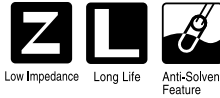
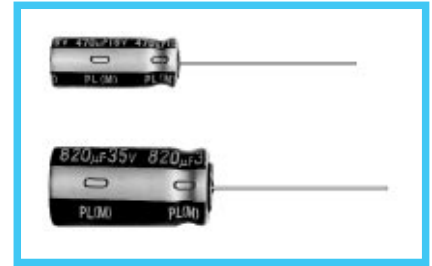


**PL** series Extremely Low Impedance, High Reliability



- Same case size as PF series, but extremely low impedance as little as 1/2 or PF series.
- High reliability withstanding 5000 hours load life at +105°C (3000/2000 hours for smaller case size as specified below).
- Capacitance ranges available based on the numerical values in E12 series under JIS.

This series will be discontinued in 2002, and combine with PM series.

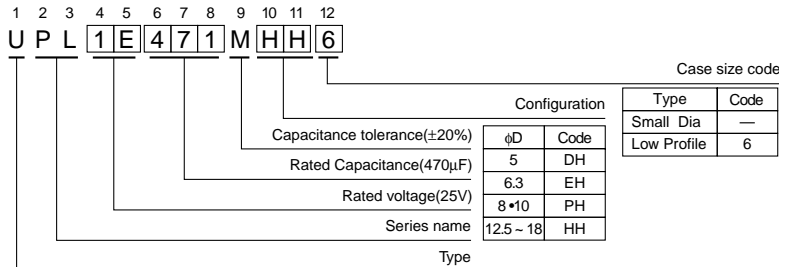
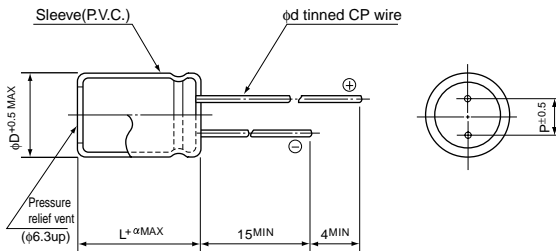


## Specifications

| Item                         | Performance Characteristics  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
|------------------------------|--|------------------------------|------------------------------|-------|---|-----------------|---------------------------------|----|----|------------------------------|---------------|------|------|------|------|------|------|
| Category Temperature Range   | -55 ~ +105°C   |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Rated Voltage Range          | 6.3 ~ 63V  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Rated Capacitance Range      | 0.47 ~ 15000µF   |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Capacitance Tolerance        | ±20% at 120Hz, 20°C  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Leakage Current              | After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4µA, whichever is greater.   |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| tan δ                        | For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz, Temperature : 20°C  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
|                              | <table border="1"> <tr> <td>Rated voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>tan δ(MAX.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> </tr> </table>                    | Rated voltage(V)             | 6.3                          | 10    | 16                                      | 25              | 35                              | 50 | 63 | tan δ(MAX.)                  | 0.22          | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |
| Rated voltage(V)             | 6.3  | 10                           | 16                           | 25    | 35                                      | 50              | 63                              |    |    |                              |               |      |      |      |      |      |      |
| tan δ(MAX.)                  | 0.22   | 0.19                         | 0.16                         | 0.14  | 0.12                                    | 0.10            | 0.08                            |    |    |                              |               |      |      |      |      |      |      |
| Stability at Low Temperature | Measurement frequency : 120Hz  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
|                              | <table border="1"> <tr> <td>Rated voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> </tr> <tr> <td>Impedance ratio ZT/Z20(MAX.)</td> <td>Z-55°C/Z+20°C</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> <td>2</td> </tr> </table> | Rated voltage(V)             | 6.3                          | 10    | 16                                      | 25              | 35                              | 50 | 63 | Impedance ratio ZT/Z20(MAX.) | Z-55°C/Z+20°C | 4    | 4    | 3    | 3    | 3    | 2    |
| Rated voltage(V)             | 6.3  | 10                           | 16                           | 25    | 35                                      | 50              | 63                              |    |    |                              |               |      |      |      |      |      |      |
| Impedance ratio ZT/Z20(MAX.) | Z-55°C/Z+20°C  | 4                            | 4                            | 3     | 3                                       | 3               | 2                               | 2  |    |                              |               |      |      |      |      |      |      |
| Endurance                    | After an application of D.C. bias voltage plus the rated ripple current for 5000 hours (2000 hours for D=5 and 6.3, 3000 hours for D=8) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristics requirements listed at right.                               |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
|                              | <table border="1"> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>   | Capacitance change           | Within ±20% of initial value | tan δ | 200% or less of initial specified value | Leakage current | Initial specified value or less |    |    |                              |               |      |      |      |      |      |      |
|                              | Capacitance change   | Within ±20% of initial value |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| tan δ                        | 200% or less of initial specified value  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Leakage current              | Initial specified value or less  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Shelf Life                   | After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for endurance characteristics listed above. The value of tan δ is, however, 150% or less of initial specified value.   |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |
| Marking                      | Printed with white color letter on dark brown sleeve.  |                              |                              |       |   |                 |                                 |    |    |                              |               |      |      |      |      |      |      |

## Radial Lead Type

Type numbering system (Example: 25V 470µF φ12.5 × 15)

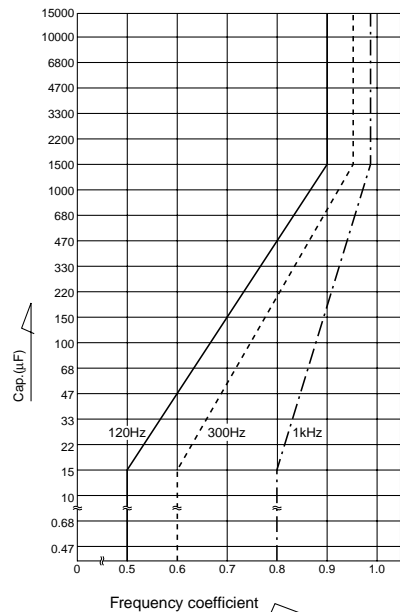


|   |            |
|---|------------|
| α | (L<20) 1.5 |
|   | (L≥20) 2.0 |

|    |     |     |     |     |                  |     |     |
|----|-----|-----|-----|-----|------------------|-----|-----|
| φD | 5   | 6.3 | 8   | 10  | 12.5             | 16  | 18  |
| P  | 2.0 | 2.5 | 3.5 | 5.0 | 5.0              | 7.5 | 7.5 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 <sup>②</sup> | 0.8 | 0.8 |

\* In case L>25 for φ12.5(D) case sizes, lead diameter φ0.8(d) will be applied.

- Frequency coefficient of rated ripple current (10kHz ~ 200kHz=1)



Please refer to page 18, 19, 20 about the formed or taped product spec. Please refer to page 3 for the minimum order quantity.

Dimension table in next page.

