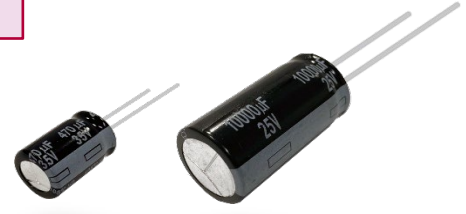




Aluminum Electrolytic Capacitors

Radial Lead Type

HD-A series



Features

- Endurance : 105 °C 1000 h to 2000 h
- Minaturize, Higher Capacitance : 1 Size miniturized product of current A-NHG
- AEC-Q200 compliant
- RoHS compliant

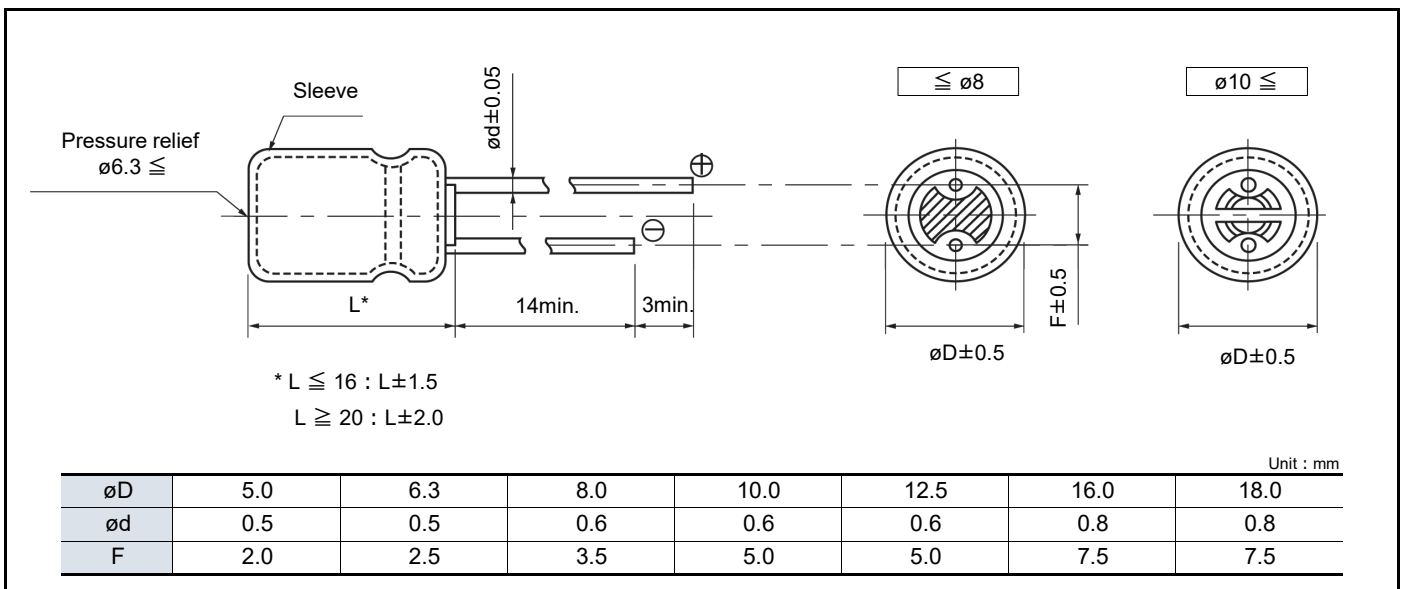
Specifications

Category temp. range	-55 °C to +105 °C	
Rated voltage range	10 V to 50 V	
Capacitance range	2.2 μF to 22000 μF	
Capacitance tolerance	±20 % (120 Hz / +20°C)	
Leakage current	$I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Whichever is greater)	
Dissipation factor (tan δ)	Please see the attached characteristics list	
Endurance	After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage)when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified bellow. Duration ø5 to ø8 : 1000 h, ø10 to ø18 : 2000 h	
	Capacitance change	Within ±20 % of the initial value
	Dissipation factor (tan δ)	≤ 200 % of the initial limit
	DC leakage current	Within the initial limit
Shelf life	After storage for 1000 h at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in endurance. (With voltage treatment)	

