

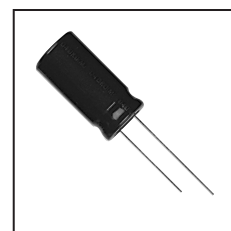
# RADIAL TYPE

# WL Series

Low Impedance, Miniature Sized

JAMICON®

- Smaller case sizes than WG series.
- Lower impedance at high frequency and high ripple current.
- Suitable for output of Motherboard and Switching power supplies.



## ● SPECIFICATION

| Item   | Characteristic  |   |        |      |                                   |       |      |  |  |
|--|---|---|--------|------|-----------------------------------|-------|------|--|--|
| Operation Temperature Range                        | -55 ~ +105°C  |   |        |      |                                   |       |      |  |  |
| Rated Working Voltage                              | 6.3 ~ 50VDC   |   |        |      |                                   |       |      |  |  |
| Capacitance Tolerance (120Hz 20°C)                 | ±20%(M)   |   |        |      |                                   |       |      |  |  |
| Leakage Current<br>(20°C)                          | $I \leq 0.01CV$ or $3 (\mu A)$  |   |        |      | I : Leakage Current ( $\mu A$ )   |       |      |  |  |
|  | *Whichever is greater after 3 minutes   |   |        |      | C : Rated Capacitance ( $\mu F$ ) |       |      |  |  |
|  |   |   |        |      | V : Working Voltage (V)           |       |      |  |  |
| Surge Voltage<br>(20°C)                            | W.V.  | 6.3                                     | 10     | 16   | 25                                | 35    | 50   |  |  |
|  | S.V.  | 8                                       | 13     | 20   | 32                                | 44    | 63   |  |  |
| Dissipation Factor (tan $\delta$ )<br>(120Hz 20°C) | Add 0.02 per 1000 $\mu F$ for more than 1000 $\mu F$  |   |        |      |                                   |       |      |  |  |
|  | W.V.  | 6.3                                     | 10     | 16   | 25                                | 35    | 50   |  |  |
|  | tan $\delta$  | 0.22                                    | 0.19   | 0.16 | 0.14                              | 0.12  | 0.10 |  |  |
| Low Temperature Stability                          | Impedance ratio at 120Hz  |   |        |      |                                   |       |      |  |  |
|  | Rated Voltage (V)   |   | 6.3~16 |      |                                   | 25~50 |      |  |  |
|  | -25°C / +20°C   |   | 3      |      |                                   | 2     |      |  |  |
|  | -55°C / +20°C   |   | 6      |      |                                   | 4     |      |  |  |
| Load Life  | After hours ( $\phi D \leq 8mm$ 1000 hours, $\phi D \geq 10mm$ 2000 hours) application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage $\leq$ rate working voltage) |   |        |      |                                   |       |      |  |  |
|  | Capacitance Change  | $\leq \pm 20\%$ of initial value        |        |      |                                   |       |      |  |  |
|  | Dissipation Factor  | $\leq 200\%$ of initial specified value |        |      |                                   |       |      |  |  |
|  | Leakage current   | $\leq$ initial specified value          |        |      |                                   |       |      |  |  |
| Shelf Life   | At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment)   |   |        |      |                                   |       |      |  |  |

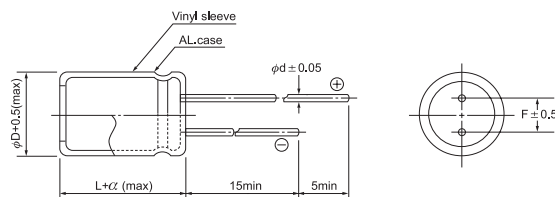
## ● DIMENSIONS (mm)

| $\phi D$ | 5   | 6.3 | 8   | 10  | 12.5 | 16  | 18  |
|----------|-----|-----|-----|-----|------|-----|-----|
| F        | 2.0 | 2.5 | 3.5 | 5.0 | 5.0  | 7.5 | 7.5 |
| d        | 0.5 | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 |
| $\alpha$ | 1.5 | 1.5 | 1.5 | 1.5 | 1.5  | 1.5 | 1.5 |

