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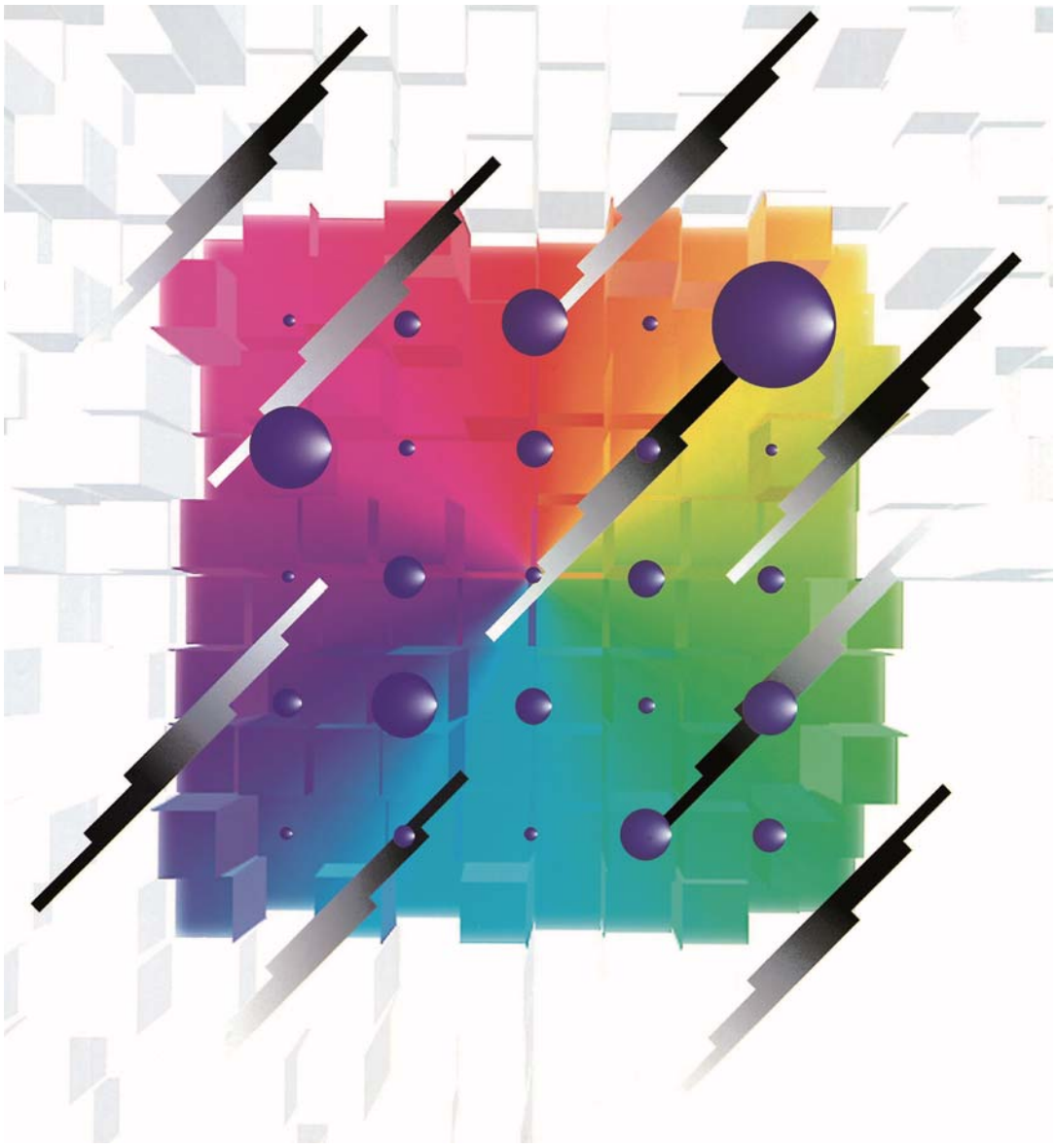
Panasonic

2017

Products Catalog

OS-CON™

Conductive Polymer Aluminum Solid Capacitors



2017.4

http://industrial.panasonic.com/ww/products/capacitors/polymer-capacitors/os-con

Notices

■ Applicable Laws and Regulations

- This product complies with the RoHS Directive (Restriction of the use of certain Hazardous substances in electrical and electronic equipment (DIRECTIVE 2011/65/EU).
- No Ozone Depleting Chemicals(ODC's), controlled under the Montreal Protocol Agreement, are used in producing this product.
- We do not use PBBs or PBDEs as brominated flame retardants.
- Export procedure which followed export related regulations, such as foreign exchange and a foreign trade method, on the occasion of export of this product.

■ Limited applications

- This capacitor is designed to be used for electronics circuits such as audio/visual equipment, home appliances, computers and other office equipment, optical equipment, measuring equipment.
- High reliability and safety are required [be / a possibility that incorrect operation of this product may do harm to a human life or property] more. When use is considered by the use, the delivery specifications which suited the use separately need to be exchanged.

Items to be observed

- This specification guarantees the quality and performance of the product as individual components. Before use, check and evaluate their compatibility with installed in your products.
- Do not use the products beyond the specifications described in this document.

■ For specifications

- Install the following systems for a failsafe design to ensure safety if these products are to be used in equipment where a defect in these products may cause the loss of human life or other signification damage, such as damage to vehicles (automobile, train, vessel), traffic lights, medical equipment, aerospace equipment, electric heating appliances, combustion/ gas equipment, rotating rotating equipment, and disaster/crime prevention equipment.
  - · The system is equipped with a protection circuit and protection device.
  - · The system is equipped with a redundant circuit or other system to prevent an unsafe status in the event of a single fault.

■ Conditions of use

- Before using the products, carefully check the effects on their quality and performance, and determined whether or not they can be used. These products are designed and manufactured for general-purpose and standard use in general electronic equipment. These products are not intended for use in the following special conditions.
  - (1) In liquid, such as Water, Oil, Chemicals, or Organic solvent.
  - (2) In direct sunlight, outdoors, or in dust.
  - (3) In vapor, such as dew condensation water of resistive element, or water leakage, salty air, or air with a high concentration corrosive gas, such as Cl_2, H_2S, NH_3, SO_2, or NOx.
  - (4) In an environment where strong static electricity or electromagnetic waves exist.
  - (5) Mounting or placing heat-generating components or inflammables, such as vinyl-coated wires, near these products.
  - (6) Sealing or coating of these products or a printed circuit board on which these products are mounted, with resin and other material.
  - (7) Using resolvent, water or water-soluble cleaner for flux cleaning agent after soldering. (In particular, when using water or a water-soluble cleaning agent, be careful not to leave water residues)
  - (8) Using in the atmosphere which strays Acid or alkaline.
  - (9) Using in the atmosphere which there are excessive vibration and shock.
- Please arrange circuit design for preventing impulse or transitional voltage. Do not apply voltage, which exceeds the full rated voltage when the capacitors receive impulse voltage, instantaneous high voltage, high pulse voltage etc.
- Our products there is a product are using an electrolyte solution. Therefore, misuse can result in rapid deterioration of characteristics and functions of each product. Electrolyte leakage damages printed circuit and affects performance, characteristics, and functions of customer system.

⚠ Guidelines and precautions (OS-CON)

1. Circuit design

1.1 Prohibited circuits

(a) Leakage current of the OS-CON may increase in the following conditions.
  (1) Soldering
  (2) When voltage is not applied : high temperature no-load test, high temperature and high humidityno-load test, rapidly changing temperature test, etc.

