

# UEP

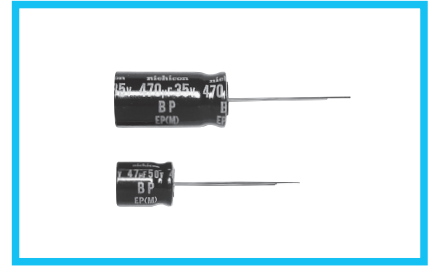
Bi-Polarized, Wide Temperature Range



- Bi-polarized series for operations over wide temperature range of -55°C to +105°C.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).

**UEP**

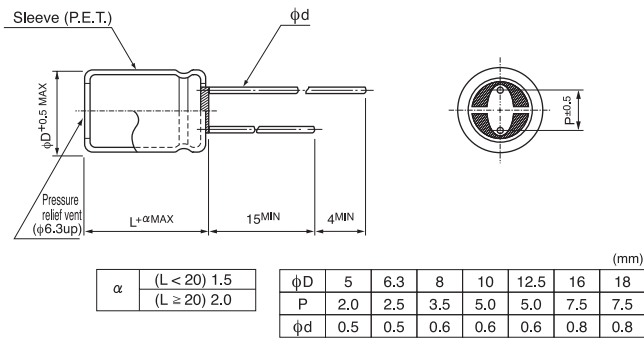
Wide Temperature  
**UVP**



## Specifications

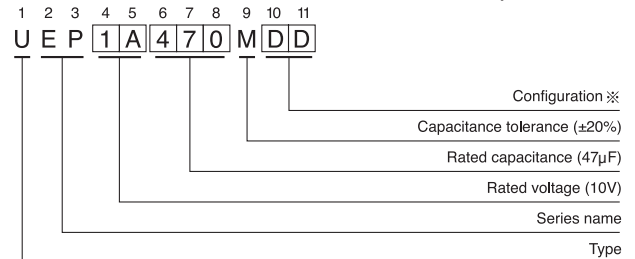
| Item                          | Performance Characteristics   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|-------------------------------|---|---|------|------|------|------|---|------|------|---|--------------------|---|--|--|-------|---|--|--|-----------------|---|--|--|--|---|--|--|
| Category Temperature Range    | -55 to +105°C   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Rated Voltage Range           | 6.3 to 100V   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Rated Capacitance Range       | 1 to 6800µF   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Leakage Current               | After 5 minutes' application of rated voltage at 20°C, leakage current is not more than 0.03CV or 3 (µA), whichever is greater.   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz, Temperature : 20°C   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               | Rated voltage (V)   | 6.3   | 10   | 16   | 25   | 35   | 50  | 63   | 100  |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               | tan δ (MAX.)  | 0.24  | 0.24 | 0.20 | 0.20 | 0.16 | 0.14  | 0.12 | 0.10 |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Stability at Low Temperature  | Measurement frequency : 120Hz   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               | Rated voltage (V)   | 6.3   | 10   | 16   | 25   | 35   | 50  | 63   | 100  |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               | Impedance ratio (MAX.)  | Z-25°C / Z+20°C   | 4    | 3    | 2    | 2    | 2   | 2    | 2    | 2 |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               |   | Z-40°C / Z+20°C   | 10   | 8    | 6    | 4    | 3   | 3    | 3    | 3 |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C with the polarity inverted every 250 hours.   |   |      |      |      |      | <table border="1"> <tr> <td>Capacitance change</td> <td colspan="3">Within ±25% of the initial capacitance value (6.3to16V)</td> </tr> <tr> <td>tan δ</td> <td colspan="3">Within ±20% of the initial capacitance value (25to100V)</td> </tr> <tr> <td>Leakage current</td> <td colspan="3">150% or less than the initial specified value</td> </tr> <tr> <td></td> <td colspan="3">Less than or equal to the initial specified value</td> </tr> </table> |      |      |   | Capacitance change | Within ±25% of the initial capacitance value (6.3to16V) |  |  | tan δ | Within ±20% of the initial capacitance value (25to100V) |  |  | Leakage current | 150% or less than the initial specified value |  |  |  | Less than or equal to the initial specified value |  |  |
|                               | Capacitance change  | Within ±25% of the initial capacitance value (6.3to16V) |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| tan δ                         | Within ±20% of the initial capacitance value (25to100V)   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
| Leakage current               | 150% or less than the initial specified value   |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |
|                               | 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 black sleeve.  |   |      |      |      |      |   |      |      |   |                    |   |  |  |       |   |  |  |                 |   |  |  |  |   |  |  |

