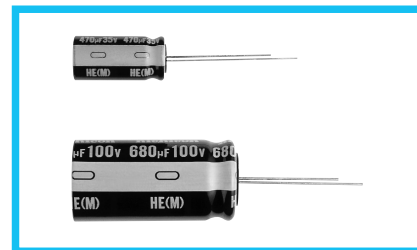


**HE** series Miniature Sized, Low Impedance, High Reliability



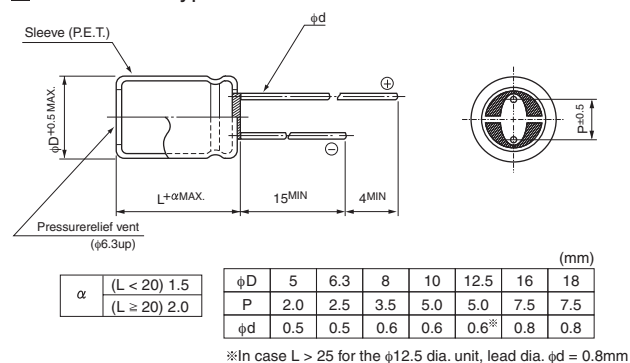
- Low impedance and high reliability withstanding 4000 hours to 10000 hours.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                             |                 |                                                   |      |             |      |             |      |      |       |  |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------|------|-------------|------|-------------|------|------|-------|--|
| Category Temperature Range    | -40 to +105°C                                                                                                                                                                                           |                 |                                                   |      |             |      |             |      |      |       |  |
| Rated Voltage Range           | 6.3 to 100V                                                                                                                                                                                             |                 |                                                   |      |             |      |             |      |      |       |  |
| Rated Capacitance Range       | 0.47 to 18000μF                                                                                                                                                                                         |                 |                                                   |      |             |      |             |      |      |       |  |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                     |                 |                                                   |      |             |      |             |      |      |       |  |
| Leakage Current               | After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.                                                                         |                 |                                                   |      |             |      |             |      |      |       |  |
| Tangent of loss angle (tan δ) | Rated voltage (V)                                                                                                                                                                                       | 6.3             | 10                                                | 16   | 25          | 35   | 50          | 63   | 100  | 120Hz |  |
|                               | tan δ (MAX.)                                                                                                                                                                                            | 0.22            | 0.19                                              | 0.16 | 0.14        | 0.12 | 0.10        | 0.09 | 0.08 | 20°C  |  |
|                               | For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.                                                                                                                             |                 |                                                   |      |             |      |             |      |      |       |  |
| Stability at Low Temperature  | Rated voltage (V)                                                                                                                                                                                       | 6.3             | 10                                                | 16   | 25          | 35   | 50          | 63   | 100  | 120Hz |  |
|                               | Impedance ratio<br>ZT / Z20 (MAX.)                                                                                                                                                                      | Z-25°C / Z+20°C | 4                                                 | 3    | 2           | 2    | 2           | 2    | 2    | 2     |  |
|                               |                                                                                                                                                                                                         | Z-40°C / Z+20°C | 8                                                 | 6    | 4           | 3    | 3           | 3    | 3    | 3     |  |
| Endurance                     | The following specifications shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied at 105°C , the peak voltage shall not exceed the rated voltage. |                 |                                                   |      |             |      |             |      |      |       |  |
|                               | Case size                                                                                                                                                                                               |                 | φD ≤ 6.3                                          |      | φD = 8 , 10 |      | φD ≥ 12.5   |      |      |       |  |
|                               | Rated voltage<br>(V)                                                                                                                                                                                    | 6.3 to 10WV     | 4000 hours                                        |      | 6000 hours  |      | 8000 hours  |      |      |       |  |
|                               |                                                                                                                                                                                                         | 16 to 100WV     | 5000 hours                                        |      | 7000 hours  |      | 10000 hours |      |      |       |  |
|                               | Capacitance change                                                                                                                                                                                      |                 | Within ±25% of the initial capacitance value      |      |             |      |             |      |      |       |  |
|                               | tan δ                                                                                                                                                                                                   |                 | 200% or less than the initial specified value     |      |             |      |             |      |      |       |  |
|                               | Leakage current                                                                                                                                                                                         |                 | Less than or equal to the initial specified value |      |             |      |             |      |      |       |  |
|                               |                                                                                                                                                                                                         |                 |                                                   |      |             |      |             |      |      |       |  |
| Marking                       | Printed with white color letter on black sleeve.                                                                                                                                                        |                 |                                                   |      |             |      |             |      |      |       |  |

