

## HP Series Snap-in Type 105°C

### Features

- ◆ Highly reliable capacitors that with high ripple current.
- ◆ Terminal spacing fixed at 10 mm for printed circuit board plug in.
- ◆ Aluminum case designed explosion-proof vent.
- ◆ Best for switching power supplies.
- ◆ RoHS Compliant



### Specifications

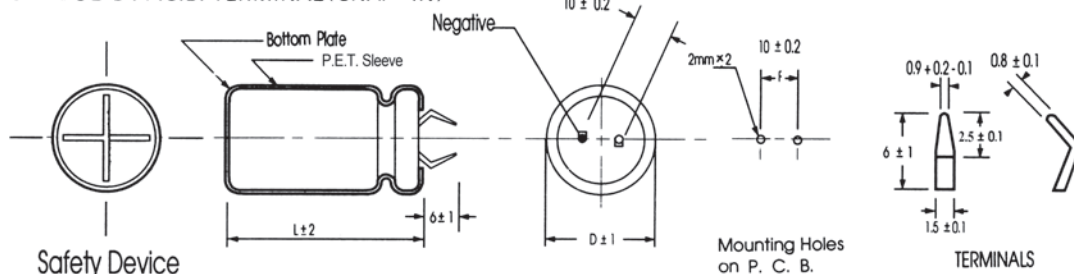
Item	Performance Characteristics											
Operating Temperature Range	-40 to +105°C	-25 to +105°C										
Rated Voltage Range	10 to 100 VDC	160 to 500 VDC										
Capacitance Range	330 to 68000 µ F	33 to 2200 µ F										
Capacitance Tolerance	± 20% (120Hz, +20°C)											
Leakage Current (+20°C, max.)	I ≤ 0.02CV After 5 minutes with rated working voltage applied.											
Dissipation Factor (tan δ , at 20°C , 120Hz)	Less than the value under table (%)											
	µ F \ VDC	10~16	25~35	50~63	80~100	160~250	315~450	500				
	47~390	—	—	—	15	15	20	25				
	470~3900	25	20	20	20	15	20	25				
	4700~8200	35	30	30	25	—	—	—				
	10000~22000	40	35	30	—	—	—	—				
	27000~47000	45	40	35	—	—	—	—				
	56000~68000	50	45	—	—	—	—	—				
Low Temperature Characteristics (at 120Hz)	Impedance ratio max.											
	Rated voltage(V)	10	16	25	35	50	63	100	160	200~250	400~450	500
	Z - 25°C / Z+20°C	5	5	4	4	4	4	4	4	4	8	10
	Z - 40°C / Z+20°C	15	15	15	12	12	12	12	—	—	—	—
Endurance	Test conditions											
	Duration time	:2000 Hrs										
	Ambient temperature	:+105°C										
	Applied voltage	:Rated DC working voltage										
	After test requirement at +20°C											
	Capacitance change	:≤ ±20% of the initial measured value										
	Dissipation factor	:≤ 200% of the initial specified value										
Leakage current	:≤ The initial specified value											
Shelf Life	Test conditions											
	Duration time	:1000 Hrs										
	Ambient temperature	:+105°C										
	Applied voltage	:None										
	After test requirement at +20°C	: Same limits as Endurance.										
Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes.												

### Multiplier for Ripple Current vs. Frequency

CAP(µ F)\Frequency(Hz)	50(60)	120	400	1K	10K	50K-100K
10 < CAP ≤ 100	0.8	1	1.23	1.36	1.48	1.53
100 < CAP ≤ 1000	0.8	1	1.16	1.25	1.35	1.38
1000 < CAP	0.8	1	1.11	1.17	1.25	1.28

### Diagram of Dimensions:(unit:mm)

SYMBOL G : P.C.B. TERMINAL (SNAP-IN)



## Case Size

φ DxL(mm)

