Panasonic INDUSTRY

⚠ Some part numbers are discontinued.

Aluminum Electrolytic Capacitors

Radial Lead Type

NHG-A series

■ Not available in Japan

Features

- Endurance : 105 ℃ 1000 h to 2000 h
- AEC-Q200 compliant (6.3 V to 100 V)
- RoHS compliant

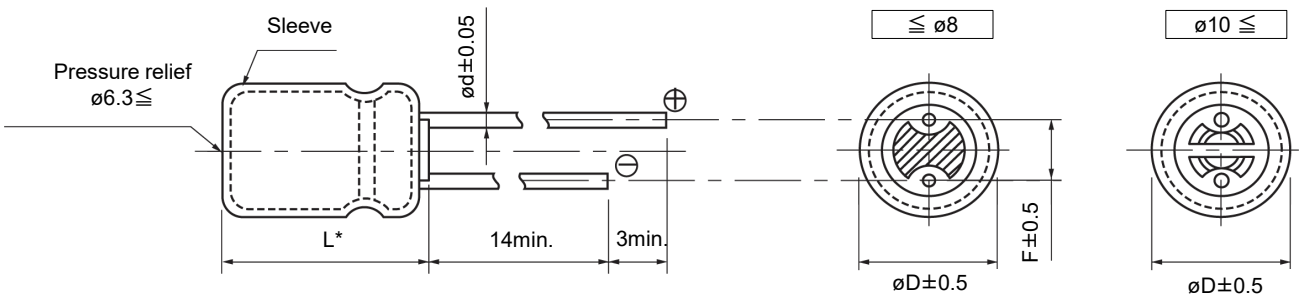
Specifications

Category temp. range	–55 ℃ to +105 ℃	–25 ℃ to +105 ℃
Rated voltage range	6.3 V to 100 V	160 V to 450 V
Capacitance range	2.2 μF to 22000 μF	2.2 μF to 330 μF
Capacitance tolerance	±20 % (120 Hz / +20℃)	
Leakage current	I ≦ 0.01 CV or 3 (μA) After 2 minutes (Which is greater)	I ≦ 0.06 CV + 10 (μA) After 2 minutes
Dissipation factor (tan δ)	Please see the attached characteristics list	
Endurance	After following life test with DC voltage and +105 ℃±2 ℃ ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) for 2000 h, when the capacitors are restored to 20 ℃, the capacitors shall meet the limits specified bellow. Duration 6.3 V to 100 V (ø5 to ø8) : 1000 h, (ø10 to ø18) : 2000 h 160 V to 450 V : 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 ℃±2 ℃ with no voltage applied and then being stabilized at +20 ℃, capacitors shall meet the limits specified in endurance. (With voltage treatment)	

Frequency correction factor for ripple current

Rated voltage (V)	Capacitance (μF)	Frequency (Hz)				
		60	120	1 k	10 k	100 k
6.3 to 100	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
160 to 450	2.2 to 330	0.80	1.00	1.35	1.50	1.50

Dimensions



* L ≦ 16 : L±1.0
L ≧ 20 : L±2.0

Unit : mm

øD	5.0	6.3	8.0	10.0	12.5	16.0	18.0
ød	0.5	0.5	0.6	0.6	0.6	0.8	0.8
F	2.0	2.5	3.5	5.0	5.0	7.5	7.5

