

### ALUMINUM ELECTROLYTIC CAPACITORS

# GHR 直立式 105°C 標準型品

## For General Use, 105°C Standard Series

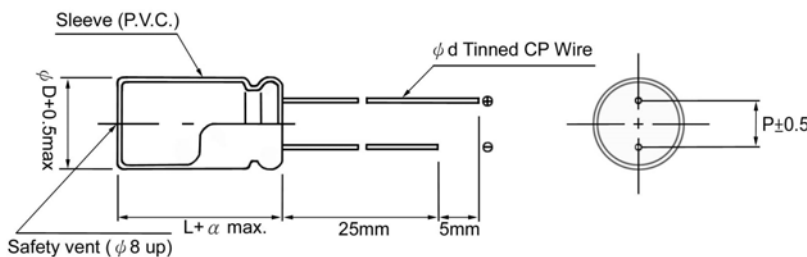
- 耐高溫型標準品, 適用於高信賴性電子產品及儀器設備等
- 產品壽命保證 2,000 小時/105°C
- For general use and suitable for high reliability products.
- Life guaranteed 2,000hrs./105°C.



#### • Specifications

Item	Performance Characteristics												
Operating Temperature range 使用溫度範圍	-40 + 105°C						-25 + 105°C						
Rated Voltage 額定電壓	6.3V ~ 100V						160V ~ 450V						
Capacitance Range 容量範圍	0.1 ~ 47,000 μF												
Capacitance Tolerance 靜電容量容許差	±20% (120Hz, 20°C)												
Leakage Current 洩漏電流	I ≤ 0.02CV or 4 μA, whichever is greater after 2 minutes application of rated voltage.						I ≤ 0.03CV + 10 μA, whichever is greater after 2 minutes application of rated voltage.						
Dissipation Factor 散逸係數 (120Hz, 20°C)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160~250	350~450		
	Tan δ (max.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.25		
For capacitance of more than 1,000μF, add 0.02 for every increase of 1,000μF.													
Temperature Characteristics 溫度特性 (120Hz)	Impedance Ratio / Stability at Low Temperature												
	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160~200	250~350	400	450
	Z (-25°C) / Z (20°C)	5	4	3	2	2	2	2	2	3	4	6	15
Z (-40°C) / Z (20°C)	10	8	6	4	3	3	3	3	4	8	10	-	
Load Life 高溫負荷特性	After 2,000 hours application of WV at 105°C, capacitor shall meet the characteristics requirements mentioned below.												
	Capacitance change	Within ±20% of initial value											
	Tan δ	200% or less of initial specified value											
	Leakage current	Initial specified value or less											
Shelf Life 擺置壽命	After leaving capacitors under no load at 105°C for 1,000 hours and applying voltage according to JIS C5102 and C5141, they shall meet the specified value as load life characteristics listed above.												

#### • Dimension



φD	5	6.3	8	10	13	16	18	20	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5
α	φd		0.5		0.6		0.8		1.0	
	~100WV	1.0		1.5		1.5		2.0		
	160WV~	1.5		2.0		2.0		2.0		

