 | 3000 | 28 | 0.12 | 410 | 25SEPF82M |
| | 180 | 8.0 | 12.0 | E12 | 4650 | 16 | 0.12 | 900 | 25SEPF180M |
| | 330 | 10.0 | 13.0 | F13 | 5000 | 14 | 0.12 | 1650 | 25SEPF330M |
| 32 | 22 | 6.3 | 5.5 | C55 | 2400 | 35 | 0.12 | 140 | 32SEPF22M |
| | 68 | 8.0 | 7.0 | E7 | 3200 | 25 | 0.10 | 435 | 32SEPF68M |
| 35 | 22 | 6.3 | 6.0 | C6 | 2600 | 35 | 0.12 | 154 | 35SEPF22M |
| | 39 | 8.0 | 7.0 | E7 | 2800 | 30 | 0.12 | 273 | 35SEPF39M |
| | 82 | 8.0 | 12.0 | E12 | 4000 | 20 | 0.12 | 574 | 35SEPF82M |
| | 120 | 10.0 | 13.0 | F13 | 4400 | 18 | 0.12 | 840 | 35SEPF120M |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

Conductive Polymer Aluminum

Solid Capacitors

Radial Lead Type

SEPC series



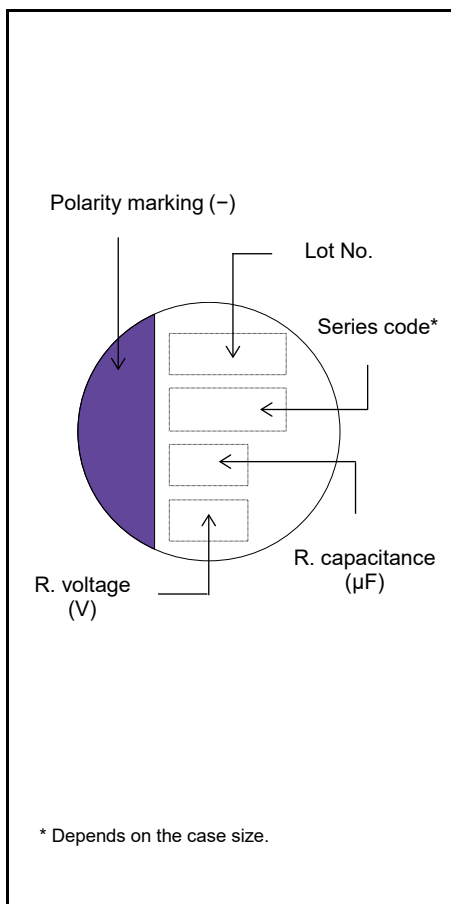
Features

- Super low ESR (5 mΩ max.)
- Large capacitance (2700 μF max.)
- RoHS compliance, Halogen free

