

UHW

Miniature Sized, High Ripple Current,
High Reliability



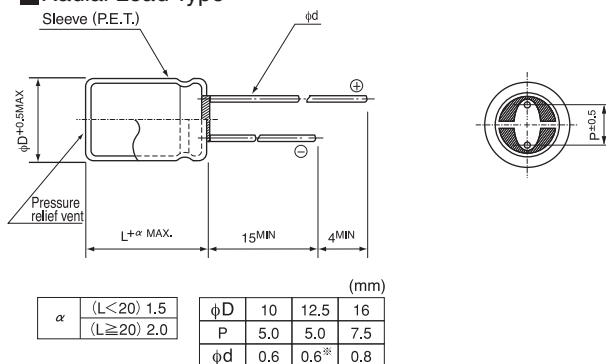
- Lower impedance at high frequency range.
- Smaller case size and high ripple current.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

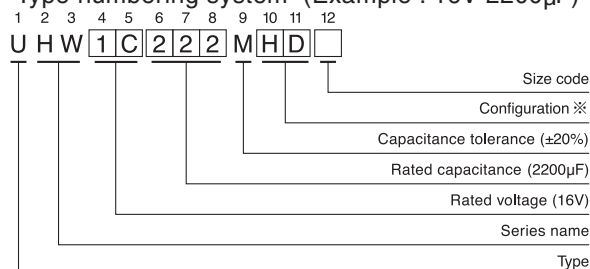
| Item | Performance Characteristics | | | | | | | | |
|--------------------------------|--|-----------------|--|------|------|------|------|--|----|
| Category Temperature Range | -40 to +105°C | | | | | | | | |
| Rated Voltage Range | 6.3 to 50V | | | | | | | | |
| Rated Capacitance Range | 220 to 15000F | | | | | | | | |
| Capacitance Tolerance | ±20% at 120Hz, 20°C | | | | | | | | |
| Leakage Current | After 2 minute's application of rated voltage at 20°C, leakage current is not more than I = 0.01CV(μA) | | | | | | | | |
| Tangent of loss angle (tan δ) | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | Measurement frequency : 120Hz, Temperature : 20°C | |
| | tan δ (MAX.) | 0.21 | 0.18 | 0.15 | 0.13 | 0.11 | 0.10 | | |
| Stability at Low Temperature | Measurement frequency : 120Hz | | | | | | | | |
| | Rated voltage (V) | | 6.3 | 10 | 16 | 25 | 35 | | 50 |
| | Impedance ratio ZT / Z20 (MAX.) | | Z-25°C / Z+20°C | 2 | 2 | 2 | 2 | | 2 |
| | | Z-40°C / Z+20°C | 3 | 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 10000 hours at 105°C, the peak voltage shall not exceed the rated voltage. | | | | | | | | |
| | Capacitance Change | | Within ±25% of the initial capacitance value (6.3V 10V:±30%) | | | | | | |
| | tan δ | | 200% or less than the initial specified value | | | | | | |
| | Leakage current | | Less than or equal to the initial specified value | | | | | | |
| Marking | Printed with white color letter on black sleeve. | | | | | | | | |

Radial Lead Type



* In case L > 25 for the $\phi 12.5$ dia. unit, lead dia. $\phi d = 0.8$ mm.

Type numbering system (Example : 16V 2200µF)



※ Configuration

| ϕD | Pb-free lead finishing Pb-free PET sleeve |
|------------|--|
| 10 | PD |
| 12.5 to 16 | HD |

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

Frequency coefficient of rated ripple current

| Cap. (µF) | Frequency | 120Hz | 1kHz | 10kHz | 10kHz or more |
|---------------|-----------|-------|------|-------|---------------|
| 220 to 560 | | 0.50 | 0.85 | 0.94 | 1.00 |
| 680 to 1800 | | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200 to 3900 | | 0.75 | 0.90 | 0.95 | 1.00 |
| 4700 to 15000 | | 0.85 | 0.95 | 0.98 | 1.00 |

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.

