

**Panasonic****Specialty Polymer  
Aluminum Electrolytic Capacitor**

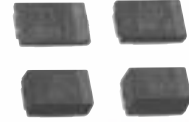
Surface Mount Type

**SP-Cap**

Series:FD,CD,UD,UE

Country of Origin

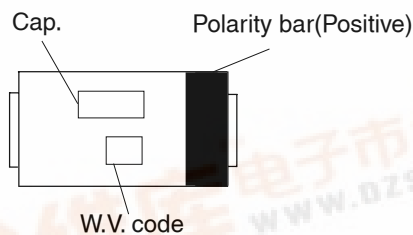
- Features Low ESR  
Excellent Noise-absorbent Characteristics

Japan  
Singapore

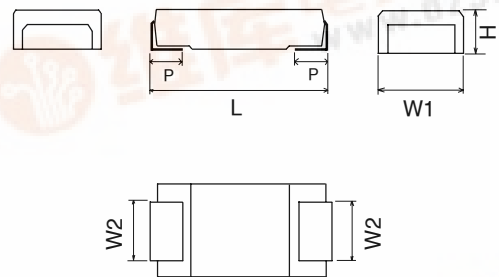
## ■ Specification

| Series & Size Code                 | FD                                                                                                                                             | CD                                | UD                   | UE                   |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------|----------------------|
| Category Temp.Range                | -40 to 105°C                                                                                                                                   |                                   |                      |                      |
| Rated W.V.Range                    | 2 to 12.5V.DC                                                                                                                                  | 2 to 16V.DC                       | 2 to 8V.DC           | 2 to 8V.DC           |
| Nominal Cap.Range                  | 15 to 68μF                                                                                                                                     | 2.2 to 150μF                      | 68 to 330μF          | 100 to 470μF         |
| Capacitance Tolerance              | ±20 %                                                                                                                                          |                                   |                      |                      |
| DC Leakage Current                 | I ≤0.06 CV 2minutes(2 to 4V.DC)<br>I ≤0.04CV or 3μA 2minutes(6.3 to 16V.DC) (Whichever is greater)                                             |                                   |                      |                      |
| Surge Voltage                      | Rated Working Voltage × 1.25 (15 to 35°C)                                                                                                      |                                   |                      |                      |
| tan δ                              | ≤ 0.06(120Hz/ +20°C)                                                                                                                           |                                   | ≤ 0.10(120Hz/ +20°C) |                      |
| Endurance<br>(105°C1000hours W.V.) | After applying rated working voltage for 1000 hours at 105±2°C, and then being stabilized at +20°C, capacitor shall meet the following limits. |                                   |                      |                      |
|                                    | Capacitance change                                                                                                                             | ±10%of initial measured value     |                      |                      |
|                                    | tan δ                                                                                                                                          | ≤ Initial specified value         |                      |                      |
|                                    | DC leakage current                                                                                                                             | ≤ Initial specified value         |                      |                      |
| Moisture resistance                | After storing for 500 hours at 60°C,90%R.H.                                                                                                    |                                   |                      |                      |
|                                    | Capacitance change of initial measurd value                                                                                                    | 2, 2.5V.DC<br>+70, -20%           | 4 V.DC<br>+60, -20%  | 6.3V.DC<br>+50, -20% |
|                                    | tan δ                                                                                                                                          | ≤ 200% of initial specified value |                      |                      |
|                                    | DC leakage current                                                                                                                             | ≤ Initial specified value         |                      |                      |
|                                    |                                                                                                                                                |                                   |                      |                      |

## ■ Marking



## ■ Dimensions in mm(not to scale)



(mm)

| Series & Size Code | L±0.2 | W1±0.2 | W2±0.1 | H       | P±0.3 |
|--------------------|-------|--------|--------|---------|-------|
| FD                 | 7.3   | 4.3    | 2.4    | 1.1±0.1 | 1.3   |
| CD                 | 7.3   | 4.3    | 2.4    | 1.8±0.1 | 1.3   |
| UD                 | 7.3   | 4.3    | 2.4    | 2.8±0.2 | 1.3   |
| UE                 | 7.3   | 4.3    | 2.4    | 4.2±0.1 | 1.3   |



