

UHE

Miniature Sized, Low Impedance,
High Reliability



- Low impedance and high reliability withstanding 4000 hours to 10000 hours.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).



Specifications

Item	Performance Characteristics										
Category Temperature Range	-40 to +105°C										
Rated Voltage Range	6.3 to 100V										
Rated Capacitance Range	2.2 to 18000μF										
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 or 3 (μA), whichever is greater.										
Tangent of loss angle (tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	120Hz 20°C	
	tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08		
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	100	120Hz	
	Impedance ratio (MAX.)	Z-25°C/Z+20°C	4	3	2	2	2	2	2		2
		Z-40°C/Z+20°C	8	6	4	3	3	3	3	3	
Endurance	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.										
	Case size		φD ≤ 6.3	φD = 8, 10	φD ≥ 12.5						
	Rated voltage (V)	6.3 to 10WV	4000 hours	6000 hours	8000 hours						
		16 to 100WV	5000 hours	7000 hours	10000 hours						
	Capacitance change	Within ±25% 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										
Marking	Printed with white color letter on black sleeve.										

Radial Lead Type



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

Frequency coefficient of rated ripple current

Cap. (μF)	50Hz	120Hz	300Hz	1kHz	10kHz or more
2.2 to 33	0.45	0.55	0.70	0.90	1.00
39 to 330	0.60	0.70	0.85	0.95	1.00
390 to 1000	0.65	0.75	0.90	0.98	1.00
1200 to 18000	0.75	0.80	0.95	1.00	1.00

Type numbering system (Example : 10V 1000μF)



※ Configuration

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

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.

UHE

■ Dimensions

Cap.(μF)	V (Code)	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	
100	101					5 × 11	0.58	2.3	210	
150	151		5 × 11	0.58	2.3	210				
220	221					6.3 × 11	0.22	0.87	340	
330	331		6.3 × 11	0.22	0.87	340				
470	471					8 × 11.5	0.13	0.52	640	
680	681		8 × 11.5	0.13	0.52	640	8 × 15	0.087	0.35	840
							▲ 10 × 12.5	0.080	0.32	865
820	821		10 × 12.5	0.080	0.32	865				
1000	102		8 × 15	0.087	0.35	840	8 × 20	0.069	0.27	1050
							▲ 10 × 16	0.060	0.24	1210
1200	122		8 × 20	0.069	0.27	1050	10 × 20	0.046	0.18	1400
			▲ 10 × 16	0.060	0.24	1210				
1500	152		10 × 20	0.046	0.18	1400	10 × 25	0.042	0.17	1650
							▲ 12.5 × 15	0.049	0.16	1450
1800	182		12.5 × 15	0.049	0.16	1450				
2200	222		10 × 25	0.042	0.17	1650	10 × 31.5	0.031	0.12	1910
							▲ 12.5 × 20	0.035	0.12	1900
							● 16 × 15	0.042	0.12	1940
2700	272		▲ 10 × 31.5	0.031	0.12	1910	18 × 15	0.043	0.11	2210
			16 × 15	0.042	0.12	1940				
3300	332		12.5 × 20	0.035	0.12	1900	12.5 × 25	0.027	0.089	2230
3900	392		12.5 × 25	0.027	0.089	2230	12.5 × 31.5	0.024	0.078	2650
			▲ 18 × 15	0.043	0.11	2210	▲ 16 × 20	0.027	0.078	2530
4700	472		12.5 × 31.5	0.024	0.078	2650	12.5 × 35.5	0.020	0.065	2880
5600	562		12.5 × 35.5	0.020	0.065	2880	12.5 × 40	0.017	0.056	3350
			▲ 16 × 20	0.027	0.078	2530	▲ 16 × 25	0.021	0.060	2930
							● 18 × 20	0.026	0.067	2860
6800	682		12.5 × 40	0.017	0.056	3350	16 × 31.5	0.017	0.050	3450
			▲ 16 × 25	0.021	0.060	2930				
			● 18 × 20	0.026	0.067	2860				
8200	822		16 × 31.5	0.017	0.050	3450	16 × 35.5	0.015	0.044	3610
							▲ 18 × 31.5	0.015	0.040	4170
10000	103		16 × 35.5	0.015	0.044	3610	16 × 40	0.013	0.038	4080
			▲ 18 × 25	0.019	0.049	3140	▲ 18 × 35.5	0.014	0.038	4220
12000	123		16 × 40	0.013	0.038	4080	18 × 40	0.012	0.032	4280
			▲ 18 × 31.5	0.015	0.040	4170				
15000	153		18 × 35.5	0.014	0.038	4220				
18000	183		18 × 40	0.012	0.032	4280				

▲: 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.

