

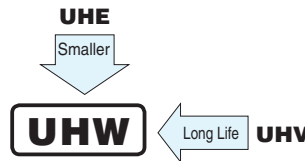
# UHW

Miniature Sized, High Ripple Current, High Reliability



Expanded

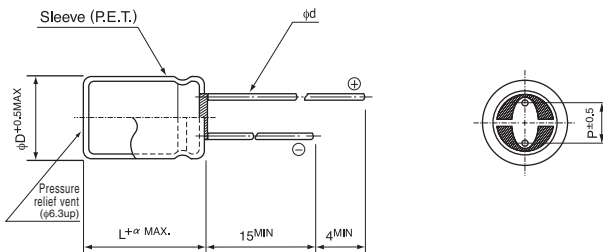
- Lower impedance at high frequency range.
- Smaller case size and high ripple current.
- Compliant to the RoHS directive (2011/65/EU).



## Specifications

Item	Performance Characteristics											
Category Temperature Range	-40 to +105°C											
Rated Voltage Range	6.3 to 100V											
Rated Capacitance Range	8.2 to 15000µF											
Capacitance Tolerance	±20% at 120Hz, 20°C											
Leakage Current	After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV (µA)											
Tangent of loss angle (tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	120Hz	
	tan δ (MAX.)	0.21	0.18	0.15	0.13	0.11	0.10	0.09	0.09	0.08	20°C	
For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.												
Stability at Low Temperature	Rated voltage (V)	6.3	10	16	25	35	50	63	80	100	120Hz	
	Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	2	2	2	2	2	2	2	2	2	
		Z-40°C / Z+20°C	5	5	4	4	4	4	3	3	3	
The following specifications shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied at 105°C, the peak voltage shall not exceed the rated voltage.												
Endurance	Case size	φD ≤ 6.3	8×11.5	8×15, 8×20	φD ≥ 10							
	Rated voltage (V)	6.3V	6000 hours	8000 hours	9000 hours	10000 hours						
		10 to 50V	7000 hours	9000 hours	10000 hours	10000 hours						
		63 to 100V	8000 hours	10000 hours	11000 hours	12000 hours						
	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



α	(L < 20)		(L ≥ 20)						
	1.5	2.0	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5		
φd	0.5	0.5	0.6	0.6	0.6	0.6	0.8	0.8	

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

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

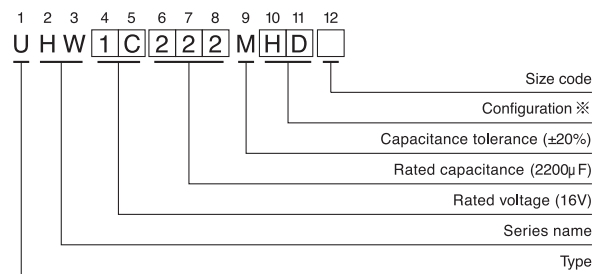
### Frequency coefficient of rated ripple current

Cap. (µF)	Frequency	120Hz	1kHz	10kHz	10kHz or more
8.2 to 33		0.40	0.70	0.90	1.00
39 to 180		0.40	0.75	0.90	1.00
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.

## Type numbering system (Example : 16V 2200µF)



※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
5	DD
6.3	ED
8 - 10	PD
12.5 to 18	HD

## UHW

### ■ Dimensions

Cap.(μF)	Item	V (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	
150	151					5 × 11	0.47	1.50	450	
220	221		5 × 11	0.47	1.50	450				
330	331					6.3 × 11	0.20	0.66	700	
470	471		6.3 × 11	0.20	0.66	700				
560	561					8 × 11.5	0.10	0.36	1200	
680	681									
820	821		8 × 11.5	0.10	0.36	1200	8 × 15	0.054	0.17	1600
1000	102		8 × 15	0.054	0.17	1600	10 × 12.5	0.048	0.15	1700
1200	122		10 × 12.5	0.048	0.15	1700	▲8 × 20	0.038	0.12	1960
							10 × 16	0.030	0.090	2000
1500	152		8 × 20	0.038	0.12	1960	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				

Cap.(μF)	Item	V (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	
68	680					5 × 11	0.47	1.50	450	
120	121		5 × 11	0.47	1.50	450				
150	151					6.3 × 11	0.20	0.66	700	
180	181					6.3 × 11	0.20	0.66	700	
270	271		6.3 × 11	0.20	0.66	700				
330	331					8 × 11.5	0.10	0.36	1200	
390	391					8 × 15	0.054	0.17	1600	
470	471		8 × 11.5	0.10	0.36	1200	10 × 12.5	0.048	0.15	1700
560	561		8 × 15	0.054	0.17	1600	8 × 20	0.038	0.12	1960
680	681		10 × 12.5	0.048	0.15	1700	10 × 16	0.030	0.090	2000
820	821		▲8 × 20	0.038	0.12	1960	10 × 20	0.020	0.060	2500
			10 × 16	0.030	0.090	2000	▲10 × 16	0.030	0.090	2000
1000	102		▲8 × 20	0.038	0.12	1960	10 × 20	0.020	0.060	2500
			10 × 16	0.030	0.090	2000				
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	3575
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.