■ Standard Products

| Series &<br>Size Code | Rated<br>W.V.<br>(V.DC) | Capacitance<br>(±20%)<br>(μF) | Case Size |           |           | Specification                                        |                            | Part number  | Min.Packaging Qty<br>(pcs) |
|-----------------------|-------------------------|-------------------------------|-----------|-----------|-----------|------------------------------------------------------|----------------------------|--------------|----------------------------|
|                       |                         |                               | L<br>(mm) | W<br>(mm) | H<br>(mm) | Ripple current<br>(A r.m.s./100kHz<br>+20 to +105°C) | ESR<br>Ω<br>(100kHz/+20°C) |              |                            |
| FD                    | 2                       | 68                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0D680R  | 3500                       |
|                       | 2.5                     | 56                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0E560R  | 3500                       |
|                       | 4                       | 39                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0G390R  | 3500                       |
|                       |                         | 47                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0G470R  | 3500                       |
|                       | 6.3                     | 33                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0J330R  | 3500                       |
|                       | 8                       | 22                            | 7.3       | 4.3       | 1.1       | 2.0                                                  | 0.028                      | EEFFD0K220R  | 3500                       |
|                       | 12.5                    | 15                            | 7.3       | 4.3       | 1.1       | 1.4                                                  | 0.040                      | EEFFD1B150R  | 3500                       |
| CD                    | 2                       | 100                           | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0D101R  | 3500                       |
|                       |                         | 100                           | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0D101XR | 3500                       |
|                       |                         | 120                           | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0D121R  | 3500                       |
|                       |                         | 120                           | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0D121XR | 3500                       |
|                       |                         | 150                           | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0D151R  | 3500                       |
|                       | 2.5                     | 82                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0E820R  | 3500                       |
|                       |                         | 82                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0E820XR | 3500                       |
|                       |                         | 100                           | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0E101R  | 3500                       |
|                       |                         | 100                           | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0E101XR | 3500                       |
|                       |                         | 120                           | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0E121R  | 3500                       |
|                       | 4                       | 56                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0G560R  | 3500                       |
|                       |                         | 56                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0G560XR | 3500                       |
|                       |                         | 68                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0G680R  | 3500                       |
|                       |                         | 68                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0G680XR | 3500                       |
|                       |                         | 82                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0G820R  | 3500                       |
|                       |                         | 82                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0G820XR | 3500                       |
|                       |                         | 100                           | 7.3       | 4.3       | 1.8       | 1.8                                                  | 0.025                      | EEFCD0G101R  | 3500                       |
|                       | 6.3                     | 10                            | 7.3       | 4.3       | 1.8       | 1.4                                                  | 0.055                      | EEFCD0J100R  | 3500                       |
|                       |                         | 22                            | 7.3       | 4.3       | 1.8       | 1.6                                                  | 0.040                      | EEFCD0J220R  | 3500                       |
|                       |                         | 33                            | 7.3       | 4.3       | 1.8       | 2.0                                                  | 0.028                      | EEFCD0J330R  | 3500                       |
|                       |                         | 47                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0J470R  | 3500                       |
|                       |                         | 47                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0J470XR | 3500                       |
|                       |                         | 68                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0J680R  | 3500                       |
|                       |                         | 68                            | 7.3       | 4.3       | 1.8       | 2.7                                                  | 0.015                      | EEFCD0J680XR | 3500                       |
|                       | 8                       | 8.2                           | 7.3       | 4.3       | 1.8       | 1.4                                                  | 0.055                      | EEFCD0K8R2R  | 3500                       |
|                       |                         | 15                            | 7.3       | 4.3       | 1.8       | 1.6                                                  | 0.040                      | EEFCD0K150R  | 3500                       |
|                       |                         | 22                            | 7.3       | 4.3       | 1.8       | 2.0                                                  | 0.028                      | EEFCD0K220R  | 3500                       |
|                       |                         | 33                            | 7.3       | 4.3       | 1.8       | 2.5                                                  | 0.018                      | EEFCD0K330R  | 3500                       |
|                       |                         | 47                            | 7.3       | 4.3       | 1.8       | 1.8                                                  | 0.025                      | EEFCD0K470R  | 3500                       |
|                       | 12.5                    | 4.7                           | 7.3       | 4.3       | 1.8       | 1.0                                                  | 0.080                      | EEFCD1B4R7R  | 3500                       |
|                       |                         | 10                            | 7.3       | 4.3       | 1.8       | 1.0                                                  | 0.060                      | EEFCD1B100R  | 3500                       |
|                       |                         | 15                            | 7.3       | 4.3       | 1.8       | 1.3                                                  | 0.050                      | EEFCD1B150R  | 3500                       |
|                       |                         | 22                            | 7.3       | 4.3       | 1.8       | 1.6                                                  | 0.030                      | EEFCD1B220R  | 3500                       |
|                       | 16                      | 2.2                           | 7.3       | 4.3       | 1.8       | 1.0                                                  | 0.110                      | EEFCD1C2R2R  | 3500                       |
|                       |                         | 4.7                           | 7.3       | 4.3       | 1.8       | 1.0                                                  | 0.080                      | EEFCD1C4R7R  | 3500                       |
|                       |                         | 6.8                           | 7.3       | 4.3       | 1.8       | 1.0                                                  | 0.070                      | EEFCD1C6R8R  | 3500                       |
|                       |                         | 8.2                           | 7.3       | 4.3       | 1.8       | 1.3                                                  | 0.045                      | EEFCD1C8R2R  | 3500                       |
| UD                    | 2                       | 180                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0D181R  | 2000                       |
|                       |                         | 180                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0D181XR | 2000                       |
|                       |                         | 220                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0D221R  | 2000                       |
|                       |                         | 220                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0D221XR | 2000                       |
|                       |                         | 270                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0D271R  | 2000                       |
|                       |                         | 270                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0D271XR | 2000                       |
|                       |                         | 330                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0D331R  | 2000                       |