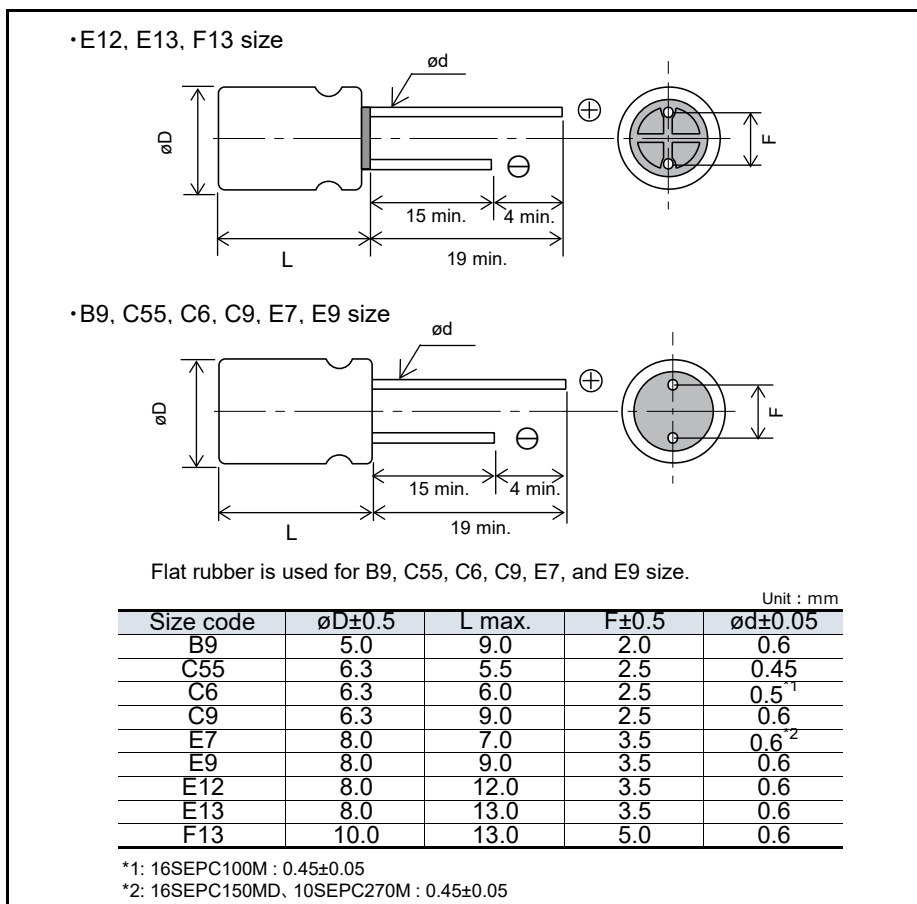
Specifications

| Size code | B9 | C55 | C6 | C9 | E7 | E9 | E12 | E13 | F13 |
|----------------------------|---|---|------------|------------|-------------|-------------|------------|------------|-------------|
| Category temp. range | -55 °C to +105 °C | | | | | | | | |
| Rated voltage range (V) | 2.5 | 6.3 | 2.5 to 16 | | 6.3 to 16 | 2.5 to 16 | 16 | 2.5 to 6.3 | 2.5 to 16 |
| Nominal cap.range (μF) | 100 to 560 | 220 | 100 to 560 | 100 to 820 | 150 to 1000 | 180 to 1000 | 180 to 270 | 470 to 820 | 470 to 2700 |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | | | | | |
| DC leakage current | Please see the attached characteristics list | | | | | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | | | | | |
| Endurance | +105 °C 5000 h, rated voltage applied | | | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | | | |
| | DC leakage current | Within the initial limit | | | | | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | | | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | | | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | | | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 2.5 | 100 | 5.0 | 9.0 | B9 | 4180 | 7 | 0.10 | 500 | 2SEPC100MZ |
| | 330 | 5.0 | 9.0 | | 4180 | 7 | 0.10 | 500 | 2SEPC330MZ |
| | 390 | 6.3 | 6.0 | C6 | 3900 | 10 | 0.12 | 500 | 2SEPC390M |
| | 470 | 5.0 | 9.0 | B9 | 4180 | 7 | 0.10 | 500 | 2SEPC470MZ |
| | 560 | 5.0 | 9.0 | | 4180 | 7 | 0.10 | 500 | 2SEPC560MZ |
| | | 6.3 | 6.0 | C6 | 3900 | 10 | 0.12 | 500 | 2SEPC560M |
| | | 6.3 | 9.0 | C9 | 5600 | 7 | 0.10 | 500 | 2SEPC560MW |
| | | 8.0 | 9.0 | E9 | 4700 | 8 | 0.10 | 280 | 2SEPC560MX |
| | 820 | 6.3 | 9.0 | C9 | 5600 | 7 | 0.10 | 500 | 2SEPC820MW |
| | | 8.0 | 7.0 | E7 | 5300 | 8 | 0.10 | 500 | 2SEPC820MD |
| | | 8.0 | 9.0 | E9 | 6100 | 7 | 0.10 | 500 | 2SEPC820MX |