## Radial Lead Type

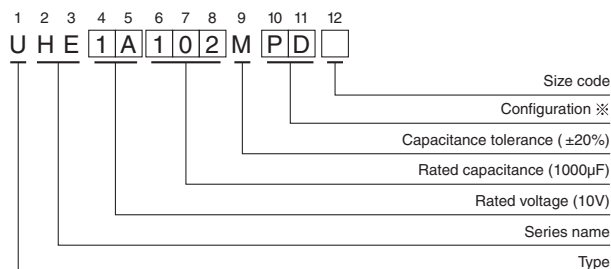


- Please refer to page 20 about the end seal configuration.

## Frequency coefficient of rated ripple current

| Cap. (μF)     | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|---------------|------|-------|-------|------|---------------|
| 0.47 to 33    | 0.45 | 0.55  | 0.70  | 0.90 | 1.00          |
| 39 to 330     | 0.60 | 0.70  | 0.85  | 0.95 | 1.00          |
| 390 to 1000   | 0.65 | 0.75  | 0.90  | 0.98 | 1.00          |
| 1200 to 18000 | 0.75 | 0.80  | 0.95  | 1.00 | 1.00          |

## Type numbering system (Example : 10V 1000μF)



### ※ Configuration

| φD         | Pb-free leadwire<br>Pb-free PET sleeve |
|------------|----------------------------------------|
| 5          | DD                                     |
| 6.3        | ED                                     |
| 8 - 10     | PD                                     |
| 12.5 to 18 | HD                                     |

