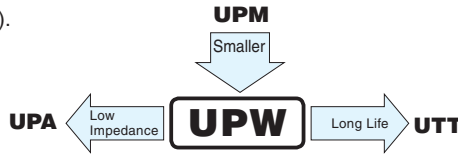
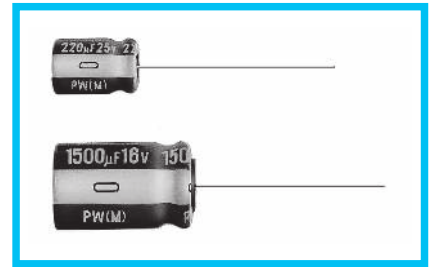


## UPW

Miniature Sized, Low Impedance, High Reliability For Switching Power Supplies



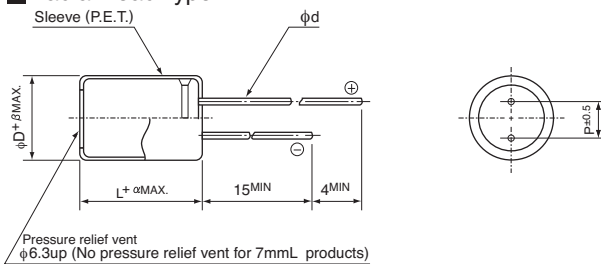
- Smaller case size and lower impedance than UPM.
- Low impedance and high reliability withstanding 2000 hours to 8000 hours.
- Capacitance ranges available based on the numerical values in E12 series under JIS.
- Compliant to the RoHS directive (2011/65/EU).



### Specifications

| Item                          | Performance Characteristics   |
|-------------------------------|---|
| Category Temperature Range    | -55 to +105°C (6.3 to 100V), -40 to +105°C (160 to 400V), -25 to +105°C (450V)  |
| Rated Voltage Range           | 6.3 to 450V   |
| Rated Capacitance Range       | 0.47 to 15000µF   |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C   |
| Leakage Current               | Rated voltage (V)   |
|                               | Leakage current   |
| Tangent of loss angle (tan δ) | For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.   |
|                               | Measurement frequency : 120Hz at 20°C   |
| Stability at Low Temperature  | Rated voltage (V)   |
|                               | Impedance ratio (MAX.)  |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 8000 hours (2000 hours for φD=4, 5 and 6.3, 3000 hours for φD=8, 5000 hours for φD=10, 7000 hours for φD=12.5) at 105°C, the peak voltage shall not exceed the rated voltage. |
|                               | Capacitance change  |
| Shelf Life                    | After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.   |
|                               | Marking   |

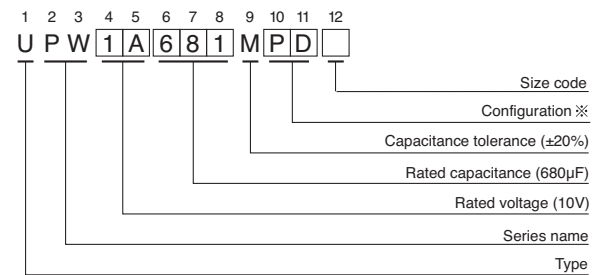
### Radial Lead Type



|              |              | (mm) |      |     |     |     |      |     |     |     |     |     |     |     |      |     |     |     |     |     |     |      |      |      |
|--------------|--------------|------|------|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|------|------|------|
| α            | (L = 7) 1.0  | φD 4 | 5    | 6.3 | 8   | 10  | 12.5 | 16  | 18  | 20  | 22  | 25  | P   | 1.5 | 2.0  | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 10.0 | 12.5 |
|              | (L < 20) 1.5 | φd   | 0.45 | 0.5 | 0.5 | 0.6 | 0.6  | 0.6 | 0.8 | 0.8 | 1.0 | 1.0 |     | 1.0 | 0.45 | 0.5 | 0.5 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0  | 1.0  | 1.0  |
| (L ≥ 20) 2.0 | β            | 0.5  | 0.5  | 0.5 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |     |      |     |     |     |     |     |     |      |      |      |

※: Applied to L>25 products  
(): Applied to 7mmL products

### Type numbering system (Example : 10V 680µF)



#### ※ Configuration

| φ D        | Pb-free leadwire<br>Pb-free PET sleeve |
|------------|--|
| 4 · 5      | DD                                     |
| 6.3        | ED (7mm L : DD)                        |
| 8 · 10     | PD                                     |
| 12.5 to 18 | HD                                     |
| 20 to 25   | RD                                     |

● Please refer to page 20 about the end seal configuration.

