

OS-CON

OS-CON Line-up

Guidelines and precautions

Series system diagram

Image of case size

Products list

Packing specifications (SMD type)

Packing specifications (Radial lead type)

Recommended soldering condition

Fundamental structure

Characteristics

Reliability

SVX

SVPG

SVPF

SVPE

SVPS

SVPD

SVPC

SVPB

SVPA

SVQP

SVP

SXE

SEPF

SEPC

SEQP

SEP

Catalog Deletion and EOL series

POSCAP

POSCAP Line-up

Guidelines and precautions

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Surface mount type

Catalog Deletion and EOL models

Radial lead type

SEPC Series

Update

RoHS directive/Halogen-free compliant

Super Low ESR(5mΩ~24mΩ)

Large capacitance(2,700μF)

Endurance: 105℃ 5,000h

Specifications

| Items                                                          | Condition                                    | Specifications                               |                                                     |              |    |    |
|----------------------------------------------------------------|----------------------------------------------|----------------------------------------------|-----------------------------------------------------|--------------|----|----|
| Rated voltage (V)                                              | —                                            | 2.5                                          | 4.0                                                 | 6.3          | 10 | 16 |
| Surge voltage (V)                                              | Room temperature                             | 3.3                                          | 5.2                                                 | 8.2          | 12 | 18 |
| Category temperature range (℃)                                 | —                                            | -55 to +105                                  |                                                     |              |    |    |
| Capacitance tolerance (%)                                      | 120Hz/20℃                                    | M : ±20                                      |                                                     |              |    |    |
| Dissipation Factor (DF)                                        | 120Hz/20℃                                    | Please see the attached characteristics list |                                                     |              |    |    |
| Leakage current※1                                              | Rated voltage applied, after 2 minutes       | Please see the attached characteristics list |                                                     |              |    |    |
| Equivalent series resistance (ESR)                             | 100kHz to 300kHz/20℃                         | Please see the attached characteristics list |                                                     |              |    |    |
| Characteristics of impedance ratio at high temp. and low temp. | Based the value at 100kHz, +20℃              | -55℃                                         | Z/Z20℃                                              | 0.75 to 1.25 |    |    |
|                                                                |                                              | +105℃                                        | Z/Z20℃                                              | 0.75 to 1.25 |    |    |
|                                                                |                                              | ΔC/C                                         | Within ±20% of the initial value                    |              |    |    |
|                                                                |                                              | DF                                           | Within 1.5 times of the initial limit               |              |    |    |
| Endurance                                                      | 105℃, 5,000h, Rated voltage applied          | ESR                                          | Within 1.5 times of the initial limit               |              |    |    |
|                                                                |                                              | LC                                           | Within the initial limit                            |              |    |    |
|                                                                |                                              | ΔC/C                                         | Within ±20% of the initial value                    |              |    |    |
|                                                                |                                              | DF                                           | Within 1.5 times of the initial limit               |              |    |    |
| Damp heat(Steady state)                                        | 60℃, 90 to 95%RH, 1,000h, No-applied voltage | ESR                                          | Within 1.5 times of the initial limit               |              |    |    |
|                                                                |                                              | LC                                           | Within the initial limit (after voltage processing) |              |    |    |
|                                                                |                                              | ΔC/C                                         | Within ±5% of the initial value                     |              |    |    |
|                                                                |                                              | DF                                           | Within the initial limit                            |              |    |    |
| Resistance to soldering heat※2                                 | Flow method (260±5℃ X 10s)                   | ESR                                          | Within the initial limit                            |              |    |    |
|                                                                |                                              | LC                                           | Within the initial limit (after voltage processing) |              |    |    |

※1 In case of some problems for measured values, measure after applying rated voltage for 120 minutes at 105℃.

※2 Please refer to page 25 for flow soldering conditions.

Marking and dimensions

Polarity marking (Cathode)

Case No.

Series

SEPC (B9 size has no marking)

Rated capacitance

Rated voltage

003

SEPC

2700

2.5

E12, E13, F13 Size

φD

L

15min.

4min.

19min.