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)<br>Item<br>Code | 6.3 (0J)                    |                    |                |                                           | 10 (1A)                     |                    |                |                                           |
|----------|--------------------------|-----------------------------|--------------------|----------------|-------------------------------------------|-----------------------------|--------------------|----------------|-------------------------------------------|
|          |                          | 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 |                                           |
| 100      | 101                      |                             |                    |                |                                           | 5 × 11                      | 0.58               | 2.3            | 210                                       |
| 150      | 151                      | 5 × 11                      | 0.58               | 2.3            | 210                                       |                             |                    |                |                                           |
| 220      | 221                      |                             |                    |                |                                           | 6.3 × 11                    | 0.22               | 0.87           | 340                                       |
| 330      | 331                      | 6.3 × 11                    | 0.22               | 0.87           | 340                                       |                             |                    |                |                                           |
| 470      | 471                      |                             |                    |                |                                           | 8 × 11.5                    | 0.13               | 0.52           | 640                                       |
| 680      | 681                      | 8 × 11.5                    | 0.13               | 0.52           | 640                                       | 8 × 15                      | 0.087              | 0.35           | 840                                       |
|          |                          |                             |                    |                |                                           | ▲ 10 × 12.5                 | 0.080              | 0.32           | 865                                       |
| 820      | 821                      | 10 × 12.5                   | 0.080              | 0.32           | 865                                       |                             |                    |                |                                           |
| 1000     | 102                      | 8 × 15                      | 0.087              | 0.35           | 840                                       | 8 × 20                      | 0.069              | 0.27           | 1050                                      |
|          |                          |                             |                    |                |                                           | ▲ 10 × 16                   | 0.060              | 0.24           | 1210                                      |
| 1200     | 122                      | 8 × 20                      | 0.069              | 0.27           | 1050                                      | 10 × 20                     | 0.046              | 0.18           | 1400                                      |
|          |                          | ▲ 10 × 16                   | 0.060              | 0.24           | 1210                                      |                             |                    |                |                                           |
| 1500     | 152                      | 10 × 20                     | 0.046              | 0.18           | 1400                                      | 10 × 25                     | 0.042              | 0.17           | 1650                                      |
|          |                          |                             |                    |                |                                           | ▲ 12.5 × 15                 | 0.049              | 0.16           | 1450                                      |
| 1800     | 182                      | 12.5 × 15                   | 0.049              | 0.16           | 1450                                      |                             |                    |                |                                           |
| 2200     | 222                      | 10 × 25                     | 0.042              | 0.17           | 1650                                      | 10 × 31.5                   | 0.031              | 0.12           | 1910                                      |
|          |                          |                             |                    |                |                                           | ▲ 12.5 × 20                 | 0.035              | 0.12           | 1900                                      |
|          |                          |                             |                    |                |                                           | ● 16 × 15                   | 0.042              | 0.12           | 1940                                      |
| 2700     | 272                      | ▲ 10 × 31.5                 | 0.031              | 0.12           | 1910                                      | 18 × 15                     | 0.043              | 0.11           | 2210                                      |
|          |                          | 16 × 15                     | 0.042              | 0.12           | 1940                                      |                             |                    |                |                                           |
| 3300     | 332                      | 12.5 × 20                   | 0.035              | 0.12           | 1900                                      | 12.5 × 25                   | 0.027              | 0.089          | 2230                                      |
| 3900     | 392                      | 12.5 × 25                   | 0.027              | 0.089          | 2230                                      | 12.5 × 31.5                 | 0.024              | 0.078          | 2650                                      |
|          |                          | ▲ 18 × 15                   | 0.043              | 0.11           | 2210                                      | ▲ 16 × 20                   | 0.027              | 0.078          | 2530                                      |
| 4700     | 472                      | 12.5 × 31.5                 | 0.024              | 0.078          | 2650                                      | 12.5 × 35.5                 | 0.020              | 0.065          | 2880                                      |
| 5600     | 562                      | 12.5 × 35.5                 | 0.020              | 0.065          | 2880                                      | 12.5 × 40                   | 0.017              | 0.056          | 3350                                      |
|          |                          | ▲ 16 × 20                   | 0.027              | 0.078          | 2530                                      | ▲ 16 × 25                   | 0.021              | 0.060          | 2930                                      |
|          |                          |                             |                    |                |                                           | ● 18 × 20                   | 0.026              | 0.067          | 2860                                      |
| 6800     | 682                      | 12.5 × 40                   | 0.017              | 0.056          | 3350                                      | 16 × 31.5                   | 0.017              | 0.050          | 3450                                      |
|          |                          | ▲ 16 × 25                   | 0.021              | 0.060          | 2930                                      |                             |                    |                |                                           |
|          |                          | ● 18 × 20                   | 0.026              | 0.067          | 2860                                      | ▲ 18 × 25                   | 0.019              | 0.049          | 3140                                      |
| 8200     | 822                      | 16 × 31.5                   | 0.017              | 0.050          | 3450                                      | 16 × 35.5                   | 0.015              | 0.044          | 3610                                      |
|          |                          |                             |                    |                |                                           | ▲ 18 × 31.5                 | 0.015              | 0.040          | 4170                                      |
| 10000    | 103                      | 16 × 35.5                   | 0.015              | 0.044          | 3610                                      | 16 × 40                     | 0.013              | 0.038          | 4080                                      |
|          |                          | ▲ 18 × 25                   | 0.019              | 0.049          | 3140                                      | ▲ 18 × 35.5                 | 0.014              | 0.038          | 4220                                      |
| 12000    | 123                      | 16 × 40                     | 0.013              | 0.038          | 4080                                      | 18 × 40                     | 0.012              | 0.032          | 4280                                      |
|          |                          | ▲ 18 × 31.5                 | 0.015              | 0.040          | 4170                                      |                             |                    |                |                                           |
| 15000    | 153                      | 18 × 35.5                   | 0.014              | 0.038          | 4220                                      |                             |                    |                |                                           |
| 18000    | 183                      | 18 × 40                     | 0.012              | 0.032          | 4280                                      |                             |                    |                |                                           |

▲ : 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.