### ● Frequency coefficient of rated ripple current

| V          | Cap. (µF)     | Frequency |       |       |      |               |
|------------|---------------|-----------|-------|-------|------|---------------|
|            |               | 50Hz      | 120Hz | 300Hz | 1kHz | 10kHz or more |
| 6.3 to 100 | 0.47 to 56    | 0.20      | 0.30  | 0.50  | 0.80 | 1.00          |
|            | 68 to 330     | 0.55      | 0.65  | 0.75  | 0.85 | 1.00          |
|            | 390 to 1000   | 0.70      | 0.75  | 0.80  | 0.90 | 1.00          |
|            | 1200 to 15000 | 0.80      | 0.85  | 0.90  | 0.95 | 1.00          |
| 160 to 450 | 0.47 to 220   | 0.80      | 1.00  | 1.25  | 1.40 | 1.60          |
|            | 330 to 470    | 0.90      | 1.00  | 1.10  | 1.13 | 1.15          |

Please refer to page 20, 21, 22 about the formed or taped product spec.  
Please refer to page 4 for the minimum order quantity.

● Dimension table in next page.



## Standard Ratings

| Cap.(μF) | V (Code) | Item Code | 6.3 (0J)                    |                    |                |  | 10 (1A)                     |                    |                |  |
|----------|----------|-----------|-----------------------------|--------------------|----------------|--|-----------------------------|--------------------|----------------|--|
|          |          |           | Case size<br>φD × L<br>(mm) | Impedance (Ω) MAX. |                | Rated ripple<br>(mA <sub>rms</sub> )<br>105°C / 100kHz | Case size<br>φD × L<br>(mm) | Impedance (Ω) MAX. |                | Rated ripple<br>(mA <sub>rms</sub> )<br>105°C / 100kHz |
|          |          |           |                             | 20°C / 100kHz      | -10°C / 100kHz |  |                             | 20°C / 100kHz      | -10°C / 100kHz |  |
| 22       | 220      |           | 5 × 11                      | 0.60               | 1.20           | 180  | 5 × 11<br>▲ 4 × 7           | 0.60<br>2.00       | 1.20<br>5.00   | 180<br>65  |
| 27       | 270      |           | 4 × 7                       | 2.00               | 5.00           | 65   |                             |                    |                |  |
| 33       | 330      |           | 5 × 11<br>▲ 5 × 7           | 0.60<br>0.95       | 1.20<br>2.40   | 180<br>120   | 5 × 11<br>▲ 5 × 7           | 0.60<br>0.95       | 1.20<br>2.40   | 180<br>120   |
| 39       | 390      |           |                             |                    |                |  | 5 × 7                       | 0.95               | 2.40           | 120  |
| 47       | 470      |           | 5 × 11<br>▲ 5 × 7           | 0.60<br>0.95       | 1.20<br>2.40   | 180<br>120   | 5 × 11<br>▲ 4 × 11          | 0.60<br>1.30       | 1.20<br>2.60   | 180<br>120   |
| 56       | 560      |           | 5 × 7                       | 0.95               | 2.40           | 120  |                             |                    |                |  |
| 68       | 680      |           | 4 × 11                      | 1.30               | 2.60           | 120  |                             |                    |                |  |
| 82       | 820      |           |                             |                    |                |  | 5 × 11<br>▲ 6.3 × 7         | 0.60<br>0.45       | 1.20<br>1.20   | 180<br>200   |
| 100      | 101      |           | 5 × 11                      | 0.60               | 1.20           | 180  | 5 × 11<br>▲ 5 × 15          | 0.60<br>0.50       | 1.20<br>1.00   | 180<br>235   |
| 120      | 121      |           | 6.3 × 7                     | 0.45               | 1.20           | 200  |                             |                    |                |  |
| 150      | 151      |           | 6.3 × 11<br>▲ 5 × 15        | 0.25<br>0.50       | 0.50<br>1.00   | 290<br>235   | 6.3 × 11                    | 0.25               | 0.50           | 290  |
| 180      | 181      |           |                             |                    |                |  | 6.3 × 11                    | 0.25               | 0.50           | 290  |