## ■ Dimensions

D × L (mm)

| Cap.(μF) | V(Code)<br>Size code | 6.3(0J)     |           | 10(1A)      |           | 16(1C)      |           | 25(1E)      |           | 35(1V) |             | 50(1H)    |             | 63(1J)    |             |
|----------|----------------------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|--------|-------------|-----------|-------------|-----------|-------------|
|          |                      | —           | 6         | —           | 6         | —           | 6         | —           | 6         | —      | 6           | —         | 6           | —         | 6           |
| 0.47     | R47                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 0.68     | R68                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 1        | 010                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 1.5      | 1R5                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 2.2      | 2R2                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 3.3      | 3R3                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 4.7      | 4R7                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 6.8      | 6R8                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      |           |             |
| 10       | 100                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      | 5 × 11    |             |
| 12       | 120                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      | 5 × 11    |             |
| 15       | 150                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      | 6.3 × 11  |             |
| 18       | 180                  |             |           |             |           |             |           |             |           |        |             |           | 5 × 11      | 6.3 × 11  |             |
| 22       | 220                  |             |           |             |           |             |           |             |           |        | 5 × 11      |           | 6.3 × 11    | 6.3 × 11  |             |
| 27       | 270                  |             |           |             |           |             |           |             |           |        | 5 × 11      |           | 6.3 × 11    | 6.3 × 11  |             |
| 33       | 330                  |             |           |             |           |             |           |             | 5 × 11    |        | 6.3 × 11    |           | 6.3 × 11    | 6.3 × 15  |             |
| 39       | 390                  |             |           |             |           |             |           |             | 5 × 11    |        | 6.3 × 11    |           | 6.3 × 11    | 6.3 × 15  |             |
| 47       | 470                  |             |           |             |           | 5 × 11      |           | 6.3 × 11    | 6.3 × 11  |        | 6.3 × 11    |           | 6.3 × 15    | 8 × 11.5  |             |
| 56       | 560                  |             |           |             |           | 5 × 11      |           | 6.3 × 11    | 6.3 × 11  |        | 6.3 × 11    |           | 6.3 × 15    | 8 × 15    | 10 × 12.5   |
| 68       | 680                  |             |           | 5 × 11      |           | 6.3 × 11    |           | 6.3 × 11    | 6.3 × 11  |        | 6.3 × 15    |           | 8 × 11.5    | 8 × 15    | 10 × 12.5   |
| 82       | 820                  |             |           | 5 × 11      |           | 6.3 × 11    |           | 6.3 × 11    | 6.3 × 11  |        | 6.3 × 15    |           | 8 × 15      | 10 × 12.5 | 10 × 15     |
| 100      | 101                  | 5 × 11      |           | 6.3 × 11    |           | 6.3 × 11    |           | 6.3 × 15    |           |        | 8 × 11.5    |           | 8 × 20      | 10 × 15   | 10 × 20     |
| 120      | 121                  | 5 × 11      |           | 6.3 × 11    |           | 6.3 × 11    |           | 6.3 × 15    |           |        | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   | 10 × 20     |
| 150      | 151                  | 6.3 × 11    |           | 6.3 × 11    |           | 6.3 × 15    |           | 8 × 11.5    |           |        | 8 × 15      | 10 × 12.5 | 10 × 20     | 12.5 × 15 | 10 × 25     |
| 180      | 181                  | 6.3 × 11    |           | 6.3 × 11    |           | 6.3 × 15    |           | 8 × 15      | 10 × 12.5 |        | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 | 10 × 31.5   |
| 220      | 221                  | 6.3 × 11    |           | 6.3 × 15    |           | 8 × 11.5    |           | 8 × 15      | 10 × 12.5 |        | 8 × 20      | 10 × 15   | 10 × 25     | 12.5 × 15 | 12.5 × 20   |
| 270      | 271                  | 6.3 × 15    |           | 6.3 × 15    |           | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   |        | 10 × 20     | 12.5 × 15 | 10 × 31.5   | 16 × 15   | 12.5 × 25   |
| 330      | 331                  | 6.3 × 15    |           | 8 × 11.5    |           | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   |        | 10 × 20     | 12.5 × 15 | 10 × 31.5   | 16 × 15   | 12.5 × 25   |
| 390      | 391                  | 8 × 11.5    |           | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 |        | 10 × 25     | 12.5 × 15 | 12.5 × 25   | 16 × 15   | 12.5 × 31.5 |
| 470      | 471                  | 8 × 15      | 10 × 12.5 | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 |        | 10 × 31.5   | 16 × 15   | 12.5 × 25   | 18 × 15   | 12.5 × 35.5 |
| 560      | 561                  | 8 × 15      | 10 × 12.5 | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 | 10 × 25     | 12.5 × 15 |        | 12.5 × 20   | 16 × 15   | 12.5 × 31.5 | 16 × 20   | 12.5 × 40   |
| 680      | 681                  | 8 × 20      | 10 × 15   | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 | 10 × 31.5   | 16 × 15   |        | 12.5 × 25   | 18 × 15   | 12.5 × 35.5 | 16 × 20   | 16 × 31.5   |
| 820      | 821                  | 8 × 20      | 10 × 15   | 10 × 20     | 12.5 × 15 | 10 × 25     | 12.5 × 15 | 12.5 × 20   | 16 × 15   |        | 12.5 × 25   | 18 × 15   | 12.5 × 40   | 18 × 20   | 16 × 35.5   |
| 1000     | 102                  | 10 × 20     | 12.5 × 15 | 10 × 20     | 12.5 × 15 | 10 × 31.5   | 16 × 15   | 12.5 × 25   | 18 × 15   |        | 12.5 × 31.5 | 16 × 20   | 16 × 31.5   | 18 × 25   | 16 × 40     |
| 1200     | 122                  | 10 × 20     | 12.5 × 15 | 10 × 25     | 12.5 × 15 | 12.5 × 20   | 16 × 15   | 12.5 × 25   | 18 × 15   |        | 12.5 × 35.5 | 16 × 25   | 16 × 35.5   | 18 × 31.5 | 18 × 40     |
| 1500     | 152                  | 10 × 25     | 12.5 × 15 | 10 × 31.5   | 16 × 15   | 12.5 × 25   | 18 × 15   | 12.5 × 31.5 | 16 × 20   |        | 12.5 × 40   | 18 × 20   | 16 × 40     | 18 × 31.5 |             |
| 1800     | 182                  | 10 × 31.5   | 16 × 15   | 12.5 × 20   | 16 × 15   | 12.5 × 31.5 | 16 × 20   | 12.5 × 35.5 | 16 × 25   |        | 16 × 31.5   | 18 × 25   | 18 × 35.5   |           |             |
| 2200     | 222                  | 10 × 31.5   | 16 × 15   | 12.5 × 25   | 18 × 15   | 12.5 × 31.5 | 16 × 20   | 12.5 × 40   | 18 × 20   |        | 16 × 35.5   | 18 × 31.5 | 18 × 40     |           |             |
| 2700     | 272                  | 12.5 × 25   | 18 × 15   | 12.5 × 31.5 | 16 × 20   | 12.5 × 35.5 | 16 × 25   | 16 × 31.5   | 18 × 25   |        | 16 × 40     | 18 × 35.5 |             |           |             |
| 3300     | 332                  | 12.5 × 25   | 18 × 15   | 12.5 × 35.5 | 16 × 20   | 12.5 × 40   | 18 × 20   | 16 × 35.5   | 18 × 31.5 |        | 18 × 40     |           |             |           |             |
| 3900     | 392                  | 12.5 × 31.5 | 16 × 20   | 12.5 × 40   | 18 × 20   | 16 × 31.5   | 18 × 25   | 16 × 40     | 18 × 35.5 |        |             |           |             |           |             |
| 4700     | 472                  | 12.5 × 35.5 | 18 × 20   | 16 × 31.5   | 18 × 25   | 16 × 35.5   | 18 × 31.5 | 18 × 40     |           |        |             |           |             |           |             |
| 5600     | 562                  | 12.5 × 40   | 18 × 20   | 16 × 35.5   | 18 × 25   | 16 × 40     | 18 × 35.5 |             |           |        |             |           |             |           |             |
| 6800     | 682                  | 16 × 31.5   | 18 × 25   | 16 × 35.5   | 18 × 31.5 | 18 × 35.5   |           |             |           |        |             |           |             |           |             |
| 8200     | 822                  | 16 × 35.5   | 18 × 31.5 | 16 × 40     | 18 × 35.5 | 18 × 40     |           |             |           |        |             |           |             |           |             |
| 10000    | 103                  | 16 × 40     | 18 × 31.5 | 18 × 40     |           |             |           |             |           |        |             |           |             |           |             |
| 12000    | 123                  | 18 × 35.5   |           |             |           |             |           |             |           |        |             |           |             |           |             |
| 15000    | 153                  | 18 × 40     |           |             |           |             |           |             |           |        |             |           |             |           |             |