## Radial Lead Type



• Please refer to page 18 about the end seal configuration.

## Type numbering system (Example : 10V 47µF)



※ Configuration

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

## Frequency coefficient of rated ripple current

| Cap. (µF)    | Frequency | 50 Hz | 120Hz | 300 Hz | 1 kHz | 10 kHz or more |
|--------------|-----------|-------|-------|--------|-------|----------------|
| 1 to 47      |           | 0.75  | 1.00  | 1.35   | 1.57  | 2.00           |
| 100 to 470   |           | 0.80  | 1.00  | 1.23   | 1.34  | 1.50           |
| 1000 to 6800 |           | 0.85  | 1.00  | 1.10   | 1.13  | 1.15           |

• Dimension table in next page.

UEP

## ■ Dimensions

| Rated Voltage (V)<br>(code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA)<br>(at 20°C after 5 minutes) | Rated Ripple (mArms)<br>(105°C/120Hz) | Part Number |
|-----------------------------|------------------------|---------------------|-------|---|---------------------------------------|-------------|
| 6.3<br>(0J)                 | 33                     | 5×11                | 0.24  | 6.237   | 46                                    | UEP0J330MDD |
|                             | 47                     | 5×11                | 0.24  | 8.883   | 54                                    | UEP0J470MDD |
|                             | 100                    | 6.3×11              | 0.24  | 18.9  | 90                                    | UEP0J101MED |
|                             | 220                    | 8×11.5              | 0.24  | 41.58   | 150                                   | UEP0J221MPD |
|                             | 330                    | 8×11.5              | 0.24  | 62.37   | 185                                   | UEP0J331MPD |
|                             | 470                    | 10×12.5             | 0.24  | 88.83   | 260                                   | UEP0J471MPD |
|                             | 1000                   | 10×20               | 0.24  | 189   | 460                                   | UEP0J102MPD |
|                             | 2200                   | 12.5×25             | 0.26  | 415.8   | 820                                   | UEP0J222MHD |
|                             | 3300                   | 16×25               | 0.28  | 623.7   | 1110                                  | UEP0J332MHD |
|                             | 4700                   | 16×31.5             | 0.30  | 888.3   | 1430                                  | UEP0J472MHD |
| 10<br>(1A)                  | 22                     | 5×11                | 0.24  | 6.6   | 42                                    | UEP1A220MDD |
|                             | 33                     | 5×11                | 0.24  | 9.9   | 45                                    | UEP1A330MDD |
|                             | 47                     | 5×11                | 0.24  | 14.1  | 54                                    | UEP1A470MDD |
|                             | 100                    | 6.3×11              | 0.24  | 30  | 90                                    | UEP1A101MED |
|                             | 220                    | 8×11.5              | 0.24  | 66  | 150                                   | UEP1A221MPD |
|                             | 330                    | 10×16               | 0.24  | 99  | 240                                   | UEP1A331MPD |
|                             | 470                    | 10×16               | 0.24  | 141   | 290                                   | UEP1A471MPD |
|                             | 1000                   | 12.5×20             | 0.24  | 300   | 510                                   | UEP1A102MHD |
