



Aluminum Electrolytic Capacitors

HP Series

Features

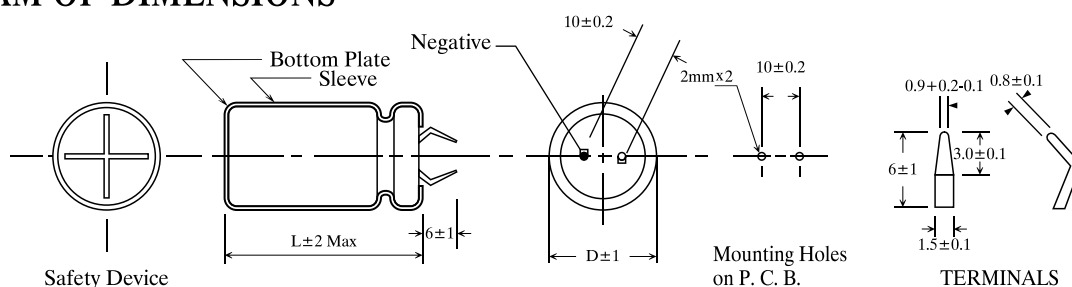
- PCB Snap-In type 105°C
- Directly mountable on printed circuit board without holders.
- Terminal spacing fixed at 10mm for pc board plug in.



Specification

Items	Performance														
Capacitance Tolerance	±20% (at 120Hz, 20°C)														
Rated Voltage Range	10 to 100 VDC							160 to 450 VDC							
Capacitance Range	470 to 47000 μF							47 to 2200 μF							
Operating Temperature Range	-40 to + 105°C							-25 to 105°C							
Leakage Current (at 20°C)	$I \leq 0.02 CV$ After 5 minutes application of working voltage. I=Leakage current (μA), C=Rated capacitance (μF), V=Rated voltage (V)														
Dissipation Factor (Tan δ at 120Hz, 20°C)	Rated Voltage	10	16	25	35	50	63	100	160	200	250	350	400	450	
	Tan δ (max)	0.50	0.50	0.40	0.40	0.30	0.30	0.25	0.15	0.15	0.15	0.20	0.20	0.20	
Low Temperature Characteristics (at 120Hz)	Impedance ratio shall not exceed the values given in the table below.														
	Rated Voltage	10	16	25	35	50	63	100	160	200	250	350	400	450	
	Z-25°C/Z+20°C	5	5	4	4	4	4	4	4	4	4	4	8	8	
Z-40°C/Z+20°C	15	15	15	12	12	12	12	-	-	-	-	-	-		
Load Life	After 2000 hours application of W.V. at 105°C, the capacitor shall meet the following limits. Capacitance change : ≤ ±25% of initial value Dissipation factor : ≤ 200% of initial specified value Leakage Current : ≤ Initial specified value														
Shelf Life	After storage for 1000 hours at 105°C, with no voltage applied and being stabilized at + 20°C, Capacitor shall meet the limit specified in load life.														
Ripple Current & Frequency Multiplier	Freq.(Hz) \ W.V. (V)	60 (50)	120	500	1K	10K up									
	Under 100	0.90	1.00	1.13	1.19	1.20									
	160 to 250	0.81	1.00	1.17	1.32	1.45									
	350 to up	0.77	1.00	1.16	1.30	1.41									
Ripple Current & Temperature Multiplier	Temperature(°C)	85							105						
	Multiplier	1.50							1.00						

DIAGRAM OF DIMENSIONS



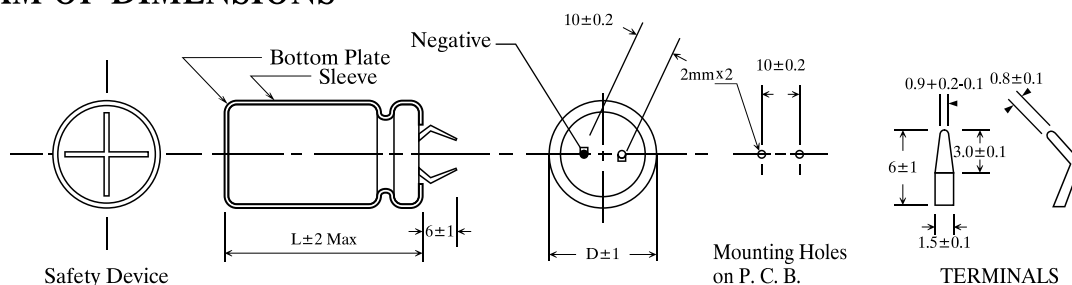
DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension : $\phi D \times L$ (mm)