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

## Standard ratings

| Cap.(μF)    |              | V(Code)<br>Size code<br>Item<br>Code |             | 6.3(0J)                     |                 |              |                         |             |                             |                 |      |                      |  |
|-------------|--------------|--------------------------------------|-------------|-----------------------------|-----------------|--------------|-------------------------|-------------|-----------------------------|-----------------|------|----------------------|--|
|             |              |                                      |             | —                           |                 |              |                         | 6           |                             |                 |      |                      |  |
|             |              |                                      |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |              | Rated ripple(mA rms)    |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |      | Rated ripple(mA rms) |  |
| 20°C/100kHz | —10°C/100kHz | 105°C/10kHz ~<br>200kHz              | 105°C/120Hz |                             | 20°C/100kHz     | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |                             |                 |      |                      |  |
| 100         | 101          | 5 × 11                               | 0.85        | 1.70                        | 150             | 99           |                         |             |                             |                 |      |                      |  |
| 120         | 121          | 5 × 11                               | 0.65        | 1.30                        | 175             | 115          |                         |             |                             |                 |      |                      |  |
| 150         | 151          | 6.3 × 11                             | 0.49        | 0.98                        | 225             | 155          |                         |             |                             |                 |      |                      |  |
| 180         | 181          | 6.3 × 11                             | 0.39        | 0.78                        | 250             | 175          |                         |             |                             |                 |      |                      |  |
| 220         | 221          | 6.3 × 11                             | 0.30        | 0.60                        | 285             | 205          |                         |             |                             |                 |      |                      |  |
| 270         | 271          | 6.3 × 15                             | 0.24        | 0.48                        | 370             | 275          |                         |             |                             |                 |      |                      |  |
| 330         | 331          | 6.3 × 15                             | 0.20        | 0.40                        | 405             | 310          |                         |             |                             |                 |      |                      |  |
| 390         | 391          | 8 × 11.5                             | 0.17        | 0.34                        | 445             | 345          |                         |             |                             |                 |      |                      |  |
| 470         | 471          | 8 × 15                               | 0.14        | 0.28                        | 550             | 435          | 10 × 12.5               | 0.14        | 0.28                        | 575             | 455  |                      |  |
| 560         | 561          | 8 × 15                               | 0.12        | 0.24                        | 595             | 480          | 10 × 12.5               | 0.13        | 0.26                        | 600             | 485  |                      |  |
| 680         | 681          | 8 × 20                               | 0.10        | 0.20                        | 730             | 605          | 10 × 15                 | 0.11        | 0.22                        | 700             | 580  |                      |  |
| 820         | 821          | 8 × 20                               | 0.085       | 0.17                        | 795             | 670          | 10 × 15                 | 0.095       | 0.19                        | 750             | 635  |                      |  |
| 1000        | 102          | 10 × 20                              | 0.075       | 0.15                        | 950             | 820          | 12.5 × 15               | 0.085       | 0.17                        | 890             | 765  |                      |  |
| 1200        | 122          | 10 × 20                              | 0.065       | 0.13                        | 1020            | 895          | 12.5 × 15               | 0.075       | 0.15                        | 950             | 835  |                      |  |
| 1500        | 152          | 10 × 25                              | 0.055       | 0.11                        | 1220            | 1090         | 12.5 × 15               | 0.065       | 0.13                        | 1020            | 915  |                      |  |
| 1800        | 182          | 10 × 31.5                            | 0.050       | 0.10                        | 1370            | 1230         | 16 × 15                 | 0.055       | 0.11                        | 1270            | 1140 |                      |  |
| 2200        | 222          | 10 × 31.5                            | 0.043       | 0.086                       | 1470            | 1320         | 16 × 15                 | 0.049       | 0.098                       | 1340            | 1200 |                      |  |
| 2700        | 272          | 12.5 × 25                            | 0.038       | 0.076                       | 1590            | 1430         | 18 × 15                 | 0.044       | 0.088                       | 1500            | 1350 |                      |  |
| 3300        | 332          | 12.5 × 25                            | 0.034       | 0.068                       | 1710            | 1530         | 18 × 15                 | 0.039       | 0.078                       | 1600            | 1440 |                      |  |
| 3900        | 392          | 12.5 × 31.5                          | 0.031       | 0.062                       | 1910            | 1710         | 16 × 20                 | 0.036       | 0.072                       | 1720            | 1540 |                      |  |
| 4700        | 472          | 12.5 × 35.5                          | 0.028       | 0.056                       | 2100            | 1890         | 18 × 20                 | 0.032       | 0.064                       | 1920            | 1720 |                      |  |
| 5600        | 562          | 12.5 × 40                            | 0.026       | 0.052                       | 2270            | 2040         | 18 × 20                 | 0.030       | 0.060                       | 1980            | 1780 |                      |  |
| 6800        | 682          | 16 × 31.5                            | 0.024       | 0.048                       | 2370            | 2130         | 18 × 25                 | 0.027       | 0.054                       | 2210            | 1980 |                      |  |
| 8200        | 822          | 16 × 35.5                            | 0.022       | 0.044                       | 2550            | 2290         | 18 × 31.5               | 0.025       | 0.050                       | 2390            | 2150 |                      |  |
| 10000       | 103          | 16 × 40                              | 0.020       | 0.040                       | 2750            | 2470         | 18 × 31.5               | 0.023       | 0.046                       | 2490            | 2240 |                      |  |
| 12000       | 123          | 18 × 35.5                            | 0.019       | 0.038                       | 2820            | 2530         |                         |             |                             |                 |      |                      |  |
| 15000       | 153          | 18 × 40                              | 0.018       | 0.036                       | 2960            | 2660         |                         |             |                             |                 |      |                      |  |