| 220      | 221      |           | 6.3 × 11                    | 0.25               | 0.50           | 290  | 6.3 × 11<br>▲ 6.3 × 15      | 0.25<br>0.23       | 0.50<br>0.46   | 290<br>430   |
| 330      | 331      |           | 6.3 × 11<br>▲ 6.3 × 15      | 0.25<br>0.23       | 0.50<br>0.46   | 290<br>430   | 8 × 11.5                    | 0.117              | 0.234          | 555  |
| 470      | 471      |           | 8 × 11.5                    | 0.117              | 0.234          | 555  | 8 × 11.5                    | 0.117              | 0.234          | 555  |
| 560      | 561      |           | 8 × 11.5                    | 0.117              | 0.234          | 555  |                             |                    |                |  |
| 680      | 681      |           | 10 × 12.5                   | 0.090              | 0.180          | 755  | 10 × 12.5<br>▲ 8 × 15       | 0.090<br>0.085     | 0.180<br>0.170 | 760<br>730   |
| 820      | 821      |           | 8 × 15<br>▲ 10 × 12.5       | 0.085<br>0.090     | 0.170<br>0.180 | 730<br>755   |                             |                    |                |  |
| 1000     | 102      |           | 10 × 12.5                   | 0.090              | 0.180          | 755  | 10 × 16<br>▲ 8 × 20         | 0.068<br>0.065     | 0.136<br>0.130 | 1050<br>995  |
| 1200     | 122      |           | 8 × 20<br>▲ 10 × 16         | 0.065<br>0.068     | 0.130<br>0.136 | 995<br>1050  | 10 × 20                     | 0.052              | 0.104          | 1220   |
| 1500     | 152      |           | 10 × 20                     | 0.052              | 0.104          | 1220   | 10 × 20<br>▲ 10 × 25        | 0.052<br>0.045     | 0.104<br>0.090 | 1220<br>1440   |
| 2200     | 222      |           | 12.5 × 20<br>▲ 10 × 25      | 0.038<br>0.045     | 0.076<br>0.090 | 1655<br>1440   | 12.5 × 20<br>▲ 10 × 31.5    | 0.038<br>0.035     | 0.076<br>0.070 | 1655<br>1815   |
| 2700     | 272      |           | 10 × 31.5                   | 0.035              | 0.070          | 1815   | 12.5 × 25                   | 0.030              | 0.060          | 1945   |
| 3300     | 332      |           | 12.5 × 20                   | 0.038              | 0.076          | 1655   | 12.5 × 25<br>▲ 12.5 × 31.5  | 0.030<br>0.025     | 0.060<br>0.050 | 1950<br>2310   |
| 3900     | 392      |           | 12.5 × 25                   | 0.030              | 0.060          | 1945   | 12.5 × 35.5<br>▲ 16 × 20    | 0.022<br>0.029     | 0.044<br>0.058 | 2510<br>2210   |
| 4700     | 472      |           | 16 × 25<br>▲ 12.5 × 31.5    | 0.022<br>0.025     | 0.044<br>0.050 | 2555<br>2310   | 16 × 25                     | 0.022              | 0.044          | 2555   |
| 5600     | 562      |           | 12.5 × 35.5<br>▲ 16 × 20    | 0.022<br>0.029     | 0.044<br>0.058 | 2510<br>2210   | 16 × 25<br>▲ 18 × 20        | 0.022<br>0.028     | 0.044<br>0.056 | 2560<br>2490   |
| 6800     | 682      |           | 16 × 25<br>▲ 18 × 20        | 0.022<br>0.028     | 0.044<br>0.056 | 2560<br>2490   | 16 × 31.5<br>▲ 18 × 25      | 0.018<br>0.020     | 0.036<br>0.040 | 3010<br>2740   |
| 8200     | 822      |           | 16 × 31.5                   | 0.018              | 0.036          | 3010   | 16 × 35.5<br>▲ 18 × 31.5    | 0.016<br>0.016     | 0.032<br>0.032 | 3150<br>3635   |
| 10000    | 103      |           | 16 × 31.5<br>▲ 18 × 25      | 0.016<br>0.020     | 0.032<br>0.040 | 3150<br>2740   | 18 × 35.5                   | 0.015              | 0.030          | 3680   |
| 12000    | 123      |           | 18 × 31.5                   | 0.016              | 0.032          | 3635   |                             |                    |                |  |
| 15000    | 153      |           | 18 × 35.5                   | 0.015              | 0.030          | 3680   | 18 × 40                     | 0.014              | 0.028          | 3800   |