## ● RIPPLE CURRENT COEFFICIENTS

| Temperature(°C) | 65   | 75   | 85   | 95   | 105  |
|-----------------|------|------|------|------|------|
| Multiplier      | 2.12 | 1.92 | 1.69 | 1.50 | 1.00 |

| Frequency(Hz) | 60         | 120  | 400  | 1k   | 10k  | 100k |
|---------------|------------|------|------|------|------|------|
| W.V.          | Multiplier |      |      |      |      |      |
| 10~16V        | 0.45       | 0.60 | 0.83 | 0.94 | 0.98 | 1.00 |
| 25~35V        | 0.38       | 0.50 | 0.75 | 0.90 | 0.97 | 1.00 |
| 50V           | 0.36       | 0.46 | 0.70 | 0.88 | 0.94 | 1.00 |



● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)  
 Max impedance : Ω 100kHz  
 Max ripple current : mA(rms) 105°C 100kHz

| μF    | Code | V(Code)<br>Item | 6.3 (0J) |       |       |      | 10 (1A) |       |       |      |
|-------|------|-----------------|----------|-------|-------|------|---------|-------|-------|------|
|       |      |                 | DxL      | IMP.  |       | R.C. | DxL     | IMP.  |       | R.C. |
|       |      |                 |          | 20°C  | -10°C |      |         | 20°C  | -10°C |      |
| 100   | 101  |                 |          |       | →     | 5x11 | 0.312   | 0.937 | 230   |      |
| 120   | 121  |                 |          |       | →     | 5x11 | 0.266   | 0.798 | 250   |      |
| 150   | 151  |                 | 5x11     | 0.219 | 0.656 | 250  | 5x11    | 0.218 | 0.653 | 280  |
| 180   | 181  |                 | 5x11     | 0.190 | 0.571 | 270  | 5x15    | 0.189 | 0.568 | 360  |
|       |      |                 |          |       |       | →    | 6.3x11  | 0.189 | 0.568 | 350  |
| 220   | 221  |                 | 5x11     | 0.162 | 0.487 | 300  | 5x15    | 0.161 | 0.484 | 400  |
|       |      |                 |          |       |       | →    | 6.3x11  | 0.161 | 0.484 | 390  |
| 270   | 271  |                 | 5x15     | 0.148 | 0.444 | 380  | 5x15    | 0.147 | 0.442 | 440  |
|       |      |                 | 6.3x11   | 0.148 | 0.444 | 380  | 6.3x11  | 0.147 | 0.442 | 430  |
| 330   | 331  |                 | 5x15     | 0.130 | 0.389 | 420  | 6.3x15  | 0.129 | 0.387 | 550  |
|       |      |                 | 6.3x11   | 0.130 | 0.389 | 420  | 8x11.5  | 0.129 | 0.387 | 560  |
| 390   | 391  |                 | 6.3x15   | 0.117 | 0.351 | 520  | 6.3x15  | 0.116 | 0.349 | 600  |
|       |      |                 | 8x11.5   | 0.117 | 0.351 | 530  | 8x11.5  | 0.116 | 0.349 | 610  |
| 470   | 471  |                 | 6.3x15   | 0.106 | 0.319 | 570  | 6.3x15  | 0.106 | 0.317 | 660  |
|       |      |                 | 8x11.5   | 0.106 | 0.319 | 580  | 8x11.5  | 0.106 | 0.317 | 670  |
| 560   | 561  |                 | 6.3x15   | 0.094 | 0.283 | 620  | 6.3x15  | 0.094 | 0.281 | 720  |
|       |      |                 | 8x11.5   | 0.094 | 0.283 | 630  | 8x11.5  | 0.094 | 0.281 | 730  |
| 680   | 681  |                 | 6.3x15   | 0.084 | 0.252 | 680  | 8x15    | 0.083 | 0.250 | 900  |
|       |      |                 | 8x11.5   | 0.084 | 0.252 | 700  | 10x12.5 | 0.083 | 0.250 | 950  |