| Cap.(μF)    |              | V(Code)<br>Size code<br>Item<br>Code |             | 10(1A)                      |                 |              |                         |             |                             |                 |      |                      |  |
|-------------|--------------|--------------------------------------|-------------|-----------------------------|-----------------|--------------|-------------------------|-------------|-----------------------------|-----------------|------|----------------------|--|
|             |              |                                      |             | —                           |                 |              |                         | 6           |                             |                 |      |                      |  |
|             |              |                                      |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |              | Rated ripple(mA rms)    |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |      | Rated ripple(mA rms) |  |
| 20°C/100kHz | —10°C/100kHz | 105°C/10kHz ~<br>200kHz              | 105°C/120Hz |                             | 20°C/100kHz     | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |                             |                 |      |                      |  |
| 68          | 680          | 5 × 11                               | 0.80        | 1.60                        | 155             | 97           |                         |             |                             |                 |      |                      |  |
| 82          | 820          | 5 × 11                               | 0.65        | 1.30                        | 175             | 110          |                         |             |                             |                 |      |                      |  |
| 100         | 101          | 6.3 × 11                             | 0.55        | 1.10                        | 210             | 135          |                         |             |                             |                 |      |                      |  |
| 120         | 121          | 6.3 × 11                             | 0.44        | 0.88                        | 235             | 160          |                         |             |                             |                 |      |                      |  |
| 150         | 151          | 6.3 × 11                             | 0.35        | 0.70                        | 265             | 185          |                         |             |                             |                 |      |                      |  |
| 180         | 181          | 6.3 × 11                             | 0.29        | 0.58                        | 290             | 205          |                         |             |                             |                 |      |                      |  |
| 220         | 221          | 6.3 × 15                             | 0.24        | 0.48                        | 370             | 270          |                         |             |                             |                 |      |                      |  |
| 270         | 271          | 6.3 × 15                             | 0.20        | 0.40                        | 405             | 300          |                         |             |                             |                 |      |                      |  |
| 330         | 331          | 8 × 11.5                             | 0.16        | 0.32                        | 460             | 350          |                         |             |                             |                 |      |                      |  |
| 390         | 391          | 8 × 15                               | 0.14        | 0.28                        | 550             | 430          | 10 × 12.5               | 0.15        | 0.30                        | 555             | 430  |                      |  |
| 470         | 471          | 8 × 15                               | 0.12        | 0.24                        | 595             | 475          | 10 × 12.5               | 0.13        | 0.26                        | 600             | 475  |                      |  |
| 560         | 561          | 8 × 20                               | 0.10        | 0.20                        | 730             | 590          | 10 × 15                 | 0.11        | 0.22                        | 700             | 565  |                      |  |
| 680         | 681          | 8 × 20                               | 0.085       | 0.17                        | 795             | 660          | 10 × 15                 | 0.090       | 0.18                        | 770             | 635  |                      |  |
| 820         | 821          | 10 × 20                              | 0.070       | 0.14                        | 985             | 835          | 12.5 × 15               | 0.080       | 0.16                        | 920             | 780  |                      |  |
| 1000        | 102          | 10 × 20                              | 0.060       | 0.12                        | 1060            | 915          | 12.5 × 15               | 0.065       | 0.13                        | 1040            | 895  |                      |  |
| 1200        | 122          | 10 × 25                              | 0.050       | 0.10                        | 1280            | 1120         | 12.5 × 15               | 0.060       | 0.12                        | 1060            | 930  |                      |  |
| 1500        | 152          | 10 × 31.5                            | 0.045       | 0.090                       | 1440            | 1290         | 16 × 15                 | 0.050       | 0.10                        | 1330            | 1190 |                      |  |
| 1800        | 182          | 12.5 × 20                            | 0.039       | 0.078                       | 1470            | 1320         | 16 × 15                 | 0.044       | 0.088                       | 1420            | 1270 |                      |  |
| 2200        | 222          | 12.5 × 25                            | 0.034       | 0.068                       | 1710            | 1530         | 18 × 15                 | 0.039       | 0.078                       | 1600            | 1440 |                      |  |
| 2700        | 272          | 12.5 × 31.5                          | 0.030       | 0.060                       | 1940            | 1740         | 16 × 20                 | 0.035       | 0.070                       | 1740            | 1560 |                      |  |
| 3300        | 332          | 12.5 × 35.5                          | 0.026       | 0.052                       | 2180            | 1960         | 16 × 20                 | 0.031       | 0.062                       | 1850            | 1660 |                      |  |
| 3900        | 392          | 12.5 × 40                            | 0.024       | 0.048                       | 2360            | 2120         | 18 × 20                 | 0.028       | 0.056                       | 2050            | 1840 |                      |  |
| 4700        | 472          | 16 × 31.5                            | 0.023       | 0.046                       | 2420            | 2170         | 18 × 25                 | 0.026       | 0.052                       | 2250            | 2020 |                      |  |
| 5600        | 562          | 16 × 35.5                            | 0.021       | 0.042                       | 2610            | 2340         | 18 × 25                 | 0.024       | 0.048                       | 2340            | 2100 |                      |  |
| 6800        | 682          | 16 × 35.5                            | 0.020       | 0.040                       | 2680            | 2410         | 18 × 31.5               | 0.022       | 0.044                       | 2540            | 2280 |                      |  |
| 8200        | 822          | 16 × 40                              | 0.019       | 0.038                       | 2820            | 2530         | 18 × 35.5               | 0.021       | 0.042                       | 2690            | 2420 |                      |  |
| 10000       | 103          | 18 × 40                              | 0.017       | 0.034                       | 3040            | 2730         |                         |             |                             |                 |      |                      |  |