▲ : In this case, [6] will be put at 12th digit of type numbering system.



■ Standard Ratings

| V(Code)   |           | 16 (1C)               |                    |                |                                     | 25 (1E)               |                    |                |                                     |
|-----------|-----------|-----------------------|--------------------|----------------|-------------------------------------|-----------------------|--------------------|----------------|-------------------------------------|
| Cap. (μF) | Item Code | Case size φD × L (mm) | Impedance (Ω) MAX. |                | Rated ripple (mArms) 105°C / 100kHz | Case size φD × L (mm) | Impedance (Ω) MAX. |                | Rated ripple (mArms) 105°C / 100kHz |
|           |           |                       | 20°C / 100kHz      | -10°C / 100kHz |                                     |                       | 20°C / 100kHz      | -10°C / 100kHz |                                     |
| 4.7       | 4R7       |                       |                    |                |                                     | 5 × 11                | 0.60               | 1.20           | 180                                 |
| 10        | 100       | 5 × 11                | 0.60               | 1.20           | 180                                 | 5 × 11                | 0.60               | 1.20           | 180                                 |
|           |           |                       |                    |                |                                     | ▲4 × 7                | 2.00               | 5.00           | 65                                  |
| 15        | 150       | 4 × 7                 | 2.00               | 5.00           | 65                                  |                       |                    |                |                                     |
| 22        | 220       | 5 × 11                | 0.60               | 1.20           | 180                                 | 5 × 11                | 0.60               | 1.20           | 180                                 |
|           |           | ▲5 × 7                | 0.95               | 2.40           | 120                                 | ▲5 × 7                | 0.95               | 2.40           | 120                                 |
| 27        | 270       | 5 × 7                 | 0.95               | 2.40           | 120                                 | 4 × 11                | 1.30               | 2.60           | 120                                 |
| 33        | 330       | 5 × 11                | 0.60               | 1.20           | 180                                 | 5 × 11                | 0.60               | 1.20           | 180                                 |
|           |           | ▲6.3 × 7              | 0.45               | 1.20           | 200                                 |                       |                    |                |                                     |
| 39        | 390       | 4 × 11                | 1.30               | 2.60           | 120                                 | 5 × 11                | 0.60               | 1.20           | 180                                 |
|           |           |                       |                    |                |                                     | ▲6.3 × 7              | 0.45               | 1.20           | 200                                 |
| 47        | 470       | 5 × 11                | 0.60               | 1.20           | 180                                 | 5 × 11                | 0.60               | 1.20           | 180                                 |
| 56        | 560       | 5 × 11                | 0.60               | 1.20           | 180                                 | 5 × 15                | 0.50               | 1.00           | 235                                 |
|           |           | ▲6.3 × 7              | 0.45               | 1.20           | 200                                 |                       |                    |                |                                     |
| 82        | 820       | 5 × 15                | 0.50               | 1.00           | 235                                 | 6.3 × 11              | 0.25               | 0.50           | 290                                 |
| 100       | 101       | 6.3 × 11              | 0.25               | 0.50           | 290                                 | 6.3 × 11              | 0.25               | 0.50           | 290                                 |
| 120       | 121       | 6.3 × 11              | 0.25               | 0.50           | 290                                 | 6.3 × 15              | 0.23               | 0.46           | 430                                 |
| 150       | 151       | 6.3 × 11              | 0.25               | 0.50           | 290                                 | 8 × 11.5              | 0.117              | 0.234          | 555                                 |
| 180       | 181       | 6.3 × 15              | 0.23               | 0.46           | 430                                 |                       |                    |                |                                     |
| 220       | 221       | 8 × 11.5              | 0.117              | 0.234          | 555                                 | 8 × 11.5              | 0.117              | 0.234          | 555                                 |
| 330       | 331       | 8 × 11.5              | 0.117              | 0.234          | 555                                 | 10 × 12.5             | 0.090              | 0.180          | 760                                 |
|           |           |                       |                    |                |                                     | ▲8 × 15               | 0.085              | 0.170          | 730                                 |
| 470       | 471       | 10 × 12.5             | 0.090              | 0.180          | 760                                 | 10 × 16               | 0.068              | 0.136          | 1050                                |
|           |           | ▲8 × 15               | 0.085              | 0.170          | 730                                 | ▲8 × 20               | 0.065              | 0.130          | 995                                 |
| 560       | 561       |                       |                    |                |                                     | 10 × 20               | 0.052              | 0.104          | 1220                                |
| 680       | 681       | 10 × 16               | 0.068              | 0.136          | 1050                                | 10 × 20               | 0.052              | 0.104          | 1220                                |
|           |           | ▲8 × 20               | 0.065              | 0.130          | 995                                 |                       |                    |                |                                     |
| 820       | 821       | 10 × 20               | 0.052              | 0.104          | 1220                                | 10 × 25               | 0.045              | 0.090          | 1440                                |
| 1000      | 102       | 10 × 20               | 0.052              | 0.104          | 1220                                | 12.5 × 20             | 0.038              | 0.076          | 1660                                |
|           |           |                       |                    |                |                                     | ▲10 × 31.5            | 0.035              | 0.070          | 1815                                |
| 1200      | 122       | 10 × 25               | 0.045              | 0.090          | 1440                                |                       |                    |                |                                     |
| 1500      | 152       | 12.5 × 20             | 0.038              | 0.076          | 1655                                | 16 × 25               | 0.022              | 0.044          | 2555                                |
|           |           | ▲10 × 31.5            | 0.035              | 0.070          | 1815                                | ▲12.5 × 25            | 0.030              | 0.060          | 1950                                |
| 1800      | 182       |                       |                    |                |                                     | 12.5 × 31.5           | 0.025              | 0.050          | 2310                                |
|           |           |                       |                    |                |                                     | ▲16 × 20              | 0.029              | 0.058          | 2210                                |
| 2200      | 222       | 12.5 × 25             | 0.030              | 0.060          | 1945                                | 16 × 25               | 0.022              | 0.044          | 2555                                |
|           |           |                       |                    |                |                                     | ▲18 × 20              | 0.028              | 0.056          | 2490                                |
|           |           |                       |                    |                |                                     | ※12.5 × 35.5          | 0.022              | 0.044          | 2510                                |
| 2700      | 272       | 12.5 × 31.5           | 0.025              | 0.050          | 2310                                | 16 × 25               | 0.022              | 0.044          | 2555                                |
|           |           | ▲16 × 20              | 0.029              | 0.058          | 2210                                |                       |                    |                |                                     |
| 3300      | 332       | 16 × 25               | 0.022              | 0.044          | 2555                                | 16 × 31.5             | 0.018              | 0.036          | 3010                                |
|           |           | ▲12.5 × 35.5          | 0.022              | 0.044          | 2510                                | ▲18 × 25              | 0.020              | 0.040          | 2740                                |
| 3900      | 392       | 16 × 25               | 0.022              | 0.044          | 2560                                | 16 × 35.5             | 0.016              | 0.032          | 3150                                |
|           |           | ▲18 × 20              | 0.028              | 0.056          | 2490                                | ▲18 × 31.5            | 0.016              | 0.032          | 3635                                |
| 4700      | 472       | 16 × 31.5             | 0.018              | 0.036          | 3010                                | 18 × 35.5             | 0.015              | 0.030          | 3680                                |
|           |           | ▲18 × 25              | 0.020              | 0.040          | 2740                                |                       |                    |                |                                     |
| 5600      | 562       | 16 × 35.5             | 0.016              | 0.032          | 3150                                |                       |                    |                |                                     |
|           |           | ▲18 × 31.5            | 0.016              | 0.032          | 3635                                |                       |                    |                |                                     |
| 6800      | 682       | 18 × 35.5             | 0.015              | 0.030          | 3680                                | 18 × 40               | 0.014              | 0.028          | 3800                                |
| 8200      | 822       | 18 × 35.5             | 0.015              | 0.030          | 3680                                |                       |                    |                |                                     |
| 10000     | 103       | 18 × 40               | 0.014              | 0.028          | 3800                                |                       |                    |                |                                     |

