

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

# UBT

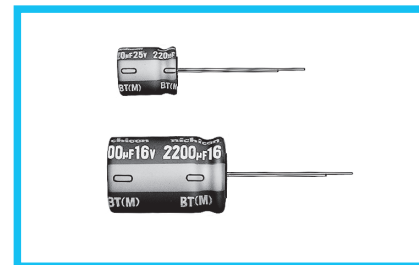
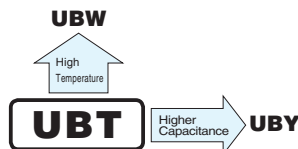
High Temperature Range, For +125°C Use



Long Life

Anti-Solvent  
Feature  
(Through  
100V only)

- Highly dependable reliability withstanding load life of 2000 to 10000 hours at +125°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.

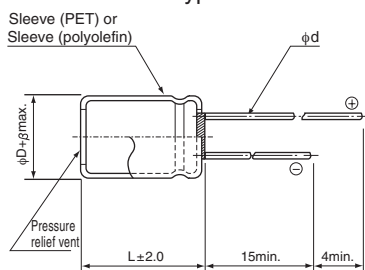


## Specifications

| Item                                                                        | Performance Characteristics                                                                                                                                                                                                                 |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------|------|------|----------|------|---------------|-------------------------------------------------------------------------------------|------------|------------|-------------|-----------|
| Category Temperature Range                                                  | -40 to +125°C (10 to 250V), -25 to +125°C (350 to 450V)                                                                                                                                                                                     |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Rated Voltage Range                                                         | 10 to 450V                                                                                                                                                                                                                                  |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Rated Capacitance Range                                                     | 4.7 to 4700μF                                                                                                                                                                                                                               |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Capacitance Tolerance                                                       | ± 20% at 120Hz, 20°C                                                                                                                                                                                                                        |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Leakage Current ※                                                           | Rated Voltage (V)                                                                                                                                                                                                                           | 10 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. |        |      |      |          |      |               | After 1 minute's application of rated voltage at 20°C, I = 0.04CV+100 (μA) or less. |            |            |             |           |
| Tangent of loss angle (tan δ)                                               | Rated voltage (V)                                                                                                                                                                                                                           | 10                                                                                                                              | 16     | 25   | 35   | 50       | 63   | 80            | 100                                                                                 | 160 to 250 | 350 to 450 | 120Hz, 20°C |           |
|                                                                             | tan δ (max.)                                                                                                                                                                                                                                | 0.20                                                                                                                            | 0.16   | 0.14 | 0.12 | 0.10     | 0.10 | 0.08          | 0.08                                                                                | 0.20       | 0.24       |             |           |
| For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. |                                                                                                                                                                                                                                             |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Stability at Low Temperature                                                | 120Hz                                                                                                                                                                                                                                       |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |
|                                                                             | Rated voltage (V)                                                                                                                                                                                                                           |                                                                                                                                 | 10     | 16   | 25   | 35       | 50   | 63            | 80                                                                                  | 100        | 160 to 250 | 350 to 450  |           |
|                                                                             | Impedance ratio (max.)                                                                                                                                                                                                                      | Z(-25°C) / Z(+20°C)                                                                                                             | 3      | 2    | 2    | 2        | 2    | 2             | 2                                                                                   | 2          | 3          | 6           |           |
|                                                                             |                                                                                                                                                                                                                                             | Z(-40°C) / Z(+20°C)                                                                                                             | 4      | 4    | 4    | 4        | 4    | 4             | 4                                                                                   | 4          | 6          | —           |           |
| Endurance                                                                   | The specifications listed below shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied at 125°C for the condition listed at right. The peak voltage shall not exceed the rated voltage. |                                                                                                                                 |        |      |      |          |      | Rated Voltage |                                                                                     | φD(mm)     | φ8         | φ10         | ≥ φ12.5   |
|                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                 |        |      |      |          |      | ≤ 50V         |                                                                                     |            | 2000hrs.   | 5000hrs.    | 10000hrs. |
|                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                 |        |      |      |          |      | 63 ~ 100V     |                                                                                     |            | 2000hrs.   | 3000hrs.    | 5000hrs.  |
|                                                                             |                                                                                                                                                                                                                                             |                                                                                                                                 | ≥ 160V |      |      | 2000hrs. |      |               |                                                                                     |            |            |             |           |
|                                                                             | Capacitance change                                                                                                                                                                                                                          | Within ±30% of the initial capacitance value (10 to 100V)<br>Within ±20% of the initial capacitance value (160 to 450V)         |        |      |      |          |      |               |                                                                                     |            |            |             |           |
|                                                                             | tan δ                                                                                                                                                                                                                                       | 300% or less than the initial specified value (10 to 100V)<br>200% or less than the initial specified value (160 to 450V)       |        |      |      |          |      |               |                                                                                     |            |            |             |           |
|                                                                             | Leakage current                                                                                                                                                                                                                             | Less than or equal to the initial specified value                                                                               |        |      |      |          |      |               |                                                                                     |            |            |             |           |
| Shelf Life                                                                  | After storing the capacitors under no load at 125°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 blue sleeve.                                                                                                                                                                                             |                                                                                                                                 |        |      |      |          |      |               |                                                                                     |            |            |             |           |