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

### Standard ratings

| Cap. (μF)   |              | V(Code)<br>Size Code<br>Item<br>Code |             | 16(1C)                      |                 |              |                          |             |                             |                 |      |                      |  |
|-------------|--------------|--------------------------------------|-------------|-----------------------------|-----------------|--------------|--------------------------|-------------|-----------------------------|-----------------|------|----------------------|--|
|             |              |                                      |             | —                           |                 |              |                          | 6           |                             |                 |      |                      |  |
|             |              |                                      |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |              | Rated ripple(mA rms)     |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |      | Rated ripple(mA rms) |  |
| 20°C/100kHz | —10°C/100kHz | 105°C/100kHz ~<br>200kHz             | 105°C/120Hz |                             | 20°C/100kHz     | —10°C/100kHz | 105°C/100kHz ~<br>200kHz | 105°C/120Hz |                             |                 |      |                      |  |
| 47          | 470          | 5 × 11                               | 0.80        | 1.60                        | 155             | 92           |                          |             |                             |                 |      |                      |  |
| 56          | 560          | 5 × 11                               | 0.65        | 1.30                        | 175             | 105          |                          |             |                             |                 |      |                      |  |
| 68          | 680          | 6.3 × 11                             | 0.50        | 1.00                        | 220             | 135          |                          |             |                             |                 |      |                      |  |
| 82          | 820          | 6.3 × 11                             | 0.42        | 0.84                        | 240             | 155          |                          |             |                             |                 |      |                      |  |
| 100         | 101          | 6.3 × 11                             | 0.35        | 0.70                        | 265             | 175          |                          |             |                             |                 |      |                      |  |
| 120         | 121          | 6.3 × 11                             | 0.29        | 0.58                        | 290             | 195          |                          |             |                             |                 |      |                      |  |
| 150         | 151          | 6.3 × 15                             | 0.23        | 0.46                        | 375             | 260          |                          |             |                             |                 |      |                      |  |
| 180         | 181          | 6.3 × 15                             | 0.20        | 0.40                        | 405             | 285          |                          |             |                             |                 |      |                      |  |
| 220         | 221          | 8 × 11.5                             | 0.16        | 0.32                        | 460             | 335          |                          |             |                             |                 |      |                      |  |
| 270         | 271          | 8 × 15                               | 0.14        | 0.28                        | 550             | 410          | 10 × 12.5                | 0.14        | 0.28                        | 575             | 430  |                      |  |
| 330         | 331          | 8 × 15                               | 0.12        | 0.24                        | 595             | 455          | 10 × 12.5                | 0.12        | 0.24                        | 625             | 480  |                      |  |
| 390         | 391          | 8 × 20                               | 0.10        | 0.20                        | 730             | 570          | 10 × 15                  | 0.10        | 0.20                        | 730             | 570  |                      |  |
| 470         | 471          | 8 × 20                               | 0.090       | 0.18                        | 770             | 615          | 10 × 15                  | 0.090       | 0.18                        | 770             | 615  |                      |  |
| 560         | 561          | 10 × 20                              | 0.075       | 0.15                        | 950             | 770          | 12.5 × 15                | 0.080       | 0.16                        | 920             | 745  |                      |  |
| 680         | 681          | 10 × 20                              | 0.065       | 0.13                        | 1020            | 845          | 12.5 × 15                | 0.070       | 0.14                        | 985             | 815  |                      |  |
| 820         | 821          | 10 × 25                              | 0.055       | 0.11                        | 1220            | 1030         | 12.5 × 15                | 0.060       | 0.12                        | 1060            | 895  |                      |  |
| 1000        | 102          | 10 × 31.5                            | 0.047       | 0.094                       | 1410            | 1210         | 16 × 15                  | 0.055       | 0.11                        | 1270            | 1090 |                      |  |
| 1200        | 122          | 12.5 × 20                            | 0.041       | 0.082                       | 1430            | 1250         | 16 × 15                  | 0.046       | 0.092                       | 1390            | 1220 |                      |  |
| 1500        | 152          | 12.5 × 25                            | 0.036       | 0.072                       | 1660            | 1490         | 18 × 15                  | 0.041       | 0.082                       | 1560            | 1400 |                      |  |
| 1800        | 182          | 12.5 × 31.5                          | 0.032       | 0.064                       | 1880            | 1690         | 16 × 20                  | 0.037       | 0.074                       | 1700            | 1530 |                      |  |
| 2200        | 222          | 12.5 × 31.5                          | 0.028       | 0.056                       | 2010            | 1800         | 16 × 20                  | 0.033       | 0.066                       | 1800            | 1620 |                      |  |
| 2700        | 272          | 12.5 × 35.5                          | 0.025       | 0.050                       | 2220            | 1990         | 16 × 25                  | 0.030       | 0.060                       | 2010            | 1800 |                      |  |
| 3300        | 332          | 12.5 × 40                            | 0.023       | 0.046                       | 2410            | 2160         | 18 × 20                  | 0.027       | 0.054                       | 2090            | 1880 |                      |  |
| 3900        | 392          | 16 × 31.5                            | 0.022       | 0.044                       | 2470            | 2220         | 18 × 25                  | 0.025       | 0.050                       | 2290            | 2060 |                      |  |
| 4700        | 472          | 16 × 35.5                            | 0.020       | 0.040                       | 2680            | 2410         | 18 × 31.5                | 0.023       | 0.046                       | 2490            | 2240 |                      |  |
| 5600        | 562          | 16 × 40                              | 0.019       | 0.038                       | 2820            | 2530         | 18 × 35.5                | 0.022       | 0.044                       | 2620            | 2350 |                      |  |
| 6800        | 682          | 18 × 35.5                            | 0.018       | 0.036                       | 2900            | 2610         |                          |             |                             |                 |      |                      |  |
| 8200        | 822          | 18 × 40                              | 0.017       | 0.034                       | 3040            | 2730         |                          |             |                             |                 |      |                      |  |