▲ : In this case, [6] will be put at 12th digit of type numbering system.  
 ※ : In this case, [3] will be put at 12th digit of type numbering system.

## UPW

### Standard Ratings

| Cap. (μF) | V(Code) | Item Code     | 35 (1V)                     |                    |                |   | 50 (1H)                     |                    |                |   |
|-----------|---------|---------------|-----------------------------|--------------------|----------------|---|-----------------------------|--------------------|----------------|---|
|           |         |               | Case size<br>φD × L<br>(mm) | Impedance (Ω) MAX. |                | Rated ripple<br>(mArms)<br>105°C / 100kHz | Case size<br>φD × L<br>(mm) | Impedance (Ω) MAX. |                | Rated ripple<br>(mArms)<br>105°C / 100kHz |
|           |         |               |                             | 20°C / 100kHz      | -10°C / 100kHz |   |                             | 20°C / 100kHz      | -10°C / 100kHz |   |
| 0.47      | R47     |               |                             |                    |                | 5 × 11                                    | 5.00                        | 10.0               | 25             |   |
| 1         | 010     |               |                             |                    |                | 5 × 11                                    | 3.50                        | 7.00               | 40             |   |
| 2.2       | 2R2     |               |                             |                    |                | 5 × 11                                    | 3.00                        | 6.00               | 55             |   |
| 3.3       | 3R3     |               |                             |                    |                | 5 × 11                                    | 2.60                        | 5.20               | 65             |   |
| 4.7       | 4R7     | 5 × 11        | 0.60                        | 1.20               | 180            | 5 × 11                                    | 2.30                        | 4.60               | 90             |   |
| 6.8       | 6R8     | 4 × 7         | 2.00                        | 5.00               | 65             |   |                             |                    |                |   |
| 10        | 100     | 5 × 11        | 0.60                        | 1.20               | 180            | 5 × 11                                    | 1.40                        | 2.80               | 120            |   |
|           |         | ▲ 5 × 7       | 0.95                        | 2.40               | 120            | ▲ 4 × 11                                  | 2.50                        | 5.00               | 90             |   |
| 12        | 120     | 5 × 7         | 0.95                        | 2.40               | 120            |   |                             |                    |                |   |
| 18        | 180     | 4 × 11        | 1.30                        | 2.60               | 120            | 5 × 11                                    | 1.30                        | 2.60               | 155            |   |
| 22        | 220     | 5 × 11        | 0.60                        | 1.20               | 180            | 5 × 11                                    | 1.20                        | 2.40               | 170            |   |
| 27        | 270     | 5 × 11        | 0.60                        | 1.20               | 180            | 5 × 15                                    | 0.90                        | 1.80               | 215            |   |
|           |         | ▲ 6.3 × 7     | 0.45                        | 1.20               | 200            |   |                             |                    |                |   |
| 33        | 330     | 5 × 11        | 0.60                        | 1.20               | 180            | 6.3 × 11                                  | 0.43                        | 0.86               | 300            |   |
| 39        | 390     | 5 × 15        | 0.50                        | 1.00               | 235            |   |                             |                    |                |   |
| 47        | 470     | 6.3 × 11      | 0.25                        | 0.50               | 290            | 6.3 × 11                                  | 0.43                        | 0.86               | 300            |   |
| 56        | 560     | 6.3 × 11      | 0.25                        | 0.50               | 290            | 6.3 × 15                                  | 0.40                        | 0.80               | 360            |   |
| 82        | 820     | 6.3 × 15      | 0.23                        | 0.46               | 430            | 8 × 11.5                                  | 0.234                       | 0.468              | 485            |   |
| 100       | 101     | 8 × 11.5      | 0.117                       | 0.234              | 555            | 8 × 11.5                                  | 0.234                       | 0.468              | 485            |   |
|           |         |               |                             |                    |                | 8 × 15                                    | 0.155                       | 0.310              | 635            |   |
| 120       | 121     |               |                             |                    |                | ▲ 10 × 12.5                               | 0.162                       | 0.324              | 620            |   |
|           |         |               |                             |                    |                | 10 × 12.5                                 | 0.162                       | 0.324              | 615            |   |