Cap (μF)	φ D	10								16							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
3300										22x25	1.17						
4700		22x25	1.24							22x25	1.53	25x25	1.55				
6800		22x25	1.56	25x25	1.56					22x30	1.65						
8200		22x25	2.04	25x25	2.04					22x30	2.02	25x25	2.02	30x25	2.02		
10000		22x30	2.20	25x25	2.20	30x25	2.20			22x30	2.79	25x25	2.79	30x25	2.81		
12000		22x30	2.34							22x35	2.97	25x30	2.97				
		22x35	2.49	25x25	2.40					22x35	3.06	25x30	3.06	30x25	3.06		
15000		22x35	2.76	25x25	2.60	30x25	2.80			22x40	3.24	25x35	3.24	30x25	3.24	35x30	3.24
				25x30	2.76							25x40	3.42				
18000		22x35	2.94	25x30	2.94					22x50	3.51	25x45	3.51	30x35	3.51	35x30	3.54
22000		22x40	3.12	25x35	3.12	30x25	3.08	35x25	3.20			25x45	4.08	30x35	4.08	35x30	4.08
						30x30	3.30					25x50	4.25				
27000		22x45	3.48	25x35	3.48	30x30	3.48	35x25	3.48			25x50	4.30	30x40	4.30	35x30	4.30
33000				25x45	3.72	30x35	3.72	35x25	3.65					30x45	4.83	35x35	4.83
								35x30	3.85								
39000				25x50	4.10	30x40	4.10	35x30	4.10					30x50	5.78	35x40	5.78
47000						30x45	4.38	35x35	4.38							35x45	6.32
56000						30x50	4.64	35x40	4.64							35x50	7.05
68000								35x50	4.80								

Cap (μF)	φ D	25								35							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1500										22x25	1.26						
2200		22x25	1.03							22x25	1.35	25x25	1.45				
										22x30	1.45						
3300		22x25	1.48	25x25	1.48					22x25	1.80	25x25	1.90	30x25	1.92		
3900										22x30	1.90						
4700		22x25	1.88	25x25	1.90	30x25	1.92			22x35	2.42	25x25	2.30	30x25	2.54		
		22x30	1.92									25x30	2.44				
5600		22x30	2.25							22x35	2.89	25x30	2.89	30x25	2.89		
6800		22x30	2.60	25x25	2.60	30x25	2.60			22x40	3.24	25x35	3.24	30x25	3.21	35x25	3.24
														30x30	3.43		
8200		22x35	3.14	25x30	3.14	30x25	3.14			22x50	3.57	25x40	3.57	30x30	3.57	35x25	3.57
10000		22x40	3.50	25x35	3.50	30x30	3.50	35x25	3.50			25x45	3.96	30x35	3.96	35x25	3.75
																35x30	4.00
12000		22x45	4.02	25x40	4.02	30x30	4.02	35x25	4.02			25x50	4.21	30x40	4.21	35x30	4.21
15000				25x45	4.58	30x35	4.58	35x30	4.58					30x45	4.69	35x35	4.69
				25x50	4.82	30x40	4.82	35x30	4.79							35x40	5.07
18000							35x35	4.82									
22000						30x45	5.12	35x35	5.12							35x50	5.50
								35x40	5.30								
27000							35x45	5.47									
33000							35x50	6.09									