| 820   | 821  |                 | 8x15     | 0.077 | 0.230 | 860  | 8x15    | 0.076 | 0.228 | 990  |
|       |      |                 | 10x12.5  | 0.077 | 0.230 | 900  | 10x12.5 | 0.076 | 0.228 | 1040 |
| 1000  | 102  |                 | 8x15     | 0.069 | 0.206 | 950  | 8x20    | 0.068 | 0.204 | 1240 |
|       |      |                 | 10x12.5  | 0.069 | 0.206 | 990  | 10x16   | 0.068 | 0.204 | 1280 |
| 1200  | 122  |                 | 8x20     | 0.059 | 0.178 | 1180 | 10x20   | 0.059 | 0.177 | 1540 |
|       |      |                 | 10x16    | 0.059 | 0.178 | 1210 | 12.5x15 | 0.059 | 0.148 | 1480 |
| 1500  | 152  |                 | 10x20    | 0.036 | 0.107 | 1450 | 10x25   | 0.035 | 0.106 | 1830 |
|       |      |                 | 12.5x15  | 0.036 | 0.089 | 1390 | 12.5x18 | 0.035 | 0.089 | 1720 |
| 1800  | 182  |                 | 10x20    | 0.031 | 0.094 | 1590 | 10x25   | 0.031 | 0.094 | 2000 |
|       |      |                 | 12.5x15  | 0.031 | 0.078 | 1520 | 12.5x18 | 0.031 | 0.078 | 1880 |
| 2200  | 222  |                 | 10x25    | 0.028 | 0.083 | 1880 | 10x28   | 0.027 | 0.082 | 2250 |
|       |      |                 | 12.5x18  | 0.028 | 0.069 | 1770 | 16x15   | 0.027 | 0.068 | 1960 |
| 2700  | 272  |                 | 10x28    | 0.025 | 0.075 | 2140 | 12.5x20 | 0.025 | 0.062 | 2250 |
|       |      |                 | 16x15    | 0.025 | 0.063 | 1870 | 16x15   | 0.025 | 0.062 | 2100 |
| 3300  | 332  |                 | 12.5x20  | 0.023 | 0.058 | 2150 | 12.5x25 | 0.023 | 0.057 | 2650 |
|       |      |                 | 16x15    | 0.023 | 0.058 | 2010 | 18x15   | 0.023 | 0.057 | 2300 |
| 3900  | 392  |                 | 12.5x25  | 0.022 | 0.055 | 2520 | 12.5x30 | 0.022 | 0.055 | 3030 |
|       |      |                 | 18x15    | 0.022 | 0.055 | 2190 | 16x20   | 0.022 | 0.055 | 2670 |
| 4700  | 472  |                 | 12.5x30  | 0.021 | 0.053 | 2860 | 12.5x35 | 0.021 | 0.053 | 3210 |
|       |      |                 | 16x20    | 0.021 | 0.053 | 2520 | 16x25   | 0.021 | 0.053 | 3050 |
| 5600  | 562  |                 | 12.5x35  | 0.020 | 0.050 | 3060 | 12.5x40 | 0.020 | 0.049 | 3550 |
|       |      |                 | 16x25    | 0.020 | 0.050 | 2900 | 18x20   | 0.020 | 0.049 | 2940 |
| 6800  | 682  |                 | 12.5x40  | 0.019 | 0.047 | 3450 | 16x31.5 | 0.019 | 0.047 | 3680 |
|       |      |                 | 18x20    | 0.019 | 0.047 | 2850 | 18x25   | 0.019 | 0.047 | 3390 |
| 8200  | 822  |                 | 16x31.5  | 0.018 | 0.045 | 3540 | 16x35.5 | 0.018 | 0.044 | 4010 |
|       |      |                 | 18x25    | 0.018 | 0.045 | 3260 | 18x31.5 | 0.018 | 0.044 | 3870 |
| 10000 | 103  |                 | 16x35.5  | 0.017 | 0.043 | 3880 |         |       |       |      |
|       |      |                 | 18x31.5  | 0.017 | 0.043 | 3740 | 18x35.5 | 0.017 | 0.042 | 4190 |

All blank voltage on sleeve marking is the same voltage as" → "point to.

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)  
 Max impedance : Ω 100kHz  
 Max ripple current : mA(rms) 105°C 100kHz