(b) Avoid the use of the OS-CON in the following type of circuits because leakage current may increase.
  (1) High-impedance circuits
  (2) Coupling circuits
  (3) Time constant circuits
  (4) Other circuits that are significantly affected by leakage current
  ✻ If you plan to use 2 or more OS-CONs in a series connection, please contact us before use

1.2 Failure and life-span

The failure rate is 0.5 % /1000 h (Confidence level : 60 %) based on JIS C 5003.
The prospective failure is not zero. The mainly failure modes are as follows.

1.2-1 Contingency failure

The most common failure mode is a short circuit. Mainly caused by the soldering or operating temperature environment, along with heat stresses, electrical stresses or mechanical stressesas follows.
  (1) Applying voltage over the rated voltage.
  (2) Applying reverse voltage
  (3) Excessive mechanical stress
  (4) Applying rush current by sudden charge or discharge out of the specification.

(a) The following phenomenon is seen when short-current is applied to the OS-CON.
  (1) When current is relatively low (ϕ10 : approx 1 A or less, ϕ8 : approx 0.5 A or less, ϕ6.3 : approx 0.2 A or less) The OS-CON becomes heated, but no effects are visible even when the current is continously carried.
  (2) When the short circuit currents exceed the mentioned value above.
  After internal temperature increase, sealing rubber may be turned over.
  In some cases, odorous gas may be produced.

(b) In case a short circuit occurs, ensure safety by fully considering the followings.
  (1) If odorous gas is released, turn off the main power of the equipment.
  In this case, keep your face and hands away from the area.
  (2) Though it depends on the conditions, it takes seconds to minutes before odorant gas generates.
  Protective circuit should operate in this period.
  (3) If the gas comes into eyes, rinse immediately. If the gas is inhaled, gargle immediately.
  (4) Do not lick the electrolyte. If the electrolyte touches skin, wash it off with soap immediately.
  (5) The OS-CON contains combustible substances. In case a large current continues to flow after a short circuit, in the worst case, the shorted-out section may ignite. For safety, install a redundant circuit or a protective circuit, etc.

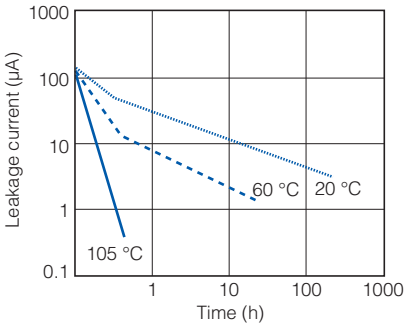
1.2-2 Wear-out failure (life time)

When lifetime span exceeded the specified guarantee time of endurance and damp heat, electrolyte might insulate and cause electric characteristic changed. This is called an open circuit.
The electric characteristics of capacitance and ESR may possibly change within the specified range in specifications even if it is used under the condition of the rated voltage, electric and mechanical performance. Please note it when designing.

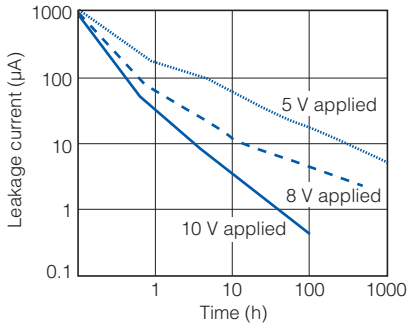
1.3 Leakage current

Mechanical stress may cause OS-CON's leakage current increased.
In such a case, leakage current will gradually decrease by applying voltage (withinthe category voltage and the upper limit of category temperature).
Then, self-healing speed of leakage current is faster when it is near to the upper limit of category temperature and the category voltage.

OS-CON
leakage current restoration characteristics
16 V.DC/10 µF (16 V.DC applied)



OS-CON
leakage current restoration characteristics
10 V.DC/33 µF (Ambient temperature : 65 °C)
(Measured voltage : 10 V)



✻ To make the recovery of LC values easy to show, samples that LC values have been increased on purpose are used in the test.

1.4 Rapid charge and discharge limitation

Allowance of a large rush current to flow due to rapid charge and discharge may result in short circuit or large leakage current. The protection circuit, to maintain high reliability, is recommended when rush current to flow to the OS-CON is in the following cases.

(a) Products which 10 times of allowable ripple current is less than 10 A : It is when 10 A or over of rush current is applied.
(b) Products which 10 times of allowable ripple current is 10 A or over : It is when rush current, which the figure is over 10 times of allowable ripple current, is applied.

2. Mounting

2.1 Soldering with a soldering iron

(a) When lead terminals for radial lead type must be processed because the lead pitch and the PCB holes do not match, process them without any stresses to the OS-CON before soldering.
(b) Solder without any excessive stresses to the OS-CON itself.
(c) When the OS-CON has been soldered once and needs to be removed, remove it after the solder has been completely melted.
(d) Do not let the tip of the soldering iron touch the OS-CON itself.

2.2 Flow soldering

(a) Do not apply flow soldering to OS-CON SMD type.
(b) Do not solder the OS-CON itself by submerging it in melted solder.
(c) Solder the opposite side that the OS-CON is mounted on.
(d) Note that flux does not adhere to anywhere expect the lead terminal.
(e) Note that other components do not fall over and touch the OS-CON when soldering.

2.3 Reflow soldering

(a) Do not apply reflow soldering to OS-CON Radial Lead type.
(b) Please contact us for setting VPS conditions.

2.4 Capacitor handling after soldering

Do not subject the OS-CON to excessive stress as follows.

(a) Do not tilt, bend or twist the OS-CON.
(b) Do not move the PCB with holding the OS-CON itself.
(c) Do not hit the OS-CON with objects.
(d) When stacking PCBs, make sure that the OS-CON does not touch other PCBs or components.

2.5 Circuit board cleaning

Check the following items before washing PC board with these detergents: high quality alcohol-based cleaning fluid such as Pine-α ST-100S, clean thru 750H, 750L, 710M, 750K or Techno Care FRW 14 through 17 or detergents including substitute freon as AK-225AES or IPA.

(a) Use immersion or ultrasonic waves to clean within 2 minutes.
(b) The temperature of the cleaning fluid should be less than 60 °C.
(c) Watch the contamination of the detergent such as conductivity, pH, specific gravity, water content, etc.
(d) Do not store the OS-CON in a location subject to gases from the cleaning fluid or in an airtight container after cleaning.
(e) Dry the PCB or OS-CON with hot air that should be less than the upper category temperature.
(f) Please note that indication may disappear when rubbing print side after washing depending on a cleaner.
(g) Please contact us for details about detergents, cleaning methods and detergents other than those listed above.

2.6 Fixatives and coating materials

(a) Select the appropriate covering and sealant materials for the OS-CON. In particular, don't use acetone in the fixative, coating agent and diluent.
(b) Before applying the fixative or coating, completely remove any flux residue and foreign matter from the area where the board and the OS-CON will be jointed together.
(c) Allow any detergent to dry before applying the fixative or coating.
(d) Please contact us for the fixative and coating heat curing conditions.

2.7 Capacitor insulation

Be sure to completely separate the case, negative lead terminal, positive lead terminal and PC board patterns with each other due to the following reasons.

(a) Insulation is not guaranteed at a part of resin on the surface of a case.
(b) It offers inconstant resistance between a case and a negative lead terminal and it isn't insulated.

3. Storage

Open the bags just before mounting and use up all products once opened,
For keeping a good solderability, store the OS-CON as follows.

✻ Due to the feature of the plating material of the lead terminal, it may rarely become dull color during the specified period as follow, but it will not affect the solderability.