※ I : Leakage Current (µA), C : Rated Capacitance (µF), V : Rated Voltage (V)

## Radial Lead Type

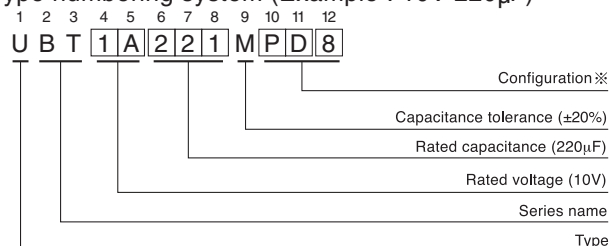


|    | (mm) |     |      |     |     |
|----|------|-----|------|-----|-----|
| φD | 8    | 10  | 12.5 | 16  | 18  |
| P  | 3.5  | 5.0 | 5.0  | 7.5 | 7.5 |
| φd | 0.6  | 0.6 | 0.6* | 0.8 | 0.8 |
| β  | 0.8  | 0.8 | 1.0  | 1.0 | 1.0 |

※ In case L > 25 for the φ12.5 dia. unit, lead dia. φd = 0.8mm.

- Please refer to the Guidelines for Aluminum Electrolytic Capacitors for end seal configuration information.

## Type numbering system (Example : 10V 220µF)



※ Configuration

|            | Standard type                          |
|------------|----------------------------------------|
| φ D        | Pb-free leadwire<br>Pb-free PET sleeve |
| 8, 10      | PD8                                    |
| 12.5 to 18 | HD8                                    |

## Frequency coefficient of rated ripple current

| V         | CV | Frequency | 120Hz | 300Hz | 1kHz | 10kHz or more |
|-----------|----|-----------|-------|-------|------|---------------|
| 10 to 100 |    | 1000 > CV | 0.50  | 0.64  | 0.83 | 1.00          |
|           |    | 1000 ≤ CV | 0.67  | 0.79  | 0.91 | 1.00          |

| V          | Cap. (µF) | Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | 100kHz or more |
|------------|-----------|-----------|------|-------|-------|------|-------|----------------|
| 160 to 450 |           | 4.7 to 33 | 0.75 | 1.00  | 1.25  | 1.50 | 1.75  | 1.80           |
|            |           | 47 to 150 | 0.80 | 1.00  | 1.15  | 1.30 | 1.40  | 1.50           |

● Dimension table in next page.