φd

(+)

B9, C55, C6, C7, C9, E7, E9 Size

φD

L

15min.

4min.

19min.

φd

(+)

B9, C55, C6, C7, C9, E7, E9 size flat rubber is used.

(unit : mm)

| Size code | φD ±0.5 | L max | F       | φd ±0.05 |
|-----------|---------|-------|---------|----------|
| B9        | 5.0     | 9.0   | 2.0±0.5 | 0.6      |
| C55       | 6.3     | 5.5   | 2.5±0.5 | 0.45     |
| C6        | 6.3     | 6.0   | 2.5±0.5 | 0.45※3   |
| C7        | 6.3     | 7.0   | 2.5±0.5 | 0.6      |
| C9        | 6.3     | 9.0   | 2.5±0.5 | 0.6      |
| E7        | 8.0     | 7.0   | 3.5±0.5 | 0.6※4    |
| E9        | 8.0     | 9.0   | 3.5±0.5 | 0.6      |
| E12       | 8.0     | 12.0  | 3.5±0.5 | 0.6      |
| E13       | 8.0     | 13.0  | 3.5±0.5 | 0.6      |
| F13       | 10.0    | 13.0  | 5.0±0.5 | 0.6      |

※3 2SEPC390M, 2SEPC560M : 0.5±0.05

※4 16SEPC150MD, 10SEPC270MD : 0.45±0.05

Size list

RV : Rated voltage

| RV    | 2.5             | 4.0         | 6.3             | 10 | 16      |
|-------|-----------------|-------------|-----------------|----|---------|
| 100   | B9              |             |                 |    | C6, C9  |
| 150   |                 |             |                 |    | E7      |
| 180   |                 |             |                 |    | E9, E12 |
| 220   |                 |             | C55             |    | E7      |
| 270   |                 |             |                 | E7 | E9, E12 |
| 330   | B9, C9          |             |                 |    |         |
| 390   | C6              |             |                 |    |         |
| 470   | B9              |             | C7, C9, E9, E13 |    | F13     |
| 560   | B9, C6, C9, E9  | C9, E9, E13 | C9, E9          |    |         |
| 680   |                 | E13         | F13             |    |         |
| 820   | C9, E7, E9, E13 | F13         |                 |    |         |
| 1,000 | E9              |             | E7              |    |         |
| 1,500 |                 |             | F13             |    |         |
| 2,700 | F13             |             |                 |    |         |

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## SEPC series characteristics list