		Before unsealing	After unsealing
SMD type *1		Within 24 months after shipment	Within 30 days from opening (packaged with carrier tape)
Radial lead type	Bag packing product	Within 30 months after shipment	Within 7 days from opening
	Taping product	Within 24 months after shipment	

✻1 The JEDEC J-STD-020 standard is not applicable

◇ Intellectual property right

We, Panasonic Group are providing the product and service that customers can use without anxiety, and are working positively on the protection of our products underintellectual property rights.
Representative patents relating to OS-CON are as follows:

US Patent Nos. 6310765, 6508846 and 7158367

Line up

SMD type

Series	Features	Small size/Low profile	Large capacitance	Low ESR	High voltage	Long life/High reliability	Category temperature range (℃)	Rated voltage (V.DC)	ESR (mΩ)	Capacitance (μF)	Marking color	Size code	Size(mm) φD	Size(mm) L
SVF	High voltage Large capacitance 125℃ 1000 h		●		●	●	-55 to 125	16 to 25	27 to 40	27 to 82	Purple	B6	5.0	5.9
							-55 to 125	16 to 50	22 to 40	10 to 180	Purple	C6	6.3	5.9
							-55 to 125	16 to 50	22 to 35	18 to 270	Purple	E7	8.0	6.9
							-55 to 125	16 to 50	14 to 25	39 to 560	Purple	E12	8.0	11.9
							-55 to 125	16 to 50	12 to 20	68 to 1000	Purple	F12	10.0	12.6
SVPK	High voltage Large capacitance 125℃ 1000 h		●		●	●	-55 to 125	25 to 50	35 to 80	10 to 33	Purple	B6	5.0	5.9
							-55 to 125	25 to 50	25 to 35	22 to 82	Purple	C6	6.3	5.9
							-55 to 125	25 to 50	24 to 35	33 to 12	Purple	E7	8.0	6.9
							-55 to 125	25 to 50	16 to 25	68 to 270	Purple	E12	8.0	11.9
							-55 to 125	25 to 50	14 to 20	120 to 470	Purple	F12	10.0	12.6
NEW SXV	Super high voltage 125 ℃ 1000 h				●	●	-55 to 125	100	60	6.8	Purple	E7	8.0	6.9
							-55 to 125	100	60	15	Purple	F8	10.0	7.9
							-55 to 125	63 to 100	25 to 40	15 to 33	Purple	E12	8.0	11.9
							-55 to 125	100	30	18 to 22	Purple	F12	10.0	12.6
SVPG	Low ESR High ripple current 105 ℃ 5000 h			●		●	-55 to 105	16 to 25	25 to 30	15 to 47	Purple	B45	5.0	4.4
							-55 to 105	16	8	270	Purple	C10	6.3	9.9
SVPF	High voltage Large capacitance 105 ℃ 5000 h		●		●	●	-55 to 105	16 to 25	27 to 40	27 to 82	Purple	B6	5.0	5.9
							-55 to 105	16 to 50	22 to 40	10 to 180	Purple	C6	6.3	5.9
							-55 to 105	16 to 50	22 to 35	18 to 270	Purple	E7	8.0	6.9
							-55 to 105	16 to 50	14 to 25	39 to 560	Purple	E12	8.0	11.9
							-55 to 105	16 to 50	12 to 20	68 to 1000	Purple	F12	10.0	12.6
SVPA	Low ESR High ripple current			●			-55 to 105	2.5 to 20	30 to 40	10 to 82	Purple	B6	5.0	5.9
							-55 to 105	2.5 to 20	20 to 35	22 to 180	Purple	C6	6.3	5.9
							-55 to 105	2.5 to 20	20 to 33	47 to 330	Purple	E7	8.0	6.9
							-55 to 105	2.5 to 16	19 to 29	180 to 820	Purple	F8	10.0	7.9
SVPB	Low prfile	●					-55 to 105	2.5 to 20	40 to 45	15 to 120	Purple	C5	6.3	4.9
							-55 to 105	20	35	22	Purple	C55	6.3	5.4
SVPC	Low ESR Large capacitance		●	●			-55 to 105	2.5 to 16	19 to 35	39 to 180	Purple	B6	5.0	5.9
							-55 to 105	2.5 to 16	15 to 30	68 to 560	Purple	C6	6.3	5.9
							-55 to 105	2.5 to 16	19 to 27	120 to 680	Purple	E7	8.0	6.9
							-55 to 105	2.5 to 16	9 to 16	270 to 1500	Purple	E12	8.0	11.9
							-55 to 105	2.5	12	2700	Purple	F12	10.0	12.6
SVPD	Guaranteed at 125 ℃ High voltage 85 ℃ 85 % RH				●	●	-55 to 125	10 to 25	45 to 65	10 to 56	Purple	C6	6.3	5.9
							-55 to 125	16 to 35	40 to 70	8.2 to 82	Purple	E7	8.0	6.9
							-55 to 125	25 to 35	45 to 60	18 to 39	Purple	F8	10.0	7.9
							-55 to 125	25 to 35	30 to 50	22 to 47	Purple	E12	8.0	11.9
							-55 to 125	25 to 35	28 to 30	47 to 82	Purple	F12	10.0	12.6

Line up

SMD type

Series	Features	Small size/Low profile	Large capacitance	Low ESR	High voltage	Long life/High reliability	Category temperature range (℃)	Rated voltage (V.DC)	ESR (mΩ)	Capacitance (μF)	Marking color	Size code	Size(mm) φD	Size(mm) L
SVPE	Super low ESR Large capacitance		●	●			-55 to 105	2.5 to 6.3	10 to 15	150 to 390	Purple	B6	5.0	5.9
							-55 to 105	2.5 to 10	10 to 20	220 to 390	Purple	C6	6.3	5.9
							-55 to 105	2.0 to 16	8 to 11	180 to 1200	Purple	C10	6.3	9.9
							-55 to 105	16	10	470	Purple	F12	10.0	12.6
SVPS	Long life					●	-55 to 105	4.0 to 10	200 to 220	10 to 33	Purple	A5	4.0	5.4
							-55 to 105	4.0 to 16	30 to 90	22 to 68	Purple	B6	5.0	5.9
							-55 to 105	4.0 to 20	22 to 60	22 to 150	Purple	C6	6.3	5.9
							-55 to 105	4.0 to 25	22 to 60	10 to 270	Purple	E7	8.0	6.9
							-55 to 105	4.0 to 16	20 to 35	100 to 680	Purple	F8	10.0	7.9
SVPQ	Guaranteed at 125 ℃					●	-55 to 125	4.0 to 20	40 to 60	22 to 150	Purple	C6	6.3	5.9
							-55 to 125	6.3 to 20	35 to 45	47 to 220	Purple	E7	8.0	6.9
SVP	Standard						-55 to 105	4.0 to 16	200 to 260	3.3 to 33	Purple	A5	4.0	5.4
							-55 to 105	4.0 to 20	60 to 120	10 to 68	Purple	B6	5.0	5.9
							-55 to 105	2.5 to 20	23 to 60	22 to 220	Purple	C6	6.3	5.9
							-55 to 105	4.0 to 20	35 to 45	33 to 330	Purple	E7	8.0	6.9
							-55 to 105	4.0 to 20	25 to 40	56 to 680	Purple	F8	10.0	7.9
							-55 to 105	2.5 to 20	13 to 24	100 to 680	Purple	E12	8.0	11.9
							-55 to 105	2.5 to 20	12 to 20	150 to 1500	Purple	F12	10.0	12.6