Design, and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and / or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Standard Products

| Series &<br>Size Code | Rated<br>W.V.<br>(V.DC) | Capacitance<br>(±20%)<br>(μF) | Case Size |           |           | Specification                                        |                            | Part number  | Min. Packaging Qty<br>(pcs) |
|-----------------------|-------------------------|-------------------------------|-----------|-----------|-----------|------------------------------------------------------|----------------------------|--------------|-----------------------------|
|                       |                         |                               | L<br>(mm) | W<br>(mm) | H<br>(mm) | Ripple current<br>(A r.m.s./100kHz<br>+20 to +105°C) | ESR<br>Ω<br>(100kHz/+20°C) |              |                             |
| UD                    | 2                       | 330                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0D331XR | 2000                        |
|                       | 2.5                     | 150                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0E151R  | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0E151XR | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0E181R  | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0E181XR | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0E221R  | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0E221XR | 2000                        |
|                       |                         | 270                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0E271R  | 2000                        |
|                       | 4                       | 120                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0G121R  | 2000                        |
|                       |                         | 120                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0G121XR | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0G151R  | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0G151XR | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 2.8       | 2.5                                                  | 0.018                      | EEFUD0G181R  | 2000                        |
|                       | 6.3                     | 100                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0J101R  | 2000                        |
|                       |                         | 100                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0J101XR | 2000                        |
|                       |                         | 120                           | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0J121R  | 2000                        |
|                       |                         | 120                           | 7.3       | 4.3       | 2.8       | 3.3                                                  | 0.012                      | EEFUD0J121XR | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 2.8       | 2.5                                                  | 0.018                      | EEFUD0J151R  | 2000                        |
|                       | 8                       | 68                            | 7.3       | 4.3       | 2.8       | 3.0                                                  | 0.015                      | EEFUD0K680R  | 2000                        |
|                       |                         | 100                           | 7.3       | 4.3       | 2.8       | 2.5                                                  | 0.018                      | EEFUD0K101R  | 2000                        |
| UE                    | 2                       | 270                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0D271R  | 2000                        |
|                       |                         | 270                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0D271XR | 2000                        |
|                       |                         | 330                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0D331R  | 2000                        |
|                       |                         | 330                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0D331XR | 2000                        |
|                       |                         | 390                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0D391R  | 2000                        |
|                       |                         | 390                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0D391XR | 2000                        |
|                       |                         | 470                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0D471R  | 2000                        |
|                       |                         | 470                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0D471XR | 2000                        |
|                       | 2.5                     | 220                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0E221R  | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0E221XR | 2000                        |
|                       |                         | 270                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0E271R  | 2000                        |
|                       |                         | 270                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0E271XR | 2000                        |
|                       |                         | 330                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0E331R  | 2000                        |
|                       |                         | 330                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0E331XR | 2000                        |
|                       |                         | 390                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0E391R  | 2000                        |
|                       |                         | 390                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0E391XR | 2000                        |
|                       | 4                       | 180                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0G181R  | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0G181XR | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0G221R  | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0G221XR | 2000                        |
|                       |                         | 270                           | 7.3       | 4.3       | 4.2       | 3.0                                                  | 0.015                      | EEFUE0G271R  | 2000                        |
|                       | 6.3                     | 150                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0J151R  | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0J151XR | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0J181R  | 2000                        |
|                       |                         | 180                           | 7.3       | 4.3       | 4.2       | 3.5                                                  | 0.010                      | EEFUE0J181XR | 2000                        |
|                       |                         | 220                           | 7.3       | 4.3       | 4.2       | 3.0                                                  | 0.015                      | EEFUE0J221R  | 2000                        |
|                       | 8                       | 100                           | 7.3       | 4.3       | 4.2       | 3.3                                                  | 0.012                      | EEFUE0K101R  | 2000                        |
|                       |                         | 150                           | 7.3       | 4.3       | 4.2       | 3.0                                                  | 0.015                      | EEFUE0K151R  | 2000                        |