| 150       | 151     | 8 × 11.5      | 0.117                       | 0.234              | 555            | 8 × 20                                    | 0.120                       | 0.240              | 860            |   |
| 180       | 181     |               |                             |                    |                | ▲ 10 × 16                                 | 0.119                       | 0.238              | 850            |   |
|           |         |               |                             |                    |                | 10 × 16                                   | 0.119                       | 0.238              | 850            |   |
| 220       | 221     | 10 × 12.5     | 0.090                       | 0.180              | 760            | ▲ 10 × 20                                 | 0.090                       | 0.180              | 1030           |   |
|           |         | ▲ 8 × 15      | 0.085                       | 0.170              | 730            | 10 × 25                                   | 0.082                       | 0.164              | 1200           |   |
| 330       | 331     | 10 × 16       | 0.068                       | 0.136              | 1050           | 10 × 20                                   | 0.090                       | 0.180              | 1030           |   |
|           |         | ▲ 8 × 20      | 0.065                       | 0.130              | 995            | ▲ 10 × 31.5                               | 0.060                       | 0.120              | 1610           |   |
| 390       | 391     | 10 × 20       | 0.052                       | 0.104              | 1220           | 12.5 × 20                                 | 0.063                       | 0.126              | 1480           |   |
| 470       | 471     | 10 × 20       | 0.052                       | 0.104              | 1220           | 12.5 × 20                                 | 0.060                       | 0.120              | 1500           |   |
| 560       | 561     | 10 × 25       | 0.045                       | 0.090              | 1440           | 12.5 × 25                                 | 0.050                       | 0.100              | 1832           |   |
| 680       | 681     | 12.5 × 20     | 0.038                       | 0.076              | 1660           | 12.5 × 25                                 | 0.050                       | 0.100              | 1840           |   |
|           |         | ▲ 10 × 31.5   | 0.035                       | 0.070              | 1815           | ▲ 16 × 20                                 | 0.048                       | 0.096              | 1840           |   |
| 820       | 821     |               |                             |                    |                | 12.5 × 35.5                               | 0.034                       | 0.068              | 2290           |   |
|           |         |               |                             |                    |                | ▲ 18 × 20                                 | 0.042                       | 0.084              | 2420           |   |
| 1000      | 102     | 12.5 × 25     | 0.030                       | 0.060              | 1950           | 16 × 25                                   | 0.034                       | 0.068              | 2235           |   |
| 1200      | 122     | 12.5 × 31.5   | 0.025                       | 0.050              | 2310           | 16 × 31.5                                 | 0.028                       | 0.056              | 2700           |   |
|           |         | ▲ 16 × 20     | 0.029                       | 0.058              | 2210           | ▲ 18 × 25                                 | 0.029                       | 0.058              | 2610           |   |
| 1500      | 152     | 16 × 25       | 0.022                       | 0.044              | 2555           | 16 × 31.5                                 | 0.028                       | 0.056              | 2700           |   |
|           |         | ▲ 12.5 × 35.5 | 0.022                       | 0.044              | 2510           | ▲ 16 × 35.5                               | 0.025                       | 0.050              | 2790           |   |
| 1800      | 182     | 16 × 25       | 0.022                       | 0.044              | 2555           | 18 × 31.5                                 | 0.025                       | 0.050              | 3000           |   |
|           |         | ▲ 18 × 20     | 0.028                       | 0.056              | 2490           |   |                             |                    |                |   |
| 2200      | 222     | 16 × 31.5     | 0.018                       | 0.036              | 3010           | 18 × 35.5                                 | 0.023                       | 0.046              | 3100           |   |
|           |         | ▲ 18 × 25     | 0.020                       | 0.040              | 2740           |   |                             |                    |                |   |
| 2700      | 272     | 16 × 35.5     | 0.016                       | 0.032              | 3150           |   |                             |                    |                |   |
|           |         | ▲ 18 × 31.5   | 0.016                       | 0.032              | 3635           |   |                             |                    |                |   |
| 3300      | 332     | 18 × 35.5     | 0.015                       | 0.030              | 3680           |   |                             |                    |                |   |
| 4700      | 472     | 18 × 40       | 0.014                       | 0.028              | 3800           |   |                             |                    |                |   |

▲ : In this case, [6] will be put at 12th digit of type numbering system.