Characteristics list

Endurance : 105 ℃ 1000 h to 2000 h

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
								Lead space					
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B	Taping ✻i		Straight leads	Taping
6.3	100	5.0	11.0	91	0.28	1000	0.5	2.0	5.0	2.5	ECA0JHG101( )	200	2000
	220	5.0	11.0	140	0.28	1000	0.5	2.0	5.0	2.5	ECA0JHG221( )	200	2000
	470	6.3	11.2	230	0.28	1000	0.5	2.5	5.0	2.5	ECA0JHG471( )	200	2000
	1000	8.0	11.5	380	0.28	1000	0.6	3.5	5.0	—	ECA0JHG102( )	200	1000
	2200	10.0	16.0	710	0.30	2000	0.6	5.0	5.0	—	ECA0JHG222( )	200	500
	3300	10.0	20.0	840	0.32	2000	0.6	5.0	5.0	—	ECA0JHG332( )	200	500
	4700	12.5	20.0	1090	0.34	2000	0.6	5.0	5.0	—	ECA0JHG472( )	200	500
	6800	12.5	25.0	1350	0.38	2000	0.6	5.0	5.0	—	ECA0JHG682( )	200	500
	10000	16.0	25.0	1650	0.46	2000	0.8	7.5	7.5	—	ECA0JHG103( )	100	250
	15000	16.0	31.5	2010	0.56	2000	0.8	7.5	—	—	ECA0JHG153	100	—
	22000	18.0	35.5	2350	0.70	2000	0.8	7.5	—	—	ECA0JHG223	50	—
10	330	6.3	11.2	200	0.24	1000	0.5	2.5	5.0	2.5	ECA1AHG331( )	200	2000
	470	8.0	11.5	250	0.24	1000	0.6	3.5	5.0	—	ECA1AHG471( )	200	1000
	1000	10.0	12.5	460	0.24	2000	0.6	5.0	5.0	—	ECA1AHG102( )	200	500
	2200	10.0	20.0	760	0.26	2000	0.6	5.0	5.0	—	ECA1AHG222( )	200	500
	3300	12.5	20.0	1000	0.28	2000	0.6	5.0	5.0	—	ECA1AHG332( )	200	500
	4700	12.5	25.0	1260	0.30	2000	0.6	5.0	5.0	—	ECA1AHG472( )	200	500
	6800	16.0	25.0	1570	0.34	2000	0.8	7.5	7.5	—	ECA1AHG682( )	100	250
	10000	16.0	31.5	1890	0.42	2000	0.8	7.5	—	—	ECA1AHG103	100	—
	15000	18.0	35.5	2180	0.52	2000	0.8	7.5	—	—	ECA1AHG153	50	—
16	100	5.0	11.0	110	0.20	1000	0.5	2.0	5.0	2.5	ECA1CHG101( )	200	2000
	220	6.3	11.2	180	0.20	1000	0.5	2.5	5.0	2.5	ECA1CHG221( )	200	2000
	330	8.0	11.5	260	0.20	1000	0.6	3.5	5.0	—	ECA1CHG331( )	200	1000
	470	8.0	11.5	310	0.20	1000	0.6	3.5	5.0	—	ECA1CHG471( )	200	1000
	1000	10.0	16.0	560	0.20	2000	0.6	5.0	5.0	—	ECA1CHG102( )	200	500
	2200	12.5	20.0	920	0.22	2000	0.6	5.0	5.0	—	ECA1CHG222( )	200	500
	3300	12.5	25.0	1170	0.24	2000	0.6	5.0	5.0	—	ECA1CHG332( )	200	500
	4700	16.0	25.0	1480	0.26	2000	0.8	7.5	7.5	—	ECA1CHG472( )	100	250
	6800	16.0	31.5	1780	0.30	2000	0.8	7.5	—	—	ECA1CHG682	100	—
	10000	18.0	35.5	2060	0.38	2000	0.8	7.5	—	—	ECA1CHG103	50	—
25	47	5.0	11.0	91	0.16	1000	0.5	2.0	5.0	2.5	ECA1EHG470( )	200	2000
	100	6.3	11.2	130	0.16	1000	0.5	2.5	5.0	2.5	ECA1EHG101( )	200	2000
	220	8.0	11.5	230	0.16	1000	0.6	3.5	5.0	—	ECA1EHG221( )	200	1000
	330	8.0	11.5	310	0.16	1000	0.6	3.5	5.0	—	ECA1EHG331( )	200	1000
	470	10.0	12.5	380	0.16	2000	0.6	5.0	5.0	—	ECA1EHG471( )	200	500
	1000	10.0	20.0	680	0.16	2000	0.6	5.0	5.0	—	ECA1EHG102( )	200	500
	2200	12.5	25.0	1090	0.18	2000	0.6	5.0	5.0	—	ECA1EHG222( )	200	500
	3300	16.0	25.0	1400	0.20	2000	0.8	7.5	7.5	—	ECA1EHG332( )	100	250
	4700	16.0	31.5	1750	0.22	2000	0.8	7.5	—	—	ECA1EHG472	100	—
	6800	18.0	35.5	2040	0.26	2000	0.8	7.5	—	—	ECA1EHG682	50	—
35	47	5.0	11.0	90	0.14	1000	0.5	2.0	5.0	2.5	ECA1VHG470( )	200	2000
	100	6.3	11.2	150	0.14	1000	0.5	2.5	5.0	2.5	ECA1VHG101( )	200	2000
	220	8.0	11.5	270	0.14	1000	0.6	3.5	5.0	—	ECA1VHG221( )	200	1000
	330	10.0	12.5	350	0.14	2000	0.6	5.0	5.0	—	ECA1VHG331( )	200	500
	470	10.0	16.0	460	0.14	2000	0.6	5.0	5.0	—	ECA1VHG471( )	200	500
	1000	12.5	20.0	810	0.14	2000	0.6	5.0	5.0	—	ECA1VHG102( )	200	500
	2200	16.0	25.0	1260	0.16	2000	0.8	7.5	7.5	—	ECA1VHG222( )	100	250
	3300	16.0	31.5	1610	0.18	2000	0.8	7.5	—	—	ECA1VHG332	100	—
	4700	18.0	35.5	1910	0.20	2000	0.8	7.5	—	—	ECA1VHG472	50	—