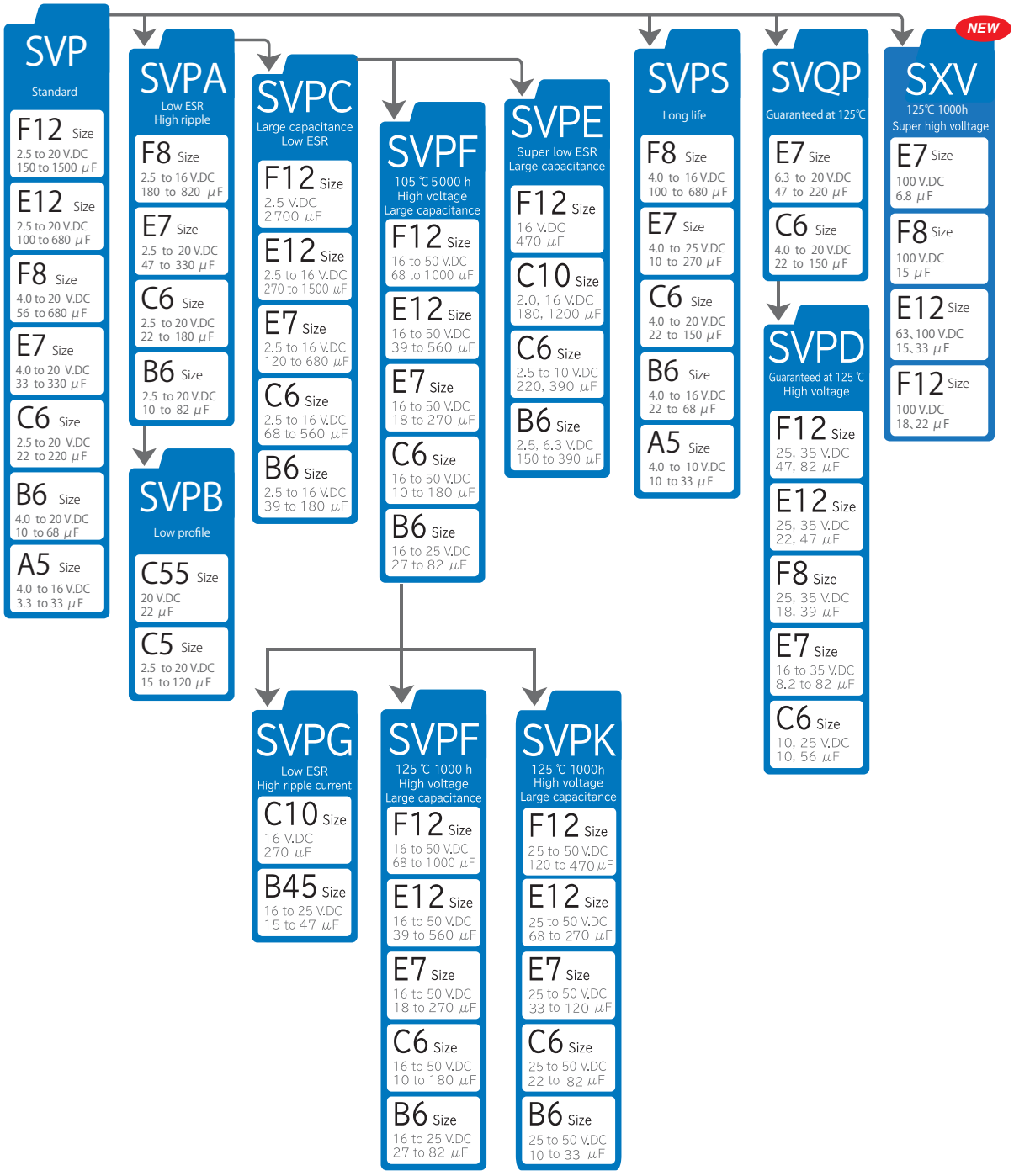
Line up

Radial lead type

Series	Features	Small size/Low profile	Large capacitance	Low ESR	High voltage	Long life/High reliability	Category temperature range (℃)	Rated voltage (V.DC)	ESR (mΩ)	Capacitance (μF)	Marking color	Size code	Size(mm) φD	Size(mm) L
SEF	High voltage Large capacitance 125℃ 1000 h		●		●	●	-55 to 125	16 to 35	22 to 35	22 to 180	Purple	C6	6.3	5.9
							-55 to 125	16 to 35	22 to 30	39 to 270	Purple	E7	8.0	6.9
							-55 to 125	16 to 35	14 to 20	82 to 560	Purple	E12	8.0	11.9
							-55 to 125	16 to 35	12 to 18	120 to 1000	Purple	F13	10.0	12.9
SEPG	Low ESR High ripple current 105 ℃ 5000 h			●		●	-55 to 125	16	8	270	Purple	C10	6.3	9.9
NEW SXE	Super high voltage 125 ℃ 1000 h				●	●	-55 to 125	100	60	6.8	Purple	E7	8.0	6.9
							-55 to 125	100	60	15	Purple	F8	10.0	8.9
							-55 to 125	63 to 100	25 to 40	15 to 33	Purple	E12	8.0	11.9
							-55 to 125	100	30	18 to 22	Purple	F13	10.0	12.9
SEPF	Small size Low profile High voltage Large capacitance 105 ℃ 5000 h	●	●		●	●	-55 to 105	16 to 32	30 to 35	22 to 150	Purple	C55	6.3	5.4
							-55 to 105	16 to 35	22 to 35	22 to 180	Purple	C6	6.3	5.9
							-55 to 105	16 to 35	22 to 30	39 to 270	Purple	E7	8.0	6.9
							-55 to 105	16 to 35	14 to 20	82 to 560	Purple	E12	8.0	11.9
							-55 to 105	16 to 35	12 to 18	120 to 1000	Purple	F13	10.0	12.9
SEPC	Super low ESR Large capacitance Small size Low profile 105 ℃ 5000 h	●	●	●		●	-55 to 105	2.5	7	100 to 560	Purple	B9	5.0	8.9
							-55 to 105	6.3	18	220	Purple	C55	6.3	5.4
							-55 to 105	2.5 to 16	10 to 24	100 to 560	Purple	C6	6.3	5.9
							-55 to 105	2.5 to 16	7 to 10	100 to 820	Purple	C9	6.3	8.9
							-55 to 105	2.5 to 16	8 to 22	150 to 1000	Purple	E7	8.0	6.9
							-55 to 105	2.5 to 16	5 to 10	180 to 1000	Purple	E9	8.0	8.9
							-55 to 105	16	11 to 16	180 to 270	Purple	E12	8.0	11.9
							-55 to 105	2.5 to 6.3	7 to 8	470 to 820	Purple	E13	8.0	12.9
							-55 to 105	2.5 to 16	7 to 10	470 to 2700	Purple	F13	10.0	12.9
SEQP	105 ℃ 5000 h Guaranteed at 125℃ Rated 32 V.DC max.				●	●	-55 to 125	4.0 to 20	40 to 60	22 to 150	Purple	C6	6.3	5.9
							-55 to 125	4.0 to 32	35 to 100	6.8 to 330	Purple	E7	8.0	6.9
							-55 to 125	4.0 to 32	25 to 80	15 to 680	Purple	F8	10.0	7.9
							-55 to 125	4.0 to 32	13 to 50	18 to 560	Purple	E12	8.0	11.9
							-55 to 125	4.0 to 20	12 to 20	150 to 1200	Purple	F13	10.0	12.9
SEP	Standard				●	●	-55 to 105	4.0 to 20	40 to 60	22 to 150	Purple	C6	6.3	5.9
							-55 to 105	4.0 to 20	35 to 45	33 to 330	Purple	E7	8.0	6.9
							-55 to 105	4.0 to 20	25 to 40	56 to 680	Purple	F8	10.0	7.9
							-55 to 105	2.5 to 20	13 to 24	100 to 680	Purple	E12	8.0	11.9
							-55 to 105	2.5 to 20	12 to 20	150 to 1500	Purple	F12	10.0	12.9