|                             | 2200                   | 16×25               | 0.26  | 660   | 910                                   | UEP1A222MHD |
|                             | 3300                   | 16×31.5             | 0.28  | 990   | 1200                                  | UEP1A332MHD |
| 4700                        | 18×35.5                | 0.30                | 1410  | 1520  | UEP1A472MHD                           |             |
| 16<br>(1C)                  | 10                     | 5×11                | 0.20  | 4.8   | 30                                    | UEP1C100MDD |
|                             | 22                     | 5×11                | 0.20  | 10.56   | 40                                    | UEP1C220MDD |
|                             | 33                     | 5×11                | 0.20  | 15.84   | 49                                    | UEP1C330MDD |
|                             | 47                     | 6.3×11              | 0.20  | 22.56   | 67                                    | UEP1C470MED |
|                             | 100                    | 8×11.5              | 0.20  | 48  | 110                                   | UEP1C101MPD |
|                             | 220                    | 10×12.5             | 0.20  | 105.6   | 195                                   | UEP1C221MPD |
|                             | 330                    | 10×16               | 0.20  | 158.4   | 265                                   | UEP1C331MPD |
|                             | 470                    | 10×20               | 0.20  | 225.6   | 345                                   | UEP1C471MPD |
|                             | 1000                   | 12.5×25             | 0.20  | 480   | 605                                   | UEP1C102MHD |
|                             | 2200                   | 16×31.5             | 0.22  | 1056  | 1070                                  | UEP1C222MHD |
| 3300                        | 18×35.5                | 0.24                | 1584  | 1400  | UEP1C332MHD                           |             |
| 25<br>(1E)                  | 10                     | 5×11                | 0.20  | 7.5   | 34                                    | UEP1E100MDD |
|                             | 22                     | 6.3×11              | 0.20  | 16.5  | 55                                    | UEP1E220MED |
|                             | 33                     | 6.3×11              | 0.20  | 24.75   | 56                                    | UEP1E330MED |
|                             | 47                     | 6.3×11              | 0.20  | 35.25   | 67                                    | UEP1E470MED |
|                             | 100                    | 8×11.5              | 0.20  | 75  | 110                                   | UEP1E101MPD |
|                             | 220                    | 10×16               | 0.20  | 165   | 215                                   | UEP1E221MPD |
|                             | 330                    | 12.5×20             | 0.20  | 247.5   | 320                                   | UEP1E331MHD |
|                             | 470                    | 12.5×20             | 0.20  | 352.5   | 380                                   | UEP1E471MHD |
|                             | 1000                   | 16×25               | 0.20  | 750   | 670                                   | UEP1E102MHD |
| 2200                        | 18×35.5                | 0.22                | 1650  | 1140  | UEP1E222MHD                           |             |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).