CAT.8100L

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## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D×L (mm) | $\tan \delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Impedance ( $\Omega$ )<br>max.<br>(20°C/100kHz) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(125°C/100kHz) | Part Number  |
|--------------------------------|---------------------------------|------------------------------|---------------|--------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------|--------------|
| 10<br>(1A)                     | 220                             | 8×11.5                       | 0.20          | 66                                                           | 0.26                                            | 340                                                    | UBT1A221MPD8 |
|                                | 330                             | 10×12.5                      | 0.20          | 99                                                           | 0.15                                            | 620                                                    | UBT1A331MPD8 |
|                                | 470                             | 10×12.5                      | 0.20          | 141                                                          | 0.10                                            | 680                                                    | UBT1A471MPD8 |
|                                | 1000                            | 10×20                        | 0.20          | 300                                                          | 0.057                                           | 1100                                                   | UBT1A102MPD8 |
|                                | 2200                            | 12.5×25                      | 0.22          | 660                                                          | 0.033                                           | 1750                                                   | UBT1A222MHD8 |
|                                | 3300                            | 16×25                        | 0.24          | 990                                                          | 0.024                                           | 2300                                                   | UBT1A332MHD8 |
|                                | 4700                            | 16×30.5                      | 0.26          | 1410                                                         | 0.020                                           | 2710                                                   | UBT1A472MHD8 |
| 16<br>(1C)                     | 100                             | 8×11.5                       | 0.16          | 48                                                           | 0.32                                            | 340                                                    | UBT1C101MPD8 |
|                                | 220                             | 10×12.5                      | 0.16          | 105.6                                                        | 0.15                                            | 620                                                    | UBT1C221MPD8 |
|                                | 330                             | 10×12.5                      | 0.16          | 158.4                                                        | 0.10                                            | 680                                                    | UBT1C331MPD8 |
|                                | 470                             | 10×16                        | 0.16          | 225.6                                                        | 0.075                                           | 945                                                    | UBT1C471MPD8 |
|                                | 1000                            | 12.5×20                      | 0.16          | 480                                                          | 0.042                                           | 1490                                                   | UBT1C102MHD8 |
|                                | 2200                            | 16×25                        | 0.18          | 1056                                                         | 0.024                                           | 2300                                                   | UBT1C222MHD8 |
|                                | 3300                            | 16×30.5                      | 0.20          | 1584                                                         | 0.020                                           | 2710                                                   | UBT1C332MHD8 |
|                                | 4700                            | 18×30.5                      | 0.22          | 2256                                                         | 0.018                                           | 3270                                                   | UBT1C472MHD8 |
| 25<br>(1E)                     | 100                             | 8×11.5                       | 0.14          | 75                                                           | 0.13                                            | 500                                                    | UBT1E101MPD8 |
|                                | 220                             | 10×12.5                      | 0.14          | 165                                                          | 0.10                                            | 680                                                    | UBT1E221MPD8 |
|                                | 330                             | 10×16                        | 0.14          | 247.5                                                        | 0.075                                           | 945                                                    | UBT1E331MPD8 |
|                                | 470                             | 10×20                        | 0.14          | 352.5                                                        | 0.057                                           | 1100                                                   | UBT1E471MPD8 |
|                                | 1000                            | 12.5×25                      | 0.14          | 750                                                          | 0.033                                           | 1750                                                   | UBT1E102MHD8 |
|                                | 2200                            | 16×30.5                      | 0.16          | 1650                                                         | 0.020                                           | 2710                                                   | UBT1E222MHD8 |
|                                | 3300                            | 18×30.5                      | 0.18          | 2475                                                         | 0.017                                           | 3310                                                   | UBT1E332MHD8 |
| 35<br>(1V)                     | 100                             | 10×12.5                      | 0.12          | 105                                                          | 0.15                                            | 620                                                    | UBT1V101MPD8 |
|                                | 220                             | 10×16                        | 0.12          | 231                                                          | 0.094                                           | 790                                                    | UBT1V221MPD8 |
|                                | 330                             | 10×20                        | 0.12          | 346.5                                                        | 0.075                                           | 950                                                    | UBT1V331MPD8 |
|                                | 470                             | 12.5×20                      | 0.12          | 493.5                                                        | 0.058                                           | 1330                                                   | UBT1V471MHD8 |
|                                | 1000                            | 16×25                        | 0.12          | 1050                                                         | 0.031                                           | 2010                                                   | UBT1V102MHD8 |
|                                | 2200                            | 18×35.5                      | 0.14          | 2310                                                         | 0.025                                           | 2790                                                   | UBT1V222MHD8 |
| 50<br>(1H)                     | 4.7                             | 8×11.5                       | 0.10          | 7.05                                                         | 1.15                                            | 85                                                     | UBT1H4R7MPD8 |
|                                | 10                              | 8×11.5                       | 0.10          | 15                                                           | 0.75                                            | 180                                                    | UBT1H100MPD8 |
|                                | 22                              | 8×11.5                       | 0.10          | 33                                                           | 0.50                                            | 250                                                    | UBT1H220MPD8 |
|                                | 33                              | 8×11.5                       | 0.10          | 49.5                                                         | 0.45                                            | 300                                                    | UBT1H330MPD8 |
|                                | 47                              | 8×11.5                       | 0.10          | 70.5                                                         | 0.35                                            | 440                                                    | UBT1H470MPD8 |
|                                | 100                             | 10×12.5                      | 0.10          | 150                                                          | 0.18                                            | 555                                                    | UBT1H101MPD8 |
|                                | 220                             | 10×20                        | 0.10          | 330                                                          | 0.098                                           | 930                                                    | UBT1H221MPD8 |
|                                | 330                             | 12.5×20                      | 0.10          | 495                                                          | 0.070                                           | 1330                                                   | UBT1H331MHD8 |
|                                | 470                             | 12.5×25                      | 0.10          | 705                                                          | 0.055                                           | 1650                                                   | UBT1H471MHD8 |
|                                | 1000                            | 16×30.5                      | 0.10          | 1500                                                         | 0.031                                           | 2430                                                   | UBT1H102MHD8 |
| 63<br>(1J)                     | 22                              | 8×11.5                       | 0.10          | 41.58                                                        | 2.00                                            | 130                                                    | UBT1J220MPD8 |
|                                | 33                              | 8×11.5                       | 0.10          | 62.37                                                        | 1.50                                            | 150                                                    | UBT1J330MPD8 |
|                                | 47                              | 10×12.5                      | 0.10          | 88.83                                                        | 0.59                                            | 530                                                    | UBT1J470MPD8 |
|                                | 100                             | 10×16                        | 0.10          | 189                                                          | 0.41                                            | 690                                                    | UBT1J101MPD8 |
|                                | 220                             | 12.5×20                      | 0.10          | 415.8                                                        | 0.16                                            | 1050                                                   | UBT1J221MHD8 |
|                                | 330                             | 12.5×25                      | 0.10          | 623.7                                                        | 0.12                                            | 1290                                                   | UBT1J331MHD8 |
|                                | 470                             | 12.5×30.5                    | 0.10          | 888.3                                                        | 0.097                                           | 1460                                                   | UBT1J471MHD8 |