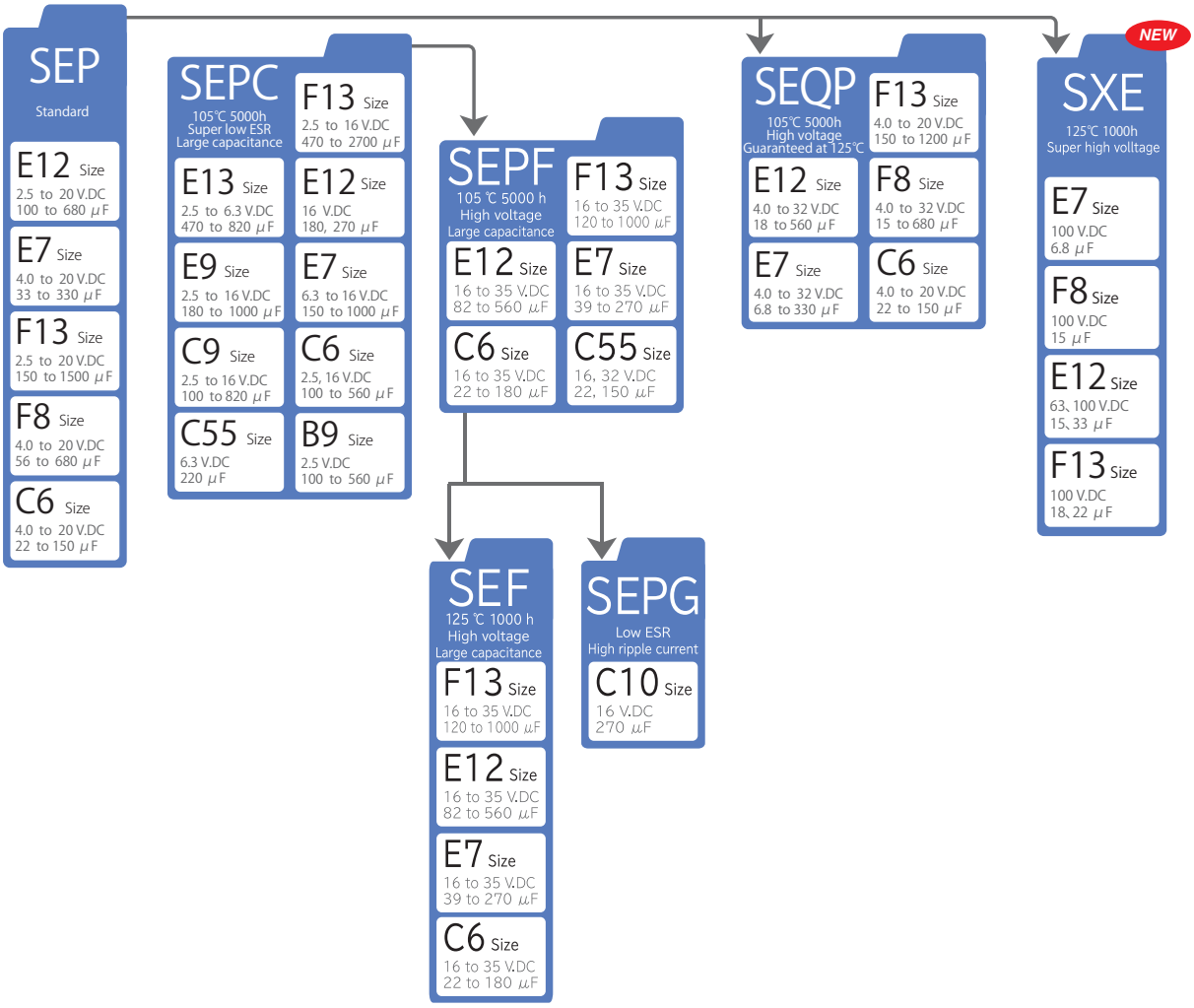
Diagram

SMD type



Diagram

Radial lead type



Explanation of part numbers

Part number system

- Surface mount type

1	6	S	V	P	3	R	3	M
Rated voltage		Series name			Rated capacitance			Capacitance tolerance

Example

Rated volt.	Code
2.0	2
2.5	2R5
4.0	4
6.3	6
10	10
16	16
20	20
25	25
35	35
100	100

SVF
SVPK
SXV
SVPG
SVPF
SVPA
SVPB
SVPC
SVPD
SVPE
SVPS
SVQP
SVP

Example

Rated cap.(μF)	Code
3.3	3R3
4.7	4R7
10	10
22	22
100	100
220	220
470	470
1,500	1500

Cap. tolerance	Code
±20%	M

- Radial lead type

1	6	S	E	P	C	4	7	0	M	+	T
Rated voltage		Series name				Rated capacitance			Capacitance tolerance		Taping or forming of terminal code

Example

Rated volt.	Code
2.5	2R5 ※1
4.0	4
6.3	6
10	10
16	16
20	20
25	25
32	32
100	100

SEF
SEPG
SXE
SEPC
SEPF
SEQP
SEP

Example

Rated cap. (μF)	Code
6.8	6R8
10	10
22	22
100	100
220	220
470	470
1,000	1000
2,700	2700

Cap. tolerance	Code
±20%	M

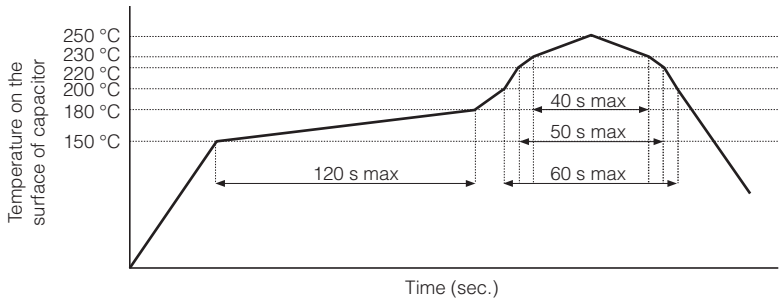
Taping or lead terminal wire process code
None suffix for regular length lead type products

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

Mounting specifications

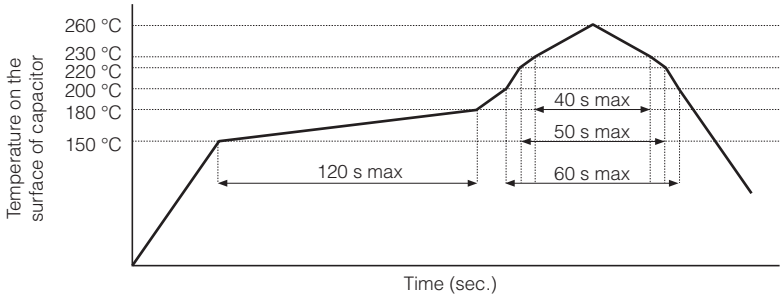
● Recommendable reflow soldering

<Peak temperature 250 °C lead free reflow soldering profile>



Reflow cycle : 2 max.

<Peak temperature 260 °C lead free reflow soldering profile>



Reflow cycle : 1 max.