| μF   | Code | V(Code)<br>Item | 16 (1C) |       |       | 25 (1E) |         |       |       |      |
|------|------|-----------------|---------|-------|-------|---------|---------|-------|-------|------|
|      |      |                 | DxL     | IMP.  |       | R.C.    | DxL     | IMP.  |       | R.C. |
|      |      |                 |         | 20°C  | -10°C |         |         | 20°C  | -10°C |      |
| 47   | 470  |                 |         |       | →     | 5x11    | 0.283   | 0.085 | 220   |      |
| 56   | 560  |                 | 5x11    | 0.253 | 0.759 | 190     | 5x11    | 0.253 | 0.758 | 240  |
| 68   | 680  |                 | 5x11    | 0.221 | 0.662 | 210     | 5x11    | 0.220 | 0.661 | 270  |
| 82   | 820  |                 | 5x11    | 0.203 | 0.610 | 230     | 5x15    | 0.203 | 0.609 | 340  |
|      |      |                 |         |       |       | →       | 6.3x11  | 0.203 | 0.609 | 330  |
| 100  | 101  |                 | 5x11    | 0.183 | 0.550 | 250     | 5x15    | 0.183 | 0.549 | 370  |
|      |      |                 |         |       |       | →       | 6.3x11  | 0.183 | 0.549 | 370  |
| 120  | 121  |                 | 5x15    | 0.156 | 0.469 | 320     | 5x15    | 0.156 | 0.468 | 410  |
|      |      |                 | 6.3x11  | 0.156 | 0.469 | 320     | 6.3x11  | 0.156 | 0.468 | 400  |
| 150  | 151  |                 | 5x15    | 0.128 | 0.383 | 360     | 6.3x15  | 0.128 | 0.383 | 510  |
|      |      |                 | 6.3x11  | 0.128 | 0.383 | 350     | 8x11.5  | 0.128 | 0.383 | 520  |
| 180  | 181  |                 | 5x15    | 0.111 | 0.333 | 390     | 6.3x15  | 0.111 | 0.333 | 560  |
|      |      |                 | 6.3x11  | 0.111 | 0.333 | 390     | 8x11.5  | 0.111 | 0.333 | 570  |
| 220  | 221  |                 | 5x15    | 0.095 | 0.284 | 430     | 6.3x15  | 0.095 | 0.284 | 620  |
|      |      |                 | 6.3x11  | 0.095 | 0.284 | 430     | 8x11.5  | 0.095 | 0.284 | 630  |
| 270  | 271  |                 | 6.3x15  | 0.086 | 0.259 | 550     | 8x15    | 0.086 | 0.259 | 790  |
|      |      |                 | 8x11.5  | 0.086 | 0.259 | 550     | 10x12.5 | 0.086 | 0.259 | 830  |
| 330  | 331  |                 | 6.3x15  | 0.076 | 0.227 | 600     | 8x15    | 0.076 | 0.227 | 870  |
|      |      |                 | 8x11.5  | 0.076 | 0.227 | 610     | 10x12.5 | 0.076 | 0.227 | 910  |
| 390  | 391  |                 | 8x15    | 0.068 | 0.205 | 750     | 8x20    | 0.068 | 0.205 | 1080 |
|      |      |                 | 10x12.5 | 0.068 | 0.205 | 790     | 10x16   | 0.068 | 0.205 | 1100 |
| 470  | 471  |                 | 8x15    | 0.062 | 0.186 | 820     | 8x20    | 0.062 | 0.186 | 1180 |
|      |      |                 | 10x12.5 | 0.062 | 0.186 | 860     | 10x16   | 0.062 | 0.186 | 1210 |
| 560  | 561  |                 | 8x20    | 0.055 | 0.165 | 1020    | 8x20    | 0.055 | 0.165 | 1290 |
|      |      |                 | 10x16   | 0.055 | 0.165 | 1050    | 10x16   | 0.055 | 0.165 | 1320 |
| 680  | 681  |                 | 8x20    | 0.049 | 0.147 | 1120    | 10x20   | 0.049 | 0.147 | 1610 |
|      |      |                 | 10x16   | 0.049 | 0.147 | 1150    | 12.5x15 | 0.049 | 0.122 | 1550 |
| 820  | 821  |                 | 8x20    | 0.045 | 0.134 | 1230    | 10x25   | 0.045 | 0.134 | 1950 |
|      |      |                 | 10x16   | 0.045 | 0.134 | 1270    | 12.5x18 | 0.045 | 0.112 | 1830 |
| 1000 | 102  |                 | 10x20   | 0.040 | 0.120 | 1540    | 10x28   | 0.040 | 0.120 | 2270 |
|      |      |                 | 12.5x15 | 0.040 | 0.100 | 1480    | 16x15   | 0.040 | 0.100 | 1980 |
| 1200 | 122  |                 | 10x25   | 0.035 | 0.104 | 1870    | 12.5x20 | 0.035 | 0.104 | 2320 |
|      |      |                 | 12.5x18 | 0.035 | 0.087 | 1750    | 16x15   | 0.035 | 0.087 | 2170 |
| 1500 | 152  |                 | 10x28   | 0.029 | 0.088 | 2100    | 12.5x25 | 0.029 | 0.074 | 2710 |
|      |      |                 | 16x15   | 0.029 | 0.074 | 1830    | 18x15   | 0.029 | 0.074 | 2480 |
| 1800 | 182  |                 | 12.5x20 | 0.026 | 0.065 | 2140    | 12.5x30 | 0.026 | 0.065 | 3230 |
|      |      |                 | 16x15   | 0.026 | 0.065 | 2000    | 16x20   | 0.026 | 0.065 | 2840 |
| 2200 | 222  |                 | 12.5x25 | 0.023 | 0.057 | 2500    | 12.5x35 | 0.023 | 0.057 | 3470 |
|      |      |                 | 18x15   | 0.023 | 0.057 | 2170    | 16x25   | 0.023 | 0.057 | 3290 |
| 2700 | 272  |                 | 12.5x30 | 0.021 | 0.052 | 2890    | 12.5x40 | 0.021 | 0.052 | 3910 |
|      |      |                 | 16x20   | 0.021 | 0.052 | 2540    | 18x20   | 0.021 | 0.052 | 3240 |
| 3300 | 332  |                 | 12.5x35 | 0.019 | 0.048 | 3130    | 16x31.5 | 0.019 | 0.047 | 4100 |
|      |      |                 | 16x25   | 0.019 | 0.048 | 2970    | 18x25   | 0.019 | 0.047 | 3770 |
| 3900 | 392  |                 | 12.5x40 | 0.018 | 0.046 | 3500    | 16x35.5 | 0.018 | 0.046 | 4530 |
|      |      |                 | 18x20   | 0.018 | 0.046 | 2900    | 18x31.5 | 0.018 | 0.046 | 4360 |
| 4700 | 472  |                 | 16x31.5 | 0.016 | 0.040 | 3560    |         |       |       |      |
|      |      |                 | 18x25   | 0.016 | 0.040 | 3280    | 18x35.5 | 0.016 | 0.040 | 4720 |
| 5600 | 562  |                 | 16x35.5 | 0.015 | 0.038 | 3880    |         |       |       |      |
|      |      |                 | 18x31.5 | 0.015 | 0.038 | 3740    |         |       |       |      |