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.

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## ■ Dimensions

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | $\tan \delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Impedance ( $\Omega$ )<br>max.<br>(20°C/100kHz) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(125°C/100kHz) | Part Number  |
|--------------------------------|---------------------------------|---------------------------------------|---------------|--------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------|--------------|
| 80<br>(1K)                     | 22                              | 8 $\times$ 11.5                       | 0.08          | 52.8                                                         | 1.50                                            | 150                                                    | UBT1K220MPD8 |
|                                | 33                              | 10 $\times$ 12.5                      | 0.08          | 79.2                                                         | 0.80                                            | 480                                                    | UBT1K330MPD8 |
|                                | 47                              | 10 $\times$ 12.5                      | 0.08          | 112.8                                                        | 0.80                                            | 480                                                    | UBT1K470MPD8 |
|                                | 100                             | 10 $\times$ 20                        | 0.08          | 240                                                          | 0.39                                            | 790                                                    | UBT1K101MPD8 |
|                                | 220                             | 12.5 $\times$ 25                      | 0.08          | 528                                                          | 0.18                                            | 1240                                                   | UBT1K221MHD8 |
|                                | 330                             | 12.5 $\times$ 30.5                    | 0.08          | 792                                                          | 0.16                                            | 1390                                                   | UBT1K331MHD8 |
|                                | 470                             | 16 $\times$ 25                        | 0.08          | 1128                                                         | 0.11                                            | 1500                                                   | UBT1K471MHD8 |
| 100<br>(2A)                    | 10                              | 8 $\times$ 11.5                       | 0.08          | 30                                                           | 1.50                                            | 150                                                    | UBT2A100MPD8 |
|                                | 22                              | 10 $\times$ 12.5                      | 0.08          | 66                                                           | 0.80                                            | 480                                                    | UBT2A220MPD8 |
|                                | 33                              | 10 $\times$ 12.5                      | 0.08          | 99                                                           | 0.80                                            | 480                                                    | UBT2A330MPD8 |
|                                | 47                              | 10 $\times$ 16                        | 0.08          | 141                                                          | 0.55                                            | 630                                                    | UBT2A470MPD8 |
|                                | 100                             | 12.5 $\times$ 20                      | 0.08          | 300                                                          | 0.25                                            | 990                                                    | UBT2A101MHD8 |
|                                | 220                             | 16 $\times$ 25                        | 0.08          | 660                                                          | 0.11                                            | 1500                                                   | UBT2A221MHD8 |
|                                | 330                             | 16 $\times$ 30.5                      | 0.08          | 990                                                          | 0.079                                           | 1790                                                   | UBT2A331MHD8 |