| Cap. (μF)   |              | V(Code)<br>Size Code<br>Item<br>Code |             | 25(1E)                      |                 |              |                          |             |                             |                 |      |                      |  |
|-------------|--------------|--------------------------------------|-------------|-----------------------------|-----------------|--------------|--------------------------|-------------|-----------------------------|-----------------|------|----------------------|--|
|             |              |                                      |             | —                           |                 |              |                          | 6           |                             |                 |      |                      |  |
|             |              |                                      |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |              | Rated ripple(mA rms)     |             | Case size<br>φD × L<br>(mm) | Impedance(ΩMAX) |      | Rated ripple(mA rms) |  |
| 20°C/100kHz | —10°C/100kHz | 105°C/100kHz ~<br>200kHz             | 105°C/120Hz |                             | 20°C/100kHz     | —10°C/100kHz | 105°C/100kHz ~<br>200kHz | 105°C/120Hz |                             |                 |      |                      |  |
| 33          | 330          | 5 × 11                               | 0.80        | 1.60                        | 155             | 88           |                          |             |                             |                 |      |                      |  |
| 39          | 390          | 5 × 11                               | 0.65        | 1.30                        | 175             | 100          |                          |             |                             |                 |      |                      |  |
| 47          | 470          | 6.3 × 11                             | 0.55        | 1.10                        | 210             | 125          |                          |             |                             |                 |      |                      |  |
| 56          | 560          | 6.3 × 11                             | 0.44        | 0.88                        | 235             | 140          |                          |             |                             |                 |      |                      |  |
| 68          | 680          | 6.3 × 11                             | 0.36        | 0.72                        | 260             | 160          |                          |             |                             |                 |      |                      |  |
| 82          | 820          | 6.3 × 11                             | 0.30        | 0.60                        | 285             | 180          |                          |             |                             |                 |      |                      |  |
| 100         | 101          | 6.3 × 15                             | 0.24        | 0.48                        | 370             | 245          |                          |             |                             |                 |      |                      |  |
| 120         | 121          | 6.3 × 15                             | 0.20        | 0.40                        | 405             | 275          |                          |             |                             |                 |      |                      |  |
| 150         | 151          | 8 × 11.5                             | 0.16        | 0.32                        | 460             | 320          |                          |             |                             |                 |      |                      |  |
| 180         | 181          | 8 × 15                               | 0.14        | 0.28                        | 550             | 390          | 10 × 12.5                | 0.15        | 0.30                        | 555             | 395  |                      |  |
| 220         | 221          | 8 × 15                               | 0.11        | 0.22                        | 625             | 455          | 10 × 12.5                | 0.13        | 0.26                        | 600             | 435  |                      |  |
| 270         | 271          | 8 × 20                               | 0.095       | 0.19                        | 750             | 560          | 10 × 15                  | 0.11        | 0.22                        | 700             | 525  |                      |  |
| 330         | 331          | 8 × 20                               | 0.085       | 0.17                        | 795             | 610          | 10 × 15                  | 0.095       | 0.19                        | 750             | 575  |                      |  |
| 390         | 391          | 10 × 20                              | 0.070       | 0.14                        | 985             | 770          | 12.5 × 15                | 0.080       | 0.16                        | 920             | 720  |                      |  |
| 470         | 471          | 10 × 20                              | 0.065       | 0.13                        | 1020            | 810          | 12.5 × 15                | 0.070       | 0.14                        | 985             | 785  |                      |  |
| 560         | 561          | 10 × 25                              | 0.055       | 0.11                        | 1220            | 990          | 12.5 × 15                | 0.060       | 0.12                        | 1060            | 860  |                      |  |
| 680         | 681          | 10 × 31.5                            | 0.046       | 0.092                       | 1420            | 1180         | 16 × 15                  | 0.055       | 0.11                        | 1270            | 1050 |                      |  |
| 820         | 821          | 12.5 × 20                            | 0.041       | 0.082                       | 1430            | 1210         | 16 × 15                  | 0.049       | 0.098                       | 1340            | 1130 |                      |  |
| 1000        | 102          | 12.5 × 25                            | 0.036       | 0.072                       | 1660            | 1430         | 18 × 15                  | 0.043       | 0.086                       | 1520            | 1310 |                      |  |
| 1200        | 122          | 12.5 × 25                            | 0.032       | 0.064                       | 1760            | 1550         | 18 × 15                  | 0.039       | 0.078                       | 1600            | 1400 |                      |  |
| 1500        | 152          | 12.5 × 31.5                          | 0.029       | 0.058                       | 1980            | 1780         | 16 × 20                  | 0.034       | 0.068                       | 1770            | 1590 |                      |  |
| 1800        | 182          | 12.5 × 35.5                          | 0.026       | 0.052                       | 2180            | 1960         | 16 × 25                  | 0.031       | 0.062                       | 1980            | 1780 |                      |  |
| 2200        | 222          | 12.5 × 40                            | 0.024       | 0.048                       | 2360            | 2120         | 18 × 20                  | 0.028       | 0.056                       | 2050            | 1840 |                      |  |
| 2700        | 272          | 16 × 31.5                            | 0.022       | 0.044                       | 2470            | 2220         | 18 × 25                  | 0.025       | 0.050                       | 2290            | 2060 |                      |  |
| 3300        | 332          | 16 × 35.5                            | 0.020       | 0.040                       | 2680            | 2410         | 18 × 31.5                | 0.023       | 0.046                       | 2490            | 2240 |                      |  |
| 3900        | 392          | 16 × 40                              | 0.019       | 0.038                       | 2820            | 2530         | 18 × 35.5                | 0.021       | 0.042                       | 2690            | 2420 |                      |  |
| 4700        | 472          | 18 × 40                              | 0.018       | 0.036                       | 2960            | 2660         |                          |             |                             |                 |      |                      |  |

\* In case of low profile type, [E] will be put at 12th digit of type numbering system.



## Standard ratings

| Cap. (μF)   |              | V(Code)<br>Size code    |             | 35(1V)       |                             |                   |              |                         |             |                             |                   |  |                      |
|-------------|--------------|-------------------------|-------------|--------------|-----------------------------|-------------------|--------------|-------------------------|-------------|-----------------------------|-------------------|--|----------------------|
|             |              |                         |             | —            |                             | 6                 |              |                         |             |                             |                   |  |                      |
|             |              |                         |             | Item<br>Code | Case size<br>φD × L<br>(mm) | Impedance(Ω MAX.) |              | Rated ripple(mA rms)    |             | Case size<br>φD × L<br>(mm) | Impedance(Ω MAX.) |  | Rated ripple(mA rms) |
| 20°C/100kHz | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |              |                             | 20°C/100kHz       | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |                             |                   |  |                      |
| 22          | 220          | 5 × 11                  | 0.75        | 1.50         | 160                         | 85                |              |                         |             |                             |                   |  |                      |
| 27          | 270          | 5 × 11                  | 0.60        | 1.20         | 180                         | 99                |              |                         |             |                             |                   |  |                      |
| 33          | 330          | 6.3 × 11                | 0.49        | 0.98         | 225                         | 125               |              |                         |             |                             |                   |  |                      |
| 39          | 390          | 6.3 × 11                | 0.41        | 0.82         | 245                         | 140               |              |                         |             |                             |                   |  |                      |
| 47          | 470          | 6.3 × 11                | 0.34        | 0.68         | 270                         | 160               |              |                         |             |                             |                   |  |                      |
| 56          | 560          | 6.3 × 11                | 0.28        | 0.56         | 295                         | 180               |              |                         |             |                             |                   |  |                      |
| 68          | 680          | 6.3 × 15                | 0.24        | 0.48         | 370                         | 230               |              |                         |             |                             |                   |  |                      |
| 82          | 820          | 6.3 × 15                | 0.19        | 0.38         | 415                         | 265               |              |                         |             |                             |                   |  |                      |
| 100         | 101          | 8 × 11.5                | 0.16        | 0.32         | 460                         | 305               |              |                         |             |                             |                   |  |                      |
| 120         | 121          | 8 × 15                  | 0.14        | 0.28         | 550                         | 370               | 10 × 12.5    | 0.15                    | 0.30        | 555                         | 375               |  |                      |
| 150         | 151          | 8 × 15                  | 0.12        | 0.24         | 595                         | 415               | 10 × 12.5    | 0.12                    | 0.24        | 625                         | 435               |  |                      |
| 180         | 181          | 8 × 20                  | 0.10        | 0.20         | 730                         | 520               | 10 × 15      | 0.11                    | 0.22        | 700                         | 500               |  |                      |
| 220         | 221          | 8 × 20                  | 0.085       | 0.17         | 795                         | 580               | 10 × 15      | 0.090                   | 0.18        | 770                         | 560               |  |                      |
| 270         | 271          | 10 × 20                 | 0.070       | 0.14         | 985                         | 735               | 12.5 × 15    | 0.080                   | 0.16        | 920                         | 690               |  |                      |
| 330         | 331          | 10 × 20                 | 0.060       | 0.12         | 1060                        | 810               | 12.5 × 15    | 0.065                   | 0.13        | 1020                        | 780               |  |                      |
| 390         | 391          | 10 × 25                 | 0.055       | 0.11         | 1220                        | 955               | 12.5 × 15    | 0.060                   | 0.12        | 1060                        | 825               |  |                      |
| 470         | 471          | 10 × 31.5               | 0.046       | 0.092        | 1420                        | 1130              | 16 × 15      | 0.055                   | 0.11        | 1270                        | 1010              |  |                      |
| 560         | 561          | 12.5 × 20               | 0.041       | 0.082        | 1430                        | 1160              | 16 × 15      | 0.048                   | 0.096       | 1360                        | 1100              |  |                      |
| 680         | 681          | 12.5 × 25               | 0.036       | 0.072        | 1660                        | 1370              | 18 × 15      | 0.042                   | 0.084       | 1540                        | 1270              |  |                      |
| 820         | 821          | 12.5 × 25               | 0.032       | 0.064        | 1760                        | 1490              | 18 × 15      | 0.038                   | 0.076       | 1620                        | 1370              |  |                      |
| 1000        | 102          | 12.5 × 31.5             | 0.029       | 0.058        | 1980                        | 1710              | 16 × 20      | 0.034                   | 0.068       | 1770                        | 1530              |  |                      |
| 1200        | 122          | 12.5 × 35.5             | 0.026       | 0.052        | 2180                        | 1920              | 16 × 25      | 0.031                   | 0.062       | 1980                        | 1740              |  |                      |
| 1500        | 152          | 12.5 × 40               | 0.024       | 0.048        | 2360                        | 2120              | 18 × 20      | 0.028                   | 0.056       | 2050                        | 1840              |  |                      |
| 1800        | 182          | 16 × 31.5               | 0.022       | 0.044        | 2470                        | 2220              | 18 × 25      | 0.025                   | 0.050       | 2290                        | 2060              |  |                      |
| 2200        | 222          | 16 × 35.5               | 0.020       | 0.040        | 2680                        | 2410              | 18 × 31.5    | 0.023                   | 0.046       | 2490                        | 2240              |  |                      |
| 2700        | 272          | 16 × 40                 | 0.018       | 0.036        | 2900                        | 2610              | 18 × 35.5    | 0.021                   | 0.042       | 2690                        | 2420              |  |                      |
| 3300        | 332          | 18 × 40                 | 0.017       | 0.034        | 3040                        | 2730              |              |                         |             |                             |                   |  |                      |