## ■ Standard Ratings

| Cap.(μF) | V (Code)<br>Item<br>Code | 16 (1C)                     |                    |                |                                                        | 25 (1E)                     |                    |                |                                                        |
|----------|--------------------------|-----------------------------|--------------------|----------------|--------------------------------------------------------|-----------------------------|--------------------|----------------|--------------------------------------------------------|
|          |                          | 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 |                                                        |
| 47       | 470                      |                             |                    |                |                                                        | 5 × 11                      | 0.58               | 2.3            | 210                                                    |
| 56       | 560                      | 5 × 11                      | 0.58               | 2.3            | 210                                                    |                             |                    |                |                                                        |
| 100      | 101                      |                             |                    |                |                                                        | 6.3 × 11                    | 0.22               | 0.87           | 340                                                    |
| 120      | 121                      | 6.3 × 11                    | 0.22               | 0.87           | 340                                                    |                             |                    |                |                                                        |
| 220      | 221                      |                             |                    |                |                                                        | 8 × 11.5                    | 0.13               | 0.52           | 640                                                    |
| 330      | 331                      | 8 × 11.5                    | 0.13               | 0.52           | 640                                                    | 8 × 15                      | 0.087              | 0.35           | 840                                                    |
| 470      | 471                      | 8 × 15                      | 0.087              | 0.35           | 840                                                    | ▲ 10 × 12.5                 | 0.080              | 0.32           | 865                                                    |
|          |                          | ▲ 10 × 12.5                 | 0.080              | 0.32           | 865                                                    | ▲ 10 × 16                   | 0.06               | 0.24           | 1210                                                   |
|          |                          | 8 × 20                      | 0.069              | 0.27           | 1050                                                   | 10 × 20                     | 0.046              | 0.18           | 1400                                                   |
| 680      | 681                      | ▲ 10 × 16                   | 0.060              | 0.24           | 1210                                                   | ▲ 12.5 × 15                 | 0.049              | 0.16           | 1450                                                   |
| 820      | 821                      |                             |                    |                |                                                        | 10 × 25                     | 0.042              | 0.17           | 1650                                                   |
| 1000     | 102                      | 10 × 20                     | 0.046              | 0.18           | 1400                                                   | 10 × 31.5                   | 0.031              | 0.12           | 1910                                                   |
|          |                          | ▲ 12.5 × 15                 | 0.049              | 0.16           | 1450                                                   | ▲ 12.5 × 20                 | 0.035              | 0.12           | 1900                                                   |
|          |                          |                             |                    |                |                                                        | ● 16 × 15                   | 0.042              | 0.12           | 1940                                                   |
| 1200     | 122                      | 10 × 25                     | 0.042              | 0.17           | 1650                                                   | 18 × 15                     | 0.043              | 0.11           | 2210                                                   |
| 1500     | 152                      | 10 × 31.5                   | 0.031              | 0.12           | 1910                                                   | 12.5 × 25                   | 0.027              | 0.089          | 2230                                                   |
|          |                          | ▲ 12.5 × 20                 | 0.035              | 0.12           | 1900                                                   |                             |                    |                |                                                        |
|          |                          | ● 16 × 15                   | 0.042              | 0.12           | 1940                                                   |                             |                    |                |                                                        |
| 1800     | 182                      |                             |                    |                |                                                        | 12.5 × 31.5                 | 0.024              | 0.078          | 2650                                                   |
|          |                          |                             |                    |                |                                                        | ▲ 16 × 20                   | 0.027              | 0.078          | 2530                                                   |
| 2200     | 222                      | 12.5 × 25                   | 0.027              | 0.089          | 2230                                                   | 12.5 × 35.5                 | 0.020              | 0.065          | 2880                                                   |
|          |                          | ▲ 18 × 15                   | 0.043              | 0.11           | 2210                                                   | ▲ 18 × 20                   | 0.026              | 0.067          | 2860                                                   |
| 2700     | 272                      | 12.5 × 31.5                 | 0.024              | 0.078          | 2650                                                   | 12.5 × 40                   | 0.017              | 0.056          | 3350                                                   |
|          |                          | ▲ 16 × 20                   | 0.027              | 0.078          | 2530                                                   | ▲ 16 × 25                   | 0.021              | 0.060          | 2930                                                   |
| 3300     | 332                      | 12.5 × 35.5                 | 0.020              | 0.065          | 2880                                                   | 16 × 31.5                   | 0.017              | 0.050          | 3450                                                   |
|          |                          |                             |                    |                |                                                        | ▲ 18 × 25                   | 0.019              | 0.049          | 3140                                                   |
| 3900     | 392                      | 12.5 × 40                   | 0.017              | 0.056          | 3350                                                   | 16 × 35.5                   | 0.015              | 0.044          | 3610                                                   |
|          |                          | ▲ 16 × 25                   | 0.021              | 0.060          | 2930                                                   |                             |                    |                |                                                        |
|          |                          | ● 16 × 20                   | 0.026              | 0.067          | 2860                                                   | ▲ 18 × 31.5                 | 0.015              | 0.040          | 4170                                                   |
| 4700     | 472                      | 16 × 31.5                   | 0.017              | 0.050          | 3450                                                   | 16 × 40                     | 0.013              | 0.038          | 4080                                                   |
|          |                          | ▲ 18 × 25                   | 0.019              | 0.049          | 3140                                                   | ▲ 18 × 35.5                 | 0.014              | 0.038          | 4220                                                   |
| 5600     | 562                      | 16 × 35.5                   | 0.015              | 0.044          | 3610                                                   | 18 × 40                     | 0.012              | 0.032          | 4280                                                   |
|          |                          | ▲ 18 × 31.5                 | 0.015              | 0.040          | 4170                                                   |                             |                    |                |                                                        |
| 6800     | 682                      | 16 × 40                     | 0.013              | 0.038          | 4080                                                   |                             |                    |                |                                                        |
| 8200     | 822                      | 18 × 35.5                   | 0.014              | 0.038          | 4220                                                   |                             |                    |                |                                                        |
| 10000    | 103                      | 18 × 40                     | 0.012              | 0.032          | 4280                                                   |                             |                    |                |                                                        |

