Radial Lead Type

Series: **NHG** Type: **A**

■ Features

- Endurance : 105 °C 1000 h to 2000 h
- RoHS directive compliant

■ Specifications

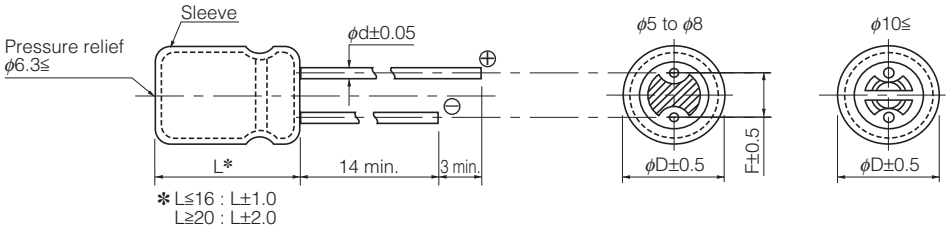
Category Temp. Range	–55 °C to +105 °C	–25 °C to +105 °C
Rated W.V. Range	6.3 V.DC to 100 V.DC	160 V.DC to 450 V.DC
Nominal Cap. Range	0.1 μF to 22000 μF	1.0 μF to 330 μF
Capacitance Tolerance	±20 % (120 Hz/+20 °C)	
DC Leakage Current	I ≦ 0.01 CV or 3 (μA) After 2 minutes (Which is greater)	I ≦ 0.06 CV +10 (μA) After 2 minutes
tan δ	Please see the attached standard products 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 below. Duration : 6.3 V.DC to 100 V.DC : (ϕ5 to ϕ8)=1000 hours, (ϕ10 to ϕ18)=2000 hours 160 V.DC to 450 V.DC : 2000 hours	
	Capacitance change	±20 % of initial measured value
	tan δ	≦ 200 % of initial specified value
	DC leakage current	≦ initial specified value
Shelf Life	After storage for 1000 hours 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

W.V.(V.DC)	Cap. (μF)	Frequency (Hz)				
		60	120	1 k	10 k	100 k
6.3 to 100	0.1 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	1 to 330	0.80	1.00	1.35	1.50	1.50

■ Dimensions in mm (not to scale)

[mm]



(mm)

Body Dia. ϕD	5	6.3	8	10	12.5	16	18
Lead Dia. ϕd	0.5	0.5	0.6	0.6	0.6	0.8	0.8
Lead space F	2.0	2.5	3.5	5.0	5.0	7.5	7.5

