

# ALUMINUM ELECTROLYTIC CAPACITORS

**PW** Miniature Sized, Low Impedance,  
High Reliability For Switching Power Supplies  
series



- Smaller case size and lower impedance than PM series.
- 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)   | 6.3 to 100  | 160 to 450                            |    |   |    |    |    |     |            |           |           |
|                               | Leakage current   | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (µA), whichever is greater. |                                       |    |   |    |    |    |     |            |           |           |
| 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 |    |   |    |    |    |     |            |           |           |
|                               | Rated voltage (V)   | 6.3   | 10                                    | 16 | 25  | 35 | 50 | 63 | 100 | 160 to 250 | 315 - 350 | 400 - 450 |
| Stability at Low Temperature  | Impedance ratio (MAX.)  | Z-25°C / Z+20°C   | —                                     | —  | —   | —  | 3  | 3  | 4   | 6          | 15        |           |
|                               |   | Z-40°C / Z+20°C   | —                                     | —  | —   | —  | —  | 4  | 6   | 8          | 10        | —         |
|                               |   | Z-55°C / Z+20°C   | 3                                     | 3  | 3   | 3  | —  | —  | —   | —          | —         | —         |
| 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                    |    | Within ±20% of the initial capacitance value      |    |    |    |     |            |           |           |
|                               |   |   | tan δ                                 |    | 200% or less than the initial specified value     |    |    |    |     |            |           |           |
| 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.   |   | Leakage current                       |    | Less than or equal to the initial specified value |    |    |    |     |            |           |           |
|                               |   |   |                                       |    |   |    |    |    |     |            |           |           |
| Marking                       | Printed with white color letter on dark brown sleeve.   |   |                                       |    |   |    |    |    |     |            |           |           |

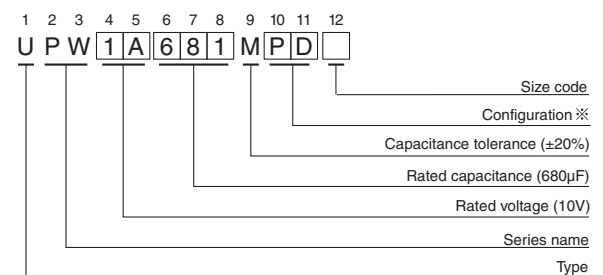
## Radial Lead Type



| α | (L = 7) 1.0  |              | (mm) |      |     |     |     |     |      |     |     |      |      |      |  |
|---|--------------|--------------|------|------|-----|-----|-----|-----|------|-----|-----|------|------|------|--|
|   | (L < 20) 1.5 | (L ≥ 20) 2.0 | 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 |  |
|   |              |              | φd   | 0.45 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6  | 0.8 | 0.8 | 1.0  | 1.0  | 1.0  |  |
|   |              |              | β    | 0.5  | 0.5 | 0.5 | 0.5 | 0.5 | 0.5  | 0.5 | 0.5 | 0.5  | 1.0  | 1.0  |  |

※: 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

| Cap. (μF) | V(Code) | Item Code    | 16 (1C)                     |                    |                |   | 25 (1E)                     |                    |                |   |
|-----------|---------|--------------|-----------------------------|--------------------|----------------|---|-----------------------------|--------------------|----------------|---|
|           |         |              | 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 |   |
| 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.

## 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) | Code | Item    | 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                      | 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                                       |                             |                    |                |   |     |
|          |      |         |                             |                    |                |   | 10 × 16                     | 0.37               | 0.74           | 420                                       |     |
| 47       | 470  |         | 8 × 11.5                    | 0.342              | 0.684          | 405                                       | ▲                           | 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                                      |                             |                    |                |   |     |
|          |      | ※       | 16 × 20                     | 0.059              | 0.118          | 1770                                      |                             |                    |                |   |     |
| 560      | 561  |         |                             |                    |                |   | 18 × 31.5                   | 0.068              | 0.136          | 1370                                      |     |
| 680      | 681  |         | 16 × 25                     | 0.050              | 0.100          | 2160                                      | 16 × 35.5                   | 0.064              | 0.128          | 1410                                      |     |
|          |      | ▲       | 12.5 × 35.5                 | 0.047              | 0.094          | 2270                                      |                             |                    |                |   |     |
|          |      | ※       | 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      |           |     |           |           |           |     |           |           |         | Case size<br>φD × L (mm) | ※ |

※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.

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

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Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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