<Soldering with a soldering iron>

Tip of a soldering iron : 400±10 °C

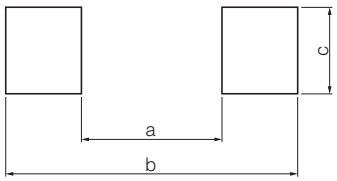
Working time : 5 sec. max

<Flow soldering>

	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.

● Land pattern



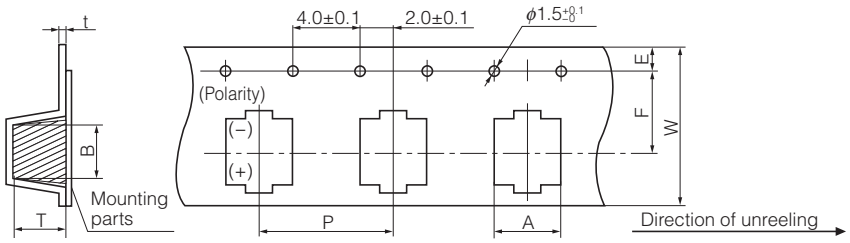
Unit : mm

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
C10	2.1	9.1	1.6
E7	2.8	11.1	1.9
E12	2.8	11.1	1.9
F8	4.3	13.1	1.9
F12	4.3	13.1	1.9

Packing specifications

● SMD type (Taping)

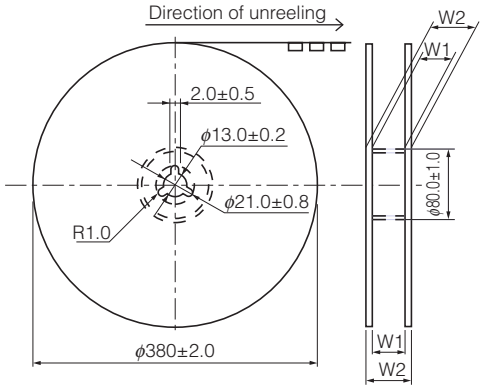
<Carrier tape>



Unit : mm

Dimension / 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
C10	7.0	7.0	24.0	11.5	1.75	16.0	0.5	10.5
E7	8.6	8.6	24.0	11.5	1.75	12.0	0.4	7.2
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
F12	10.7	10.7	24.0	11.5	1.75	16.0	0.4	13.0

<Reel>



Unit : mm

Size code	W1±0.5	W2±1.0
A5, B45	13.0	17.5
B6, C5, C55, C6	17.0	21.5
C10, E7, F8, E12, F12	25.0	29.5

● Minimum packing quantity and weight

Size code	Quantity (pcs./Reel, φ380)	Typical weight (g)
A5	2000	700
B45	2500	900
B6	1500	800
C5	1300	800
C55	1000	800
C6	1000	800
C10	500	700
E7	1000	1100
E12	400	800
F8	500	1000
F12	400	1000

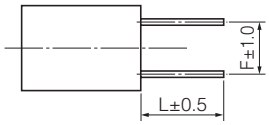
● Radial lead type

<Applicationsl>

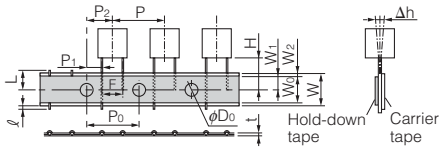
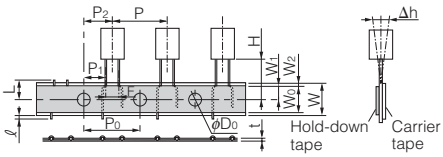
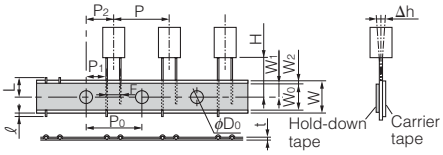
✻ The following table is a standard specification. Please contact us separately concerming specifications except for that mentioned below. Because of a limit on the length of a model name, the part of process name changes to +S from +TSS, +D from +TS, +3 from +C3, Please contact us for details.

Series	Size code	Bag-packed product (lead terminal cutting)		Taping
		Not processed	Straight cut	
SEP, SEQP SEPC, SEPF SXE, SEPG SEF	B9, C55, C6, C9, C10, E7, E9, E12	○	+C3	+TSS (+S)
	E13	○	+C3	+TS (+D)
	F8, F13	○	+C3	+T

<Lead terminal cutting>

Lead terminal cutting code	Process names	Size code (φD)	Dimensions
+C3 (+3)	Straight cut	B9 (φ5) C55, C6, C9, C10 (φ6.3) E7, E9, E12, E13 (φ8) F8, F13 (φ10)	 Unit : mm C3 L 3.5 Unit : mm Size code / B9 / C55, C6, C9, C10 / E7, E9, E12, E13 / F8, F13 F 2.0 / 2.5 / 3.5 / 5.0

<Lead terminal taping>

Taping code	F	Size code (φD)	Taping
+T	F=5.0 mm	F8, F13 (φ10)	
+TS (+D)	F=3.5 mm	E13 (φ8)	
+TSS (+S)	F=2.0 mm F=2.5 mm F=3.5 mm	B9 (φ5) C55, C6, C9, C10 (φ6.3) E7, E9, E12 (φ8)	

Unit : mm

Code		F +0.8 −0.2	P±1.0	P0±0.2	P1±0.5	P2±1.0	Δh±1.0	W±0.5	W0(min.)	W1±0.5	W2(max.)	H±0.75	φD0±0.2	t±0.3	ℓ(max.)	L(max.)
+T	φ10	5.0	12.7	12.7	3.85	6.35	0	18.0	9.5	9.0	2.5	18.5	4.0	0.6	0	11.0
+TS (+D)	φ8	3.5	12.7	12.7	4.60	6.35	0	18.0	9.5	9.0	2.5	17.5	4.0	0.6	0	11.0
+TSS (+S)	φ5	2.0	12.7	12.7	5.35	6.35	0	18.0	9.5	9.0	2.5	17.5	4.0	0.6	0	11.0
	φ6.3	2.5	12.7	12.7	5.10	6.35	0	18.0	9.5	9.0	2.5	17.5	4.0	0.6	0	11.0
	φ8	3.5	12.7	12.7	4.60	6.35	0	18.0	9.5	9.0	2.5	17.5	4.0	0.6	0	11.0

Minimum packing quantity and weight

Size code	Case size	Processed type discrete lead terminals		Zig-zag pack taping type	
		Quantity (pcs./Bag)	Typical weight (g)	Quantity (pcs./Bag)	Typical weight (g)
B9	φ5	500	180	2000	1000
C55	φ6.3	500	150	1500	650
C6	φ6.3	500	160	1500	700
C9	φ6.3	500	240	1500	1000
C10	φ6.3	500	✻	1500	✻
E7	φ8	200	110	1000	820

Size code	Case size	Processed type discrete lead terminals		Zig-zag pack taping type	
		Quantity (pcs./Bag)	Typical weight (g)	Quantity (pcs./Bag)	Typical weight (g)
E9	φ8	200	130	1000	900
E12	φ8	200	200	1000	980
E13	φ8	200	160	1000	1060
F8	φ10	200	180	500	890
F13	φ10	200	280	500	940

✻ Please contact us.