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■ Standard Products

W.V. (V)	Cap. (±20 %) (μF)	Case size Dia. (mm)	Case size Length (mm)	Specification Ripple Current (120 Hz) (+105 °C) (mA r.m.s.)	Specification tan δ (120 Hz) (+20 °C)	Specification Endurance (hours)	Lead Length Lead Dia. (mm)	Lead Length Lead Space Straight (mm)	Lead Length Lead Space Taping ✻B (mm)	Lead Length Lead Space Taping ✻i (mm)	Part No.	Min. Packaging Q'ty Straight Leads (pcs)	Min. Packaging Q'ty Taping (pcs)
6.3	220	5	11	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	11.5	380	0.28	1000	0.6	3.5	5.0		ECA0JHG102( )	200	1000
	2200	10	16	710	0.30	2000	0.6	5.0	5.0		ECA0JHG222( )	200	500
	3300	10	20	840	0.32	2000	0.6	5.0	5.0		ECA0JHG332( )	200	500
	4700	12.5	20	1090	0.34	2000	0.6	5.0	5.0		ECA0JHG472( )	200	500
	6800	12.5	25	1350	0.38	2000	0.6	5.0	5.0		ECA0JHG682( )	200	500
	10000	16	25	1650	0.46	2000	0.8	7.5	7.5		ECA0JHG103( )	100	250
	15000	16	31.5	2010	0.56	2000	0.8	7.5			ECA0JHG153	100	
	22000	18	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	11.5	250	0.24	1000	0.6	3.5	5.0		ECA1AHG471( )	200	1000
	1000	10	12.5	460	0.24	2000	0.6	5.0	5.0		ECA1AHG102( )	200	500
	2200	10	20	760	0.26	2000	0.6	5.0	5.0		ECA1AHG222( )	200	500
	3300	12.5	20	1000	0.28	2000	0.6	5.0	5.0		ECA1AHG332( )	200	500
	4700	12.5	25	1260	0.30	2000	0.6	5.0	5.0		ECA1AHG472( )	200	500
	6800	16	25	1570	0.34	2000	0.8	7.5	7.5		ECA1AHG682( )	100	250
	10000	16	31.5	1890	0.42	2000	0.8	7.5			ECA1AHG103	100	
	15000	18	35.5	2180	0.52	2000	0.8	7.5			ECA1AHG153	50	
16	100	5	11	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	11.5	260	0.20	1000	0.6	3.5	5.0		ECA1CHG331( )	200	1000
	470	8	11.5	310	0.20	1000	0.6	3.5	5.0		ECA1CHG471( )	200	1000
	1000	10	16	560	0.20	2000	0.6	5.0	5.0		ECA1CHG102( )	200	500
	2200	12.5	20	920	0.22	2000	0.6	5.0	5.0		ECA1CHG222( )	200	500
	3300	12.5	25	1170	0.24	2000	0.6	5.0	5.0		ECA1CHG332( )	200	500
	4700	16	25	1480	0.26	2000	0.8	7.5	7.5		ECA1CHG472( )	100	250
	6800	16	31.5	1780	0.30	2000	0.8	7.5			ECA1CHG682	100	
	10000	18	35.5	2060	0.38	2000	0.8	7.5			ECA1CHG103	50	
25	47	5	11	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	11.5	230	0.16	1000	0.6	3.5	5.0		ECA1EHG221( )	200	1000
	330	8	11.5	310	0.16	1000	0.6	3.5	5.0		ECA1EHG331( )	200	1000
	470	10	12.5	380	0.16	2000	0.6	5.0	5.0		ECA1EHG471( )	200	500
	1000	10	20	680	0.16	2000	0.6	5.0	5.0		ECA1EHG102( )	200	500
	2200	12.5	25	1090	0.18	2000	0.6	5.0	5.0		ECA1EHG222( )	200	500
	3300	16	25	1400	0.20	2000	0.8	7.5	7.5		ECA1EHG332( )	100	250
	4700	16	31.5	1750	0.22	2000	0.8	7.5			ECA1EHG472	100	
	6800	18	35.5	2040	0.26	2000	0.8	7.5			ECA1EHG682	50	
35	47	5	11	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	11.5	270	0.14	1000	0.6	3.5	5.0		ECA1VHG221( )	200	1000
	330	10	12.5	350	0.14	2000	0.6	5.0	5.0		ECA1VHG331( )	200	500
	470	10	16	460	0.14	2000	0.6	5.0	5.0		ECA1VHG471( )	200	500
	1000	12.5	20	810	0.14	2000	0.6	5.0	5.0		ECA1VHG102( )	200	500
	2200	16	25	1260	0.16	2000	0.8	7.5	7.5		ECA1VHG222( )	100	250
	3300	16	31.5	1610	0.18	2000	0.8	7.5			ECA1VHG332	100	
	4700	18	35.5	1910	0.20	2000	0.8	7.5			ECA1VHG472	50	

