

FEATURES

1. Highly reliable capacitors that withstand low ESR & long life.
2. Two or three dimensions with same ratings.
3. Aluminum case designed explosion-proof vent.
4. Best for switching power supplies

SPECIFICATIONS

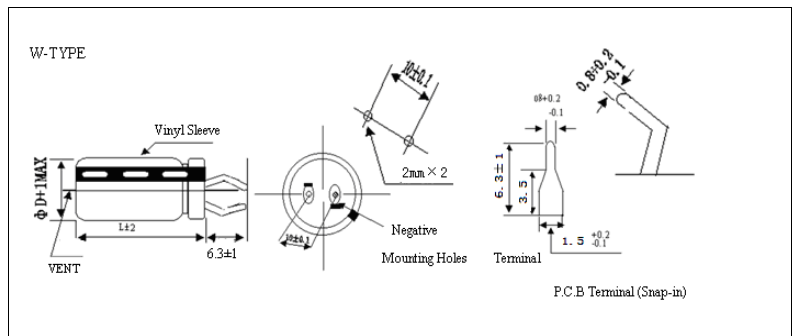
Item	Performance Characteristics													
Operating Temperature Range	-40 to +105 °C													
Rated Working voltage Range	10 to 450V DC													
Nominal Capacitance Range	47~47000(uF)													
Capacitance Tolerance	±20% (120Hz, +20 °C)													
Leakage Current	$I \leq 3 \sqrt{CV}$ after 5 minutes application of rated working voltage at +20 °C													
Dissipation Factor $\tan \delta$ (120Hz+20 °C)	Working voltage(V)	10~16	25	35~50	63	80	100	160~200	250	315~450				
	$\tan \delta$ (max.)	0.50	0.30	0.25	0.20	0.15	0.15	0.15	0.15	0.15	0.25			
Low Temperature characteristics	Impedance ratio max. at 120Hz													
	Working voltage(V)	10	16	25	35	50	63	80	100	160	200	250	400	450
	Z-25 °C/Z+20 °C	6	6	6	6	4	3	3	3	8	8	8	8	8
Z-40 °C/Z+20 °C	15	15	15	10	8	6	6	6	8	8	8	8	8	
High temperature Loading	Test conditions													
	After 5000 hours application of rated voltage at +105 °C the capacitor shall meet the following limits													
Shelf life	Post test requirements at +20 °C													
	Leakage current : ≤ Initial specified value													
	Capacitance change : ≤ ±20% of initial measured value													
	$\tan \delta$: ≤ 200% of initial specified value													
Others	At 105 °C no voltage applied after 1000hours the capacitors shall meet the following limits													
	Post test requirements at +20 °C													
	Leakage current : ≤ 200 of Initial specified value													
	Capacitance change : ≤ ±15% of initial measured value													
$\tan \delta$: ≤ 150% of initial specified value														
JIS C-5141 JIS C-5102														

Ripple current MULTIPLIERS

- 1) Maximum rms ripple current at 120Hz, 105 °C are given in the table
 - 2) Temperature multiplying factor: Where capacitors are operated at temperature other than 105 °C, the maximum ripple current must be multiplied by the figure shown in the table below.
- Temperature coefficient

Temperature (°C)	20~45	65	75	105
Factor	1	0.91	0.73	0.36

- 3) Frequency multiplying factor:

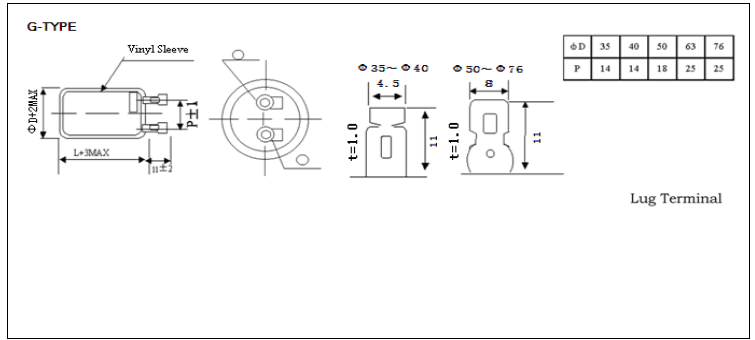




Large Can Aluminum Electrolytic Capacitors

If capacitor are used to filter circuits at a frequency other than 120 Hz, the maximum ripple current must be multiplied by the figure shown in the table below.
Frequency coefficient

