

Aluminum Electrolytic Capacitors
(Radial Lead Type)

Japan
Malaysia

Series: **NHG**
Type: **A (Radial Leads)**
Style: **04/JIS C 5141**

Standard



■ Features

- Smaller than Series NHE
- Lifetime: 2000 h at +105 °C

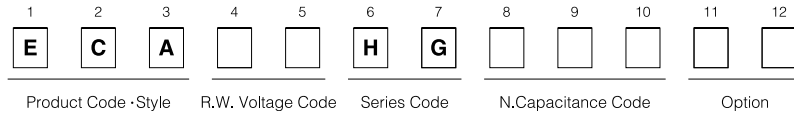
■ Recommended Applications

- AV (TV, Video, Audio), Office, Home appliance

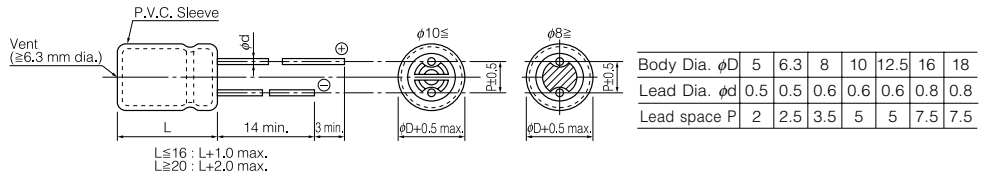
■ Specifications

Operating Temp. Range	-55 to +105 °C										-25 to +105 °C															
Rated W.V. Range	6.3 to 100 V.DC										160 to 450 V.DC															
Nominal Cap. Range	0.1 to 22000 µF										1.0 to 330 µF															
Capacitance Tolerance	±20 % (120 Hz/+20 °C)																									
DC Leakage Current	I ≤ 0.01 CV or 3 (µA) after 2 minutes appli- cation of rated working voltage at +20 °C										I ≤ 0.06 CV +10 (µA) after 2 minutes appli- cation of rated working voltage at +20 °C															
Dissipation Factor	W.V. (V)		6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	(120 Hz/+20 °C)									
	D.F.		0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.15	0.15	0.15	0.20	0.24	0.24	(max.)									
	Add 0.02 per 1000 µF for products of 1000 µF or more.																									
Endurance	After following life test with DC voltage and +105 ±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), the capacitors shall meet the limits specified below. Duration: 1000 hours (to ø8), 2000 hours (ø10 to) Post test requirements at +20 °C. <table><tr><td>Capacitance change</td><td>±20 % of initial measured value</td></tr><tr><td>D.F.</td><td>≤ 200 % of initial specified value</td></tr><tr><td>DC leakage current</td><td>≤ Initial specified value</td></tr></table>																				Capacitance change	±20 % of initial measured value	D.F.	≤ 200 % of initial specified value	DC leakage current	≤ Initial specified value
Capacitance change	±20 % of initial measured value																									
D.F.	≤ 200 % of initial specified value																									
DC leakage current	≤ Initial specified value																									
Shelf Life	After storage for 1000 hours at +105±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in "Endurance".																									

■ Explanation of Part Numbers



■ Dimensions in mm (not to scale)



■ 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 30	0.75	1	1.55	1.80	2.00
	47 to 470	0.80	1	1.35	1.50	1.50
	1000 to 22000	0.85	1	1.10	1.15	1.15
160 to 450	1 to 330	0.80	1	1.35	1.50	1.50

■ Case size/Ripple current

φD×L (mm)/(mA) r.m.s. (120 Hz/+105 °C)

Cap. (μF)	W.V. (V.DC)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)	63 (1J)	100 (2A)
0.1 (0R1)							5 x11	1.1	
0.22 (R22)							5 x11	2.3	
0.33 (R33)							5 x11	3.5	
0.47 (R47)							5 x11	5	
1.0 (010)							5 x11	10	5 x11
2.2 (2R2)							5 x11	18	5 x11
3.3 (3R3)							5 x11	22	5 x11
4.7 (4R7)							5 x11	26	5 x11
10 (100)							5 x11	39	5 x11
22 (220)							5 x11	65	5 x11
33 (330)							5 x11	90	5 x11
47 (470)							5 x11	110	5 x11
100 (101)				5 x11	110	63x11.2	130	63x11.2	150
220 (221)	5 x11	140		63x11.2	180	8 x11.5	230	8 x11.5	270
330 (331)			63x11.2	200	8 x11.5	260	8 x11.5	310	10 x12.5
470 (471)	63x11.2	230	8 x11.5	250	8 x11.5	310	10 x12.5	380	10 x16
1000 (102)				10 x16	560	10 x20	680	12.5x20	810
2200 (222)	10 x16	710	10 x20	760	12.5x20	920	12.5x25	1090	16 x25
3300 (332)	10 x20	840	12.5x20	1000	12.5x25	1170	16 x25	1400	16 x31.5
4700 (472)	12.5x20	1090	12.5x25	1260	16 x25	1480	16 x31.5	1750	18 x35.5
6800 (682)	12.5x25	1350	16 x25	1570	16 x31.5	1780	18 x35.5	2040	
10000 (103)	16 x25	1650	16 x31.5	1890	18 x35.5	2060			
15000 (153)	16 x31.5	2010	18 x35.5	2180					
22000 (223)	18 x35.5	2350							

