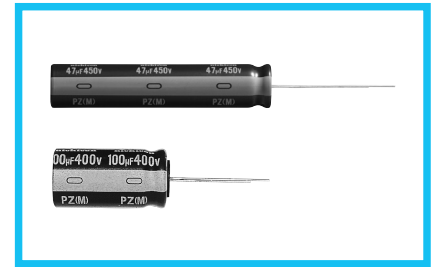
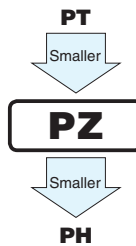


**PZ** High Voltage, Miniature-sized series

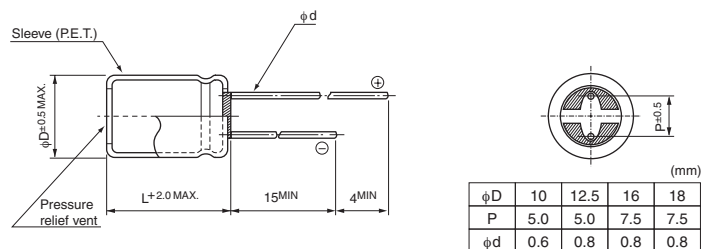


- High ripple current.
- Load life of 2000 hours at 105°C.
- Suited for ballast applications.
- Compliant to the RoHS directive (2011/65/EU).

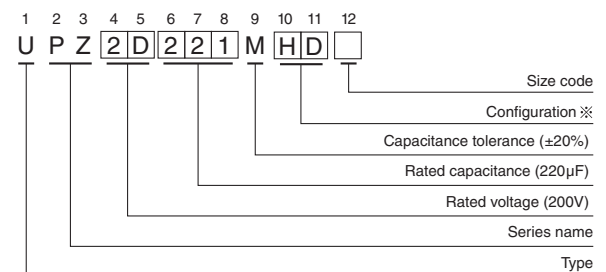
## Specifications

| Item                            | Performance Characteristics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|---|--------------------|----------------------------------------------|-------|-----------------------------------------------|-----------------|---------------------------------------------------|---------------------------------|-----------------|------|------|------|------|---|
| Category Temperature Range      | -25 to +105°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Rated Voltage Range             | 200 to 450V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Rated Capacitance Range         | 18 to 470μF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Capacitance Tolerance           | ± 20% at 120Hz, 20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Leakage Current                 | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.04CV+100 (μA).                                                                                                                                                                                                                                                                                                                                                                                                                |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Tangent of loss angle (tan δ)   | Measurement frequency : 120Hz at 20°C <table><tr><td>Rated voltage (V)</td><td>200</td><td>250</td><td>400</td><td>420</td><td>450</td></tr><tr><td>tan δ (MAX.)</td><td>0.12</td><td>0.15</td><td>0.15</td><td>0.20</td><td>0.20</td></tr></table>                                                                                                                                                                                                                                                                     |      |      |      |      |   | Rated voltage (V)  | 200                                          | 250   | 400                                           | 420             | 450                                               | tan δ (MAX.)                    | 0.12            | 0.15 | 0.15 | 0.20 | 0.20 |   |
| Rated voltage (V)               | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 250  | 400  | 420  | 450  |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| tan δ (MAX.)                    | 0.12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.15 | 0.15 | 0.20 | 0.20 |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Stability at Low Temperature    | Measurement frequency : 120Hz <table><tr><td>Rated voltage (V)</td><td>200</td><td>250</td><td>400</td><td>420</td><td>450</td></tr><tr><td>Impedance ratio ZT / Z20 (MAX.)</td><td>Z-25°C / Z+20°C</td><td>3</td><td>3</td><td>8</td><td>8</td><td>8</td></tr></table>                                                                                                                                                                                                                                                 |      |      |      |      |   | Rated voltage (V)  | 200                                          | 250   | 400                                           | 420             | 450                                               | Impedance ratio ZT / Z20 (MAX.) | Z-25°C / Z+20°C | 3    | 3    | 8    | 8    | 8 |
| Rated voltage (V)               | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 250  | 400  | 420  | 450  |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Impedance ratio ZT / Z20 (MAX.) | Z-25°C / Z+20°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3    | 3    | 8    | 8    | 8 |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Endurance                       | <div>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 2000 hours at 105°C, the peak voltage shall not exceed the rated voltage.</div> <table><tr><td>Capacitance change</td><td>Within ±20% of the initial capacitance value</td></tr><tr><td>tan δ</td><td>200% or less than the initial specified value</td></tr><tr><td>Leakage current</td><td>Less than or equal to the initial specified value</td></tr></table> |      |      |      |      |   | Capacitance change | Within ±20% 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 |                                 |                 |      |      |      |      |   |
| Capacitance change              | Within ±20% 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Shelf Life                      | After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.                                                                                                                                                                                                                                                                                 |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |
| Marking                         | Printed with white color letter on dark brown sleeve.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |      |      |   |                    |                                              |       |                                               |                 |                                                   |                                 |                 |      |      |      |      |   |

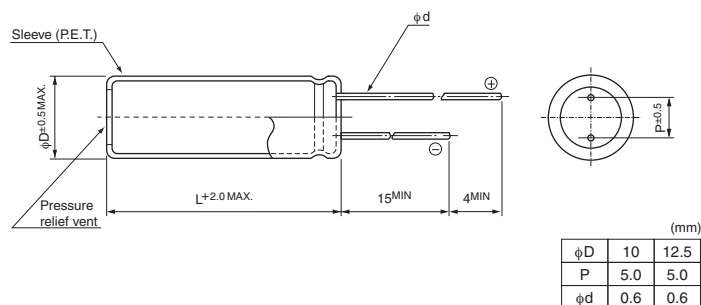
## Radial Lead Type



## Type numbering system (Example : 200V 220µF)



## Pencil - shaped Type



### ※ Configuration

|            |                  |                    |
|------------|------------------|--------------------|
| Size code  | Blank, 6         | 9                  |
| φ D        | Pb-free leadwire | Pb-free PET sleeve |
| 10         | PD               | ND                 |
| 12.5 to 18 | HD               | NY                 |

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

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.