Frequency correction factor for ripple current

Freq. (Hz)	60	120	1 k	10 k	100 k
Cap. (μF)					
2.2 to 33	0.75	1.00	1.55	1.80	2.00
47 to 470	0.80	1.00	1.35	1.50	1.50
1000 to 22000	0.85	1.00	1.10	1.15	1.15

Dimensions



Characteristics list

Endurance : 105 °C 1000 h / ø5 to ø8, 105 °C 2000 h / ø10 to ø18

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
		øD	L	Ripple current ^{*1} (mA rms)	tan δ ^{*2}	Endu- rance (h)	Lead dia. (øD)	Lead space				Straight leads	Taping
								Straight	Taping *B	Taping *H			
10	330	6.3	11.2	200	0.24	1000	0.5	2.5	5.0	2.5	EEUHD1A331()	200	2000
	470	8.0	11.5	250	0.24	1000	0.6	3.5	5.0	—	EEUHD1A471()	200	1000
	1000	10.0	12.5	460	0.24	2000	0.6	5.0	5.0	—	EEUHD1A102()	200	500
	2200	10.0	16.0	760	0.26	2000	0.6	5.0	5.0	—	EEUHD1A222()	200	500
	4700	12.5	20.0	1260	0.30	2000	0.6	5.0	5.0	—	EEUHD1A472()	200	500
	6800	12.5	25.0	1570	0.34	2000	0.6	5.0	5.0	—	EEUHD1A682()	200	500
	10000	16.0	25.0	1890	0.42	2000	0.8	7.5	7.5	—	EEUHD1A103()	100	250
	15000	16.0	31.5	2180	0.52	2000	0.8	7.5	—	—	EEUHD1A153	100	—
	22000	18.0	35.5	2400	0.66	2000	0.8	7.5	—	—	EEUHD1A223	50	—
16	100	5.0	11.0	110	0.20	1000	0.5	2.0	5.0	2.5	EEUHD1C101()	200	2000
	220	6.3	11.2	180	0.20	1000	0.5	2.5	5.0	2.5	EEUHD1C221()	200	2000
	330	8.0	11.5	260	0.20	1000	0.6	3.5	5.0	—	EEUHD1C331()	200	1000
	470	8.0	11.5	310	0.20	1000	0.6	3.5	5.0	—	EEUHD1C471()	200	1000
	3300	12.5	20.0	1170	0.24	2000	0.6	5.0	5.0	—	EEUHD1C332()	200	500
	4700	12.5	25.0	1480	0.26	2000	0.6	5.0	5.0	—	EEUHD1C472()	200	500
	6800	16.0	25.0	1780	0.30	2000	0.8	7.5	7.5	—	EEUHD1C682()	100	250
	8200	16.0	25.0	1780	0.34	2000	0.8	7.5	7.5	—	EEUHD1C822()	100	250
	10000	16.0	31.5	2060	0.38	2000	0.8	7.5	—	—	EEUHD1C103	100	—
	15000	18.0	35.5	2210	0.48	2000	0.8	7.5	—	—	EEUHD1C153	50	—
25	47	5.0	11.0	91	0.16	1000	0.5	2.0	5.0	2.5	EEUHD1E470()	200	2000
	68	5.0	11.0	91	0.16	1000	0.5	2.0	5.0	2.5	EEUHD1E680()	200	2000
	100	6.3	11.2	130	0.16	1000	0.5	2.5	5.0	2.5	EEUHD1E101()	200	2000
	220	8.0	11.5	230	0.16	1000	0.6	3.5	5.0	—	EEUHD1E221()	200	1000
	330	8.0	11.5	310	0.16	1000	0.6	3.5	5.0	—	EEUHD1E331()	200	1000
	470	10.0	12.5	380	0.16	2000	0.6	5.0	5.0	—	EEUHD1E471()	200	500
	1000	10.0	16.0	680	0.16	2000	0.6	5.0	5.0	—	EEUHD1E102()	200	500
	2200	12.5	20.0	1090	0.18	2000	0.6	5.0	5.0	—	EEUHD1E222()	200	500
	3300	12.5	25.0	1400	0.20	2000	0.6	5.0	5.0	—	EEUHD1E332()	200	500
	4700	16.0	25.0	1750	0.22	2000	0.8	7.5	7.5	—	EEUHD1E472()	100	250
	5600	16.0	25.0	1750	0.24	2000	0.8	7.5	7.5	—	EEUHD1E562()	100	250
	6800	16.0	31.5	2040	0.26	2000	0.8	7.5	—	—	EEUHD1E682	100	—
	10000	18.0	35.5	2200	0.34	2000	0.8	7.5	—	—	EEUHD1E103	50	—
35	47	5.0	11.0	90	0.14	1000	0.5	2.0	5.0	2.5	EEUHD1V470()	200	2000
	100	6.3	11.2	150	0.14	1000	0.5	2.5	5.0	2.5	EEUHD1V101()	200	2000
	220	8.0	11.5	270	0.14	1000	0.6	3.5	5.0	—	EEUHD1V221()	200	1000
	330	10.0	12.5	350	0.14	2000	0.6	5.0	5.0	—	EEUHD1V331()	200	500
	470	10.0	16.0	460	0.14	2000	0.6	5.0	5.0	—	EEUHD1V471()	200	500
	680	10.0	16.0	460	0.14	2000	0.6	5.0	5.0	—	EEUHD1V681()	200	500
	2200	12.5	25.0	1260	0.16	2000	0.6	5.0	5.0	—	EEUHD1V222()	200	500
	3300	16.0	25.0	1610	0.18	2000	0.8	7.5	7.5	—	EEUHD1V332()	100	250
	4700	16.0	31.5	1910	0.20	2000	0.8	7.5	—	—	EEUHD1V472	100	—
	6800	18.0	35.5	2050	0.24	2000	0.8	7.5	—	—	EEUHD1V682	50	—