| | | 8.0 | 9.0 | | 7200 | 5 | 0.10 | 500 | 2SEPC820MY |
| | | 8.0 | 13.0 | E13 | 6100 | 7 | 0.10 | 500 | 2R5SEPC820M |
| | 1000 | 8.0 | 9.0 | E9 | 6100 | 7 | 0.10 | 500 | 2SEPC1000MX |
| 2700 | 10.0 | 13.0 | F13 | 5560 | 10 | 0.10 | 1350 | 2SEPC2700M | |
| 4.0 | 560 | 6.3 | 9.0 | C9 | 5600 | 7 | 0.10 | 500 | 4SEPC560MW |
| | | 8.0 | 9.0 | E9 | 6100 | 7 | 0.10 | 500 | 4SEPC560MX |
| | | 8.0 | 13.0 | E13 | 6100 | 7 | 0.10 | 500 | 4SEPC560M |
| | 680 | 8.0 | 13.0 | | 6100 | 7 | 0.10 | 544 | 4SEPC680M |
| | 820 | 10.0 | 13.0 | F13 | 6640 | 7 | 0.10 | 656 | 4SEPC820M |
| 6.3 | 220 | 6.3 | 5.5 | C55 | 2980 | 18 | 0.12 | 280 | 6SEPC220M |
| | 470 | 6.3 | 9.0 | C9 | 5600 | 7 | 0.10 | 592 | 6SEPC470MW |
| | | 8.0 | 9.0 | E9 | 5700 | 8 | 0.10 | 592 | 6SEPC470MX |
| | | 8.0 | 13.0 | E13 | 5700 | 8 | 0.10 | 592 | 6SEPC470M |
| | 560 | 6.3 | 9.0 | C9 | 5600 | 7 | 0.10 | 705 | 6SEPC560MW |
| | | 8.0 | 9.0 | E9 | 6100 | 7 | 0.10 | 705 | 6SEPC560MX |
| | 680 | 10.0 | 13.0 | F13 | 6640 | 7 | 0.10 | 857 | 6SEPC680M |
| | 1000 | 8.0 | 7.0 | E7 | 3530 | 18 | 0.10 | 1260 | 6SEPC1000MD |
| 1500 | 10.0 | 13.0 | F13 | 5560 | 10 | 0.10 | 1890 | 6SEPC1500M | |
| 10 | 270 | 8.0 | 7.0 | E7 | 3220 | 22 | 0.12 | 500 | 10SEPC270MD |
| 16 | 100 | 6.3 | 6.0 | C6 | 2490 | 24 | 0.10 | 320 | 16SEPC100M |
| | | 6.3 | 9.0 | C9 | 4680 | 10 | 0.10 | 500 | 16SEPC100MW |
| | 150 | 8.0 | 7.0 | E7 | 3220 | 22 | 0.12 | 500 | 16SEPC150MD |
| | 180 | 8.0 | 9.0 | E9 | 5000 | 10 | 0.10 | 576 | 16SEPC180MX |
| | | 8.0 | 12.0 | E12 | 4360 | 16 | 0.10 | 576 | 16SEPC180M |
| | 220 | 8.0 | 7.0 | E7 | 4150 | 13 | 0.10 | 500 | 16SEPC220MD |
| | 270 | 8.0 | 9.0 | E9 | 5000 | 10 | 0.10 | 864 | 16SEPC270MX |
| | | 8.0 | 12.0 | E12 | 5000 | 11 | 0.10 | 864 | 16SEPC270M |
| | 470 | 10.0 | 13.0 | F13 | 6100 | 10 | 0.10 | 1504 | 16SEPC470M |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEQP series