| Rated Voltage<br>(V)<br>(code) | Rated Capacitance<br>( $\mu$ F) | Case Size<br>$\phi$ D $\times$ L (mm) | $\tan \delta$ | Leakage Current<br>( $\mu$ A)<br>(at 20°C after<br>1 minute) | Rated Ripple<br>(mA <sub>rms</sub> )<br>(125°C/120Hz) | Part Number  |
|--------------------------------|---------------------------------|---------------------------------------|---------------|--------------------------------------------------------------|-------------------------------------------------------|--------------|
| 160<br>(2C)                    | 22                              | 10 $\times$ 20                        | 0.20          | 240.8                                                        | 115                                                   | UBT2C220MPD8 |
|                                | 33                              | 10 $\times$ 25                        | 0.20          | 311.2                                                        | 154                                                   | UBT2C330MPD8 |
|                                | 47                              | 12.5 $\times$ 20                      | 0.20          | 400.8                                                        | 187                                                   | UBT2C470MHD8 |
|                                | 68                              | 12.5 $\times$ 25                      | 0.20          | 535.2                                                        | 245                                                   | UBT2C680MHD8 |
|                                | 100                             | 16 $\times$ 25                        | 0.20          | 740                                                          | 329                                                   | UBT2C101MHD8 |
|                                | 150                             | 16 $\times$ 30.5                      | 0.20          | 1060                                                         | 434                                                   | UBT2C151MHD8 |
| 200<br>(2D)                    | 10                              | 10 $\times$ 20                        | 0.20          | 180                                                          | 78                                                    | UBT2D100MPD8 |
|                                | 22                              | 10 $\times$ 25                        | 0.20          | 276                                                          | 126                                                   | UBT2D220MPD8 |
|                                | 33                              | 12.5 $\times$ 20                      | 0.20          | 364                                                          | 157                                                   | UBT2D330MHD8 |
|                                | 47                              | 12.5 $\times$ 25                      | 0.20          | 476                                                          | 204                                                   | UBT2D470MHD8 |
|                                | 68                              | 16 $\times$ 20                        | 0.20          | 644                                                          | 250                                                   | UBT2D680MHD8 |
| 250<br>(2E)                    | 100                             | 16 $\times$ 25                        | 0.20          | 900                                                          | 329                                                   | UBT2D101MHD8 |
|                                | 10                              | 10 $\times$ 20                        | 0.20          | 200                                                          | 78                                                    | UBT2E100MPD8 |
|                                | 22                              | 12.5 $\times$ 20                      | 0.20          | 320                                                          | 128                                                   | UBT2E220MHD8 |
|                                | 33                              | 12.5 $\times$ 25                      | 0.20          | 430                                                          | 171                                                   | UBT2E330MHD8 |
|                                | 47                              | 16 $\times$ 25                        | 0.20          | 570                                                          | 225                                                   | UBT2E470MHD8 |
| 350<br>(2V)                    | 68                              | 16 $\times$ 30.5                      | 0.20          | 780                                                          | 292                                                   | UBT2E680MHD8 |
|                                | 4.7                             | 10 $\times$ 20                        | 0.24          | 165.8                                                        | 53                                                    | UBT2V4R7MPD8 |
|                                | 10                              | 10 $\times$ 25                        | 0.24          | 240                                                          | 85                                                    | UBT2V100MPD8 |
|                                | 22                              | 12.5 $\times$ 25                      | 0.24          | 408                                                          | 139                                                   | UBT2V220MHD8 |
|                                | 33                              | 16 $\times$ 25                        | 0.24          | 562                                                          | 189                                                   | UBT2V330MHD8 |
| 400<br>(2G)                    | 47                              | 16 $\times$ 30.5                      | 0.24          | 758                                                          | 243                                                   | UBT2V470MHD8 |
|                                | 4.7                             | 10 $\times$ 20                        | 0.24          | 175.2                                                        | 53                                                    | UBT2G4R7MPD8 |
|                                | 10                              | 10 $\times$ 25                        | 0.24          | 260                                                          | 86                                                    | UBT2G100MPD8 |
|                                | 22                              | 12.5 $\times$ 30.5                    | 0.24          | 452                                                          | 142                                                   | UBT2G220MHD8 |
|                                | 33                              | 16 $\times$ 25                        | 0.24          | 628                                                          | 189                                                   | UBT2G330MHD8 |
| 450<br>(2W)                    | 47                              | 16 $\times$ 30.5                      | 0.24          | 852                                                          | 243                                                   | UBT2G470MHD8 |
|                                | 4.7                             | 10 $\times$ 25                        | 0.24          | 184.6                                                        | 58                                                    | UBT2W4R7MPD8 |
|                                | 10                              | 12.5 $\times$ 20                      | 0.24          | 280                                                          | 86                                                    | UBT2W100MHD8 |
|                                | 22                              | 16 $\times$ 25                        | 0.24          | 496                                                          | 154                                                   | UBT2W220MHD8 |
|                                | 33                              | 16 $\times$ 30.5                      | 0.24          | 694                                                          | 203                                                   | UBT2W330MHD8 |

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.

- For formed lead or taped product specifications and minimum order quantity, please refer to the Guidelines for Aluminum Electrolytic Capacitors.