Cap. (μF)	W.V. (V.DC)	160 (2C)	200 (2D)	250 (2E)	350 (2V)	400 (2G)	450 (2W)
1.0 (010)	63x11.2	17	63x11.2	17	63x11.2	18	8 x11.5
2.2 (2R2)	63x11.2	25	63x11.2	25	63x11.2	29	8 x11.5
3.3 (3R3)	63x11.2	36	63x11.2	36	8 x11.5	42	10 x12.5
4.7 (4R7)	63x11.2	43	8 x11.5	50	8 x11.5	50	10 x16
10 (100)	10 x12.5	70	10 x16	80	10 x16	88	10 x20
22 (220)	10 x20	130	10 x20	140	12.5x20	155	12.5x25
33 (330)	10 x20	180	12.5x20	190	16 x25	195	16 x25
47 (470)	12.5x20	220	12.5x20	220	12.5x25	230	16 x25
100 (101)	16 x25	335	16 x25	335	16 x31.5	365	18 x31.5
220 (221)	16 x31.5	540	18 x31.5	575			
330 (331)	18 x31.5	705					

() shows W.V. and capacitance code.

■ Standard Products

W.V.	Cap . (±20%)	Case size		Specification			Lead Length				Part No.	Min. Packaging Qty	
		Dia.	Length	Ripple current (120Hz) (+105° C) (mA)	D.F.	Life Time (hours)	Lead Dia.	Lead Space				Straight Leads	Taping
								Straight (mm)	Taping *B (mm)	Taping *i (mm)			
(V)	(μF)	(mm)	(mm)				(mm)	(mm)	(mm)	(mm)		(pcs)	(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

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

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

■ Standard Products

W.V.	Cap. (±20%)	Case size		Specification			Lead Length				Part No	Min. Packaging Qty	
		Dia.	Length	Ripple current (120Hz) (+105°C) (mA)	D.F.	Life Time (hours)	Lead Dia.	Lead Space				Straight Leads	Taping
								Straight	Taping *B	Taping *i			
(V)	(μF)	(mm)	(mm)				(mm)	(mm)	(mm)	(mm)		(pcs)	(pcs)
35	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	
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	20.0
	22	6.3	11.2	93	0.08	1000	0.5	2.5	5.0	2.5	ECA2AHG220()	200	2000

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

The taping dimentions are explained on p.25 of our Catalog. Please use it as a reference guide.

■ Standard Products

W.V.	Cap. (±20%)	Case size		Specification			Lead Length				Part No.	Min. Packaging Qty	
		Dia.	Length	Ripple current (120Hz) (+105°C) (mA)	D.F.	Life Time (hours)	Lead Dia.	Lead Space				Straight Leads	Taping
								Straight	Taping *B	Taping *i			
(V)	(μF)	(mm)	(mm)				(mm)	(mm)	(mm)			(pcs)	(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		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

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

The taping dimensions are explained on p.25 of our Catalog. Please use it as a reference guide.

• i Standard Products

W.V.	Cap. (±20%)	Case size		Specification			Lead Length				Part No.	Min. Packaging Qty	
		Dia.	Length	Ripple current (120Hz) (+105°C) (mA)	D.F.	Life Time (hours)	Lead Dia. (mm)	Lead Space				Straight Leads (pcs)	Taping (pcs)
								Straight (mm)	Taping *B (mm)	Taping *I (mm)			
(V)	(μF)	(mm)	(mm)				(mm)	(mm)	(mm)				
350	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	
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
450	47	16	31.5	250	0.24	2000	0.8	7.5			ECA2GHG470	100	
	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	

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i=2.5mm.

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