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■ Standard Products

W.V. (V)	Cap. (±20 %) (μF)	Case size Dia. (mm)	Case size Length (mm)	Specification Ripple Current (120 Hz) (+105 °C) (mA r.m.s.)	Specification tan δ (120 Hz) (+20 °C)	Specification Endurance (hours)	Lead Length Lead Dia. (mm)	Lead Length Lead Space Straight (mm)	Lead Length Lead Space Taping ✻B (mm)	Lead Length Lead Space Taping ✻i (mm)	Part No.	Min. Packaging Q'ty Straight Leads (pcs)	Min. Packaging Q'ty Taping (pcs)
50	0.1	5	11	1.1	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG0R1( )	200	2000
	0.22	5	11	2.3	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHGR22( )	200	2000
	0.33	5	11	3.5	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHGR33( )	200	2000
	0.47	5	11	5	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHGR47( )	200	2000
	1	5	11	10	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG010( )	200	2000
	2.2	5	11	18	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG2R2( )	200	2000
	3.3	5	11	22	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG3R3( )	200	2000
	4.7	5	11	26	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG4R7( )	200	2000
	10	5	11	39	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG100( )	200	2000
	22	5	11	65	0.12	1000	0.5	2.0	5.0	2.5	ECA1HHG220( )	200	2000
	33	5	11	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	11.5	180	0.12	1000	0.6	3.5	5.0		ECA1HHG101( )	200	1000
	220	10	12.5	300	0.12	2000	0.6	5.0	5.0		ECA1HHG221( )	200	500
	330	10	16	410	0.12	2000	0.6	5.0	5.0		ECA1HHG331( )	200	500
	470	10	20	530	0.12	2000	0.6	5.0	5.0		ECA1HHG471( )	200	500
	1000	12.5	25	950	0.12	2000	0.6	5.0	5.0		ECA1HHG102( )	200	500
	2200	16	31.5	1470	0.14	2000	0.8	7.5			ECA1HHG222	100	
	3300	18	35.5	1770	0.16	2000	0.8	7.5			ECA1HHG332	50	
63	10	5	11	46	0.10	1000	0.5	2.0	5.0	2.5	ECA1JHG100( )	200	2000
	22	5	11	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	12.5	215	0.10	2000	0.6	5.0	5.0		ECA1JHG101( )	200	500
	220	10	16	335	0.10	2000	0.6	5.0	5.0		ECA1JHG221( )	200	500
	330	10	20	510	0.10	2000	0.6	5.0	5.0		ECA1JHG331( )	200	500
	470	12.5	20	640	0.10	2000	0.6	5.0	5.0		ECA1JHG471( )	200	500
	1000	16	25	930	0.10	2000	0.8	7.5	7.5		ECA1JHG102( )	100	250
	2200	18	35.5	1610	0.12	2000	0.8	7.5			ECA1JHG222	50	
100	0.47	5	11	9	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHGR47( )	200	2000
	1	5	11	14	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG010( )	200	2000
	2.2	5	11	21	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG2R2( )	200	2000
	3.3	5	11	31	0.08	1000	0.5	2.0	5.0	2.5	ECA2AHG3R3( )	200	2000
	4.7	5	11	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

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W.V. (V)	Cap. (±20 %) (μF)	Case size Dia. (mm)	Case size Length (mm)	Specification Ripple Current (120 Hz) (+105 °C) (mA r.m.s.)	Specification tan δ (120 Hz) (+20 °C)	Specification Endurance (hours)	Lead Length Lead Dia. (mm)	Lead Length Lead Space Straight (mm)	Lead Length Lead Space Taping ✻B (mm)	Lead Length Lead Space Taping ✻i (mm)	Part No.	Min. Packaging Q'ty Straight Leads (pcs)	Min. Packaging Q'ty Taping (pcs)
100	33	8	11.5	130	0.08	1000	0.6	3.5	5.0		ECA2AHG330( )	200	1000
	47	10	12.5	165	0.08	2000	0.6	5.0	5.0		ECA2AHG470( )	200	500
	100	10	20	265	0.08	2000	0.6	5.0	5.0		ECA2AHG101( )	200	500
	220	12.5	25	440	0.08	2000	0.6	5.0	5.0		ECA2AHG221( )	200	500
	330	16	25	540	0.08	2000	0.8	7.5	7.5		ECA2AHG331( )	100	250
	470	16	25	715	0.08	2000	0.8	7.5	7.5		ECA2AHG471( )	100	250
	1000	18	35.5	985	0.08	2000	0.8	7.5			ECA2AHG102	50	
160	1	6.3	11.2	17	0.15	2000	0.5	2.5	5.0	2.5	ECA2CHG010( )	200	2000
	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	12.5	70	0.15	2000	0.6	5.0	5.0		ECA2CHG100( )	200	500
	22	10	20	130	0.15	2000	0.6	5.0	5.0		ECA2CHG220( )	200	500
	33	10	20	180	0.15	2000	0.6	5.0	5.0		ECA2CHG330( )	200	500
	47	12.5	20	220	0.15	2000	0.6	5.0	5.0		ECA2CHG470( )	200	500
	100	16	25	335	0.15	2000	0.8	7.5	7.5		ECA2CHG101( )	100	250
	220	16	31.5	540	0.15	2000	0.8	7.5			ECA2CHG221	100	
	330	18	31.5	705	0.15	2000	0.8	7.5			ECA2CHG331	50	
200	1	6.3	11.2	17	0.15	2000	0.5	2.5	5.0	2.5	ECA2DHG010( )	200	2000
	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	11.5	50	0.15	2000	0.6	3.5	5.0		ECA2DHG4R7( )	200	1000
	10	10	16	80	0.15	2000	0.6	5.0	5.0		ECA2DHG100( )	200	500
	22	10	20	140	0.15	2000	0.6	5.0	5.0		ECA2DHG220( )	200	500
	33	12.5	20	190	0.15	2000	0.6	5.0	5.0		ECA2DHG330( )	200	500
	47	12.5	20	220	0.15	2000	0.6	5.0	5.0		ECA2DHG470( )	200	500
	100	16	25	335	0.15	2000	0.8	7.5	7.5	2.5	ECA2DHG101( )	100	250
	220	18	31.5	575	0.15	2000	0.8	7.5			ECA2DHG221	50	
250	1	6.3	11.2	17	0.15	2000	0.5	2.5	5.0	2.5	ECA2EHG010( )	200	2000
	2.2	6.3	11.2	29	0.15	2000	0.5	2.5	5.0	2.5	ECA2EHG2R2( )	200	2000
	3.3	8	11.5	42	0.15	2000	0.6	3.5	5.0		ECA2EHG3R3	200	1000
	4.7	8	11.5	50	0.15	2000	0.6	3.5	5.0		ECA2EHG4R7( )	200	1000
	10	10	16	88	0.15	2000	0.6	5.0	5.0		ECA2EHG100( )	200	500
	22	12.5	20	155	0.15	2000	0.6	5.0	5.0		ECA2EHG220( )	200	500
	33	12.5	20	190	0.15	2000	0.6	5.0	5.0		ECA2EHG330( )	200	500
	47	12.5	25	230	0.15	2000	0.6	5.0	5.0		ECA2EHG470( )	200	500
	100	16	31.5	365	0.15	2000	0.8	7.5			ECA2EHG101	100	
350	1	6.3	11.2	18	0.20	2000	0.5	2.5	5.0	2.5	ECA2VHG010( )	200	2000
	2.2	8	11.5	31	0.20	2000	0.6	3.5	5.0		ECA2VHG2R2( )	200	1000
	3.3	10	12.5	38	0.20	2000	0.6	5.0	5.0		ECA2VHG3R3( )	200	500
	4.7	10	16	50	0.20	2000	0.6	5.0	5.0		ECA2VHG4R7( )	200	500
	10	10	20	82	0.20	2000	0.6	5.0	5.0		ECA2VHG100( )	200	500
	22	12.5	20	130	0.20	2000	0.6	5.0	5.0		ECA2VHG220( )	200	500
	33	16	25	195	0.20	2000	0.8	7.5	7.5		ECA2VHG330( )	100	250
	47	16	25	230	0.20	2000	0.8	7.5	7.5		ECA2VHG470( )	100	250
	100	18	31.5	375	0.20	2000	0.8	7.5			ECA2VHG101	50	