WV(SV) Cap(μF)	6.3 (8)		10 (13)		16 (20)		25 (32)		35 (44)		50 (63)		63 (75)	
0.1											5 x 11	1.3		
0.22											5 x 11	2.9		
0.33											5 x 11	4.3		
0.47											5 x 11	7		
1											5 x 11	13		
2.2											5 x 11	20		
3.3											5 x 11	25		
4.7											5 x 11	30		
10					5 x 11	35	5 x 11	36	5 x 11	41	5 x 11	46	5 x 11	46
22	5 x 11	45	5 x 11	45	5 x 11	54	5 x 11	58	5 x 11	61	5 x 11	68	6.3 x 11	82
													5 x 11	71
33	5 x 11	55	5 x 11	58	5 x 11	65	5 x 11	68	5 x 11	75	6.3 x 11	95	6.3 x 11	100
											5 x 11	90		
47	5 x 11	65	5 x 11	68	5 x 11	79	5 x 11	83	6.3 x 11	100	6.3 x 11	115	8 x 11	135
									5 x 11	93			6.3 x 11	120
68	5 x 11	75	5 x 11	80	5 x 11	90	5 x 11	95	6.3 x 11	110	8 x 11	145	8 x 11	155
											6.3 x 11	130		
100	5 x 11	95	5 x 11	105	6.3 x 11	125	6.3 x 11	140	8 x 11	170	8 x 11	190	10 x 12	215
					5 x 11	115	5 x 11	125	6.3 x 11	150			8 x 11	200
220	5 x 11	145	6.3 x 11	175	6.3 x 11	190	8 x 11	240	10 x 12	275	10 x 16	440	10 x 20	400
			5 x 11	155					8 x 11	250	10 x 12	300	10 x 16	335
330	6.3 x 11	195	6.3 x 11	210	8 x 11	260	10 x 12	315	10 x 16	400	10 x 20	460	13 x 20	540
							8 x 11	275	10 x 12	350	10 x 16	410	10 x 20	510
470	6.3 x 11	230	8 x 11	290	10 x 12	370	10 x 16	440	10 x 20	520	13 x 20	610	13 x 20	640
			6.3 x 11	250	8 x 11	315	10 x 12	380	10 x 16	460	10 x 20	540		
1000	8 x 11	390	10 x 12	460	10 x 20	640	13 x 20	770	13 x 25	920	16 x 25	1080	16 x 32	1210
					10 x 16	560	10 x 20	680	13 x 20	810	13 x 25	950	16 x 25	930
2200	10 x 20	710	10 x 20	760	13 x 25	1000	16 x 25	1170	16 x 32	1340	16 x 36	1470	18 x 36	1650
	10 x 16	635			13 x 20	920	13 x 25	1090	16 x 25	1260	16 x 32	1410		
3300	10 x 20	840	13 x 25	1100	16 x 25	1300	16 x 32	1460	16 x 36	1610	18 x 36	1770	20 x 40	1950
			13 x 20	1000	13 x 25	1170	16 x 25	1400	16 x 32	1500				
4700	13 x 20	1090	16 x 25	1400	16 x 32	1600	16 x 32	1710	18 x 36	1910	20 x 40	2100	22 x 50	2450
			13 x 25	1260	16 x 25	1480	16 x 25	1570	16 x 36	1780				
6800	16 x 25	1500	16 x 32	1690	16 x 36	1780	18 x 36	2040	20 x 40	2150	22 x 50	2500	25 x 50	2800
	13 x 25	1350	16 x 25	1570	16 x 25	1600	16 x 36	1850	18 x 40	2000				
10000	16 x 32	1765	16 x 36	1890	18 x 36	2060	20 x 40	2150	22 x 50	2650	25 x 50	2850		
	16 x 25	1650	16 x 32	1820	16 x 36	1930	18 x 40	2000						
15000	16 x 36	2010	18 x 36	2180	20 x 40	2430	22 x 50	2750	25 x 50	3100				
	16 x 32	1820	16 x 36	2050	18 x 40	2210								
22000	18 x 40	2350	20 x 40	2650	22 x 50	3000	25 x 50	3250						
	18 x 36	2280	18 x 40	2420	22 x 40	2710								
33000	22 x 50	2800	22 x 50	3250	25 x 50	3450								
	20 x 40	2500	22 x 50	3210										
47000	22 x 50	2780	25 x 50	3570										
													Case Size	ripple

Ripple (mA rms) at 105°C 120Hz

**ALUMINUM ELECTROLYTIC CAPACITORS**

• Size & ripple current

Unit: DxL(mm)