## UHW

### ■ Dimensions

Cap.( $\mu$ F)	Code	V (Code)	Item	35 (1V)			50 (1H)				
				Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.		Rated ripple (mArms) 105°C /100kHz	Case size $\phi$ D $\times$ L (mm)	Impedance ( $\Omega$ ) MAX.		Rated ripple (mArms) 105°C /100kHz
					20°C /100kHz	-10°C /100kHz			20°C /100kHz	-10°C /100kHz	
27	270						5 $\times$ 11	0.47	1.50	450	
47	470			5 $\times$ 11	0.47	1.50					
56	560						6.3 $\times$ 11	0.20	0.66	700	
100	101			6.3 $\times$ 11	0.20	0.66	8 $\times$ 11.5	0.10	0.36	1200	
120	121						8 $\times$ 11.5	0.10	0.36	1200	
150	151						8 $\times$ 15	0.054	0.17	1600	
180	181			8 $\times$ 11.5	0.10	0.36	10 $\times$ 12.5	0.048	0.15	1700	
220	221			8 $\times$ 15	0.054	0.17	10 $\times$ 16	0.042	0.126	1650	
							8 $\times$ 15	0.054	0.17	1600	▲10 $\times$ 12.5
270	271			▲10 $\times$ 12.5	0.048	0.15	1700	10 $\times$ 20	0.030	0.090	2060
				8 $\times$ 15	0.054	0.17	1600	▲8 $\times$ 20	0.038	0.12	1960
330	331			10 $\times$ 12.5	0.048	0.15	1700	10 $\times$ 20	0.030	0.090	2060
390	391			▲8 $\times$ 20	0.038	0.12	1960	10 $\times$ 25	0.028	0.084	2420
				10 $\times$ 16	0.030	0.090	2000	▲10 $\times$ 20	0.030	0.090	2060
470	471			10 $\times$ 16	0.030	0.090	2000	10 $\times$ 25	0.028	0.084	2420
							2000	▲12.5 $\times$ 20	0.027	0.081	2300
560	561			10 $\times$ 20	0.020	0.060	2500	12.5 $\times$ 20	0.027	0.081	2300
							2500	12.5 $\times$ 25	0.023	0.069	2800
680	681			10 $\times$ 25	0.017	0.051	2900	12.5 $\times$ 25	0.023	0.069	2800
				▲10 $\times$ 20	0.020	0.060	2500				
820	821			10 $\times$ 25	0.017	0.051	2900	12.5 $\times$ 25	0.023	0.069	2800
				▲12.5 $\times$ 20	0.017	0.051	2600	▲16 $\times$ 20	0.023	0.069	3070
1000	102			12.5 $\times$ 20	0.017	0.051	2600	12.5 $\times$ 31.5	0.020	0.060	3500
							2600	▲16 $\times$ 25	0.021	0.063	3270
1200	122			12.5 $\times$ 25	0.015	0.045	3200	16 $\times$ 25	0.021	0.063	3270
1500	152			16 $\times$ 20	0.015	0.045	3575	12.5 $\times$ 35.5	0.019	0.057	3810
							3575	▲16 $\times$ 25	0.021	0.063	3270
1800	182			12.5 $\times$ 31.5	0.012	0.036	3795	16 $\times$ 31.5	0.019	0.057	3430
				▲16 $\times$ 25	0.013	0.039	3810				
2200	222			12.5 $\times$ 35.5	0.011	0.033	4120	16 $\times$ 31.5	0.019	0.057	3430
				▲16 $\times$ 25	0.013	0.039	3810				
2700	272						16 $\times$ 35.5	0.018	0.054	3600	
3300	332			16 $\times$ 31.5	0.011	0.033	4000				
3900	392			16 $\times$ 35.5	0.010	0.030	4200				