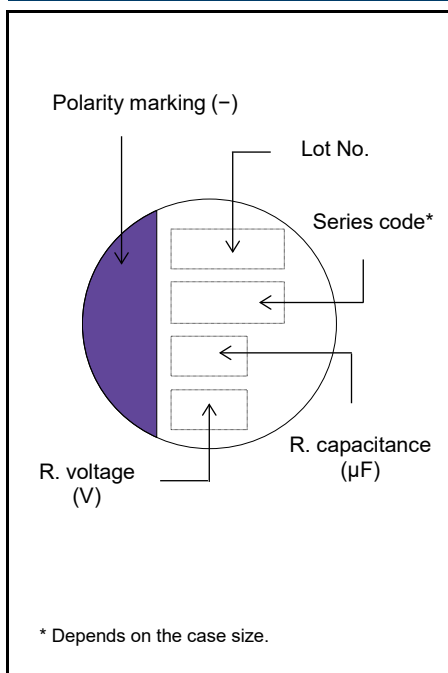
Features

- High voltage (32 V max.)
- 125 °C 1000 h
- RoHS compliance, Halogen free

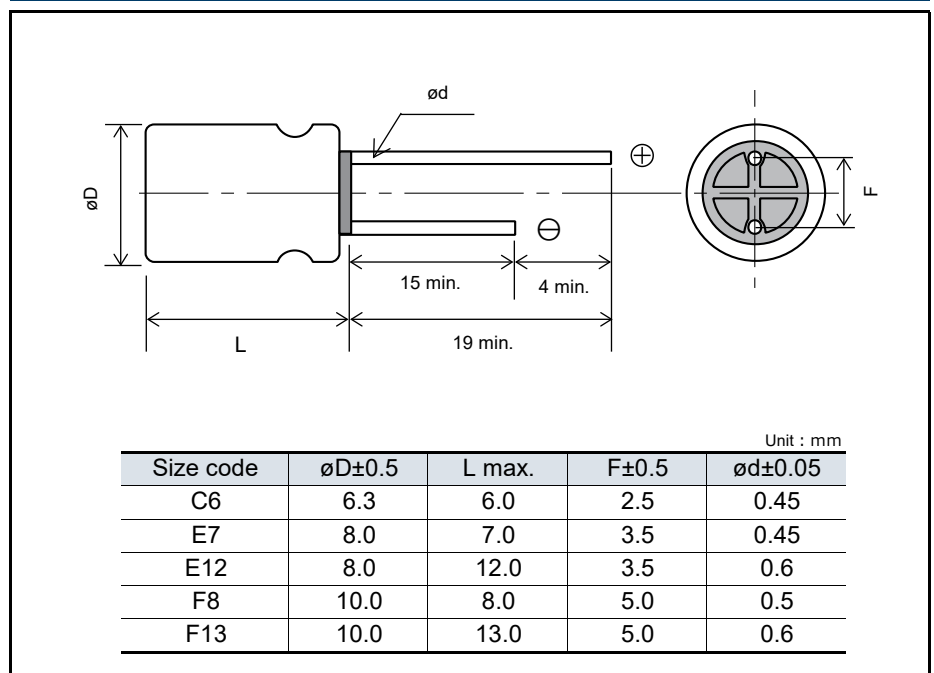
Specifications

| Size code | C6 | E7 | E12 | F8 | F13 |
|-----------------------------|--|---|-----------------|-----------------|-------------------|
| Category temp. range | -55 °C to +125 °C | | | | |
| Rated voltage range | 4.0 V to 20 V | 4.0 V to 32 V | | | 4.0 V to 20 V |
| Nominal cap.range | 22 µF to 150 µF | 6.8 µF to 330 µF | 18 µF to 560 µF | 15 µF to 680 µF | 150 µF to 1200 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +125 °C 1000 h / +105 °C 5000 h, rated voltage applied | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 200 % of the initial limit | | | |
| | DC leakage current | Within the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | | Part number <small>Click here for part number list of lead terminal cutting and lead terminal taping</small> |
|-------------------|--|-----------------|------|-----------|---------------------------------------|---|-------------------------------------|-----------------------------|------------------------------------|---|
| | | $\varnothing D$ | L | | Ripple current ^{*1} (mA rms) | Allowable ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 4.0 | 150 | 6.3 | 6.0 | C6 | 572 | 1810 | 40 | 0.12 | 300 | 4SEQP150M |
| | 330 | 8.0 | 7.0 | E7 | 810 | 2560 | 35 | 0.12 | 660 | 4SEQP330M |
| | 560 | 8.0 | 12.0 | E12 | 1430 | 4520 | 13 | 0.15 | 448 | 4SEQP560M |
| | 680 | 10.0 | 8.0 | F8 | 1170 | 3700 | 25 | 0.12 | 544 | 4SEQP680M |
| | 1200 | 10.0 | 13.0 | F13 | 1721 | 5440 | 12 | 0.18 | 960 | 4SEQP1200M |