Standard Ratings

| V(Code)  |           | 63 (1J)               |                    |                |                                     | 100 (2A)              |                    |                |                                     |
|----------|-----------|-----------------------|--------------------|----------------|-------------------------------------|-----------------------|--------------------|----------------|-------------------------------------|
| Cap.(μF) | Item Code | Case size φD × L (mm) | Impedance (Ω) MAX. |                | Rated ripple (mArms) 105°C / 100kHz | Case size φD × L (mm) | Impedance (Ω) MAX. |                | Rated ripple (mArms) 105°C / 100kHz |
|          |           |                       | 20°C / 100kHz      | -10°C / 100kHz |                                     |                       | 20°C / 100kHz      | -10°C / 100kHz |                                     |
| 0.47     | R47       |                       |                    |                |                                     | 5 × 11                | 43.0               | 86.0           | 20                                  |
| 1        | 010       |                       |                    |                |                                     | 5 × 11                | 20.0               | 40.0           | 30                                  |
| 2.2      | 2R2       |                       |                    |                |                                     | 5 × 11                | 9.80               | 19.6           | 44                                  |
| 3.3      | 3R3       |                       |                    |                |                                     | 5 × 11                | 6.60               | 13.2           | 58                                  |
| 4.7      | 4R7       | 5 × 11                | 4.70               | 9.40           | 68                                  | 5 × 11                | 4.60               | 9.20           | 74                                  |
| 6.8      | 6R8       | 5 × 11                | 2.50               | 5.00           | 95                                  | 5 × 11                | 3.50               | 7.00           | 95                                  |
|          |           | ▲ 4 × 11              | 3.50               | 7.00           | 80                                  |                       |                    |                |                                     |
| 10       | 100       | 5 × 11                | 2.10               | 4.20           | 110                                 | 6.3 × 11              | 1.80               | 3.60           | 130                                 |
| 12       | 120       | 5 × 11                | 2.00               | 4.00           | 145                                 |                       |                    |                |                                     |
| 15       | 150       | 6.3 × 11              | 1.20               | 2.40           | 160                                 | 8 × 11.5              | 0.83               | 1.66           | 180                                 |
| 18       | 180       | 5 × 15                | 1.30               | 2.60           | 200                                 | 6.3 × 15              | 0.80               | 1.60           | 200                                 |
| 22       | 220       | 6.3 × 11              | 0.71               | 1.42           | 250                                 | 8 × 11.5              | 0.68               | 1.36           | 230                                 |
| 33       | 330       | 6.3 × 11              | 0.71               | 1.42           | 250                                 | 10 × 12.5             | 0.46               | 0.92           | 320                                 |
|          |           | ▲ 8 × 15              |                    |                |                                     |                       | 0.45               | 0.90           | 360                                 |
| 39       | 390       | 6.3 × 15              | 0.70               | 1.40           | 330                                 |                       |                    |                |                                     |
|          |           |                       |                    |                |                                     |                       |                    |                |                                     |
| 47       | 470       | 8 × 11.5              | 0.342              | 0.684          | 405                                 | 10 × 16               | 0.37               | 0.74           | 420                                 |
|          |           |                       |                    |                |                                     | ▲ 8 × 20              | 0.37               | 0.74           | 420                                 |
| 68       | 680       | 8 × 11.5              | 0.342              | 0.684          | 405                                 | 10 × 20               | 0.30               | 0.60           | 490                                 |
| 82       | 820       |                       |                    |                |                                     | 10 × 25               | 0.25               | 0.50           | 540                                 |
| 100      | 101       | 10 × 12.5             | 0.256              | 0.512          | 540                                 | 12.5 × 20             | 0.18               | 0.36           | 580                                 |
|          |           | ▲ 8 × 15              | 0.230              | 0.460          | 535                                 |                       |                    |                |                                     |
| 120      | 121       | 10 × 16               | 0.194              | 0.388          | 600                                 |                       |                    |                |                                     |
| 150      | 151       | 10 × 16               | 0.194              | 0.388          | 660                                 | 12.5 × 25             | 0.13               | 0.26           | 710                                 |
| 180      | 181       | 10 × 20               | 0.147              | 0.294          | 890                                 | 12.5 × 31.5           | 0.12               | 0.24           | 790                                 |
|          |           | ▲ 12.5 × 15           | 0.150              | 0.300          | 1020                                | ▲ 16 × 20             | 0.13               | 0.26           | 750                                 |
| 220      | 221       | 10 × 20               | 0.147              | 0.294          | 885                                 | 16 × 25               | 0.10               | 0.20           | 890                                 |
|          |           | ▲ 10 × 25             | 0.130              | 0.260          | 1050                                | ▲ 18 × 20             | 0.11               | 0.22           | 850                                 |
| 270      | 271       | 16 × 15               | 0.090              | 0.180          | 1410                                |                       |                    |                |                                     |
| 330      | 331       | 12.5 × 20             | 0.085              | 0.170          | 1290                                | 16 × 25               | 0.090              | 0.18           | 1080                                |
| 390      | 391       | 12.5 × 25             | 0.070              | 0.140          | 1720                                | 18 × 25               | 0.083              | 0.166          | 1260                                |
|          |           | ▲ 18 × 15             | 0.086              | 0.172          | 1690                                |                       |                    |                |                                     |
| 470      | 471       | 12.5 × 25             | 0.070              | 0.140          | 1720                                | 16 × 31.5             | 0.076              | 0.152          | 1310                                |
|          |           | ▲ 12.5 × 31.5         | 0.055              | 0.110          | 2090                                |                       |                    |                |                                     |
| 560      | 561       |                       |                    |                |                                     | 18 × 31.5             | 0.068              | 0.136          | 1370                                |
|          |           | 16 × 25               | 0.050              | 0.100          | 2160                                |                       |                    |                |                                     |
| 680      | 681       | ▲ 12.5 × 35.5         | 0.047              | 0.094          | 2270                                | 16 × 35.5             | 0.064              | 0.128          | 1410                                |
|          |           | ※ 18 × 20             | 0.055              | 0.110          | 2290                                |                       |                    |                |                                     |
| 820      | 821       | 16 × 31.5             | 0.043              | 0.086          | 2670                                |                       |                    |                |                                     |
|          |           | ▲ 18 × 25             | 0.043              | 0.086          | 2590                                |                       |                    |                |                                     |
| 1000     | 102       | 16 × 31.5             | 0.043              | 0.086          | 2770                                | 18 × 40               | 0.047              | 0.094          | 1520                                |
|          |           | ▲ 16 × 35.5           | 0.036              | 0.072          | 2770                                |                       |                    |                |                                     |
| 1200     | 122       | 18 × 31.5             | 0.032              | 0.064          | 2950                                |                       |                    |                |                                     |
| 1500     | 152       | 18 × 35.5             | 0.030              | 0.060          | 3100                                |                       |                    |                |                                     |
| 2200     | 222       | 18 × 40               | 0.028              | 0.056          | 3200                                |                       |                    |                |                                     |