▲ : 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.

## ■ Standard Ratings

| V (Code)<br><br>Item<br><br>Cap.(μF)    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                      | 5.5                | 22             | 17                                          |
| 1                                            | 010 |                             |                    |                |                                             | 5 × 11                      | 4                  | 16             | 30                                          |
| 2.2                                          | 2R2 |                             |                    |                |                                             | 5 × 11                      | 2.5                | 10             | 43                                          |
| 3.3                                          | 3R3 |                             |                    |                |                                             | 5 × 11                      | 2.2                | 8.8            | 53                                          |
| 4.7                                          | 4R7 |                             |                    |                |                                             | 5 × 11                      | 1.9                | 7.6            | 88                                          |
| 10                                           | 100 |                             |                    |                |                                             | 5 × 11                      | 1.5                | 6              | 100                                         |
| 22                                           | 220 |                             |                    |                |                                             | 5 × 11                      | 0.70               | 2.8            | 180                                         |
| 33                                           | 330 | 5 × 11                      | 0.58               | 2.3            | 210                                         | 6.3 × 11                    | 0.30               | 1.2            | 295                                         |
| 47                                           | 470 | 6.3 × 11                    | 0.22               | 0.87           | 250                                         | 6.3 × 11                    | 0.30               | 1.2            | 295                                         |
| 56                                           | 560 | 6.3 × 11                    | 0.22               | 0.87           | 340                                         | 6.3 × 11                    | 0.30               | 1.2            | 295                                         |
| 100                                          | 101 | 8 × 11.5                    | 0.13               | 0.52           | 640                                         | 8 × 11.5                    | 0.17               | 0.68           | 555                                         |
| 120                                          | 121 |                             |                    |                |                                             | 8 × 15                      | 0.12               | 0.48           | 730                                         |
| 150                                          | 151 | 8 × 11.5                    | 0.13               | 0.52           | 640                                         | 10 × 12.5                   | 0.12               | 0.48           | 760                                         |
| 180                                          | 181 |                             |                    |                |                                             | 8 × 20                      | 0.091              | 0.36           | 910                                         |
| 220                                          | 221 | 8 × 15                      | 0.087              | 0.35           | 840                                         | 10 × 16                     | 0.084              | 0.34           | 1050                                        |
|                                              |     | ▲ 10 × 12.5                 | 0.080              | 0.32           | 865                                         |                             |                    |                |                                             |
| 270                                          | 271 | 8 × 20                      | 0.069              | 0.27           | 1050                                        | 10 × 20                     | 0.060              | 0.24           | 1220                                        |
|                                              |     |                             |                    |                |                                             | ▲ 12.5 × 15                 | 0.061              | 0.20           | 1260                                        |
| 330                                          | 331 | 10 × 16                     | 0.060              | 0.24           | 1210                                        | 10 × 25                     | 0.055              | 0.22           | 1440                                        |
|                                              |     |                             |                    |                |                                             | ▲ 10 × 20                   | 0.060              | 0.24           | 1220                                        |
| 470                                          | 471 | 10 × 20                     | 0.046              | 0.18           | 1400                                        | 10 × 31.5                   | 0.043              | 0.17           | 1690                                        |
|                                              |     | ▲ 12.5 × 15                 | 0.049              | 0.16           | 1450                                        | ▲ 12.5 × 20                 | 0.045              | 0.15           | 1660                                        |
|                                              |     |                             |                    |                |                                             | ● 16 × 15                   | 0.055              | 0.17           | 1690                                        |