| 6.3 | 82 | 6.3 | 6.0 | C6 | 537 | 1700 | 45 | 0.12 | 258 | 6SEQP82M |
| | 150 | 8.0 | 7.0 | E7 | 810 | 2560 | 35 | 0.12 | 472 | 6SEQP150M |
| | 330 | 10.0 | 8.0 | F8 | 1170 | 3700 | 25 | 0.12 | 416 | 6SEQP330M |
| | 470 | 8.0 | 12.0 | E12 | 1332 | 4210 | 15 | 0.15 | 592 | 6SEQP470M |
| | 820 | 10.0 | 13.0 | F13 | 1721 | 5440 | 12 | 0.15 | 775 | 6SEQP820M |
| 10 | 56 | 6.3 | 6.0 | C6 | 537 | 1700 | 45 | 0.12 | 280 | 10SEQP56M |
| | 120 | 8.0 | 7.0 | E7 | 810 | 2560 | 35 | 0.12 | 600 | 10SEQP120M |
| | 270 | 10.0 | 8.0 | F8 | 1170 | 3700 | 25 | 0.12 | 540 | 10SEQP270M |
| | 330 | 8.0 | 12.0 | E12 | 1250 | 3950 | 17 | 0.15 | 660 | 10SEQP330M |
| | 560 | 10.0 | 13.0 | F13 | 1655 | 5230 | 13 | 0.15 | 840 | 10SEQP560M |
| 16 | 39 | 6.3 | 6.0 | C6 | 512 | 1620 | 50 | 0.10 | 312 | 16SEQP39M |
| | 82 | 8.0 | 7.0 | E7 | 670 | 2120 | 40 | 0.12 | 656 | 16SEQP82M |
| | 150 | 10.0 | 8.0 | F8 | 955 | 3020 | 30 | 0.12 | 480 | 16SEQP150M |
| | 180 | 8.0 | 12.0 | E12 | 1151 | 3640 | 20 | 0.15 | 576 | 16SEQP180M |
| | 330 | 10.0 | 13.0 | F13 | 1493 | 4720 | 16 | 0.15 | 792 | 16SEQP330M |
| 20 | 22 | 6.3 | 6.0 | C6 | 458 | 1450 | 60 | 0.10 | 220 | 20SEQP22M |
| | 47 | 8.0 | 7.0 | E7 | 598 | 1890 | 45 | 0.12 | 470 | 20SEQP47M |
| | 68 | 10.0 | 8.0 | F8 | 759 | 2400 | 40 | 0.12 | 272 | 20SEQP68M |
| | 100 | 8.0 | 12.0 | E12 | 1050 | 3320 | 24 | 0.15 | 400 | 20SEQP100M |
| | 150 | 10.0 | 13.0 | F13 | 1367 | 4320 | 20 | 0.15 | 600 | 20SEQP150M |
| 32 | 6.8 | 8.0 | 7.0 | E7 | 440 | 1400 | 100 | 0.10 | 44 | 32SEQP6R8M |
| | 15 | 10.0 | 8.0 | F8 | 560 | 1800 | 80 | 0.10 | 96 | 32SEQP15M |
| | 18 | 8.0 | 12.0 | E12 | 790 | 2500 | 50 | 0.12 | 115 | 32SEQP18M |