All blank voltage on sleeve marking is the same voltage as " → "point to.

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)  
 Max impedance : Ω 100kHz  
 Max ripple current : mA(rms) 105°C 100kHz

| μF   | Code | V(Code)<br>Item | 35 (1V) |       |       |      | 50 (1H) |       |       |      |
|------|------|-----------------|---------|-------|-------|------|---------|-------|-------|------|
|      |      |                 | DxL     | IMP.  |       | R.C. | DxL     | IMP.  |       | R.C. |
|      |      |                 |         | 20°C  | -10°C |      |         | 20°C  | -10°C |      |
| 0.47 | R47  |                 |         |       | →     | 5x11 | 3.006   | 9.017 | 27    |      |
| 1    | 010  |                 |         |       | →     | 5x11 | 2.825   | 8.476 | 40    |      |
| 2.2  | 2R2  |                 |         |       | →     | 5x11 | 1.511   | 4.533 | 60    |      |
| 3.3  | 3R3  |                 |         |       | →     | 5x11 | 1.259   | 3.777 | 70    |      |
| 4.7  | 4R7  |                 | 5x11    | 1.062 | 3.185 | 75   | 5x11    | 1.061 | 3.182 | 85   |
| 6.8  | 6R8  |                 | 5x11    | 0.917 | 2.752 | 90   | 5x11    | 0.916 | 2.749 | 100  |
| 10   | 100  |                 | 5x11    | 0.832 | 2.495 | 110  | 5x11    | 0.831 | 2.493 | 130  |
| 15   | 150  |                 | 5x11    | 0.610 | 1.829 | 130  | 5x11    | 0.609 | 1.828 | 150  |
| 18   | 180  |                 | 5x11    | 0.531 | 1.594 | 150  | 5x11    | 0.531 | 1.593 | 170  |
| 22   | 220  |                 | 5x11    | 0.454 | 1.361 | 160  | 5x11    | 0.453 | 1.360 | 190  |
| 27   | 270  |                 | 5x11    | 0.400 | 1.201 | 180  | 5x11    | 0.400 | 1.200 | 210  |
| 33   | 330  |                 | 5x11    | 0.353 | 1.058 | 200  | 5x11    | 0.353 | 1.058 | 230  |
| 39   | 390  |                 | 5x11    | 0.320 | 0.096 | 210  | 5x15    | 0.320 | 0.959 | 290  |
|      |      |                 |         |       |       | →    | 6.3x11  | 0.320 | 0.959 | 280  |
| 47   | 470  |                 | 5x11    | 0.283 | 0.849 | 230  | 5x15    | 0.283 | 0.849 | 310  |
|      |      |                 |         |       |       | →    | 6.3x11  | 0.283 | 0.849 | 310  |
| 56   | 560  |                 | 5x15    | 0.252 | 0.757 | 290  | 5x15    | 0.252 | 0.757 | 340  |
|      |      |                 | 6.3x11  | 0.252 | 0.757 | 290  | 6.3x11  | 0.252 | 0.757 | 340  |
| 68   | 680  |                 | 5x15    | 0.220 | 0.660 | 320  | 6.3x15  | 0.220 | 0.660 | 430  |
|      |      |                 | 6.3x11  | 0.220 | 0.660 | 320  | 8x11.5  | 0.220 | 0.660 | 430  |
| 82   | 820  |                 | 5x15    | 0.203 | 0.608 | 360  | 6.3x15  | 0.203 | 0.608 | 470  |
|      |      |                 | 6.3x11  | 0.203 | 0.608 | 350  | 8x11.5  | 0.203 | 0.608 | 480  |
| 100  | 101  |                 | 6.3x15  | 0.183 | 0.549 | 450  | 8x15    | 0.183 | 0.548 | 590  |
|      |      |                 | 8x11.5  | 0.183 | 0.549 | 450  | 10x12.5 | 0.183 | 0.548 | 620  |
| 120  | 121  |                 | 6.3x15  | 0.109 | 0.327 | 490  | 8x15    | 0.109 | 0.327 | 650  |