WV(SV) Cap(μF)	100 (125)		160 (200)		200 (250)		250 (300)		350 (400)		400 (450)		450 (500)	
0.1	5 x 11	1.5			6.3 x 11	1.5								
0.22	5 x 11	3.4			6.3 x 11	3.3								
0.33	5 x 11	5.0			6.3 x 11	5								
0.47	5 x 11	7.1	6.3 x 11	11	6.3 x 11	11	6.3 x 11	10			6.3 x 11	8.5		
1	5 x 11	15	6.3 x 11	16	6.3 x 11	16	6.3 x 11	15	6.3 x 11	15	8 x 11	17	8 x 11	13
											6.3 x 11	14		
2.2	5 x 11	21	6.3 x 11	25	6.3 x 11	25	6.3 x 11	23	8 x 11	26	10 x 12	30	10 x 12	23
									6.3 x 11	21	8 x 11	27	8 x 11	20
3.3	5 x 11	29	6.3 x 11	30	6.3 x 11	30	8 x 11	32	10 x 12	38	10 x 12	38	10 x 16	31
							6.3 x 11	28	8 x 11	30	8 x 11	34	10 x 12	28
4.7	5 x 11	32	6.3 x 11	34	8 x 11	39	8 x 11	39	10 x 12	45	10 x 16	50	10 x 20	40
					6.3 x 11	35	6.3 x 11	35	8 x 11	39	10 x 12	42	10 x 12	32
10	6.3 x 11	54	8 x 11	41	10 x 12	65	10 x 16	74	10 x 20	80	13 x 20	90	13 x 20	65
	5 x 11	50			8 x 11	57	10 x 12	71	10 x 12	64	10 x 16	64	10 x 20	27
22	6.3 x 11	93	10 x 16	100	10 x 20	120	13 x 20	130	13 x 25	115	16 x 25	165	16 x 25	115
			10 x 12	92	10 x 16	105	10 x 20	105	13 x 20	105	13 x 25	140	13 x 25	100
33	8 x 11	130	10 x 20	145	13 x 20	160	13 x 20	160	16 x 25	195	16 x 32	215	16 x 36	165
			10 x 16	125	10 x 20	140	10 x 20	140	13 x 25	170	16 x 25	170	16 x 25	125
47	10 x 12	165	13 x 20	195	13 x 20	195	13 x 25	210	16 x 36	270	16 x 36	270	18 x 40	185
	8 x 11	140	10 x 20	150			13 x 20	190	16 x 25	210	16 x 25	200	16 x 32	155
68	10 x 12	190	13 x 20	250	13 x 25	250	16 x 25	270	16 x 25	285	16 x 32	240	18 x 36	185
100	10 x 20	265	13 x 25	315	16 x 32	375	16 x 32	365	18 x 40	420	20 x 40	450	22 x 40	270
	10 x 16	240			16 x 25	320	16 x 25	310	18 x 36	370	18 x 36	310	18 x 40	200
220	13 x 25	440	16 x 36	570	18 x 36	575	20 x 40	600	22 x 50	620	25 x 50	660	25 x 50	250
	13 x 20	390	16 x 32	410	16 x 36	500	18 x 36	485			22 x 50	460		
330	13 x 25	540	18 x 40	750	20 x 40	705	22 x 50	730	25 x 50	710				
			18 x 36	570	18 x 40	675	20 x 40	710						
470	16 x 25	715	22 x 40	900	22 x 50	840	25 x 50	870						
			18 x 40	855	22 x 40	925	22 x 50	1000						
1000	18 x 40	985	25 x 50	1310										
	18 x 36	960												
2200	22 x 50	1750												
3300	25 x 50	2070												
													Case Size	Ripple

Ripple (mA rms) at 105°C 120 Hz

• Frequency coefficient of allowable ripple current

WV	Cap(μF)	Frequency	50 Hz	120 Hz	300 Hz	1 KHz	10 KHz~
6.3~100		~ 47	0.75	1	1.35	1.57	2.00
		100 ~ 470	0.80	1	1.23	1.34	1.50
		1,000 ~ 33,000	0.85	1	1.10	1.13	1.15
160~450		0.47 ~ 220	0.80	1	1.25	1.40	1.60
		330 ~ 1,000	0.95	1	1.10	1.13	1.15

• Allowable ripple & Ambient temperature

Ambient Temp. (°C)	~ +70	+85	+105
Compensating Coefficient	1.78	1.4	1.1