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400	1	6.3	11.2	18	0.24	2000	0.5	2.5	5.0	2.5	ECA2GHG010( )	200	2000
	2.2	8	11.5	30	0.24	2000	0.6	3.5	5.0		ECA2GHG2R2( )	200	1000
	3.3	10	12.5	40	0.24	2000	0.6	5.0	5.0		ECA2GHG3R3( )	200	500
	4.7	10	16	50	0.24	2000	0.6	5.0	5.0		ECA2GHG4R7( )	200	500
	10	10	20	80	0.24	2000	0.6	5.0	5.0		ECA2GHG100( )	200	500
	22	12.5	25	145	0.24	2000	0.6	5.0	5.0		ECA2GHG220( )	200	500
	33	16	25	195	0.24	2000	0.8	7.5	7.5		ECA2GHG330( )	100	250
	47	16	31.5	250	0.24	2000	0.8	7.5			ECA2GHG470	100	
450	1	8	11.5	18	0.24	2000	0.6	3.5	5.0		ECA2WHG010( )	200	1000
	2.2	10	12.5	29	0.24	2000	0.6	5.0	5.0		ECA2WHG2R2( )	200	500
	3.3	10	16	41	0.24	2000	0.6	5.0	5.0		ECA2WHG3R3( )	200	500
	4.7	10	20	49	0.24	2000	0.6	5.0	5.0		ECA2WHG4R7( )	200	500
	10	12.5	20	75	0.24	2000	0.6	5.0	5.0		ECA2WHG100( )	200	500
	22	16	25	115	0.24	2000	0.8	7.5	7.5		ECA2WHG220( )	100	250
	33	16	31.5	155	0.24	2000	0.8	7.5			ECA2WHG330	100	

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.
The taping dimensions are explained on p.178 of our Catalog. Please use it as a reference guide.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.