Frequency(Hz)	60	120	1k	10~50k
10~100V	0.9	1.0	1.15	1.25
160~250V	0.8	1.0	1.25	1.47
350~450V	0.8	1.0	1.30	1.47



DIMENSIONS

ΦD × L (mm)

WV(SV)	Cap.(μF) Code	ΦD	10(13)											
			22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
5600	568	22×25	1.11	125										
6800	688	22×25	1.31	125	25×25	1.10	88							
8200	828	22×25	1.57	125	25×25	1.57	88							
10000	109	22×30	1.60	97	25×25	1.60	88	30×25	1.61	75				
12000	129	22×35	1.81	81	25×30	1.801	77	30×25	1.80	75				
15000	159	22×35	2.10	81	25×30	2.10	69	30×25	2.10	75				
18000	189	22×35	2.21	81	25×30	2.21	68	30×30	2.21	66				
22000	229	22×40	2.76	69	25×35	2.76	63	30×30	2.76	49	35×25	2.76	69	
27000	279				25×50	3.05	42	30×40	3.05	31	35×30	3.05	47	
33000	339				25×50	3.41	42	30×40	3.01	31	35×35	3.41	37	
39000	399							30×50	3.61	28	35×40	3.61	32	
47000	479							30×50	4.61	28	35×50	4.61	26	

WV(SV)	Cap.(μF) Code	ΦD	16(20)											
			22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
5600	568	22×25	1.41	126										
6800	688	22×30	1.61	98	25×25	1.61	89							
8200	828	22×35	1.80	82	25×30	1.80	74							
10000	109	22×40	2.10	68	25×30	2.10	68	30×25	2.10	75				
12000	129	22×40	2.41	68	25×35	2.41	53	30×25	2.41	75				
15000	159	22×50	2.70	53	25×40	2.70	52	30×30	2.70	48				
18000	189				25×50	3.05	42	30×35	3.05	36	35×30	3.05	47	
22000	229				25×50	3.40	42	30×40	3.40	30	35×45	3.40	37	
27000	279							30×50	4.03	28	35×40	4.03	32	
33000	339							30×50	4.33	28	35×40	4.33	32	
39000	399										35×50	4.94	26	

WV(SV)	Cap.(μF) Code	ΦD	25(32)											
			22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
3900	398	22×25	1.30	125										
4700	478	22×30	1.50	99	25×25	1.50	89							
5600	568	22×35	1.60	83	25×25	1.60	88							
6800	688	22×40	1.87	68	25×30	1.87	68	30×25	1.87	76				
8200	828	22×45	2.20	63	25×35	2.20	63	30×30	2.20	48	35×25	2.20	68	
10000	109	22×50	2.35	42	25×40	2.35	53	30×35	2.35	37	35×30	2.35	60	
12000	129				25×50	2.72	42	30×35	2.72	37	35×30	2.72	47	
15000	159							30×40	3.16	30	35×35	3.16	37	
18000	189							30×50	3.60	28	35×40	3.60	32	
22000	229										35×45	3.80	30	
27000	279										35×50	4.61	26	



Large Can Aluminum Electrolytic Capacitors

WV(SV)		35(44)												
Cap.(uF)	Code	φ D	22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
2200	228		22×25	1.11	125									
2700	278		22×25	1.30	125									
3300	338		22×30	1.41	98	25×25	1.41	88						
3900	398		22×35	1.54	81	25×30	1.54	68						
4700	478		22×40	1.76	68	25×30	1.76	68	30×25	1.76	75			
5600	568		22×45	1.94	62	25×35	1.94	62	30×30	1.94	48	35×25	1.94	68
6800	688		22×50	2.21	52	25×40	2.21	52	30×35	2.21	36	35×30	2.21	60
8200	828					25×50	2.51	40	30×35	2.51	35	35×30	2.51	47
10000	109								30×40	2.80	30	35×35	2.80	37
12000	129								30×50	3.30	28	35×40	3.30	30
15000	159											35×50	4.26	25

Allowable Ripple (A rms)at 105°C 120Hz
Max Impedance (Z m Ω)at 20°C 30KHZ

DIMENSIONS

Φ D × L (mm)