If there is no size code in the part number, please add size code "1" and then add the appropriate code.

UEP

## ■ Dimensions

| Rated Voltage (V)<br>(code) | Rated Capacitance (μF) | Case Size φD×L (mm) | tan δ | Leakage Current (μA)<br>(at 20°C after 5 minutes) | Rated Ripple (mArms)<br>(105°C/120Hz) | Part Number |
|-----------------------------|------------------------|---------------------|-------|---|---------------------------------------|-------------|
| 35<br>(1V)                  | 4.7                    | 5×11                | 0.16  | 4.935   | 25                                    | UEP1V4R7MDD |
|                             | 10                     | 5×11                | 0.16  | 10.5  | 30                                    | UEP1V100MDD |
|                             | 22                     | 6.3×11              | 0.16  | 23.1  | 51                                    | UEP1V220MED |
|                             | 33                     | 8×11.5              | 0.16  | 34.65   | 72                                    | UEP1V330MPD |
|                             | 47                     | 8×11.5              | 0.16  | 49.35   | 86                                    | UEP1V470MPD |
|                             | 100                    | 10×16               | 0.16  | 105   | 160                                   | UEP1V101MPD |
|                             | 220                    | 12.5×20             | 0.16  | 231   | 290                                   | UEP1V221MHD |
|                             | 330                    | 12.5×20             | 0.16  | 346.5   | 350                                   | UEP1V331MHD |
|                             | 470                    | 12.5×25             | 0.16  | 493.5   | 465                                   | UEP1V471MHD |
| 1000                        | 16×31.5                | 0.16                | 1050  | 805   | UEP1V102MHD                           |             |
| 50<br>(1H)                  | 1                      | 5×11                | 0.14  | 3   | 12                                    | UEP1H010MDD |
|                             | 2.2                    | 5×11                | 0.14  | 3.3   | 18                                    | UEP1H2R2MDD |
|                             | 3.3                    | 5×11                | 0.14  | 4.95  | 22                                    | UEP1H3R3MDD |
|                             | 4.7                    | 5×11                | 0.14  | 7.05  | 22                                    | UEP1H4R7MDD |
|                             | 10                     | 6.3×11              | 0.14  | 15  | 37                                    | UEP1H100MED |
|                             | 22                     | 8×11.5              | 0.14  | 33  | 63                                    | UEP1H220MPD |
|                             | 33                     | 8×11.5              | 0.14  | 49.5  | 77                                    | UEP1H330MPD |
|                             | 47                     | 10×12.5             | 0.14  | 70.5  | 105                                   | UEP1H470MPD |
|                             | 100                    | 10×20               | 0.14  | 150   | 190                                   | UEP1H101MPD |
|                             | 220                    | 12.5×25             | 0.14  | 330   | 340                                   | UEP1H221MHD |
|                             | 330                    | 16×25               | 0.14  | 495   | 460                                   | UEP1H331MHD |
| 470                         | 16×31.5                | 0.14                | 705   | 590   | UEP1H471MHD                           |             |
| 63<br>(1J)                  | 3.3                    | 5×11                | 0.12  | 6.237   | 20                                    | UEP1J3R3MDD |
|                             | 4.7                    | 6.3×11              | 0.12  | 8.883   | 31                                    | UEP1J4R7MED |
|                             | 10                     | 6.3×11              | 0.12  | 18.9  | 40                                    | UEP1J100MED |
|                             | 22                     | 8×11.5              | 0.12  | 41.58   | 68                                    | UEP1J220MPD |
|                             | 33                     | 10×12.5             | 0.12  | 62.37   | 98                                    | UEP1J330MPD |
|                             | 47                     | 10×16               | 0.12  | 88.83   | 130                                   | UEP1J470MPD |
|                             | 100                    | 12.5×20             | 0.12  | 189   | 225                                   | UEP1J101MHD |
|                             | 220                    | 16×25               | 0.12  | 415.8   | 405                                   | UEP1J221MHD |
|                             | 330                    | 16×31.5             | 0.12  | 623.7   | 535                                   | UEP1J331MHD |
| 470                         | 18×35.5                | 0.12                | 888.3 | 680   | UEP1J471MHD                           |             |
| 100<br>(2A)                 | 1                      | 5×11                | 0.10  | 3   | 15                                    | UEP2A010MDD |
|                             | 2.2                    | 6.3×11              | 0.10  | 6.6   | 20                                    | UEP2A2R2MED |
|                             | 3.3                    | 6.3×11              | 0.10  | 9.9   | 25                                    | UEP2A3R3MED |
|                             | 4.7                    | 6.3×11              | 0.10  | 14.1  | 30                                    | UEP2A4R7MED |
|                             | 10                     | 8×11.5              | 0.10  | 30  | 50                                    | UEP2A100MPD |
|                             | 22                     | 10×16               | 0.10  | 66  | 97                                    | UEP2A220MPD |
|                             | 33                     | 12.5×20             | 0.10  | 99  | 140                                   | UEP2A330MHD |
|                             | 47                     | 12.5×20             | 0.10  | 141   | 170                                   | UEP2A470MHD |
|                             | 100                    | 16×25               | 0.10  | 300   | 300                                   | UEP2A101MHD |
| 220                         | 18×35.5                | 0.10                | 660   | 510   | UEP2A221MHD                           |             |

For cut leads, formed leads or taped parts, please add the appropriate code after the size code (12th digit).  
If there is no size code in the part number, please add size code "1" and then add the appropriate code.

Please refer to page 18, 19 about the formed or taped product spec.  
Please refer to page 4 for the minimum order quantity.