| 560                                          | 561 | 10 × 25                     | 0.042              | 0.17           | 1650                                        | 12.5 × 25                   | 0.034              | 0.11           | 1950                                        |
|                                              |     |                             |                    |                |                                             | ▲ 18 × 15                   | 0.054              | 0.15           | 1930                                        |
| 680                                          | 681 | 10 × 31.5                   | 0.031              | 0.12           | 1910                                        | 12.5 × 31.5                 | 0.030              | 0.10           | 2310                                        |
|                                              |     | ▲ 12.5 × 20                 | 0.035              | 0.12           | 1900                                        |                             |                    |                |                                             |
|                                              |     | ● 16 × 15                   | 0.042              | 0.12           | 1940                                        |                             |                    |                |                                             |
| 820                                          | 821 |                             |                    |                |                                             | 12.5 × 35.5                 | 0.025              | 0.083          | 2510                                        |
|                                              |     |                             |                    |                |                                             | ▲ 16 × 20                   | 0.034              | 0.10           | 2210                                        |
| 1000                                         | 102 | 12.5 × 25                   | 0.027              | 0.089          | 2230                                        | 12.5 × 40                   | 0.021              | 0.069          | 2920                                        |
|                                              |     | ▲ 18 × 15                   | 0.043              | 0.11           | 2210                                        | ▲ 16 × 25                   | 0.025              | 0.075          | 2555                                        |
|                                              |     |                             |                    |                |                                             | ● 18 × 20                   | 0.036              | 0.097          | 2490                                        |
| 1200                                         | 122 | 12.5 × 31.5                 | 0.024              | 0.078          | 2650                                        | 16 × 31.5                   | 0.022              | 0.066          | 3010                                        |
|                                              |     | ▲ 16 × 20                   | 0.027              | 0.078          | 2530                                        | ▲ 18 × 25                   | 0.026              | 0.070          | 2740                                        |
| 1500                                         | 152 | 12.5 × 35.5                 | 0.020              | 0.065          | 2880                                        | 16 × 35.5                   | 0.019              | 0.057          | 3150                                        |
| 1800                                         | 182 | 12.5 × 40                   | 0.017              | 0.056          | 3350                                        | 16 × 40                     | 0.016              | 0.048          | 3710                                        |
|                                              |     | ▲ 16 × 25                   | 0.021              | 0.060          | 2930                                        | ▲ 18 × 31.5                 | 0.021              | 0.057          | 3635                                        |
|                                              |     | ● 18 × 20                   | 0.026              | 0.067          | 2860                                        |                             |                    |                |                                             |
| 2200                                         | 222 | 16 × 31.5                   | 0.017              | 0.050          | 3450                                        | ▲ 18 × 35.5                 | 0.017              | 0.046          | 3680                                        |
|                                              |     | ▲ 18 × 25                   | 0.019              | 0.049          | 3140                                        |                             |                    |                |                                             |
| 2700                                         | 272 | 16 × 35.5                   | 0.015              | 0.044          | 3610                                        | 18 × 40                     | 0.014              | 0.038          | 3800                                        |
|                                              |     | ▲ 18 × 31.5                 | 0.015              | 0.040          | 4170                                        |                             |                    |                |                                             |
| 3300                                         | 332 | 16 × 40                     | 0.013              | 0.038          | 4080                                        |                             |                    |                |                                             |
|                                              |     | ▲ 18 × 35.5                 | 0.014              | 0.038          | 4220                                        |                             |                    |                |                                             |
| 3900                                         | 392 | 18 × 40                     | 0.012              | 0.032          | 4280                                        |                             |                    |                |                                             |

