

## Surface Mount Type **SP-Cap**

Series : **SX (Low ESR Products)**



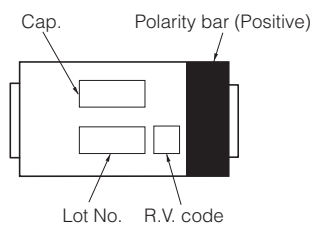
### Features

- Large capacitance (560  $\mu\text{F}$  max.)
- Low ESR (4.5  $\text{m}\Omega$  to 9  $\text{m}\Omega$ )
- High ripple current (8500  $\text{mA}$ .r.m.s. max.)
- RoHS compliance, Halogen free

### Specifications

|                                      |   |  |              |              |
|--------------------------------------|---|--|--------------|--------------|
| Series                               | SX  |  |              |              |
| Category temp. range                 | -55 °C to +105 °C                                   |  |              |              |
| Rated voltage range                  | 2 V.DC to 6.3 V.DC                                  |  |              |              |
| Nominal cap.range                    | 82 $\mu\text{F}$ to 560 $\mu\text{F}$               |  |              |              |
| Capacitance tolerance                | $\pm 20\%$ (120 Hz/+20 °C)                          |  |              |              |
| DC leakage current                   | $I \leq 0.1 \text{ CV}$ ( $\mu\text{A}$ ) 2 minutes |  |              |              |
| Dissipation factor ( $\tan \delta$ ) | $\leq 0.06$ (120 Hz/+20 °C)                         |  |              |              |
| Surge voltage (V.DC)                 | Rated voltage $\times 1.25$ (15 °C to 35 °C)        |  |              |              |
| Endurance                            | +105 °C, 2000 h, rated voltage applied              |  |              |              |
|                                      | Capacitance change                                  | Within $\pm 20\%$ of the initial value |              |              |
|                                      | $\tan \delta$                                       | $\leq 2$ times of the initial limit    |              |              |
|                                      | DC leakage current                                  | $\leq 3$ times of the initial limit    |              |              |
| Damp heat (Steady state)             | +60 °C, 90 %, 500 h, No-applied voltage             |  |              |              |
|                                      | Capacitance change of initial measurd value         | 2 to 2.5 V.DC                          | 4 V.DC       | 6.3 V.DC     |
|                                      |   | +70 %, -20 %                           | +60 %, -20 % | +50 %, -20 % |
|                                      | $\tan \delta$                                       | $\leq 2$ times of the initial limit    |              |              |
| DC leakage current                   | Within the initial limit                            |  |              |              |

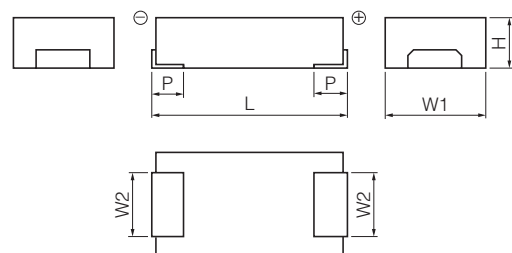
### Marking



Rated voltage mark

|   |          |
|---|----------|
| d | 2 V.DC   |
| e | 2.5 V.DC |
| g | 4 V.DC   |
| j | 6.3 V.DC |

### Dimensions (not to scale)



Unit : mm

| Series | $L \pm 0.2$ | $W1 \pm 0.2$ | $W2 \pm 0.1$ | $H \pm 0.1$ | $P \pm 0.3$ |
|--------|-------------|--------------|--------------|-------------|-------------|
| SX     | 7.3         | 4.3          | 2.4          | 1.9         | 1.3         |

\* Externals of figure are the reference.

## Characteristics list

Reflow \*3 &lt;Standard&gt;