|      |      |                 | 8x11.5  | 0.109 | 0.327 | 500  | 10x12.5 | 0.109 | 0.327 | 680  |
| 150  | 151  |                 | 6.3x15  | 0.089 | 0.268 | 550  | 8x20    | 0.089 | 0.268 | 820  |
|      |      |                 | 8x11.5  | 0.089 | 0.268 | 550  | 10x16   | 0.089 | 0.268 | 840  |
| 180  | 181  |                 | 8x15    | 0.078 | 0.233 | 680  | 8x20    | 0.078 | 0.233 | 900  |
|      |      |                 | 10x12.5 | 0.078 | 0.233 | 720  | 10x16   | 0.078 | 0.233 | 920  |
| 220  | 221  |                 | 8x15    | 0.066 | 0.198 | 750  | 8x20    | 0.066 | 0.198 | 1000 |
|      |      |                 | 10x12.5 | 0.066 | 0.198 | 790  | 10x16   | 0.066 | 0.198 | 1020 |
| 270  | 271  |                 | 8x20    | 0.060 | 0.181 | 950  | 10x20   | 0.060 | 0.181 | 1250 |
|      |      |                 | 10x16   | 0.060 | 0.181 | 970  | 12.5x15 | 0.060 | 0.151 | 1200 |
| 330  | 331  |                 | 8x20    | 0.053 | 0.159 | 1050 | 10x25   | 0.053 | 0.159 | 1530 |
|      |      |                 | 10x16   | 0.053 | 0.159 | 1080 | 12.5x18 | 0.053 | 0.132 | 1430 |
| 390  | 391  |                 | 10x20   | 0.048 | 0.143 | 1290 | 10x25   | 0.048 | 0.143 | 1660 |
|      |      |                 | 12.5x15 | 0.048 | 0.119 | 1240 | 12.5x18 | 0.048 | 0.119 | 1560 |
| 470  | 471  |                 | 10x20   | 0.043 | 0.130 | 1420 | 12.5x20 | 0.043 | 0.108 | 1790 |
|      |      |                 | 12.5x15 | 0.043 | 0.108 | 1360 | 16x15   | 0.043 | 0.108 | 1680 |
| 560  | 561  |                 | 10x25   | 0.038 | 0.115 | 1710 | 12.5x25 | 0.038 | 0.096 | 2150 |
|      |      |                 | 12.5x18 | 0.038 | 0.096 | 1610 | 18x15   | 0.038 | 0.096 | 1870 |
| 680  | 681  |                 | 10x28   | 0.034 | 0.103 | 1990 | 12.5x30 | 0.034 | 0.086 | 2580 |
|      |      |                 | 16x15   | 0.034 | 0.086 | 1730 | 16x20   | 0.034 | 0.086 | 2260 |
| 820  | 821  |                 | 10x30   | 0.031 | 0.094 | 2250 | 12.5x35 | 0.031 | 0.078 | 2880 |
|      |      |                 | 16x15   | 0.031 | 0.078 | 1900 | 16x25   | 0.031 | 0.078 | 2730 |
| 1000 | 102  |                 | 12.5x25 | 0.028 | 0.070 | 2480 | 12.5x40 | 0.028 | 0.070 | 3390 |
|      |      |                 | 18x15   | 0.028 | 0.070 | 2150 | 18x20   | 0.028 | 0.070 | 2800 |
| 1200 | 122  |                 | 12.5x30 | 0.024 | 0.061 | 2940 | 16x31.5 | 0.024 | 0.061 | 3660 |
|      |      |                 | 16x20   | 0.024 | 0.061 | 2590 | 18x25   | 0.024 | 0.061 | 3370 |
| 1500 | 152  |                 | 12.5x35 | 0.021 | 0.051 | 3160 | 16x35.5 | 0.021 | 0.051 | 4040 |
|      |      |                 | 16x25   | 0.021 | 0.051 | 3000 | 18x31.5 | 0.021 | 0.051 | 3890 |
| 1800 | 182  |                 | 12.5x40 | 0.018 | 0.045 | 3690 |         |       |       |      |
|      |      |                 | 18x20   | 0.018 | 0.045 | 3050 |         |       |       |      |
| 2200 | 222  |                 | 16x31.5 | 0.016 | 0.040 | 3810 |         |       |       |      |
|      |      |                 | 18x25   | 0.016 | 0.040 | 3510 |         |       |       |      |