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■ Dimensions

Cap. (μF)	V (Code)	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	
47	470					5 × 11	0.58	2.3	210	
56	560		5 × 11	0.58	2.3	210				
100	101					6.3 × 11	0.22	0.87	340	
120	121		6.3 × 11	0.22	0.87	340				
220	221					8 × 11.5	0.13	0.52	640	
330	331		8 × 11.5	0.13	0.52	640	8 × 15	0.087	0.35	840
			▲ 10 × 12.5	0.080	0.32	865	▲ 10 × 12.5	0.080	0.32	865
470	471		8 × 15	0.087	0.35	840	8 × 20	0.069	0.27	1050
			▲ 10 × 12.5	0.080	0.32	865	▲ 10 × 16	0.06	0.24	1210
680	681		8 × 20	0.069	0.27	1050	10 × 20	0.046	0.18	1400
			▲ 10 × 16	0.060	0.24	1210	▲ 12.5 × 15	0.049	0.16	1450
820	821					10 × 25	0.042	0.17	1650	
1000	102		10 × 20	0.046	0.18	1400	10 × 31.5	0.031	0.12	1910
			▲ 12.5 × 15	0.049	0.16	1450	▲ 12.5 × 20	0.035	0.12	1900
							● 16 × 15	0.042	0.12	1940
1200	122		10 × 25	0.042	0.17	1650	18 × 15	0.043	0.11	2210
1500	152		10 × 31.5	0.031	0.12	1910				
			▲ 12.5 × 20	0.035	0.12	1900	12.5 × 25	0.027	0.089	2230
			● 16 × 15	0.042	0.12	1940				
1800	182					12.5 × 31.5	0.024	0.078	2650	
						▲ 16 × 20	0.027	0.078	2530	
2200	222		12.5 × 25	0.027	0.089	2230	12.5 × 35.5	0.020	0.065	2880
			▲ 18 × 15	0.043	0.11	2210	▲ 18 × 20	0.026	0.067	2860
2700	272		12.5 × 31.5	0.024	0.078	2650	12.5 × 40	0.017	0.056	3350
			▲ 16 × 20	0.027	0.078	2530	▲ 16 × 25	0.021	0.060	2930
3300	332		12.5 × 35.5	0.020	0.065	2880	16 × 31.5	0.017	0.050	3450
							▲ 18 × 25	0.019	0.049	3140
3900	392		12.5 × 40	0.017	0.056	3350	16 × 35.5	0.015	0.044	3610
			▲ 16 × 25	0.021	0.060	2930				
			● 16 × 20	0.026	0.067	2860	▲ 18 × 31.5	0.015	0.040	4170
4700	472		16 × 31.5	0.017	0.050	3450	16 × 40	0.013	0.038	4080
			▲ 18 × 25	0.019	0.049	3140	▲ 18 × 35.5	0.014	0.038	4220
5600	562		16 × 35.5	0.015	0.044	3610				
			▲ 18 × 31.5	0.015	0.040	4170	18 × 40	0.012	0.032	4280
6800	682		16 × 40	0.013	0.038	4080				
8200	822		18 × 35.5	0.014	0.038	4220				
10000	103		18 × 40	0.012	0.032	4280				

▲ : 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.

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■ Dimensions

V (Code)		35 (1V)				50 (1H)			
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
2.2	2R2					5 × 11	2.5	10	43
3.3	3R3					5 × 11	2.2	8.8	53
4.7	4R7					5 × 11	1.9	7.6	88
10	100					5 × 11	1.5	6	100
22	220					5 × 11	0.70	2.8	180
33	330	5 × 11	0.58	2.3	210	6.3 × 11	0.30	1.2	295
47	470	6.3 × 11	0.22	0.87	250	6.3 × 11	0.30	1.2	295
56	560	6.3 × 11	0.22	0.87	340	6.3 × 11	0.30	1.2	295
100	101	8 × 11.5	0.13	0.52	640	8 × 11.5	0.17	0.68	555
120	121					8 × 15	0.12	0.48	730
150	151	8 × 11.5	0.13	0.52	640	10 × 12.5	0.12	0.48	760
180	181					8 × 20	0.091	0.36	910
220	221	8 × 15	0.087	0.35	840	10 × 16	0.084	0.34	1050
		▲ 10 × 12.5	0.080	0.32	865				
270	271	8 × 20	0.069	0.27	1050	10 × 20	0.060	0.24	1220
		▲ 12.5 × 15				▲ 12.5 × 15	0.061	0.20	1260
330	331	10 × 16	0.060	0.24	1210	10 × 25	0.055	0.22	1440
						▲ 10 × 20	0.060	0.24	1220
470	471	10 × 20	0.046	0.18	1400	10 × 31.5	0.043	0.17	1690
		▲ 12.5 × 15	0.049	0.16	1450	▲ 12.5 × 20	0.045	0.15	1660
						● 16 × 15	0.055	0.17	1690
560	561	10 × 25	0.042	0.17	1650	12.5 × 25	0.034	0.11	1950
						▲ 18 × 15	0.054	0.15	1930
680	681	10 × 31.5	0.031	0.12	1910	12.5 × 31.5	0.030	0.10	2310
		▲ 12.5 × 20	0.035	0.12	1900				
		● 16 × 15	0.042	0.12	1940				
820	821					12.5 × 35.5	0.025	0.083	2510
						▲ 16 × 20	0.034	0.10	2210
1000	102	12.5 × 25	0.027	0.089	2230	12.5 × 40	0.021	0.069	2920
		▲ 18 × 15	0.043	0.11	2210	▲ 16 × 25	0.025	0.075	2555
						● 18 × 20	0.036	0.097	2490
1200	122	12.5 × 31.5	0.024	0.078	2650	16 × 31.5	0.022	0.066	3010
		▲ 16 × 20	0.027	0.078	2530	▲ 18 × 25	0.026	0.070	2740
1500	152	12.5 × 35.5	0.020	0.065	2880	16 × 35.5	0.019	0.057	3150
1800	182	12.5 × 40	0.017	0.056	3350	16 × 40	0.016	0.048	3710
		▲ 16 × 25	0.021	0.060	2930				
		● 18 × 20	0.026	0.067	2860				
2200	222	16 × 31.5	0.017	0.050	3450	▲ 18 × 35.5	0.017	0.046	3680
		▲ 18 × 25	0.019	0.049	3140				
2700	272	16 × 35.5	0.015	0.044	3610	18 × 40	0.014	0.038	3800
		▲ 18 × 31.5	0.015	0.040	4170				
3300	332	16 × 40	0.013	0.038	4080				
		▲ 18 × 35.5	0.014	0.038	4220				
3900	392	18 × 40	0.012	0.032	4280				