| Cap. (μF)   |              | V(Code)<br>Size code    |             | 50(1H)       |                             |                   |              |                         |             |                             |                   |  |                      |
|-------------|--------------|-------------------------|-------------|--------------|-----------------------------|-------------------|--------------|-------------------------|-------------|-----------------------------|-------------------|--|----------------------|
|             |              |                         |             | —            |                             | 6                 |              |                         |             |                             |                   |  |                      |
|             |              |                         |             | Item<br>Code | Case size<br>φD × L<br>(mm) | Impedance(Ω MAX.) |              | Rated ripple(mA rms)    |             | Case size<br>φD × L<br>(mm) | Impedance(Ω MAX.) |  | Rated ripple(mA rms) |
| 20°C/100kHz | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |              |                             | 20°C/100kHz       | —10°C/100kHz | 105°C/10kHz ~<br>200kHz | 105°C/120Hz |                             |                   |  |                      |
| 0.47        | R47          | 5 × 11                  | 23.0        | 46.0         | 22                          | 11                |              |                         |             |                             |                   |  |                      |
| 0.68        | R68          | 5 × 11                  | 16.0        | 32.0         | 28                          | 14                |              |                         |             |                             |                   |  |                      |
| 1           | 010          | 5 × 11                  | 11.0        | 22.0         | 36                          | 18                |              |                         |             |                             |                   |  |                      |
| 1.5         | 1R5          | 5 × 11                  | 7.50        | 15.0         | 45                          | 22                |              |                         |             |                             |                   |  |                      |
| 2.2         | 2R2          | 5 × 11                  | 5.00        | 10.0         | 54                          | 27                |              |                         |             |                             |                   |  |                      |
| 3.3         | 3R3          | 5 × 11                  | 3.30        | 6.60         | 66                          | 33                |              |                         |             |                             |                   |  |                      |
| 4.7         | 4R7          | 5 × 11                  | 2.20        | 4.40         | 81                          | 40                |              |                         |             |                             |                   |  |                      |
| 6.8         | 6R8          | 5 × 11                  | 1.80        | 3.60         | 91                          | 45                |              |                         |             |                             |                   |  |                      |
| 10          | 100          | 5 × 11                  | 1.40        | 2.80         | 115                         | 57                |              |                         |             |                             |                   |  |                      |
| 12          | 120          | 5 × 11                  | 1.20        | 2.40         | 125                         | 62                |              |                         |             |                             |                   |  |                      |
| 15          | 150          | 5 × 11                  | 0.93        | 1.86         | 145                         | 72                |              |                         |             |                             |                   |  |                      |
| 18          | 180          | 5 × 11                  | 0.80        | 1.60         | 155                         | 79                |              |                         |             |                             |                   |  |                      |
| 22          | 220          | 6.3 × 11                | 0.65        | 1.30         | 195                         | 100               |              |                         |             |                             |                   |  |                      |
| 27          | 270          | 6.3 × 11                | 0.53        | 1.06         | 215                         | 115               |              |                         |             |                             |                   |  |                      |
| 33          | 330          | 6.3 × 11                | 0.43        | 0.86         | 240                         | 135               |              |                         |             |                             |                   |  |                      |
| 39          | 390          | 6.3 × 11                | 0.36        | 0.72         | 260                         | 150               |              |                         |             |                             |                   |  |                      |
| 47          | 470          | 6.3 × 15                | 0.30        | 0.60         | 330                         | 195               |              |                         |             |                             |                   |  |                      |
| 56          | 560          | 6.3 × 15                | 0.25        | 0.50         | 360                         | 220               |              |                         |             |                             |                   |  |                      |
| 68          | 680          | 8 × 11.5                | 0.20        | 0.40         | 410                         | 255               |              |                         |             |                             |                   |  |                      |
| 82          | 820          | 8 × 15                  | 0.17        | 0.34         | 500                         | 320               | 10 × 12.5    | 0.18                    | 0.36        | 510                         | 330               |  |                      |
| 100         | 101          | 8 × 20                  | 0.14        | 0.28         | 620                         | 410               | 10 × 15      | 0.16                    | 0.32        | 580                         | 385               |  |                      |
| 120         | 121          | 8 × 20                  | 0.12        | 0.24         | 670                         | 455               | 10 × 15      | 0.13                    | 0.26        | 640                         | 435               |  |                      |
| 150         | 151          | 10 × 20                 | 0.10        | 0.20         | 820                         | 570               | 12.5 × 15    | 0.11                    | 0.22        | 785                         | 545               |  |                      |
| 180         | 181          | 10 × 20                 | 0.085       | 0.17         | 890                         | 635               | 12.5 × 15    | 0.095                   | 0.19        | 845                         | 605               |  |                      |
| 220         | 221          | 10 × 25                 | 0.075       | 0.15         | 1040                        | 760               | 12.5 × 15    | 0.080                   | 0.16        | 920                         | 670               |  |                      |
| 270         | 271          | 10 × 31.5               | 0.065       | 0.13         | 1200                        | 900               | 16 × 15      | 0.070                   | 0.14        | 1120                        | 840               |  |                      |
| 330         | 331          | 10 × 31.5               | 0.055       | 0.11         | 1300                        | 995               | 16 × 15      | 0.060                   | 0.12        | 1210                        | 925               |  |                      |
| 390         | 391          | 12.5 × 25               | 0.048       | 0.096        | 1440                        | 1120              | 16 × 15      | 0.055                   | 0.11        | 1270                        | 990               |  |                      |
| 470         | 471          | 12.5 × 25               | 0.044       | 0.088        | 1500                        | 1190              | 18 × 15      | 0.046                   | 0.092       | 1470                        | 1170              |  |                      |
| 560         | 561          | 12.5 × 31.5             | 0.040       | 0.080        | 1680                        | 1360              | 16 × 20      | 0.044                   | 0.088       | 1550                        | 1260              |  |                      |
| 680         | 681          | 12.5 × 35.5             | 0.036       | 0.072        | 1850                        | 1530              | 16 × 20      | 0.040                   | 0.080       | 1630                        | 1350              |  |                      |
| 820         | 821          | 12.5 × 40               | 0.033       | 0.066        | 2010                        | 1700              | 18 × 20      | 0.036                   | 0.072       | 1810                        | 1530              |  |                      |
| 1000        | 102          | 16 × 31.5               | 0.030       | 0.060        | 2120                        | 1830              | 18 × 25      | 0.033                   | 0.066       | 2000                        | 1730              |  |                      |
| 1200        | 122          | 16 × 35.5               | 0.028       | 0.056        | 2260                        | 1990              | 18 × 31.5    | 0.031                   | 0.062       | 2140                        | 1880              |  |                      |
| 1500        | 152          | 16 × 40                 | 0.026       | 0.052        | 2410                        | 2170              | 18 × 31.5    | 0.029                   | 0.058       | 2220                        | 1990              |  |                      |
| 1800        | 182          | 18 × 35.5               | 0.025       | 0.050        | 2460                        | 2210              |              |                         |             |                             |                   |  |                      |
| 2200        | 222          | 18 × 40                 | 0.024       | 0.048        | 2560                        | 2300              |              |                         |             |                             |                   |  |                      |

