

## Surface Mount Type

## SP-Cap

Series: **LX** (Low ESR / Low ESL Products)



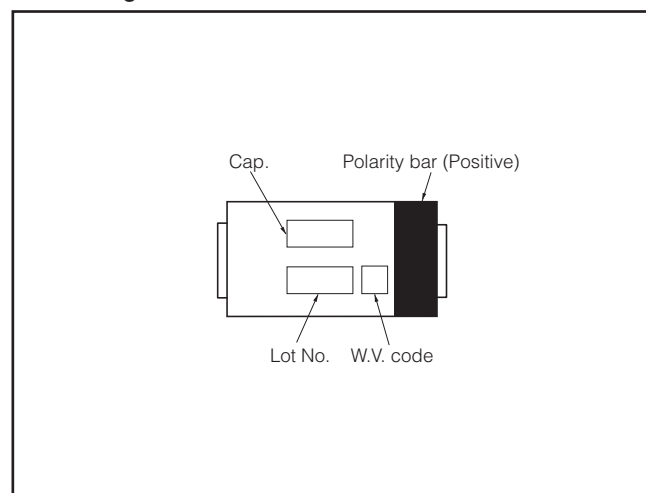
### ■ Features

- Large capacitance (560  $\mu$ F max.)
- Low ESR (4.5 m $\Omega$ , 6 m $\Omega$ )
- Low ESL (50 % less than 3-terminals)
- RoHS directive compliant

### ■ Specifications

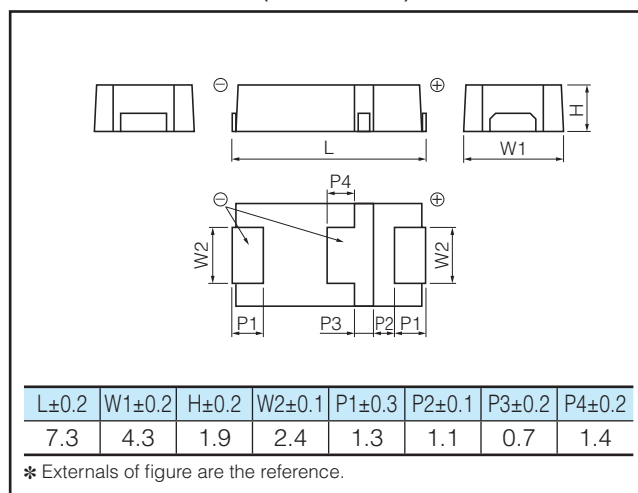
|                       |                                                                                                                                                           |                                         |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Series & Size Code    | LX                                                                                                                                                        |                                         |
| Category Temp. Range  | -40 °C to +105 °C                                                                                                                                         |                                         |
| Rated W.V.Range       | 2 to 2.5 V.DC                                                                                                                                             |                                         |
| Nominal Cap.Range     | 330 $\mu$ F to 560 $\mu$ F                                                                                                                                |                                         |
| Capacitance Tolerance | $\pm 20$ % (120 Hz/+20 °C)                                                                                                                                |                                         |
| DC Leakage Current    | $I \leq 0.1$ CV ( $\mu$ A) 2 minutes                                                                                                                      |                                         |
| $\tan \delta$         | $\leq 0.06$ (120 Hz/+20 °C)                                                                                                                               |                                         |
| Surge Voltage         | Rated Working Voltage $\times 1.25$ (15 °C to 35 °C)                                                                                                      |                                         |
| Endurance             | After applying rated working voltage for 2000 hours at 105 °C $\pm 2$ °C, and then being stabilized at +20 °C, capacitor shall meet the following limits. |                                         |
|                       | Capacitance change                                                                                                                                        | $\pm 20$ % of initial measured value    |
|                       | $\tan \delta$                                                                                                                                             | $\leq 200$ % of initial specified value |
|                       | DC leakage current                                                                                                                                        | $\leq 300$ % of initial specified value |
| Moisture resistance   | After storing for 500 hours at 60 °C, 90 %                                                                                                                |                                         |
|                       | Capacitance change of initial measurd value                                                                                                               | 2 to 2.5 V.DC                           |
|                       |                                                                                                                                                           | +70, -20 %                              |
|                       | $\tan \delta$                                                                                                                                             | $\leq 200$ % of initial specified value |
|                       | DC leakage current                                                                                                                                        | $\leq$ Initial specified value          |

### ■ Marking



### ■ Dimensions in mm(not to scale)

(Unit : mm)



■ Standard Products

| Series &<br>Size Code | Rated<br>W.V.<br>(V.DC) | Capaci-<br>tance<br>(±20 %) (μF) | Case Size |           |           | Specification                        |                        | Part number  | *4<br>Min.<br>Packaging<br>Q'ty<br>(pcs) |
|-----------------------|-------------------------|----------------------------------|-----------|-----------|-----------|--------------------------------------|------------------------|--------------|------------------------------------------|
|                       |                         |                                  | L<br>(mm) | W<br>(mm) | H<br>(mm) | *1<br>Ripple<br>current<br>(Ar.m.s.) | *2<br>ESR<br>(mΩ max.) |              |                                          |
| LX                    | 2                       | 330                              | 7.3       | 4.3       | 1.9       | 7.5                                  | 6                      | EEFLX0D331R  | 3500                                     |
|                       |                         |                                  | 7.3       | 4.3       | 1.9       | 8.5                                  | 4.5                    | EEFLX0D331R4 | 3500                                     |
|                       |                         | 470                              | 7.3       | 4.3       | 1.9       | 7.5                                  | 6                      | EEFLX0D471R  | 3500                                     |
|                       |                         |                                  | 7.3       | 4.3       | 1.9       | 8.5                                  | 4.5                    | EEFLX0D471R4 | 3500                                     |
|                       |                         | 560                              | 7.3       | 4.3       | 1.9       | 7.5                                  | 6                      | EEFLX0D561R  | 3500                                     |
|                       |                         |                                  | 7.3       | 4.3       | 1.9       | 8.5                                  | 4.5                    | EEFLX0D561R4 | 3500                                     |
|                       | 2.5                     | 330                              | 7.3       | 4.3       | 1.9       | 7.5                                  | 6                      | EEFLX0E331R  | 3500                                     |
|                       |                         |                                  | 7.3       | 4.3       | 1.9       | 8.5                                  | 4.5                    | EEFLX0E331R4 | 3500                                     |
|                       |                         | 470                              | 7.3       | 4.3       | 1.9       | 7.5                                  | 6                      | EEFLX0E471R  | 3500                                     |
|                       |                         |                                  | 7.3       | 4.3       | 1.9       | 8.5                                  | 4.5                    | EEFLX0E471R4 | 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 |                   |                    |
|---------------------------------------------------------|-------------------|--------------------|
| ≤ 45 °C                                                 | 45 °C < T ≤ 85 °C | 85 °C < T ≤ 105 °C |
| 1.0                                                     | 0.7               | 0.25               |