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■ Dimensions

| V (Code) Cap.(μF) Item Code | | 6.3 (0J) | | | | 10 (1A) | | | |
|-----------------------------------|-----|-----------------------------|--------------------|----------------|---|-----------------------------|--------------------|----------------|---|
| | | Case size φD × L (mm) | Impedance (Ω) MAX. | | Rated ripple (mArms) 105°C / 100kHz | Case size φD × L (mm) | Impedance (Ω) MAX. | | Rated ripple (mArms) 105°C / 100kHz |
| | | | 20°C / 100kHz | -10°C / 100kHz | | | 20°C / 100kHz | -10°C / 100kHz | |
| 1200 | 122 | | | | | 10 × 16 | 0.030 | 0.090 | 2000 |
| 1500 | 152 | | | | | 10 × 16 | 0.030 | 0.090 | 2000 |
| 1800 | 182 | 10 × 16 | 0.030 | 0.090 | 2000 | 10 × 20 | 0.020 | 0.060 | 2500 |
| 2200 | 222 | 10 × 20 | 0.020 | 0.060 | 2500 | 10 × 25 | 0.017 | 0.051 | 2900 |
| 2700 | 272 | 10 × 20 | 0.020 | 0.060 | 2500 | 12.5 × 20 | 0.017 | 0.051 | 2600 |
| 3300 | 332 | 10 × 25 | 0.017 | 0.051 | 2900 | 12.5 × 20 | 0.017 | 0.051 | 2600 |
| 3900 | 392 | 12.5 × 20 | 0.017 | 0.051 | 2600 | 12.5 × 25 | 0.015 | 0.045 | 3200 |
| 4700 | 472 | 12.5 × 25 | 0.015 | 0.045 | 3200 | 12.5 × 31.5 | 0.012 | 0.036 | 3795 |
| | | | | | | ▲ 16 × 20 | 0.015 | 0.045 | 3575 |
| 5600 | 562 | 12.5 × 31.5 | 0.012 | 0.036 | 3795 | 12.5 × 35.5 | 0.011 | 0.033 | 4120 |
| | | ▲ 12.5 × 25 | 0.015 | 0.045 | 3200 | ▲ 16 × 25 | 0.013 | 0.039 | 3810 |
| 6800 | 682 | 12.5 × 31.5 | 0.011 | 0.033 | 3795 | 16 × 25 | 0.013 | 0.039 | 3810 |
| | | ▲ 16 × 20 | 0.015 | 0.045 | 3575 | | | | |
| 8200 | 822 | 16 × 25 | 0.013 | 0.039 | 3810 | 16 × 31.5 | 0.011 | 0.033 | 4000 |
| 10000 | 103 | 16 × 25 | 0.013 | 0.039 | 3810 | 16 × 31.5 | 0.011 | 0.033 | 4000 |
| 12000 | 123 | 16 × 31.5 | 0.011 | 0.033 | 4000 | 16 × 35.5 | 0.010 | 0.030 | 4200 |
| 15000 | 153 | 16 × 35.5 | 0.010 | 0.030 | 4200 | | | | |

| V (Code) Cap.(μF) Item Code | | 16 (1C) | | | | 25 (1E) | | | |
|-----------------------------------|-----|-----------------------------|--------------------|----------------|---|-----------------------------|--------------------|----------------|---|
| | | Case size φD × L (mm) | Impedance (Ω) MAX. | | Rated ripple (mArms) 105°C / 100kHz | Case size φD × L (mm) | Impedance (Ω) MAX. | | Rated ripple (mArms) 105°C / 100kHz |
| | | | 20°C / 100kHz | -10°C / 100kHz | | | 20°C / 100kHz | -10°C / 100kHz | |
| 680 | 681 | | | | | 10 × 16 | 0.030 | 0.090 | 2000 |
| 820 | 821 | 10 × 16 | 0.030 | 0.090 | 2000 | 10 × 20 | 0.020 | 0.060 | 2500 |
| | | | | | | ▲ 10 × 16 | 0.030 | 0.090 | 2000 |
| 1000 | 102 | 10 × 16 | 0.030 | 0.090 | 2000 | 10 × 20 | 0.020 | 0.060 | 2500 |
| 1200 | 122 | 10 × 20 | 0.020 | 0.060 | 2500 | 10 × 25 | 0.017 | 0.051 | 2900 |
| | | ▲ 10 × 16 | 0.030 | 0.090 | 2000 | | | | |
| 1500 | 152 | 10 × 20 | 0.020 | 0.060 | 2500 | 12.5 × 20 | 0.017 | 0.051 | 2600 |
| 1800 | 182 | 10 × 25 | 0.017 | 0.051 | 2900 | 12.5 × 25 | 0.015 | 0.045 | 3200 |
| 2200 | 222 | 12.5 × 20 | 0.017 | 0.051 | 2600 | 12.5 × 25 | 0.015 | 0.045 | 3200 |
| | | | | | | ▲ 16 × 20 | 0.015 | 0.045 | 3575 |
| 2700 | 272 | 12.5 × 25 | 0.015 | 0.045 | 3200 | 12.5 × 31.5 | 0.012 | 0.036 | 3795 |
| | | | | | | ▲ 16 × 20 | 0.015 | 0.045 | 3576 |
| 3300 | 332 | 12.5 × 25 | 0.015 | 0.045 | 3200 | 12.5 × 35.5 | 0.011 | 0.033 | 4120 |
| | | ▲ 16 × 20 | 0.015 | 0.045 | 3575 | ▲ 16 × 25 | 0.013 | 0.039 | 3810 |
| 3900 | 392 | 12.5 × 31.5 | 0.012 | 0.036 | 3795 | 16 × 25 | 0.013 | 0.039 | 3810 |
| | | ▲ 16 × 20 | 0.015 | 0.045 | 3575 | | | | |
| 4700 | 472 | 12.5 × 35.5 | 0.011 | 0.033 | 4120 | 16 × 31.5 | 0.011 | 0.033 | 4000 |
| | | ▲ 16 × 25 | 0.013 | 0.039 | 3810 | | | | |
| 5600 | 562 | 16 × 25 | 0.013 | 0.039 | 3810 | 16 × 35.5 | 0.010 | 0.030 | 4200 |
| 6800 | 682 | 16 × 31.5 | 0.011 | 0.033 | 4000 | | | | |
| 8200 | 822 | 16 × 35.5 | 0.010 | 0.030 | 4200 | | | | |