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

UHW

■ Dimensions

Cap.(μF)		V (Code) Item Code		63 (1J)			80 (1K)				
				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	
12	120										
18	180	5 × 11		1.20	5.40	310	5 × 11	1.20	5.40	310	
27	270						6.3 × 11	0.46	2.10	500	
39	390	6.3 × 11		0.46	2.10	500					
47	470	6.3 × 11		0.46	2.10	500	8 × 11.5	0.29	1.30	950	
68	680	8 × 11.5		0.29	1.30	950	8 × 15	0.20	0.90	1230	
82	820	8 × 11.5		0.29	1.30	950	10 × 12.5	0.17	0.66	1280	
100	101	8 × 15		0.20	0.90	1230	8 × 20	0.16	0.66	1580	
120	121	8 × 15		0.20	0.90	1230	10 × 16	0.115	0.47	1040	
		▲10 × 12.5		0.17	0.66	1280					
150	151	8 × 20		0.16	0.66	1580					
		▲10 × 12.5		0.17	0.66	1280					
		▲8 × 20		0.16	0.66	1580	10 × 20	0.088	0.34	1430	
180	181	10 × 16		0.115	0.47	1200	▲12.5 × 15	0.115	0.47	1430	
220	221						10 × 25	0.072	0.28	1620	
270	271	10 × 20		0.088	0.34	1570	10 × 31.5	0.063	0.18	1750	
			▲12.5 × 20					0.065	0.18	1750	
330	331	10 × 25		0.072	0.28	1990					
390	391	10 × 31.5		0.063	0.18	2050	12.5 × 25	0.049	0.14	2210	
		▲12.5 × 20		0.065	0.18	1990					
470	471						12.5 × 31.5	0.044	0.13	2400	
							▲16 × 20	0.050	0.15	1950	
560	561	12.5 × 25		0.049	0.14	2460	12.5 × 35.5	0.038	0.11	2600	
			▲18 × 20					0.047	0.14	2270	
680	681	12.5 × 31.5		0.044	0.13	2760	12.5 × 40	0.033	0.095	2860	
		▲16 × 20		0.050	0.15	2380	▲16 × 25	0.040	0.12	2430	
820	821	12.5 × 35.5		0.038	0.11	3040	16 × 31.5	0.033	0.095	2640	
		▲18 × 20		0.047	0.14	2460	▲18 × 25	0.038	0.11	2500	
1000	102	12.5 × 40		0.033	0.095	3100	16 × 35.5	0.030	0.086	2860	
		▲16 × 25		0.040	0.12	2890					
1200	122	16 × 31.5		0.025	0.072	2930	16 × 40	0.028	0.081	3510	
		▲18 × 25		0.038	0.11	2930	▲18 × 31.5	0.031	0.090	2860	
1500	152	16 × 35.5		0.023	0.066	3100	18 × 35.5	0.028	0.081	3510	
		▲18 × 31.5		0.024	0.069	3100					
1800	182	16 × 40		0.021	0.060	3510	18 × 40	0.027	0.076	3860	
		▲18 × 35.5		0.022	0.063	3510					
2200	222	18 × 40		0.020	0.057	3860					

Cap.(μF)		V (Code) Item Code		100 (2A)			
				Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C /100kHz
					20°C /100kHz	-10°C /100kHz	
8.2	8R2	5 × 11		1.20	5.40	310	
18	180	6.3 × 11		0.46	2.10	500	
33	330	8 × 11.5		0.29	1.30	950	
47	470	8 × 15		0.20	0.90	1230	
56	560	10 × 12.5		0.17	0.66	1280	
68	680	8 × 20		0.16	0.66	1580	
82	820	10 × 16		0.115	0.47	1040	
100	101	10 × 20		0.088	0.34	1430	
		▲12.5 × 15		0.115	0.47	1430	
120	121	10 × 25		0.072	0.28	1620	
180	181	12.5 × 20		0.065	0.18	1750	
220	221	12.5 × 25		0.049	0.14	2210	
270	271	12.5 × 31.5		0.044	0.13	2400	
		▲16 × 20		0.050	0.15	1950	
390	391	12.5 × 35.5		0.038	0.11	2600	
		▲16 × 25		0.040	0.12	2430	
		●18 × 20		0.047	0.14	2270	
470	471	12.5 × 40		0.033	0.095	2860	
		▲18 × 25		0.038	0.11	2500	
560	561	16 × 31.5		0.033	0.095	2640	
680	681	16 × 35.5		0.030	0.086	2860	
		▲18 × 31.5		0.031	0.090	2860	
820	821	16 × 40		0.028	0.081	3510	
		▲18 × 35.5		0.028	0.081	3510	
1000	102	18 × 40		0.027	0.076	3860	

▲: In this case, [6] will be put at 12th digit of type numbering system.  
●: In this case, [3] will be put at 12th digit of type numbering system.