## ■ Dimensions

| V        |      | 200                      |              | 400                      |            | 420                    |            | 450                    |              |
|----------|------|--------------------------|--------------|--------------------------|------------|------------------------|------------|------------------------|--------------|
| Cap.(μF) | Code | 2D                       |              | 2G                       |            | W6                     |            | 2W                     |              |
| 18       | 180  |                          |              |                          |            |                        |            | 10 × 31.5              | 180          |
| 22       | 220  |                          |              |                          |            | 10 × 31.5              | 200        |                        |              |
| 27       | 270  |                          |              | 10 × 31.5                | 240        |                        |            |                        |              |
| 33       | 330  |                          |              |                          |            |                        |            | 12.5 × 31.5            | 280          |
| 39       | 390  |                          |              |                          |            | 12.5 × 31.5            | 310        | 12.5 × 35.5            | 320          |
| 47       | 470  |                          |              | 12.5 × 31.5              | 370        | 12.5 × 35.5            | 360        | 12.5 × 40              | 380          |
| 56       | 560  |                          |              | 12.5 × 35.5              | 420        | 12.5 × 40              | 430        | 16 × 31.5              | 440          |
| 68       | 680  |                          |              | 12.5 × 40                | 480        | 16 × 31.5              | 510        | 16 × 35.5              | 490          |
| 82       | 820  | 10 × 31.5                | 400          |                          |            | 16 × 35.5              | 570        | 16 × 40<br>▲ 18 × 31.5 | 550<br>550   |
| 100      | 101  |                          |              | 16 × 31.5                | 580        | 16 × 40<br>▲ 18 × 31.5 | 610<br>610 | 18 × 35.5              | 650          |
| 120      | 121  |                          |              | 16 × 35.5<br>▲ 18 × 31.5 | 670<br>670 | 18 × 35.5              | 660        | 18 × 40                | 740          |
| 150      | 151  | 12.5 × 31.5              | 620          | 16 × 40<br>▲ 18 × 35.5   | 770<br>770 | 18 × 40                | 710        |                        |              |
| 180      | 181  | 12.5 × 35.5              | 700          | 18 × 40                  | 880        |                        |            |                        |              |
| 220      | 221  | 12.5 × 40                | 800          |                          |            |                        |            |                        |              |
| 270      | 271  | 16 × 31.5                | 870          |                          |            |                        |            |                        |              |
| 330      | 331  | 16 × 35.5<br>▲ 18 × 31.5 | 1010<br>1010 |                          |            |                        |            |                        |              |
| 390      | 391  | 16 × 40<br>▲ 18 × 35.5   | 1130<br>1120 |                          |            |                        |            |                        |              |
| 470      | 471  | 18 × 40                  | 1270         |                          |            |                        |            | Case size φD × L (mm)  | Rated ripple |

Rated ripple current (mA rms) at 105°C 120Hz

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

## Pencil-shaped Type

| V        |      | 200         |      | 250         |      | 400         |     | 450                   |              |
|----------|------|-------------|------|-------------|------|-------------|-----|-----------------------|--------------|
| Cap.(μF) | Code | 2D          |      | 2E          |      | 2G          |     | 2W                    |              |
| 33       | 330  |             |      |             |      |             |     | ● 10 × 40             | 360          |
| 47       | 470  |             |      |             |      | ● 10 × 40   | 435 | ● 10 × 50             | 450          |
| 56       | 560  |             |      |             |      | ● 10 × 50   | 520 |                       |              |
| 82       | 820  |             |      | ● 10 × 40   | 610  |             |     | ● 12.5 × 50           | 730          |
| 100      | 101  |             |      |             |      | ● 12.5 × 50 | 770 |                       |              |
| 120      | 121  | ● 10 × 40   | 680  | ● 10 × 50   | 740  |             |     |                       |              |
| 150      | 151  | ● 10 × 50   | 830  |             |      |             |     |                       |              |
| 220      | 221  |             |      | ● 12.5 × 50 | 1140 |             |     | Case size φD × L (mm) | Rated ripple |
| 270      | 271  | ● 12.5 × 50 | 1265 |             |      |             |     |                       |              |

Rated ripple current (mA rms) at 105°C 120Hz

● : In this case, [9] will be put at 12th digit of type numbering system.

## ● Frequency coefficient of rated ripple current

| V          | 60Hz | 120Hz | 500Hz | 1kHz | 10kHz or more |
|------------|------|-------|-------|------|---------------|
| 200        | 0.80 | 1.00  | 1.20  | 1.30 | 1.40          |
| 400 to 450 | 0.80 | 1.00  | 1.25  | 1.40 | 1.50          |