*1: Ripple current (120 Hz / +105 ℃)

*2: tan δ (120 Hz / +20 ℃)

・When requesting taped product, please put the letter “B” or “i” between the “( )”.
Lead wire pitch ✻B=5 mm, 7.5 mm, i=2.5 mm.

・Please refer to the page of “Taping dimensions”.

Characteristics list

Endurance : 105 ℃ 1000 h to 2000 h

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
								Lead space					
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B	Taping ✻i		Straight leads	Taping
50	2.2	5.0	11.0	18	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG2R2( )	200	2000
	3.3	5.0	11.0	22	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG3R3( )	200	2000
	4.7	5.0	11.0	26	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG4R7( )	200	2000
	10	5.0	11.0	39	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG100( )	200	2000
	22	5.0	11.0	65	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG220( )	200	2000
	33	5.0	11.0	90	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG330( )	200	2000
	47	6.3	11.2	110	0.12	1000	0.5	2.5	5.0	2.5	ECA1HHG470( )	200	2000
	100	8.0	11.5	180	0.12	1000	0.6	3.5	5.0	—	ECA1HHG101( )	200	1000
	220	10.0	12.5	300	0.12	2000	0.6	5.0	5.0	—	ECA1HHG221( )	200	500
	330	10.0	16.0	410	0.12	2000	0.6	5.0	5.0	—	ECA1HHG331( )	200	500
	470	10.0	20.0	530	0.12	2000	0.6	5.0	5.0	—	ECA1HHG471( )	200	500
	1000	12.5	25.0	950	0.12	2000	0.6	5.0	5.0	—	ECA1HHG102( )	200	500
	2200	16.0	31.5	1470	0.14	2000	0.8	7.5	—	—	ECA1HHG222	100	—
	3300	18.0	35.5	1770	0.16	2000	0.8	7.5	—	—	ECA1HHG332	50	—
63	10	5.0	11.0	46	0.10	1000	0.5	2.0	5.0	2.5	ECA1JHG100( )	200	2000
	22	5.0	11.0	71	0.10	1000	0.5	2.0	5.0	2.5	ECA1JHG220( )	200	2000
	33	6.3	11.2	100	0.10	1000	0.5	2.5	5.0	2.5	ECA1JHG330( )	200	2000
	47	6.3	11.2	120	0.10	1000	0.5	2.5	5.0	2.5	ECA1JHG470( )	200	2000
	100	10.0	12.5	215	0.10	2000	0.6	5.0	5.0	—	ECA1JHG101( )	200	500
	220	10.0	16.0	335	0.10	2000	0.6	5.0	5.0	—	ECA1JHG221( )	200	500
	330	10.0	20.0	510	0.10	2000	0.6	5.0	5.0	—	ECA1JHG331( )	200	500
	470	12.5	20.0	640	0.10	2000	0.6	5.0	5.0	—	ECA1JHG471( )	200	500
	1000	16.0	25.0	930	0.10	2000	0.8	7.5	7.5	—	ECA1JHG102( )	100	250
	2200	18.0	35.5	1610	0.12	2000	0.8	7.5	—	—	ECA1JHG222	50	—
100	2.2	5.0	11.0	21	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG2R2( )	200	2000
	3.3	5.0	11.0	31	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG3R3( )	200	2000
	4.7	5.0	11.0	38	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG4R7( )	200	2000
	10	6.3	11.2	54	0.08	1000	0.5	2.5	5.0	2.5	ECA2AHG100( )	200	2000
	22	6.3	11.2	93	0.08	1000	0.5	2.5	5.0	2.5	ECA2AHG220( )	200	2000
	33	8.0	11.5	130	0.08	1000	0.6	3.5	5.0	—	ECA2AHG330( )	200	1000
	47	10.0	12.5	165	0.08	2000	0.6	5.0	5.0	—	ECA2AHG470( )	200	500
	100	10.0	20.0	265	0.08	2000	0.6	5.0	5.0	—	ECA2AHG101( )	200	500
	220	12.5	25.0	440	0.08	2000	0.6	5.0	5.0	—	ECA2AHG221( )	200	500
	330	16.0	25.0	540	0.08	2000	0.8	7.5	7.5	—	ECA2AHG331( )	100	250
	470	16.0	25.0	715	0.08	2000	0.8	7.5	7.5	—	ECA2AHG471( )	100	250
	1000	18.0	35.5	985	0.08	2000	0.8	7.5	—	—	ECA2AHG102	50	—