Surface Mount Type

Series : **SVF**

OS-CON

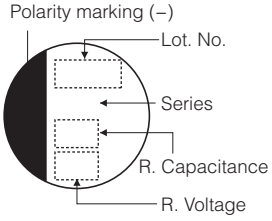
Features

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

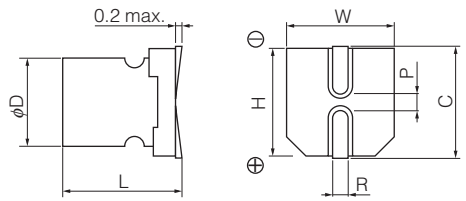
Specifications

Size code	B6	C6	E7	E12	F12
Category temperature range	–55 °C to +125 °C				
Rated voltage range	16 V.DC to 25 V.DC	16 V.DC to 50 V.DC			
Rated capacitance range	27 µF to 82 µF	10 µF to 180 µF	18 µF to 270 µF	39 µF to 560 µF	68 µF to 1000 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	+125 °C, 1000 h, rated voltage applied				
	Capacitance change	Within ±20 % of the initial value			
	tan δ	≦ 200 % of the initial limit			
	DC leakage current	Within the initial limit			
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage				
	Capacitance change	Within ±20 % of the initial value			
	tan δ	≦ 150 % of the initial limit			
	DC leakage current	Within the initial limit (after voltage processing)			

Marking



Dimensions (not to scale)



Unit : mm

Size code	φD±0.5	L $^{+0.1}_{-0.4}$	W±0.2	H±0.2	C±0.2	R	P±0.2
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
E7	8.0	6.9	8.3	8.3	9.0	0.6 to 0.8	3.2
E12	8.0	11.9	8.3	8.3	9.0	0.8 to 1.1	3.2
F12	10.0	12.6	10.3	10.3	11.0	0.8 to 1.1	4.6

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (μF)	Case size (mm)		Size code	Specifications					Standard (Reel size : φ380)	
			φD	L		Ripple *1 current (mAr.m.s.)	Allowable *1 ripple current (mAr.m.s.)	ESR *2 (mΩ max.)	tan δ *3	LC *4 (μA)	Part number	Min. Packaging Q'ty (pcs)
SVF	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	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

Series : **SVPK**

OS-CON

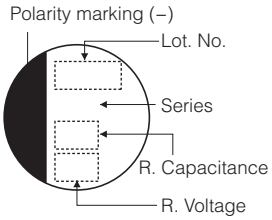
Features

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

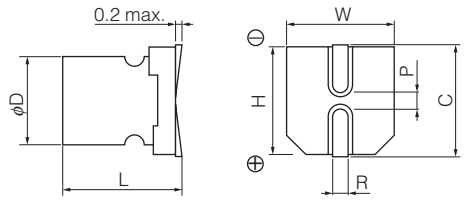
Specifications

Size code	B6	C6	E7	E12	F12
Category temperature range	–55 °C to +125 °C				
Rated voltage range	25 V.DC to 50 V.DC				
Rated capacitance range	10 µF to 30 µF	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)				
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			
	tan δ	≦ 200 % of the initial limit			
	DC leakage current	Within the initial limit			
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage				
	Capacitance change	Within ±20 % of the initial value			
	tan δ	≦ 150 % of the initial limit			
	DC leakage current	Within the initial limit (after voltage processing)			

Marking



Dimensions (not to scale)



Unit : mm

Size code	ϕD±0.5	L $^{+0.1}_{-0.4}$	W±0.2	H±0.2	C±0.2	R	P±0.2
B6	5.0	5.9	5.3	5.3	6.0	0.6 ~ 0.8	1.4
C6	6.3	5.9	6.6	6.6	7.3	0.6 ~ 0.8	2.1
E7	8.0	6.9	8.3	8.3	9.0	0.6 ~ 0.8	3.2
E12	8.0	11.9	8.3	8.3	9.0	0.8 ~ 1.1	3.2
F12	10.0	12.6	10.3	10.3	11.0	0.8 ~ 1.1	4.6

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (μF)	Case size (mm)		Size code	Specifications					Standard (Reel size : φ380)	
			φD	L		Ripple *1 current (mAr.m.s.)	Allowable *1 ripple current (mAr.m.s.)	ESR *2 (mΩ max.)	tan δ *3	LC *4 (μA)	Part number	Min. Packaging Q'ty (pcs)
SVPK	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

Series : **SXV**

OS-CON

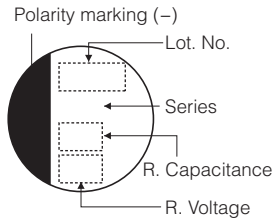
Features

- Super high voltage (100 V.DC max.)
- RoHS compliance, Halogen free

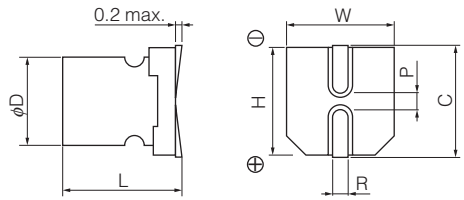
Specifications

Size code	E7	F8	E12	F12
Category temperature range	–55 °C to +125 °C			
Rated voltage range	100 V.DC		63 V.DC to 100 V.DC	100 V.DC
Rated capacitance range	6.8 µF	15 µF	15 µF to 33 µF	18 µF to 22 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	+125 °C, 1000 h, rated voltage applied			
	Capacitance change	Within ±20 % of the initial value		
	tan δ	≦ 200 % of the initial limit		
	DC leakage current	Within the initial limit		
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage			
	Capacitance change	Within ±20 % of the initial value		
	tan δ	≦ 150 % of the initial limit		
	DC leakage current	Within the initial limit (after voltage processing)		

Marking



Dimensions (not to scale)



Unit : mm

Size code	ϕD±0.5	L +0.1 −0.4	W±0.2	H±0.2	C±0.2	R	P±0.2
E7	8.0	6.9	8.3	8.3	9.0	0.6 to 0.8	3.2
F8	10.0	7.9	10.3	10.3	11.0	0.6 to 0.8	4.6
E12	8.0	11.9	8.3	8.3	9.0	0.8 to 1.1	3.2
F12	10.0	12.6	10.3	10.3	11.0	0.8 to 1.1	4.6

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (µF)	Case size (mm)		Size code	Specifications					Standard (Reel size : ϕ380)	
			ϕD	L		Ripple ✻1 current (mAr.m.s.)	Allowable ✻1 ripple current (mAr.m.s.)	ESR ✻2 (mΩ max.)	tan δ ✻3	LC ✻4 (µA)	Part number	Min. Packaging Q'ty (pcs)
SXV	63	33	8.0	11.9	E12	930	2950	25	0.12	104	63SXV33M	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
		15	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
		22	10.0	12.6		940	3000	30	0.12	110	100SXV22M	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

Series : **SVPG**

OS-CON

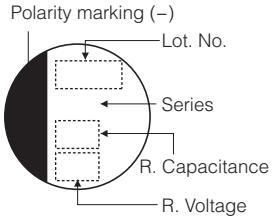
Features

- Low profile (Height 4.5 mm max.)
- Low ESR (8 mΩ to 30 mΩ)
- RoHS compliance, Halogen free

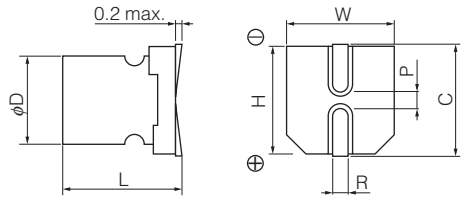
Specifications

Size code	B45	C10
Category temperature range	–55 °C to +105 °C	
Rated voltage range	16 V.DC to 25 V.DC	16 V.DC
Rated capacitance range	15 µF to 47 µF	270 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
	tan δ	≦ 150 % of the initial limit
	DC leakage current	Within the initial limit
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage	
	Capacitance change	Within ±20 % of the initial value
	tan δ	≦ 150 % of the initial limit
	DC leakage current	Within the initial limit (after voltage processing)