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

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■ Dimensions

| Cap.(μF) | V (Code) | Item | 35 (1V) | | | 50 (1H) | | | |
|----------|----------|-------------|-----------------------------|--------------------|----------------|-----------------------------|--------------------|----------------|-------------------------|
| | | | Case size φD × L (mm) | Impedance (Ω) MAX. | | Case size φD × L (mm) | Impedance (Ω) MAX. | | Rated ripple (mArms) |
| | | | | 20°C / 100kHz | -10°C / 100kHz | | 20°C / 100kHz | -10°C / 100kHz | |
| 220 | 221 | | | | | 10 × 16 | 0.042 | 0.126 | 1650 |
| 270 | 271 | | | | | 10 × 20 | 0.030 | 0.090 | 2060 |
| 330 | 331 | | | | | 10 × 20 | 0.030 | 0.090 | 2060 |
| 390 | 391 | 10 × 16 | 0.030 | 0.090 | 2000 | 10 × 25 | 0.028 | 0.084 | 2420 |
| | | | | | | ▲ 10 × 20 | 0.030 | 0.090 | 2060 |
| 470 | 471 | 10 × 16 | 0.030 | 0.090 | 2000 | 10 × 25 | 0.028 | 0.084 | 2420 |
| | | | | | | ▲ 12.5 × 20 | 0.027 | 0.081 | 2300 |
| 560 | 561 | 10 × 20 | 0.020 | 0.060 | 2500 | 12.5 × 20 | 0.027 | 0.081 | 2300 |
| 680 | 681 | 10 × 25 | 0.017 | 0.051 | 2900 | 12.5 × 25 | 0.023 | 0.069 | 2800 |
| | | ▲ 10 × 20 | 0.020 | 0.060 | 2500 | | | | |
| 820 | 821 | 10 × 25 | 0.017 | 0.051 | 2900 | 12.5 × 25 | 0.023 | 0.069 | 2800 |
| | | ▲ 12.5 × 20 | 0.017 | 0.051 | 2600 | ▲ 16 × 20 | 0.023 | 0.069 | 3070 |
| 1000 | 102 | 12.5 × 20 | 0.017 | 0.051 | 2600 | 12.5 × 31.5 | 0.020 | 0.060 | 3500 |
| | | | | | | ▲ 16 × 25 | 0.021 | 0.063 | 3270 |
| 1200 | 122 | 12.5 × 25 | 0.015 | 0.045 | 3200 | 16 × 25 | 0.021 | 0.063 | 3270 |
| 1500 | 152 | 16 × 20 | 0.015 | 0.045 | 3575 | 12.5 × 35.5 | 0.019 | 0.057 | 3810 |
| | | | | | | ▲ 16 × 25 | 0.021 | 0.063 | 3270 |
| 1800 | 182 | 12.5 × 31.5 | 0.012 | 0.036 | 3795 | 16 × 31.5 | 0.019 | 0.057 | 3430 |
| | | ▲ 16 × 25 | 0.013 | 0.039 | 3810 | | | | |
| 2200 | 222 | 12.5 × 35.5 | 0.011 | 0.033 | 4120 | 16 × 31.5 | 0.019 | 0.057 | 3430 |
| | | ▲ 16 × 25 | 0.013 | 0.039 | 3810 | | | | |
| 2700 | 272 | | | | | 16 × 35.5 | 0.018 | 0.054 | 3600 |
| 3300 | 332 | 16 × 31.5 | 0.011 | 0.033 | 4000 | | | | |
| 3900 | 392 | 16 × 35.5 | 0.010 | 0.030 | 4200 | | | | |

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

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