▲ : 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.

## ■ Standard Ratings

| Cap.(μF) | V (Code)<br>Item<br>Code | 63 (1J)                     |                    |                |                                           | 100 (2A)                    |                    |                |                                           |
|----------|--------------------------|-----------------------------|--------------------|----------------|-------------------------------------------|-----------------------------|--------------------|----------------|-------------------------------------------|
|          |                          | 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 |                                           |
| 6.8      | 6R8                      |                             |                    |                |                                           | 5 × 11                      | 2.3                | 9.3            | 62                                        |
| 15       | 150                      | 5 × 11                      | 2.3                | 9.3            | 62                                        | 6.3 × 11                    | 1.2                | 5.0            | 126                                       |
| 27       | 270                      |                             |                    |                |                                           | 8 × 11.5                    | 0.63               | 2.8            | 260                                       |
| 33       | 330                      | 6.3 × 11                    | 1.2                | 5.0            | 126                                       |                             |                    |                |                                           |
| 39       | 390                      |                             |                    |                |                                           | 8 × 15                      | 0.45               | 2.1            | 335                                       |
| 47       | 470                      | 8 × 11.5                    | 0.63               | 2.8            | 260                                       | 10 × 12.5                   | 0.43               | 1.8            | 325                                       |
| 56       | 560                      | 8 × 11.5                    | 0.63               | 2.8            | 260                                       | 8 × 20                      | 0.33               | 1.6            | 408                                       |
| 68       | 680                      |                             |                    |                |                                           | 10 × 16                     | 0.31               | 1.5            | 400                                       |
| 82       | 820                      | 8 × 15                      | 0.45               | 2.1            | 335                                       | 10 × 20                     | 0.21               | 0.94           | 518                                       |
|          |                          | ▲ 10 × 12.5                 | 0.43               | 1.8            | 325                                       | ▲ 12.5 × 15                 | 0.23               | 1.1            | 527                                       |
| 100      | 101                      |                             |                    |                |                                           | 10 × 25                     | 0.20               | 0.84           | 595                                       |
|          |                          |                             |                    |                |                                           | ▲ 12.5 × 20                 | 0.20               | 0.84           | 740                                       |
| 120      | 121                      | 8 × 20                      | 0.33               | 1.6            | 408                                       | 10 × 31.5                   | 0.15               | 0.71           | 740                                       |
|          |                          | ▲ 10 × 16                   | 0.31               | 1.5            | 400                                       | ▲ 12.5 × 20                 | 0.16               | 0.64           | 765                                       |
| 150      | 151                      |                             |                    |                |                                           | 16 × 15                     | 0.14               | 0.66           | 895                                       |
| 180      | 181                      | 10 × 20                     | 0.21               | 0.94           | 518                                       | 12.5 × 25                   | 0.12               | 0.45           | 875                                       |
|          |                          | ▲ 12.5 × 15                 | 0.23               | 1.1            | 527                                       | ▲ 18 × 15                   | 0.12               | 0.50           | 1030                                      |
| 220      | 221                      | 10 × 25                     | 0.20               | 0.84           | 595                                       | 12.5 × 31.5                 | 0.10               | 0.42           | 1010                                      |