Marking



Dimensions (not to scale)



Unit : mm

Size code	φD±0.5	L +0.1 −0.4	W±0.2	H±0.2	C±0.2	R	P±0.2
B45	5.0	4.4	5.3	5.3	6.0	0.6 to 0.8	1.4
C10	6.3	9.9	6.6	6.6	7.3	0.6 to 0.8	2.1

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (µF)	Case size (mm) φD	Case size (mm) L	Size code	Specifications Ripple ✻1 current (mAr.m.s.)	Specifications ESR ✻2 (mΩ max.)	Specifications tan δ ✻3	Specifications LC ✻4 (µA)	Standard (Reel size : φ380) Part number	Standard (Reel size : φ380) Min. Packaging Q'ty (pcs)
SVPG	16	47	5.0	4.4	B45	3200	25	0.12	150	16SVPG47M	2500
		270	6.3	9.9	C10	5800	8	0.12	864	16SVPG270M	500
	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

Series : **SVPF**

OS-CON

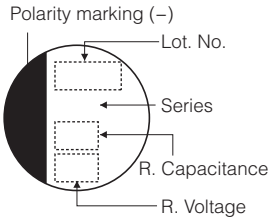
Features

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

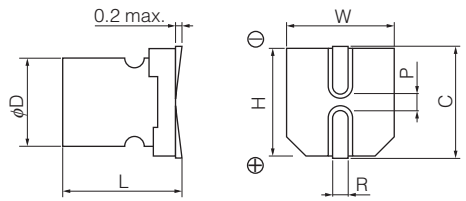
Specifications

Size code	B6	C6	E7	E12	F12
Category temperature range	–55 °C to +105 °C				
Rated voltage range	16 V.DC to 25 V.DC	16 V.DC to 50 V.DC			
Rated capacitance range	27 µF to 82 µF	10 µF to 180 µF	18 µF to 270 µF	39 µF to 560 µF	68 µF to 1000 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			
	tan δ	≦ 150 % of the initial limit			
	DC leakage current	Within the initial limit			
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage				
	Capacitance change	Within ±20 % of the initial value			
	tan δ	≦ 150 % of the initial limit			
	DC leakage current	Within the initial limit (after voltage processing)			

Marking



Dimensions (not to scale)



Unit : mm

Size code	ϕD±0.5	L $^{+0.1}_{-0.4}$	W±0.2	H±0.2	C±0.2	R	P±0.2
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
E7	8.0	6.9	8.3	8.3	9.0	0.6 to 0.8	3.2
E12	8.0	11.9	8.3	8.3	9.0	0.8 to 1.1	3.2
F12	10.0	12.6	10.3	10.3	11.0	0.8 to 1.1	4.6

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (μF)	Case size (mm)		Size code	Specifications				Standard (Reel size : φ380)	
			φD	L		Ripple *1 current (mAr.m.s.)	ESR *2 (mΩ max.)	tan δ *3	LC *4 (μA)	Part number	Min. Packaging Q'ty (pcs)
SVPF	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	11.9	E12	4950	14	0.12	1792	16SVPF560M	400
		1000	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

Series : **SVPA**

OS-CON

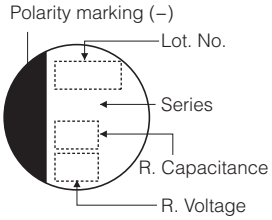
Features

- Low ESR (18 mΩ max.)
- High ripple (4240 mA.r.m.s.)
- RoHS compliance, Halogen free

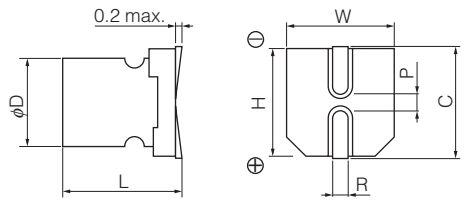
Specifications

Size code	B6	C6	E7	F8
Category temperature range	–55 °C to +105 °C			
Rated voltage range	2.5 V.DC to 20 V.DC			2.5 V.DC to 16 V.DC
Rated capacitance 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)			
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		
	tan δ	≦ 150 % of the initial limit		
	DC leakage current	Within the initial limit		
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage			
	Capacitance change	Within ±20 % of the initial value		
	tan δ	≦ 150 % of the initial limit		
	DC leakage current	Within the initial limit (after voltage processing)		

Marking



Dimensions (not to scale)



Unit : mm

Size code	φD±0.5	L $^{+0.1}_{-0.4}$	W±0.2	H±0.2	C±0.2	R	P±0.2
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
E7	8.0	6.9	8.3	8.3	9.0	0.6 to 0.8	3.2
F8	10.0	7.9	10.3	10.3	11.0	0.6 to 0.8	4.6

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (μF)	Case size (mm)		Size code	Specifications				Standard (Reel size : φ380)	
			φD	L		Ripple *1 current (mAr.m.s.)	ESR *2 (mΩ max.)	tan δ *3	LC *4 (μA)	Part number	Min. Packaging Q'ty (pcs)
SVPA	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 catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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

Surface Mount Type

OS-CON

Series : **SVPB**

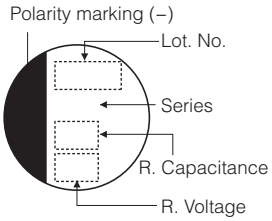
Features

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

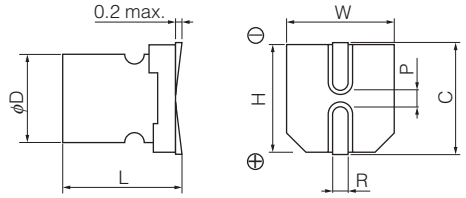
Specifications

Size code	C5	C55
Category temperature range	–55 °C to +105 °C	
Rated voltage range	2.5 V.DC to 20 V.DC	20 V.DC
Rated capacitance range	15 µF to 120 µF	22 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, 1000 h, rated voltage applied	
	Capacitance change	Within ±20 % of the initial value (±30 % for C5 size)
	tan δ	≦ 150 % of the initial limit
	DC leakage current	Within the initial limit
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 1000 h, No-applied voltage	
	Capacitance change	Within ±20 % of the initial value
	tan δ	≦ 150 % of the initial limit
	DC leakage current	Within the initial limit (after voltage processing)

Marking



Dimensions (not to scale)



Unit : mm

Size code	φD±0.5	L $^{+0.1}_{-0.4}$	W±0.2	H±0.2	C±0.2	R	P±0.2
C5	6.3	4.9	6.6	6.6	7.3	0.6 to 0.8	2.1
C55	6.3	5.4	6.6	6.6	7.3	0.6 to 0.8	2.1

✻ Externals of figure are the reference.

Characteristics list

Series	Rated voltage (V.DC)	Rated capacitance (µF)	Case size (mm) φD	Case size (mm) L	Size code	Specifications: Ripple ✻1 current (mArm.s.)	Specifications: ESR ✻2 (mΩ max.)	Specifications: tan δ ✻3	Specifications: LC ✻4 (µA)	Standard (Reel size : φ380) Part number	Standard (Reel size : φ380) Min. Packaging Q'ty (pcs)
SVPB	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 δ (120 Hz/+20 °C) ✻4 After 2 minutes

◆ Please refer to each page in this catarog for “Reflow conditions” and “Taping specifications”.

Frequency correction factor for ripple current

Frequency	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