*1: Ripple current (100 kHz / $+105\text{ }^\circ\text{C} < T_x \leq +125\text{ }^\circ\text{C}$) / Allowable ripple current (100 kHz / $T_x \leq +105\text{ }^\circ\text{C}$)

*2: ESR (100 kHz to 300 kHz / $+20\text{ }^\circ\text{C}$)

*3: $\tan \delta$ (120 Hz / $+20\text{ }^\circ\text{C}$)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | $120\text{ Hz} \leq f < 1\text{ kHz}$ | $1\text{ kHz} \leq f < 10\text{ kHz}$ | $10\text{ kHz} \leq f < 100\text{ kHz}$ | $100\text{ kHz} \leq f < 500\text{ kHz}$ |
|--------------|---------------------------------------|---------------------------------------|---|--|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

**Conductive Polymer Aluminum
Solid Capacitors**
Radial Lead Type
SEP series



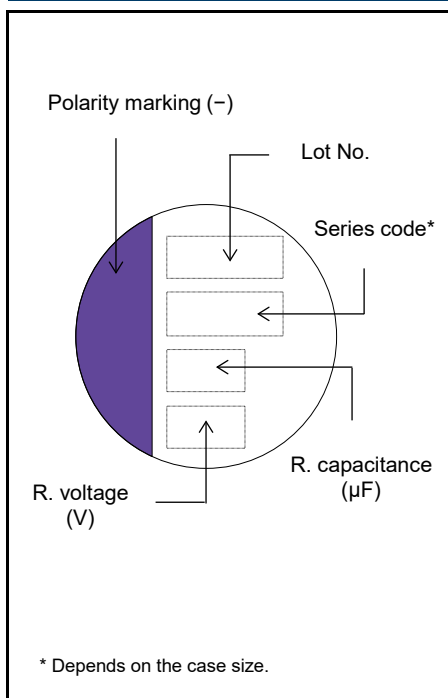
Features

- Standard
- 105 °C 3000 h
- RoHS compliance, Halogen free

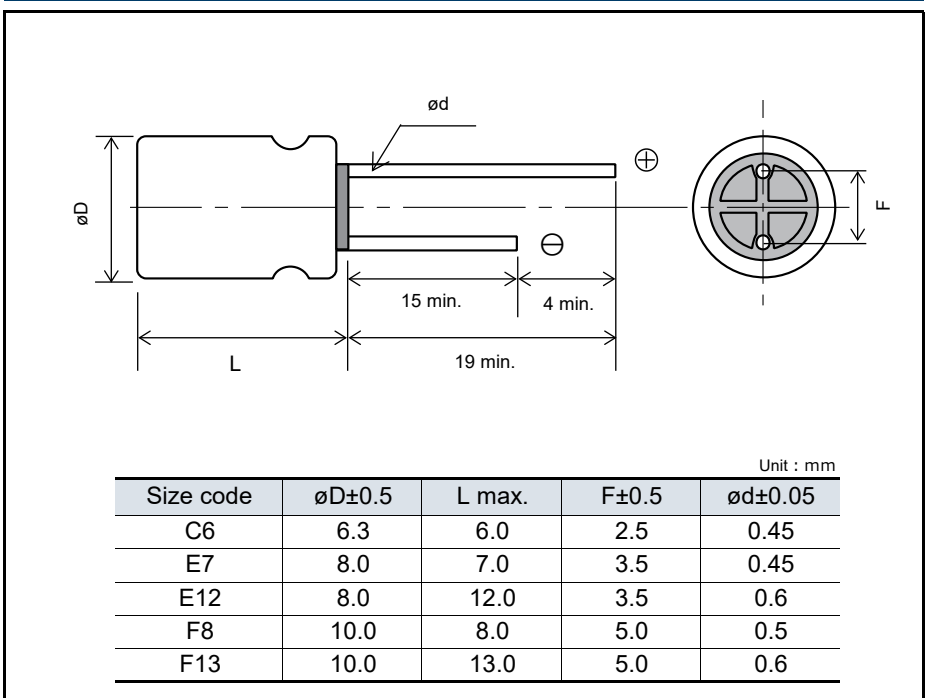
Specifications

| Size code | C6 | E7 | E12 | F8 | F13 |
|----------------------------|---|---|------------------|-----------------|-------------------|
| Category temp. range | -55 °C to +105 °C | | | | |
| Rated voltage range | 4.0 V to 20 V | | 2.5 V to 20 V | 4.0 V to 20 V | 2.5 V to 20 V |
| Nominal cap.range | 22 µF to 150 µF | 33 µF to 330 µF | 100 µF to 680 µF | 56 µF to 680 µF | 150 µF to 1500 µF |
| Capacitance tolerance | ±20 % (120 Hz / +20 °C) | | | | |
| DC leakage current | Please see the attached characteristics list | | | | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | | | | |
| Endurance | +105 °C 3000 h, rated voltage applied (2.5 V products : 2000 h) | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit | | | |
| Damp heat (Steady state) | +60 °C, 90 % to 95 % RH, 1000 h, No-applied voltage | | | | |
| | Capacitance change | Within ±20 % of the initial value | | | |
| | Dissipation factor (tanδ) | ≤ 150 % of the initial limit | | | |
| | DC leakage current | Within the initial limit (after voltage processing) | | | |

Marking



Dimensions (not to scale)