All blank voltage on sleeve marking is the same voltage as" → "point to.

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)  
 Max impedance : Ω 100kHz  
 Max ripple current : mA(rms) 105°C 100kHz

| μF   | Code | V(Code)<br>Item | DxL     | 63 (1J) |       | R.C. |
|------|------|-----------------|---------|---------|-------|------|
|      |      |                 |         | IMP.    |       |      |
|      |      |                 |         | 20°C    | -10°C |      |
| 1    | 010  |                 | 5x11    | 3.158   | 9.473 | 40   |
| 2.2  | 2R2  |                 | 5x11    | 1.813   | 5.439 | 60   |
| 3.3  | 3R3  |                 | 5x11    | 1.511   | 4.533 | 70   |
| 4.7  | 4R7  |                 | 5x11    | 1.273   | 3.819 | 85   |
| 10   | 100  |                 | 5x11    | 0.997   | 2.991 | 130  |
| 22   | 220  |                 | 5x11    | 0.544   | 1.632 | 190  |
|      |      |                 | 6.3x11  | 0.544   | 1.632 | 210  |
| 33   | 330  |                 | 5x15    | 0.423   | 1.269 | 260  |
|      |      |                 | 6.3x11  | 0.423   | 1.269 | 260  |
| 47   | 470  |                 | 8x11.5  | 0.339   | 1.018 | 360  |
| 68   | 680  |                 | 8x15    | 0.220   | 0.660 | 490  |
| 100  | 101  |                 | 10x12.5 | 0.183   | 0.548 | 620  |
| 220  | 221  |                 | 10x20   | 0.094   | 0.283 | 1130 |
| 330  | 331  |                 | 10x30   | 0.076   | 0.227 | 1660 |
| 470  | 471  |                 | 12.5x25 | 0.062   | 0.155 | 1970 |
| 680  | 681  |                 | 12.5x35 | 0.039   | 0.098 | 2760 |
| 1000 | 102  |                 | 16x25   | 0.032   | 0.080 | 3020 |