| Size code | Part number        | Rated voltage (V) | Rated capacitance (μF) | ESR(mΩ) (max)<br>100kHz to 300kHz/20°C | Rated ripple current<br>100kHz (mA <sub>rms</sub> ) at 105°C | DF (% max) | Leakage current (μA)(max)<br>After 2 minutes |
|-----------|--------------------|-------------------|------------------------|----------------------------------------|--------------------------------------------------------------|------------|----------------------------------------------|
| B9        | 2SEPC100MZ         | 2.5               | 100                    | 7                                      | 4180                                                         | 10         | 500                                          |
|           | 2SEPC330MZ         | 2.5               | 330                    | 7                                      | 4180                                                         | 10         | 500                                          |
|           | 2SEPC470MZ         | 2.5               | 470                    | 7                                      | 4180                                                         | 10         | 500                                          |
|           | 2SEPC560MZ         | 2.5               | 560                    | 7                                      | 4180                                                         | 10         | 500                                          |
| C55       | 6SEPC220M          | 6.3               | 220                    | 18                                     | 2980                                                         | 12         | 280                                          |
| C6        | 16SEPC100M         | 16                | 100                    | 24                                     | 2490                                                         | 10         | 320                                          |
|           | 2SEPC390M          | 2.5               | 390                    | 10                                     | 3900                                                         | 12         | 500                                          |
|           | 2SEPC560M          | 2.5               | 560                    | 10                                     | 3900                                                         | 12         | 500                                          |
| C7        | 6SEPC470ME         | 6.3               | 470                    | 20                                     | 2970                                                         | 10         | 592                                          |
| C9        | 16SEPC100MW        | 16                | 100                    | 10                                     | 4680                                                         | 10         | 500                                          |
|           | 6SEPC470MW         | 6.3               | 470                    | 7                                      | 5600                                                         | 10         | 592                                          |
|           | 6SEPC560MW         | 6.3               | 560                    | 7                                      | 5600                                                         | 10         | 705                                          |
|           | 4SEPC560MW         | 4.0               | 560                    | 7                                      | 5600                                                         | 10         | 500                                          |
|           | 2SEPC330MW         | 2.5               | 330                    | 7                                      | 5600                                                         | 10         | 500                                          |
|           | 2SEPC560MW         | 2.5               | 560                    | 7                                      | 5600                                                         | 10         | 500                                          |
|           | 2SEPC820MW         | 2.5               | 820                    | 7                                      | 5600                                                         | 10         | 500                                          |
| E7        | 16SEPC150MD        | 16                | 150                    | 22                                     | 3220                                                         | 12         | 500                                          |
|           | 16SEPC220MD        | 16                | 220                    | 13                                     | 4150                                                         | 10         | 500                                          |
|           | 10SEPC270MD        | 10                | 270                    | 22                                     | 3220                                                         | 12         | 500                                          |
|           | 2SEPC820MD         | 2.5               | 820                    | 8                                      | 5300                                                         | 10         | 500                                          |
|           | <b>6SEPC1000MD</b> | 6.3               | 1000                   | 18                                     | 3530                                                         | 10         | 1260                                         |
| E9        | 16SEPC180MX        | 16                | 180                    | 10                                     | 5000                                                         | 10         | 576                                          |
|           | 16SEPC270MX        | 16                | 270                    | 10                                     | 5000                                                         | 10         | 864                                          |
|           | 6SEPC470MX         | 6.3               | 470                    | 8                                      | 5700                                                         | 10         | 592                                          |
|           | 6SEPC560MX         | 6.3               | 560                    | 7                                      | 6100                                                         | 10         | 705                                          |
|           | 4SEPC560MX         | 4.0               | 560                    | 7                                      | 6100                                                         | 10         | 500                                          |
|           | 2SEPC560MX         | 2.5               | 560                    | 8                                      | 4700                                                         | 10         | 280                                          |
|           | 2SEPC820MX         | 2.5               | 820                    | 7                                      | 6100                                                         | 10         | 500                                          |
|           | 2SEPC820MY         | 2.5               | 820                    | 5                                      | 7200                                                         | 10         | 500                                          |
|           | 2SEPC1000MX        | 2.5               | 1000                   | 7                                      | 6100                                                         | 10         | 500                                          |
| E12       | 16SEPC180M         | 16                | 180                    | 16                                     | 4360                                                         | 10         | 576                                          |
|           | 16SEPC270M         | 16                | 270                    | 11                                     | 5000                                                         | 10         | 864                                          |
| E13       | 6SEPC470M          | 6.3               | 470                    | 8                                      | 5700                                                         | 10         | 592                                          |
|           | 4SEPC560M          | 4.0               | 560                    | 7                                      | 6100                                                         | 10         | 500                                          |
|           | 4SEPC680M          | 4.0               | 680                    | 7                                      | 6100                                                         | 10         | 544                                          |
|           | 2R5SEPC820M        | 2.5               | 820                    | 7                                      | 6100                                                         | 10         | 500                                          |
| F13       | 16SEPC470M         | 16                | 470                    | 10                                     | 6100                                                         | 10         | 1504                                         |
|           | 6SEPC680M          | 6.3               | 680                    | 7                                      | 6640                                                         | 10         | 857                                          |
|           | 6SEPC1500M         | 6.3               | 1500                   | 10                                     | 5560                                                         | 10         | 1890                                         |
|           | 4SEPC820M          | 4.0               | 820                    | 7                                      | 6640                                                         | 10         | 656                                          |
|           | 2SEPC2700M         | 2.5               | 2700                   | 10                                     | 5560                                                         | 10         | 1350                                         |

## Frequency coefficient for ripple current

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

※ Red letters : New models