▲ : In this case, [6] will be put at 12th digit of type numbering system.

※ : In this case, [3] will be put at 12th digit of type numbering system.

| V(Code)   |      | 160         |      | 200       |      | 250         |      | 315       |     | 350         |     | 400         |     | 450         |     |
|-----------|------|-------------|------|-----------|------|-------------|------|-----------|-----|-------------|-----|-------------|-----|-------------|-----|
| Cap. (μF) | Code | 2C          |      | 2D        |      | 2E          |      | 2F        |     | 2V          |     | 2G          |     | 2W          |     |
|           |      | 0.47        | R47  | 6.3 × 11  | 12   | 6.3 × 11    | 12   | 6.3 × 11  | 12  | 8 × 11.5    | 11  | 8 × 11.5    | 11  |             |     |
| 1         | 010  | 6.3 × 11    | 17   | 6.3 × 11  | 17   | 6.3 × 11    | 17   | 8 × 11.5  | 16  | 10 × 12.5   | 17  | 10 × 12.5   | 16  | 10 × 12.5   | 18  |
| 2.2       | 2R2  | 6.3 × 11    | 25   | 6.3 × 11  | 25   | 8 × 11.5    | 29   | 10 × 12.5 | 28  | 10 × 16     | 31  | 10 × 16     | 27  | 10 × 20     | 29  |
| 3.3       | 3R3  | 8 × 11.5    | 36   | 8 × 11.5  | 36   | 10 × 12.5   | 42   | 10 × 12.5 | 34  | 10 × 16     | 38  | 10 × 20     | 36  | 12.5 × 20   | 41  |
| 4.7       | 4R7  | 8 × 11.5    | 43   | 10 × 12.5 | 50   | 10 × 12.5   | 50   | 10 × 16   | 45  | 10 × 20     | 49  | 10 × 20     | 43  | 12.5 × 20   | 49  |
| 10        | 100  | 10 × 12.5   | 70   | 10 × 16   | 80   | 10 × 20     | 88   | 10 × 20   | 72  | 12.5 × 20   | 82  | 12.5 × 25   | 72  | 16 × 25     | 75  |
| 22        | 220  | 10 × 20     | 130  | 10 × 20   | 140  | 12.5 × 25   | 155  | 12.5 × 25 | 120 | 16 × 25     | 130 | 16 × 25     | 110 | 16 × 31.5   | 115 |
| 33        | 330  | 12.5 × 20   | 180  | 12.5 × 25 | 190  | 12.5 × 25   | 190  | 16 × 25   | 155 | 16 × 31.5   | 160 | 16 × 31.5   | 140 | ● 18 × 35.5 | 145 |
| 47        | 470  | 12.5 × 25   | 220  | 12.5 × 25 | 220  | 16 × 25     | 230  | 16 × 35.5 | 190 | ● 18 × 35.5 | 200 | ● 18 × 35.5 | 170 | 20 × 40     | 175 |
| 100       | 101  | 16 × 25     | 330  | 16 × 31.5 | 335  | ● 18 × 35.5 | 340  | ▲ 18 × 40 | 285 | 20 × 40     | 290 | 22 × 50     | 350 | 25 × 50     | 350 |
| 220       | 221  | ● 18 × 35.5 | 500  | ▲ 18 × 40 | 515  | 20 × 40     | 525  | 22 × 50   | 540 | 25 × 50     | 550 |             |     |             |     |
| 330       | 331  | 20 × 40     | 900  | 22 × 40   | 1100 | 22 × 50     | 1150 |           |     |             |     |             |     |             |     |
| 470       | 471  | 22 × 50     | 1200 | 22 × 50   | 1310 | 25 × 50     | 1350 |           |     |             |     |             |     |             |     |

※ Rated ripple current (mArms) at 105°C 120Hz

Size φ20 × 31 is available for capacitors marked " ● "

Size φ20 × 35 is available for capacitors marked " ▲ "

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