Ripple Current : A/rms at 120Hz, 105°C

VDC μF	10V		16V		25V		35V		50V		63V		100V	
	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple
470													22x26	0.72
													25x26	0.68
680													22x32	0.98
													25x26	0.98
1000													22x35	1.13
													25x32	1.13
1500									22x26	0.98	22x32	1.02	22x46	1.68
									25x26	1.10	25x26	1.02	25x41	1.68
													30x32	1.68
2200									22x26	1.46	22x36	1.46	25x51	2.97
									25x26	1.46	25x32	1.46	30x41	2.97
3300									22x41	2.08	22x42	2.37		
									25x32	2.08	25x41	2.37		
											30x32	2.34	30x51	4.38
													35x47	4.38
4700					22x26	1.72	22x32	2.37	22x46	2.73	25x51	3.22		
					25x26	1.72	25x26	2.16	25x41	2.73	30x41	3.22		
									30x32	2.73			35x56	5.32
6800					22x32	2.48	22x41	3.12	25x46	3.14	30x51	4.49		
					25x26	2.48	25x36	3.12	30x41	3.14	35x48	4.49		
10000	22x32	2.12	22x36	2.82	22x41	3.38	25x41	3.78						
	25x26	2.12	25x32	2.82	25x36	3.38	30x32	3.78	30x51	3.99	30x51	5.52		
					30x32	3.38			35x42	3.99	35x46	5.52		
15000	22x32	2.64	22x41	3.14	25x46	4.42								
	25x32	2.64	25x36	3.14	30x36	4.42	30x41	4.46						
							35x37	4.46	35x58	4.98				
22000	22x41	3.06	25x51	4.03	25x51	4.79								
	25x36	3.06	30x36	4.03	30x51	5.02	30x52	4.98						
	30x32	3.06			35x40	5.02	35x52	5.38						
33000	25x46	3.58	25x51	4.65										
	30x36	3.58	30x41	4.65										
			35x37	4.65	35x46	5.98	35x53	5.42						
47000	30x46	4.18												
	35x37	4.18	35x47	6.22										

DIAGRAM OF DIMENSIONS



DIMENSION & PERMISSIBLE RIPPLE CURRENT

Dimension : $\phi D \times L$ (mm)

Ripple Current : A/rms at 120Hz, 105°C

VDC μF	160V		200V		250V		350V		400V		450V	
	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple	$\phi D \times L$	Ripple
47											22x27	0.32
											25x26	0.32
68											22x32	0.50
											25x32	0.50
100							22x26	0.50	22x32	0.78	22x41	0.68
									25x32	0.82	25x32	0.68
											30x32	0.68
150					22x26	0.50	22x36	0.65	22x41	0.86	22x51	0.87
					25x26	0.50	25x32	0.65	25x32	0.86	25x48	0.87
									30x32	0.86	30x36	0.87
220			22x32	0.78	22x26	0.86	22x46	0.88	22x51	1.03		
			25x26	0.78	25x32	0.86	25x36	0.88	25x41	1.03	25x51	0.98
							30x32	0.88	30x41	1.03	30x48	1.12
330	22x32	0.82	22x32	1.10	22x36	1.02						
	25x26	0.82	25x26	1.10	25x32	1.02	25x41	0.92	25x52	1.20		
					30x32	1.02	30x41	0.92	30x48	1.34	30x53	1.27
									35x42	1.34	35x47	1.48
470	22x36	1.02	22x41	1.45	22x46	1.34						
	25x32	1.02	25x41	1.45	25x46	1.65	25x51	1.40	25x58	1.67		
			30x32	1.48	30x36	1.65	30x46	1.40	30x52	1.67		
					35x32	1.65			35x52	1.67	35x53	1.67
680	22x46	1.48	22x56	1.80								
	25x41	1.50	25x40	1.80	25x53	1.67						
	30x32	1.67	30x36	1.80	30x46	2.02			30x64	2.18		
					35x37	2.02	35x42	1.65	35x52	2.18		
1000	22x56	1.98										
	25x51	2.03	25x51	2.05								
	30x41	2.03	30x42	2.30	30x51	2.28						
			35x42	2.30	35x51	2.52	35x63	1.68	35x62	2.36		
1500	30x51	2.46	30x51	2.75								
	25x42	2.46	35x53	3.10								
2200	30x51	2.85										
	35x51	3.18	35x63	3.58								