Cap (μF)	φ D	50								63							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
680										22x25	0.70						
1000		22x25	0.84							22x25	0.85	25x25	0.85				
1200										22x25	0.98						
1500		22x25	1.10	25x25	1.12					22x25	1.10	25x25	1.12	30x25	1.14		
		22x30	1.12							22x30	1.15						
1800		22x25	1.50							22x30	1.40	25x25	1.40				
		22x30	1.62														
2200		22x30	1.65	25x25	1.65	30x25	1.65			22x35	1.65	25x30	1.65	30x25	1.65		
2700		22x30	1.85	25x25	1.85					22x40	2.07	25x35	2.07	30x25	2.07		
		22x35	1.97	25x30	1.98												
3300		22x35	2.24	25x30	2.24	30x25	2.24			22x45	2.46	25x35	2.40	30x30	2.48	35x25	2.48
										22x50	2.55	25x40	2.54				
3900		22x40	2.54	25x35	2.54	30x25	2.49					25x40	2.92	30x35	3.05	35x25	3.05
						30x30	2.66					25x45	3.07				
4700		22x45	2.95	25x35	2.80	30x30	2.95	35x25	2.95			25x50	3.43	30x40	3.43	35x30	3.43
				25x40	3.01												
5600		22x50	3.10	25x40	3.02	30x35	3.14	35x25	3.10					30x45	3.86	35x35	3.86
				25x45	3.15	30x40	3.20	35x30	3.20								
6800				25x45	3.23	30x40	3.26	35x30	3.26					30x50	4.64	35x40	4.64
				25x50	3.35												
8200					30x45	3.58	35x35	3.58							35x45	5.05	
10000					30x50	4.11	35x40	4.11							35x50	5.75	
12000							35x45	4.62									
15000							35x50	5.05									

φ DxL(mm)

Cap (μF)	WV	φ D	80								100							
			22		25		30		35		22		25		30		35	
			Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
330										22x25	0.54							
470										22x25	0.79	25x25	0.81					
560										22x30	0.85							
										22x25	0.90	25x25	0.95					
680										22x30	0.97							
										22x30	1.02	25x25	1.02	30x25	1.14			
820										22x30	1.26	25x25	1.26	30x25	1.32			
1000										22x35	1.38	25x30	1.38	30x25	1.38			
										22x35	1.46	25x30	1.46	30x25	1.46			
1200																		
										22x40	1.65	25x35	1.65	30x30	1.65			
1500																		
										22x40	1.74	25x35	1.74	30x30	1.83	35x25	1.83	
1800																		
										22x45	1.95	25x35	1.89	30x30	1.95	35x25	1.95	
2200																		
2700																		
3300																		
3900																		
4700																		
5600																		
6800																		

Cap (μF)	WV	φ D	160								200							
			22		25		30		35		22		25		30		35	
			Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
100										22x25	0.38							
150										22x25	0.54	25x25	0.54					
220										22x30	0.92	25x25	0.92	30x25	0.92			
270										22x30	1.03	25x25	1.03	30x25	1.05			
330										22x25	1.05							
										22x30	1.13	25x25	1.13					
390										22x35	1.21	25x30	1.21	30x25	1.21			
										22x35	1.33	25x30	1.34	30x30	1.45			
470										22x40	1.41	25x35	1.43					
										22x30	1.39	25x30	1.47					
560										22x35	1.46							
										22x35	1.48							
680										22x40	1.57	25x35	1.59	30x30	1.65	35x25	1.65	
										22x45	1.65	25x40	1.68					
820										22x40	1.72	25x30	1.64					
										22x45	1.81	25x40	1.85	30x30	1.85	35x25	1.85	
1000										22x50	1.9	25x45	1.94	30x35	1.94			
										22x40	1.85							
1200										22x45	1.95	25x35	1.86					
										22x50	2.04	25x45	2.07	30x30	2.04	35x30	2.17	
1500										22x55	2.12	25x50	2.17	30x35	2.17			
										22x45	2.05	25x50	2.3	30x35	2.3	35x35	2.31	
1800												25x55	2.4	30x40	2.4			
												25x45	2.36	30x40	2.62	35x35	2.62	
2200												30x45	2.75	35x40	2.75			
												30x50	3	35x40	3			
														35x45	3.28			
														35x50	3.46			
														35x50	4.01			