*1: Ripple current (120 Hz / +105 ℃)

*2: tan δ (120 Hz / +20 ℃)

・When requesting taped product, please put the letter “B” or “i” between the “( )”.
Lead wire pitch ✻B=5 mm, 7.5 mm, i=2.5 mm.

・Please refer to the page of “Taping dimensions”.

Characteristics list

Endurance : 105 ℃ 2000 h

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
								Lead space					
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B	Taping ✻i		Straight leads	Taping
160	2.2	6.3	11.2	25	0.15	2000	0.5	2.5	5.0	2.5	ECA2CHG2R2( )	200	2000
	3.3	6.3	11.2	36	0.15	2000	0.5	2.5	5.0	2.5	ECA2CHG3R3( )	200	2000
	4.7	6.3	11.2	43	0.15	2000	0.5	2.5	5.0	2.5	ECA2CHG4R7( )	200	2000
	10	10.0	12.5	70	0.15	2000	0.6	5.0	5.0	—	ECA2CHG100( )	200	500
	22	10.0	20.0	130	0.15	2000	0.6	5.0	5.0	—	ECA2CHG220( )	200	500
	33	10.0	20.0	180	0.15	2000	0.6	5.0	5.0	—	ECA2CHG330( )	200	500
	47	12.5	20.0	220	0.15	2000	0.6	5.0	5.0	—	ECA2CHG470( )	200	500
	100	16.0	25.0	335	0.15	2000	0.8	7.5	7.5	—	ECA2CHG101( )	100	250
	220	16.0	31.5	540	0.15	2000	0.8	7.5	—	—	ECA2CHG221	100	—
EOL	330	18.0	31.5	705	0.15	2000	0.8	7.5	—	—	ECA2CHG331	50	—
200	2.2	6.3	11.2	25	0.15	2000	0.5	2.5	5.0	2.5	ECA2DHG2R2( )	200	2000
	3.3	6.3	11.2	36	0.15	2000	0.5	2.5	5.0	2.5	ECA2DHG3R3( )	200	2000
	4.7	8.0	11.5	50	0.15	2000	0.6	3.5	5.0	—	ECA2DHG4R7( )	200	1000
	10	10.0	16.0	80	0.15	2000	0.6	5.0	5.0	—	ECA2DHG100( )	200	500
	22	10.0	20.0	140	0.15	2000	0.6	5.0	5.0	—	ECA2DHG220( )	200	500
	33	12.5	20.0	190	0.15	2000	0.6	5.0	5.0	—	ECA2DHG330( )	200	500
	47	12.5	20.0	220	0.15	2000	0.6	5.0	5.0	—	ECA2DHG470( )	200	500
	100	16.0	25.0	335	0.15	2000	0.8	7.5	7.5	—	ECA2DHG101( )	100	250
EOL	220	18.0	31.5	575	0.15	2000	0.8	7.5	—	—	ECA2DHG221	50	—
250	2.2	6.3	11.2	29	0.15	2000	0.5	2.5	5.0	2.5	ECA2EHG2R2( )	200	2000
	3.3	8.0	11.5	42	0.15	2000	0.6	3.5	5.0	—	ECA2EHG3R3	200	1000
	4.7	8.0	11.5	50	0.15	2000	0.6	3.5	5.0	—	ECA2EHG4R7( )	200	1000
	10	10.0	16.0	88	0.15	2000	0.6	5.0	5.0	—	ECA2EHG100( )	200	500
	22	12.5	20.0	155	0.15	2000	0.6	5.0	5.0	—	ECA2EHG220( )	200	500
	33	12.5	20.0	190	0.15	2000	0.6	5.0	5.0	—	ECA2EHG330( )	200	500
	47	12.5	25.0	230	0.15	2000	0.6	5.0	5.0	—	ECA2EHG470( )	200	500
	100	16.0	31.5	365	0.15	2000	0.8	7.5	—	—	ECA2EHG101	100	—
350	2.2	8.0	11.5	31	0.20	2000	0.6	3.5	5.0	—	ECA2VHG2R2( )	200	1000
	3.3	10.0	12.5	38	0.20	2000	0.6	5.0	5.0	—	ECA2VHG3R3( )	200	500
	4.7	10.0	16.0	50	0.20	2000	0.6	5.0	5.0	—	ECA2VHG4R7( )	200	500
	10	10.0	20.0	82	0.20	2000	0.6	5.0	5.0	—	ECA2VHG100( )	200	500
	22	12.5	20.0	130	0.20	2000	0.6	5.0	5.0	—	ECA2VHG220( )	200	500
	33	16.0	25.0	195	0.20	2000	0.8	7.5	7.5	—	ECA2VHG330( )	100	250
	47	16.0	25.0	230	0.20	2000	0.8	7.5	7.5	—	ECA2VHG470( )	100	250
EOL	100	18.0	31.5	375	0.20	2000	0.8	7.5	—	—	ECA2VHG101	50	—

