

ALUMINUM ELECTROLYTIC CAPACITORS

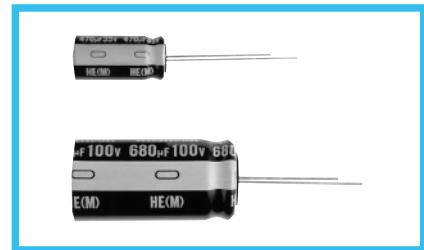
nichicon

HE

Miniature Sized, Low Impedance, High Reliability



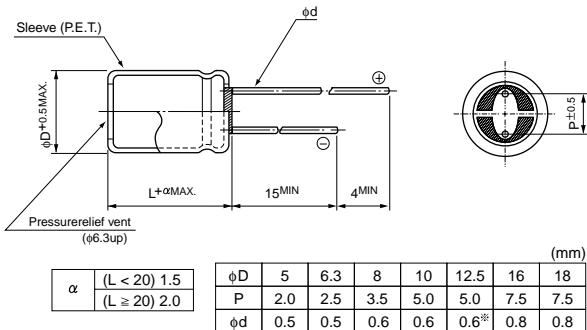
- Low impedance and high reliability withstanding 4000 hours to 10000 hours.
- Compliant to the RoHS directive (2002/95/EC).



■ Specifications

Item	Performance Characteristics													
Category Temperature Range	-40 to +105°C													
Rated Voltage Range	6.3 to 100V													
Rated Capacitance Range	0.47 to 18000μF													
Capacitance Tolerance	±20% at 120Hz, 20°C													
Leakage Current	After 2 minutes' application of rated voltage, 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				
	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				
	Impedance ratio ZT / Z20 (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	120Hz 20°C							
	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



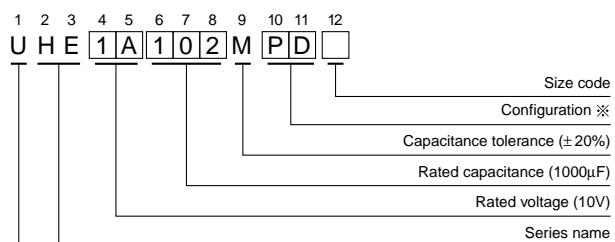
*In case L > 25 for the φ12.5 dia. unit, lead dia. φd = 0.8mm

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

● Frequency coefficient of rated ripple current

Cap. (μF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
0.47 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.

HE series

■ Standard Ratings

Cap.(μ F)	V (Code)	Item Code	6.3 (0J)				10 (1A)			
			Case size $\phi D \times L$ (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size $\phi D \times L$ (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
				20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
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					
							10 × 31.5	0.031	0.12	1910
2200	222	10 × 25	0.042	0.17	1650		▲ 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
6800	682	12.5 × 40	0.017	0.056	3350		● 18 × 20	0.026	0.067	2860
		▲ 16 × 25	0.021	0.060	2930					
		● 18 × 20	0.026	0.067	2860		▲ 18 × 25	0.019	0.049	3140
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 12th digit type numbering system.
 ●: In this case, [3] will be put 12th digit type numbering system.

HE series

■ Standard Ratings

Cap.(μ F)	V (Code)	Item Code	16 (1C)				25 (1E)			
			Case size ϕ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size ϕ D × 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	● 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 × 40	0.012	0.032	4280	
		▲ 18 × 31.5	0.015	0.040	4170					
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 12th digit type numbering system.

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

HE series

■ Standard Ratings

Cap.(μ F)	V (Code)	Item Code	35 (1V)				50 (1H)			
			Case size ϕ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size ϕ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
				20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
0.47	R47						5 × 11	5.5	22	17
1	010						5 × 11	4	16	30
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					
47	470									
56	560	6.3 × 11	0.22	0.87	340	6.3 × 11	0.30	1.2	295	
100	101						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 ▲10 × 12.5	0.087 0.080	0.35 0.32	840 865	10 × 16	0.084	0.34	1050	
270	271	8 × 20	0.069	0.27	1050	10 × 20 ▲12.5 × 15	0.060 0.061	0.24 0.20	1220 1260	
330	331	10 × 16	0.060	0.24	1210	10 × 25	0.055	0.22	1440	
470	471	10 × 20 ▲12.5 × 15	0.046 0.049	0.18 0.16	1400 1450	10 × 31.5 ▲12.5 × 20 ● 16 × 15	0.043 0.045 0.055	0.17 0.15 0.17	1690 1660 1690	
560	561	10 × 25	0.042	0.17	1650	12.5 × 25 ▲18 × 15	0.034 0.054	0.11 0.15	1950 1930	
680	681	10 × 31.5 ▲12.5 × 20 ● 16 × 15	0.031 0.035 0.042	0.12 0.12 0.12	1910 1900 1940	12.5 × 31.5	0.030	0.10	2310	
820	821					12.5 × 35.5 ▲16 × 20	0.025 0.034	0.083 0.10	2510 2210	
1000	102	12.5 × 25 ▲18 × 15	0.027 0.043	0.089 0.11	2230 2210	12.5 × 40 ▲16 × 25 ● 18 × 20	0.021 0.025 0.036	0.069 0.075 0.097	2920 2555 2490	
1200	122	12.5 × 31.5 ▲16 × 20	0.024 0.027	0.078 0.078	2650 2530	16 × 31.5 ▲18 × 25	0.022 0.026	0.066 0.070	3010 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 ▲16 × 25 ● 18 × 20	0.017 0.021 0.026	0.056 0.060 0.067	3350 2930 2860	16 × 40 ▲18 × 31.5	0.016 0.021	0.048 0.057	3710 3635	
2200	222	16 × 31.5 ▲18 × 25	0.017 0.019	0.050 0.049	3450 3140	▲18 × 35.5	0.017	0.046	3680	
2700	272	16 × 35.5 ▲18 × 31.5	0.015 0.015	0.044 0.040	3610 4170	18 × 40	0.014	0.038	3800	
3300	332	16 × 40 ▲18 × 35.5	0.013 0.014	0.038 0.038	4080 4220					
3900	392	18 × 40	0.012	0.032	4280					

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

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

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

HE series

■ Standard Ratings

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

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

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