Characteristics list

| Rated voltage (V) | Rated capacitance ($\pm 20\%$) (μF) | Case size (mm) | | Size code | Specifications | | | | Part number Click here for part number list of lead terminal cutting and lead terminal taping |
|-------------------|--|-----------------------|------|-----------|---------------------------------------|-------------------------------------|-----------------------------|------------------------------------|--|
| | | $\varnothing\text{D}$ | L | | Ripple current ^{*1} (mA rms) | ESR ^{*2} (m Ω max.) | $\tan \delta$ ^{*3} | LC ^{*4} (μA) | |
| 2.5 | 680 | 8.0 | 12.0 | E12 | 4520 | 13 | 0.15 | 340 | 2R5SEP680M |
| | 1500 | 10.0 | 13.0 | F13 | 5440 | 12 | 0.18 | 750 | 2R5SEP1500M |
| 4.0 | 100 | 6.3 | 6.0 | C6 | 1810 | 40 | 0.12 | 200 | 4SEP100M |
| | 150 | 6.3 | 6.0 | | 1810 | 40 | 0.12 | 300 | 4SEP150M |
| | 220 | 8.0 | 7.0 | E7 | 2560 | 35 | 0.12 | 440 | 4SEP220M |
| | 330 | 8.0 | 7.0 | | 2560 | 35 | 0.12 | 660 | 4SEP330M |
| | 470 | 10.0 | 8.0 | F8 | 3700 | 25 | 0.12 | 376 | 4SEP470M |
| | 560 | 8.0 | 12.0 | E12 | 4520 | 13 | 0.15 | 448 | 4SEP560M |
| | 680 | 10.0 | 8.0 | F8 | 3700 | 25 | 0.12 | 544 | 4SEP680M |
| | 1200 | 10.0 | 13.0 | F13 | 5440 | 12 | 0.18 | 960 | 4SEP1200M |
| 6.3 | 82 | 6.3 | 6.0 | C6 | 1700 | 45 | 0.12 | 258 | 6SEP82M |
| | 150 | 8.0 | 7.0 | E7 | 2560 | 35 | 0.12 | 472 | 6SEP150M |
| | 330 | 10.0 | 8.0 | F8 | 3700 | 25 | 0.12 | 416 | 6SEP330M |
| | 470 | 8.0 | 12.0 | E12 | 4210 | 15 | 0.15 | 592 | 6SEP470M |
| | 820 | 10.0 | 13.0 | F13 | 5440 | 12 | 0.15 | 775 | 6SEP820M |
| 10 | 56 | 6.3 | 6.0 | C6 | 1700 | 45 | 0.12 | 280 | 10SEP56M |
| | 120 | 8.0 | 7.0 | E7 | 2560 | 35 | 0.12 | 600 | 10SEP120M |
| | 270 | 10.0 | 8.0 | F8 | 3700 | 25 | 0.12 | 540 | 10SEP270M |
| | 330 | 8.0 | 12.0 | E12 | 3950 | 17 | 0.15 | 660 | 10SEP330M |
| | 560 | 10.0 | 13.0 | F13 | 5230 | 13 | 0.15 | 840 | 10SEP560M |
| 16 | 39 | 6.3 | 6.0 | C6 | 1620 | 50 | 0.10 | 312 | 16SEP39M |
| | 82 | 8.0 | 7.0 | E7 | 2120 | 40 | 0.12 | 656 | 16SEP82M |
| | 150 | 10.0 | 8.0 | F8 | 3020 | 30 | 0.12 | 480 | 16SEP150M |
| | 180 | 8.0 | 12.0 | E12 | 3640 | 20 | 0.15 | 576 | 16SEP180M |
| | 330 | 10.0 | 13.0 | F13 | 4720 | 16 | 0.15 | 792 | 16SEP330M |
| 20 | 22 | 6.3 | 6.0 | C6 | 1450 | 60 | 0.10 | 220 | 20SEP22M |
| | 33 | 8.0 | 7.0 | E7 | 1890 | 45 | 0.12 | 330 | 20SEP33M |
| | 47 | 8.0 | 7.0 | | 1890 | 45 | 0.12 | 470 | 20SEP47M |
| | 56 | 10.0 | 8.0 | F8 | 2400 | 40 | 0.12 | 224 | 20SEP56M |
| | 68 | 10.0 | 8.0 | | 2400 | 40 | 0.12 | 272 | 20SEP68M |
| | 100 | 10.0 | 8.0 | | 2570 | 35 | 0.12 | 400 | 20SEP100MX |
| | | 8.0 | 12.0 | E12 | 3320 | 24 | 0.15 | 400 | 20SEP100M |
| | 150 | 10.0 | 13.0 | F13 | 4320 | 20 | 0.15 | 600 | 20SEP150M |

*1: Ripple current (100 kHz / +105 °C)

*2: ESR (100 kHz to 300 kHz / +20 °C)

*3: $\tan \delta$ (120 Hz / +20 °C)

*4: After 2 minutes

◆ Please refer to each page in this catalog for "Flow conditions" and "Taping specifications".

Frequency correction factor for ripple current

| Frequency(f) | 120 Hz \leq f < 1 kHz | 1 kHz \leq f < 10 kHz | 10 kHz \leq f < 100 kHz | 100 kHz \leq f < 500 kHz |
|--------------|-------------------------|-------------------------|---------------------------|----------------------------|
| Coefficient | 0.05 | 0.3 | 0.7 | 1 |

Safety Precautions

When using our products, no matter what sort of equipment they might be used for, be sure to confirm the applications and environmental conditions with our specifications in advance.

Panasonic
INDUSTRY

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