*1: Ripple current (120 Hz / +105 °C)

*2: tan δ (120 Hz / +20 °C)

• When requesting taped product, please put the letter "B" or "H" between the "()".

Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

• Please refer to the page of "Taping dimensions".

Characteristics list

Endurance : 105 °C 1000 h / ø5 to ø8, 105 °C 2000 h / ø10 to ø18

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
		øD	L	Ripple current* ¹ (mA rms)	tan δ* ²	Endu- rance (h)	Lead dia. (ød)	Lead space				Straight leads	Taping
								Straight	Taping *B	Taping *H			
50	2.2	5.0	11.0	18	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H2R2()	200	2000
	3.3	5.0	11.0	22	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H3R3()	200	2000
	4.7	5.0	11.0	26	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H4R7()	200	2000
	10	5.0	11.0	39	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H100()	200	2000
	22	5.0	11.0	65	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H220()	200	2000
	33	5.0	11.0	90	0.12	1000	0.5	2.0	5.0	2.5	EEUHD1H330()	200	2000
	47	6.3	11.2	110	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H470()	200	2000
	68	6.3	11.2	110	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H680()	200	2000
	100	8.0	11.5	180	0.12	1000	0.6	3.5	5.0	—	EEUHD1H101()	200	1000
	220	10.0	12.5	300	0.12	2000	0.6	5.0	5.0	—	EEUHD1H221()	200	500
	330	10.0	16.0	410	0.12	2000	0.6	5.0	5.0	—	EEUHD1H331()	200	500
	470	10.0	20.0	530	0.12	2000	0.6	5.0	5.0	—	EEUHD1H471()	200	500
	560	16.0	15.0	650	0.12	2000	0.8	7.5	7.5	—	EEUHD1H561S()	100	250
	680	16.0	15.0	650	0.12	2000	0.8	7.5	7.5	—	EEUHD1H681S()	100	250
	1000	12.5	25.0	950	0.12	2000	0.6	5.0	5.0	—	EEUHD1H102()	200	500
	2200	16.0	31.5	1470	0.14	2000	0.8	7.5	—	—	EEUHD1H222	100	—
	3300	18.0	35.5	1770	0.16	2000	0.8	7.5	—	—	EEUHD1H332	50	—

*1: Ripple current (120 Hz / +105 °C)

*2: tan δ (120 Hz / +20 °C)

• When requesting taped product, please put the letter "B" or "H" between the "()".

Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

• Please refer to the page of "Taping dimensions".