| Series | Rated voltage (V.DC) | Capacitance (±20%) (μF) | Case size (mm) |     |      | Specification                   |                     | Part number  | Min.*4 Packaging Q'ty (pcs) |      |
|--------|----------------------|-------------------------|----------------|-----|------|---------------------------------|---------------------|--------------|-----------------------------|------|
|        |                      |                         | L              | W   | H    | *1<br>Ripple current (mAr.m.s.) | *2<br>ESR (mΩ max.) |              |                             |      |
| SX     | 2                    | 180                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0D181ER | 3500                        |      |
|        |                      | 220                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0D221ER | 3500                        |      |
|        |                      | 270                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0D271ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0D271XE | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 8500                            | 4.5                 | EEFSX0D271E4 | 3500                        |      |
|        |                      | 330                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0D331ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0D331XE | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 8500                            | 4.5                 | EEFSX0D331E4 | 3500                        |      |
|        |                      | 390                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0D391ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0D391XE | 3500                        |      |
|        | 7.3                  |                         | 4.3            | 1.9 | 8500 | 4.5                             | EEFSX0D391E4        | 3500         |                             |      |
|        | 470                  | 7.3                     | 4.3            | 1.9 | 6300 | 9                               | EEFSX0D471ER        | 3500         |                             |      |
|        |                      | 7.3                     | 4.3            | 1.9 | 7500 | 6                               | EEFSX0D471XE        | 3500         |                             |      |
|        |                      | 7.3                     | 4.3            | 1.9 | 8500 | 4.5                             | EEFSX0D471E4        | 3500         |                             |      |
|        | 560                  | 7.3                     | 4.3            | 1.9 | 8500 | 4.5                             | EEFSX0D561E4        | 3500         |                             |      |
|        | 2.5                  | 150                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E151ER | 3500                        |      |
|        |                      | 180                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E181ER | 3500                        |      |
|        |                      | 220                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E221ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7000                            | 7                   | EEFSX0E221E7 | 3500                        |      |
|        |                      | 270                     | 7.3            | 4.3 | 1.9  | 7000                            | 7                   | EEFSX0E271E7 | 3500                        |      |
|        |                      | 330                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E331ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0E331XE | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 8500                            | 4.5                 | EEFSX0E331E4 | 3500                        |      |
|        |                      | 390                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E391ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0E391XE | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 8500                            | 4.5                 | EEFSX0E391E4 | 3500                        |      |
|        |                      | 470                     | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0E471ER | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 7500                            | 6                   | EEFSX0E471XE | 3500                        |      |
|        |                      |                         | 7.3            | 4.3 | 1.9  | 8500                            | 4.5                 | EEFSX0E471E4 | 3500                        |      |
|        |                      | 4                       | 82             | 7.3 | 4.3  | 1.9                             | 6300                | 9            | EEFSX0G820ER                | 3500 |
|        |                      |                         | 100            | 7.3 | 4.3  | 1.9                             | 6300                | 9            | EEFSX0G101ER                | 3500 |
|        |                      |                         | 150            | 7.3 | 4.3  | 1.9                             | 6300                | 9            | EEFSX0G151ER                | 3500 |
|        |                      |                         |                | 7.3 | 4.3  | 1.9                             | 7000                | 7            | EEFSX0G151E7                | 3500 |
|        | 180                  |                         | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0G181ER | 3500                        |      |
|        | 220                  |                         | 7.3            | 4.3 | 1.9  | 6300                            | 9                   | EEFSX0G221ER | 3500                        |      |
|        | 270                  | 7.3                     | 4.3            | 1.9 | 6300 | 9                               | EEFSX0G271ER        | 3500         |                             |      |
| 6.3    | 120                  | 7.3                     | 4.3            | 1.9 | 7000 | 7                               | EEFSX0J121E7        | 3500         |                             |      |
|        | 150                  | 7.3                     | 4.3            | 1.9 | 6300 | 9                               | EEFSX0J151ER        | 3500         |                             |      |
|        | 180                  | 7.3                     | 4.3            | 1.9 | 6300 | 9                               | EEFSX0J181ER        | 3500         |                             |      |

\*1: Ripple current (100 kHz/ +45°C), \*2: ESR (100 kHz/+20°C)

\*3: Please refer to the page of "Mounting Specifications".

\*4: Please contact us when 500 pcs packing is necessary.

## Temperature compensation multipliers for ripple current

| Temp.       | T ≤ 45 °C | 45 °C < T ≤ 85 °C | 85 °C < T ≤ 105 °C |
|-------------|-----------|-------------------|--------------------|
| Coefficient | 1.0       | 0.7               | 0.25               |

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## Panasonic:

[EEF-SX0D391ER](#) [EEF-SX0D471ER](#) [EEF-SX0D471XE](#) [EEF-SX0E221ER](#) [EEF-SX0E331ER](#) [EEF-SX0E331XE](#)  
[EEF-SX0E391ER](#) [EEF-SX0E391XE](#) [EEF-SX0G151ER](#) [EEF-SX0G221ER](#) [EEF-SX0D471E4](#) [EEF-SX0D561E4](#) [EEF-](#)  
[SX0E471E4](#) [EEF-SX0E471ER](#) [EEF-SX0E471XE](#) [EEF-SX0D271ER](#) [EEF-SX0D181ER](#) [EEF-SX0D221ER](#) [EEF-](#)  
[SX0D331ER](#) [EEF-SX0E151ER](#) [EEF-SX0E181ER](#) [EEF-SX0G101ER](#) [EEF-SX0G820ER](#) [EEF-SX0D331XE](#) [EEF-](#)  
[SX0J151ER](#) [EEF-SX0D271E4](#) [EEF-SX0D271XE](#) [EEF-SX0D331E4](#) [EEF-SX0D391E4](#) [EEF-SX0D391XE](#) [EEF-](#)  
[SX0E221E7](#) [EEF-SX0G181ER](#) [EEF-SX0J121E7](#) [EEF-SX0E331E4](#) [EEF-SX0E391E4](#) [EEF-SX0E271E7](#) [EEF-](#)  
[SX0G151E7](#) [EEF-SX0J181ER](#) [EEF-SX0G271ER](#)