|          |                          |                             |                    |                |                                           | ▲ 16 × 20                   | 0.091              | 0.38           | 1130                                      |
| 270      | 271                      | 10 × 31.5                   | 0.15               | 0.71           | 740                                       | 12.5 × 35.5                 | 0.083              | 0.35           | 1140                                      |
|          |                          | ▲ 12.5 × 20                 | 0.16               | 0.64           | 765                                       |                             |                    |                |                                           |
|          |                          | ● 16 × 15                   | 0.14               | 0.66           | 895                                       | ▲ 16 × 25                   | 0.073              | 0.27           | 1350                                      |
| 330      | 331                      | 12.5 × 25                   | 0.12               | 0.45           | 875                                       | 12.5 × 40                   | 0.071              | 0.30           | 1280                                      |
|          |                          |                             |                    |                |                                           | ▲ 18 × 20                   | 0.080              | 0.30           | 1300                                      |
| 390      | 391                      | 18 × 15                     | 0.12               | 0.50           | 1030                                      | 16 × 31.5                   | 0.054              | 0.20           | 1650                                      |
|          |                          |                             |                    |                |                                           | ▲ 18 × 25                   | 0.057              | 0.21           | 1560                                      |
| 470      | 471                      | 12.5 × 31.5                 | 0.10               | 0.42           | 1010                                      | 16 × 35.5                   | 0.045              | 0.17           | 1900                                      |
|          |                          | ▲ 16 × 20                   | 0.091              | 0.38           | 1130                                      | ▲ 18 × 31.5                 | 0.047              | 0.17           | 1720                                      |
| 560      | 561                      | 12.5 × 35.5                 | 0.083              | 0.35           | 1140                                      | 16 × 40                     | 0.040              | 0.15           | 2130                                      |
|          |                          | ▲ 16 × 25                   | 0.073              | 0.27           | 1350                                      |                             |                    |                |                                           |
| 680      | 681                      | 12.5 × 40                   | 0.071              | 0.30           | 1280                                      | 18 × 35.5                   | 0.040              | 0.15           | 1890                                      |
|          |                          | ▲ 18 × 20                   | 0.080              | 0.30           | 1300                                      |                             |                    |                |                                           |
| 820      | 821                      | 16 × 31.5                   | 0.054              | 0.20           | 1650                                      | 18 × 40                     | 0.036              | 0.13           | 2470                                      |
|          |                          | ▲ 18 × 25                   | 0.057              | 0.21           | 1560                                      |                             |                    |                |                                           |
| 1000     | 102                      | 16 × 35.5                   | 0.045              | 0.17           | 1900                                      |                             |                    |                |                                           |
|          |                          | ▲ 18 × 31.5                 | 0.047              | 0.17           | 1720                                      |                             |                    |                |                                           |
| 1200     | 122                      | 16 × 40                     | 0.040              | 0.15           | 2130                                      |                             |                    |                |                                           |
|          |                          | ▲ 18 × 35.5                 | 0.040              | 0.15           | 1890                                      |                             |                    |                |                                           |
| 1500     | 152                      | 18 × 40                     | 0.036              | 0.13           | 2470                                      |                             |                    |                |                                           |

▲ : 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.