WV(SV)		50(63)												
Cap.(uF)	Code	φ D	22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
1500	158		22×25	1.01	125									
1800	188		22×30	1.11	99	25×25	1.11	88						
2200	228		22×35	1.30	83	25×25	1.30	88						
2700	278		22×40	1.46	68	25×30	1.46	68	30×25	1.46	75			
3300	338		22×40	1.70	68	25×35	1.70	62	30×30	1.70	48			
3900	398		22×50	1.90	52	25×40	1.90	52	30×35	1.90	36			
4700	478					25×40	2.11	51	30×35	2.11	35	35×30	2.11	48
5600	568					25×50	2.36	42	30×40	2.36	30	35×35	2.36	38
6800	688								30×50	2.70	28	35×40	2.70	32
8200	828								30×50	3.15	28	35×40	3.15	32
10000	109											35×50	3.51	25

WV(SV)		63(79)												
Cap.(uF)	Code	φ D	22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
1000	108		22×25	1.01	126									
1200	128		22×25	1.15	126	25×25	1.15	88						
1500	158		22×35	1.31	83	25×30	1.31	68						
1800	188		22×41	1.45	68	25×30	1.45	68	30×25	1.45	75			
2200	228		22×45	1.65	63	25×35	1.65	63	30×30	1.65	48	35×25	1.65	68
2700	278		22×50	1.91	54	25×40	1.91	52	30×35	1.91	35	35×30	1.91	60
3300	338					25×50	2.16	42	30×35	2.16	35	35×30	2.16	48
3900	398								30×40	2.40	30	35×35	2.40	38
4700	478								30×50	2.70	28	35×40	2.70	32
5600	568								30×50	3.10	28	35×40	3.10	32
6800	688											35×50	3.50	25

WV(SV)		80(100)												
Cap.(uF)	Code	φ D	22			25			30			35		
			Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
680	687		22×25	0.96	148									
820	827		22×30	1.01	118									
1000	108		22×35	1.21	98	25×25	1.21	116						
1200	128		22×40	1.40	78	25×30	1.40	81						
1500	158		22×45	1.60	48	25×35	1.60	66	30×25	1.60	82			
1800	188		22×50	1.81	58	25×40	1.81	62	30×30	1.81	58	35×25	1.81	68
2200	228					25×50	2.05	44	30×35	2.05	52	35×30	2.05	48
2700	278								30×40	2.36	42	35×36	2.35	42
3300	338								30×50	2.70	28	35×40	2.70	28
3900	398											35×45	2.80	25



Large Can Aluminum Electrolytic Capacitors

4700	478										35×50	3.40	22
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WV(SV) Cap.(uF) Code φ D		100(125)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
560	567	22×30	0.96	118	25×25	0.95	116						
680	687	22×35	1.11	98	25×30	1.10	80						
820	827	22×40	1.40	78	25×30	1.40	80	30×25	1.40	82			
1000	108	22×45	1.41	76	25×35	1.41	66	30×30	1.41	58	35×25	1.41	68
1200	128	22×50	1.60	58	25×40	1.60	62	30×35	1.60	52	35×30	1.60	66
1500	158				25×50	1.86	44	30×40	1.86	42	35×30	1.86	48
1800	188							30×45	2.06	38	35×35	2.06	42
2200	228							30×50	2.40	28	35×40	2.40	28
2700	278										35×50	2.80	23

Allowable Ripple (A rms)at 105°C 120Hz
Max Impedance (Z mΩ) at 20°C 30KHZ

DIMENSIONS

Φ D × L (mm)

WV(SV) Cap.(uF) Code φ D		160(200)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
270	277	22×30	0.61	566									
330	337	22×35	0.80	456	25×25	0.80	526						
390	397	22×35	0.86	456	25×30	0.86	416						
470	477	22×45	1.10	380	25×35	1.10	366	30×30	1.10	316			
560	567	22×45	1.15	380	25×35	1.15	300	30×30	1.15	316			
680	687				25×45	1.30	280	30×35	1.30	262			
820	827				25×45	1.44	280	30×40	1.44	346	35×30	1.44	256
1000	108							30×45	1.70	300	35×35	1.70	206
1200	128										35×45	1.95	166
1500	158										35×50	2.40	146