▲ : 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.

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■ Dimensions

V (Code) Item Cap.(μ F) Code		63 (1J)				100 (2A)			
		Case size ϕ D \times L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size ϕ D \times L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
6.8	6R8					5 \times 11	2.3	9.3	62
15	150	5 \times 11	2.3	9.3	62	6.3 \times 11	1.2	5.0	126
27	270					8 \times 11.5	0.63	2.8	260
33	330	6.3 \times 11	1.2	5.0	126				
39	390					8 \times 15	0.45	2.1	335
47	470	8 \times 11.5	0.63	2.8	260	10 \times 12.5	0.43	1.8	325
56	560	8 \times 11.5	0.63	2.8	260	8 \times 20	0.33	1.6	408
68	680					10 \times 16	0.31	1.5	400
82	820	8 \times 15	0.45	2.1	335	10 \times 20	0.21	0.94	518
		▲ 10 \times 12.5	0.43	1.8	325	▲ 12.5 \times 15	0.23	1.1	527
100	101					10 \times 25	0.20	0.84	595
						▲ 12.5 \times 20	0.20	0.84	740
120	121	8 \times 20	0.33	1.6	408	10 \times 31.5	0.15	0.71	740
		▲ 10 \times 16	0.31	1.5	400	▲ 12.5 \times 20	0.16	0.64	765
150	151					16 \times 15	0.14	0.66	895
180	181	10 \times 20	0.21	0.94	518	12.5 \times 25	0.12	0.45	875
		▲ 12.5 \times 15	0.23	1.1	527	▲ 18 \times 15	0.12	0.50	1030
220	221	10 \times 25	0.20	0.84	595	12.5 \times 31.5	0.10	0.42	1010
						▲ 16 \times 20	0.091	0.38	1130
270	271	10 \times 31.5	0.15	0.71	740	12.5 \times 35.5	0.083	0.35	1140
		▲ 12.5 \times 20	0.16	0.64	765				
		● 16 \times 15	0.14	0.66	895	▲ 16 \times 25	0.073	0.27	1350
330	331	12.5 \times 25	0.12	0.45	875	12.5 \times 40	0.071	0.30	1280
						▲ 18 \times 20	0.080	0.30	1300
390	391	18 \times 15	0.12	0.50	1030	16 \times 31.5	0.054	0.20	1650
						▲ 18 \times 25	0.057	0.21	1560
470	471	12.5 \times 31.5	0.10	0.42	1010	16 \times 35.5	0.045	0.17	1900
		▲ 16 \times 20	0.091	0.38	1130	▲ 18 \times 31.5	0.047	0.17	1720
560	561	12.5 \times 35.5	0.083	0.35	1140	16 \times 40	0.040	0.15	2130
		▲ 16 \times 25	0.073	0.27	1350				
680	681	12.5 \times 40	0.071	0.30	1280	18 \times 35.5	0.040	0.15	1890
		▲ 18 \times 20	0.080	0.30	1300				
820	821	16 \times 31.5	0.054	0.20	1650	18 \times 40	0.036	0.13	2470
		▲ 18 \times 25	0.057	0.21	1560				
1000	102	16 \times 35.5	0.045	0.17	1900				
		▲ 18 \times 31.5	0.047	0.17	1720				
1200	122	16 \times 40	0.040	0.15	2130				
		▲ 18 \times 35.5	0.040	0.15	1890				
1500	152	18 \times 40	0.036	0.13	2470				

▲ : 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.