*1: Ripple current (120 Hz / +105 ℃)

*2: tan δ (120 Hz / +20 ℃)

EOL End of life

・When requesting taped product, please put the letter “B” or “i” between the “( )”.
Lead wire pitch ✻B=5 mm, 7.5 mm, i=2.5 mm.

・Please refer to the page of “Taping dimensions”.

Characteristics list

Endurance : 105 ℃ 2000 h

Rated voltage (V)	Capacitance (±20 %) (μF)	Case size (mm)		Specification			Lead length (mm)				Part No.	Min. Packaging Q'ty (PCS)	
								Lead space					
		øD	L	Ripple current*1 (mA rms)	tan δ*2	Endu-rance (h)	Lead dia. (ød)	Straight	Taping ✻B	Taping ✻i		Straight leads	Taping
400	2.2	8.0	11.5	30	0.24	2000	0.6	3.5	5.0	—	ECA2GHG2R2( )	200	1000
	3.3	10.0	12.5	40	0.24	2000	0.6	5.0	5.0	—	ECA2GHG3R3( )	200	500
	4.7	10.0	16.0	50	0.24	2000	0.6	5.0	5.0	—	ECA2GHG4R7( )	200	500
	10	10.0	20.0	80	0.24	2000	0.6	5.0	5.0	—	ECA2GHG100( )	200	500
	22	12.5	25.0	145	0.24	2000	0.6	5.0	5.0	—	ECA2GHG220( )	200	500
	33	16.0	25.0	195	0.24	2000	0.8	7.5	7.5	—	ECA2GHG330( )	100	250
	47	16.0	31.5	250	0.24	2000	0.8	7.5	—	—	ECA2GHG470	100	—
450	2.2	10.0	12.5	29	0.24	2000	0.6	5.0	5.0	—	ECA2WHG2R2( )	200	500
	3.3	10.0	16.0	41	0.24	2000	0.6	5.0	5.0	—	ECA2WHG3R3( )	200	500
	4.7	10.0	20.0	49	0.24	2000	0.6	5.0	5.0	—	ECA2WHG4R7( )	200	500
	10	12.5	20.0	75	0.24	2000	0.6	5.0	5.0	—	ECA2WHG100( )	200	500
	22	16.0	25.0	115	0.24	2000	0.8	7.5	7.5	—	ECA2WHG220( )	100	250
	33	16.0	31.5	155	0.24	2000	0.8	7.5	—	—	ECA2WHG330	100	—

*1: Ripple current (120 Hz / +105 ℃)
*2: tan δ (120 Hz / +20 ℃)
・When requesting taped product, please put the letter “B” or “i” between the “( )”.
Lead wire pitch ✻B=5 mm, 7.5 mm, i=2.5 mm.
・Please refer to the page of “Taping dimensions”.