WV(SV) Cap.(uF) Code φ D		200(250)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
180	187	22×25	0.58	640									
220	227	22×30	0.66	560									
270	277	22×35	0.78	450	25×25	0.78	520						
330	337	22×40	0.90	400	25×30	0.90	410						
390	397	22×40	0.98	400	25×35	0.98	400	30×25	0.98	400			
470	477	22×40	1.16	400	25×35	1.16	400	30×25	1.16	400			
560	567	22×45	1.30	340	25×35	1.30	360	30×25	1.30	400			
680	687	22×50	1.46	310	25×40	1.46	310	30×30	1.46	310	35×25	1.46	340
820	827				25×45	1.60	300	30×35	1.60	360	35×35	1.60	280
1000	108				25×55	1.90	230	30×45	1.90	300	35×35	1.90	200
1200	128							30×50	2.10	172	35×40	2.10	172

WV(SV) Cap.(uF) Code φ D		250(300)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
150	157	22×25	0.51	640									
180	187	22×30	0.65	560	25×25	0.65	520						
220	227	22×35	0.76	450	25×30	0.76	410						
270	277	22×40	0.85	400	25×30	0.85	410	30×25	0.85	400			
330	337	22×45	1.00	380	25×35	1.00	360	30×30	1.00	310	35×25	1.00	340
390	397	22×50	1.11	310	25×40	1.11	300	30×35	1.11	260			
470	477				25×50	1.20	230	30×35	1.20	260	35×30	1.20	250
560	567							30×40	1.35	245	35×35	1.35	205
680	687							30×50	1.55	175	35×40	1.55	175
820	827							30×55	1.70	150			
1000	108										35×50	2.00	145



Large Can Aluminum Electrolytic Capacitors

Cap.(μ F) Code ϕ D		350(400)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
68	686	22×25	0.35	790									
82	826	22×30	0.40	700									
100	107	22×35	0.50	560	25×25	0.50	650						
120	127	22×40	0.55	500	25×30	0.55	520	30×25	0.55	490			
150	157	22×45	0.64	460	25×35	0.64	430	30×30	0.64	390			
180	187	22×50	0.70	380	25×40	0.70	370	30×30	0.70	390			
220	227				25×50	0.82	300	30×35	0.82	320	35×30	0.82	310
270	277							30×40	0.90	280	35×35	0.90	250
330	337							30×50	1.10	210	35×40	1.10	220
390	397										35×45	1.20	210
470	477										35×50	1.30	170

Allowable Ripple (A rms)at 105°C 120Hz
Max Impedance (Z m Ω)at 20°C 30KHZ

DIMENSIONS

Φ D \times L(mm)

Cap.(μ F) Code ϕ D		400(450)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
56	566	22×25	0.33	795									
68	686	22×30	0.41	700	25×25	0.41	655						
82	826	22×35	0.46	560	25×30	0.46	522						
100	107	22×40	0.50	500	25×30	0.50	522	30×25	0.50	490			
120	127	22×40	0.55	500	25×35	0.55	430	30×30	0.55	390			
150	157	22×50	0.65	380	25×40	0.65	370	30×35	0.65	320			
180	187				25×45	0.75	350	30×35	0.75	320	35×30	0.75	310
220	227				25×50	0.85	300	30×40	0.85	280	35×35	0.85	250
270	277							30×50	1.05	210	35×40	1.05	220
330	337										35×45	1.10	210
390	397										35×50	1.20	175

Cap.(μ F) Code ϕ D		450(500)											
		22			25			30			35		
		Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z	Size	Ripple	Z
47	476	22×30	0.45	845									
68	686	22×40	0.58	582	25×30	0.58	582						
100	107	22×45	0.71	391	25×35	0.71	400						
120	127	22×50	0.80	332	25×40	0.80	342						
150	157				25×45	0.95	271	30×35	0.96	262			
180	187							30×40	1.11	220			
220	227							30×45	1.31	182	35×40	1.31	185
270	277							30×50	1.41	150	35×45	1.51	152
330	337										35×50	1.72	122
390	397										35×55	1.80	105

Allowable Ripple (A rms)at 105°C 120Hz
Max Impedance (Z m Ω)at 20°C 30KHZ