Cap (μF)	WV	φ D	220								250							
			22		25		30		35		22		25		30		35	
			Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
68										22x25	0.27							
100										22x30	0.44	25x25	0.44					
150										22x30	0.6	25x25	0.6	30x25	0.6			
180										22x30	0.69	25x25	0.69	30x25	0.69			
220										22x25	0.87							
										22x30	0.94							
270										22x35	1	25x30	1	30x25	1			
										22x40	1.16	25x35	1.16	30x30	1.16			
330										22x35	1.15	25x30	1.2					
										22x45	1.28	25x35	1.28	30x30	1.28	35x25	1.28	
390										22x45	1.48	25x35	1.48	30x30	1.48	35x25	1.48	
470										22x40	1.28	25x35	1.31	30x30	1.35	35x25	1.35	
										22x45	1.35	25x40	1.38					
560										22x45	1.51							
										22x50	1.6	25x45	1.6	30x35	1.6	35x25	1.6	
680																		
										22x45	1.54							
820										22x55	1.7	25x50	1.75	30x40	1.75	35x30	1.75	
1000																		
1200																		
1500																		
1800																		

φ DxL(mm)

Cap (μF)	φ D	WV															
		400								420							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
33		22x25	0.39							22x25	0.32						
47		22x25	0.56	25x25	0.56					22x25	0.45	25x25	0.45				
56		22x25	0.63	25x25	0.68					22x25	0.52	25x25	0.52				
		22x30	0.68														
68		22x30	0.72	25x25	0.72	30x25	0.72			22x30	0.64	25x25	0.64	30x25	0.64		
82		22x30	0.77	25x30	0.82	30x25	0.85			22x30	0.75	25x30	0.75	30x25	0.75		
		22x35	0.82														
100		22x35	0.82	25x30	0.82	30x25	0.82			22x35	0.78	25x30	0.78	30x25	0.78		
120		22x35	0.90	25x30	0.90	30x25	0.90			22x35	0.84	25x35	0.84	30x25	0.84		
150		22x40	0.98	25x35	0.98	30x30	0.95	35x25	0.95	22x40	0.97	25x35	0.97	30x30	0.97		
180		22x45	1.14	25x40	1.14	30x35	1.14	35x30	1.14	22x45	1.02	25x40	1.02	30x35	1.02	35x25	1.02
220				25x45	1.21	30x40	1.21	35x30	1.21			25x45	1.22	30x40	1.22	35x30	1.22
270				25x50	1.40	30x45	1.40	35x35	1.40					30x45	1.50	35x35	1.50
330						30x50	1.57	35x40	1.57					30x50	1.68	35x40	1.68
390								35x40	1.71							35x45	1.76
								35x45	1.79								
470								35x45	1.94							35x50	1.87
								35x50	2.03								
560								35x50	2.23								

Cap (μF)	φ D	WV															
		450								500							
		22		25		30		35		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
33		22x25	0.24							22x25	0.24						
47		22x25	0.35							22x25	0.35						
56		22x30	0.41	25x25	0.41					22x30	0.41	25x25	0.41				
68		22x30	0.55	25x25	0.55					22x30	0.55	25x25	0.55				
82		22x35	0.64	25x30	0.64	30x25	0.64			22x35	0.64	25x30	0.64	30x25			
100		22x40	0.74	25x30	0.74	30x30	0.74			22x40	0.74	25x35	0.74	30x30			
120		22x45	0.82	25x35	0.82	30x30	0.82			22x45	0.86	25x40	0.86	30x35	0.86	35x30	0.86
150		22x50	0.96	25x40	1.96	30x35	0.96	35x25	0.96			25x40	0.96	30x35	0.96	35x30	0.96
180				25x45	1.14	30x35	1.1	35x30	1.14					30x40	1.14	35x30	1.14
						30x40	1.16										
220				25x45	1.24	30x40	1.24	35x35	1.24					30x45	1.24	35x35	1.24
						30x45	1.3										
270						30x50	1.48	35x40	1.48					30x50	1.48	35x40	1.48
330						30x50	1.64	35x45	1.64							35x45	1.64
390								35x50	1.86							35x50	1.86

Ripple Current ( A, rms ) at 105°C 120Hz