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

## Standard ratings

| Cap.( $\mu$ F) | Code | Item      | 63(1J)                                   |                           |              |                             |             |  |                           |              |                             |             |
|----------------|------|-----------|--|---------------------------|--------------|-----------------------------|-------------|--|---------------------------|--------------|-----------------------------|-------------|
|                |      |           | —  |                           |              |                             | 6           |  |                           |              |                             |             |
|                |      |           | Case size<br>$\phi$ D $\times$ L<br>(mm) | Impedance( $\Omega$ MAX.) |              | Rated ripple(mA rms)        |             | Case size<br>$\phi$ D $\times$ L<br>(mm) | Impedance( $\Omega$ MAX.) |              | Rated ripple(mA rms)        |             |
|                |      |           |  | 20°C/100kHz               | -10°C/100kHz | 105°C/<br>10kHz ~<br>200kHz | 105°C/120Hz |  | 20°C/100kHz               | -10°C/100kHz | 105°C/<br>10kHz ~<br>200kHz | 105°C/120Hz |
| 10             | 100  | 5×11      | 1.06                                     | 2.12                      | 135          | 67                          |             |  |                           |              |                             |             |
| 12             | 120  | 5×11      | 0.93                                     | 1.86                      | 145          | 72                          |             |  |                           |              |                             |             |
| 15             | 150  | 6.3×11    | 0.73                                     | 1.46                      | 185          | 92                          |             |  |                           |              |                             |             |
| 18             | 180  | 6.3×11    | 0.63                                     | 1.26                      | 195          | 100                         |             |  |                           |              |                             |             |
| 22             | 220  | 6.3×11    | 0.52                                     | 1.04                      | 215          | 110                         |             |  |                           |              |                             |             |
| 27             | 270  | 6.3×11    | 0.43                                     | 0.86                      | 240          | 130                         |             |  |                           |              |                             |             |
| 33             | 330  | 6.3×15    | 0.35                                     | 0.70                      | 305          | 170                         |             |  |                           |              |                             |             |
| 39             | 390  | 6.3×15    | 0.30                                     | 0.60                      | 330          | 190                         |             |  |                           |              |                             |             |
| 47             | 470  | 8×11.5    | 0.25                                     | 0.50                      | 365          | 215                         |             |  |                           |              |                             |             |
| 56             | 560  | 8×15      | 0.21                                     | 0.42                      | 450          | 275                         | 10×12.5     | 0.23                                     | 0.46                      | 450          | 275                         |             |
| 68             | 680  | 8×15      | 0.17                                     | 0.34                      | 500          | 315                         | 10×12.5     | 0.19                                     | 0.38                      | 495          | 310                         |             |
| 82             | 820  | 8×20      | 0.15                                     | 0.30                      | 600          | 385                         | 10×15       | 0.16                                     | 0.32                      | 580          | 375                         |             |
| 100            | 101  | 10×20     | 0.12                                     | 0.24                      | 750          | 495                         | 12.5×15     | 0.14                                     | 0.28                      | 695          | 460                         |             |
| 120            | 121  | 10×20     | 0.10                                     | 0.20                      | 820          | 555                         | 12.5×15     | 0.12                                     | 0.24                      | 750          | 510                         |             |
| 150            | 151  | 10×25     | 0.090                                    | 0.18                      | 950          | 665                         | 12.5×15     | 0.095                                    | 0.19                      | 845          | 590                         |             |
| 180            | 181  | 10×31.5   | 0.075                                    | 0.15                      | 1110         | 790                         | 16×15       | 0.080                                    | 0.16                      | 1050         | 750                         |             |
| 220            | 221  | 12.5×20   | 0.065                                    | 0.13                      | 1140         | 835                         | 16×15       | 0.070                                    | 0.14                      | 1120         | 820                         |             |
| 270            | 271  | 12.5×25   | 0.055                                    | 0.11                      | 1340         | 1000                        | 18×15       | 0.060                                    | 0.12                      | 1290         | 965                         |             |
| 330            | 331  | 12.5×25   | 0.049                                    | 0.098                     | 1420         | 1090                        | 18×15       | 0.050                                    | 0.10                      | 1410         | 1080                        |             |
| 390            | 391  | 12.5×31.5 | 0.043                                    | 0.086                     | 1620         | 1260                        | 16×20       | 0.047                                    | 0.094                     | 1500         | 1170                        |             |
| 470            | 471  | 12.5×35.5 | 0.039                                    | 0.078                     | 1780         | 1420                        | 16×25       | 0.042                                    | 0.084                     | 1700         | 1350                        |             |
| 560            | 561  | 12.5×40   | 0.035                                    | 0.070                     | 1950         | 1580                        | 18×20       | 0.039                                    | 0.078                     | 1730         | 1400                        |             |
| 680            | 681  | 16×31.5   | 0.032                                    | 0.064                     | 2050         | 1700                        | 18×25       | 0.035                                    | 0.070                     | 1940         | 1610                        |             |
| 820            | 821  | 16×35.5   | 0.029                                    | 0.058                     | 2220         | 1880                        | 18×31.5     | 0.032                                    | 0.064                     | 2110         | 1780                        |             |
| 1000           | 102  | 16×40     | 0.027                                    | 0.054                     | 2370         | 2050                        | 18×35.5     | 0.029                                    | 0.058                     | 2280         | 1970                        |             |
| 1200           | 122  | 18×40     | 0.025                                    | 0.050                     | 2510         | 2210                        |             |  |                           |              |                             |             |

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.