

## 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.
- ◆ For detail specifications, please refer to Engineering Bulletin No. E107
- ◆ RoHS Compliant



### Specifications

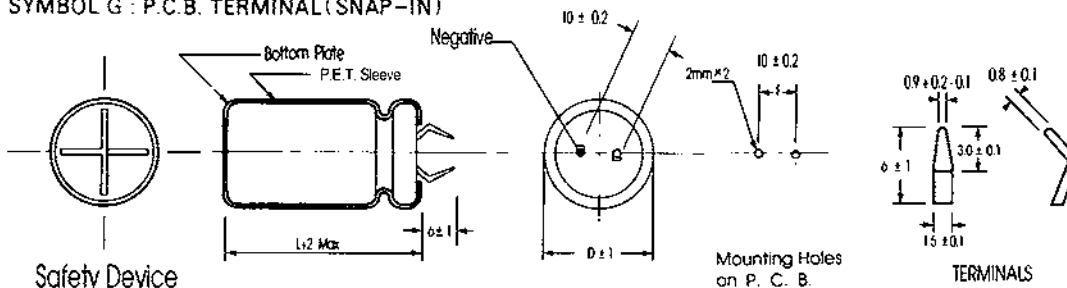
Item	Performance Characteristics										
Operating Temperature Range	-40 to +105°C	-25 to +105°C									
Rated Voltage Range	10 to 100 VDC	160 to 450 VDC									
Capacitance Range	330 to 68000 µF	33 to 2200 µF									
Capacitance Tolerance	± 20% (120Hz, +20°C)										
Leakage Current (+20°C, max.)	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				
	47~390	—	—	—	15	15	20				
	470~3900	25	20	20	20	15	20				
	4700~8200	35	30	30	25	—	—				
	10000~22000	40	35	30	—	—	—				
	27000~47000	45	40	35	—	—	—				
Low Temperature Characteristics (at 120Hz)	Impedance ratio max.										
	Rated voltage(V)	10	16	25	35	50	63	100	160	200~250	400~450
	Z - 25°C / Z+20°C	5	5	4	4	4	4	4	4	4	8
Load Life	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 Load life.									
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)	WV(SV) φ D	10 (13)								16 (20)							
		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										22x26	1.17						
4700		22x26	1.24							22x26	1.53	25x26	1.55				
6800		22x26	1.56	25x26	1.56					22x31	1.65						
8200		22x26	2.04	25x26	2.04					22x31	2.02	25x26	2.02	30x26	2.02		
10000		22x31	2.20	25x26	2.20	30x26	2.20			22x31	2.79	25x26	2.79	30x26	2.81		
12000		22x31	2.34							22x36	2.97	25x31	2.97				
		22x36	2.49	25x26	2.40					22x36	3.06	25x31	3.06	30x26	3.06		
15000		22x36	2.76	25x26	2.60	30x26	2.80			22x41	3.24	25x36	3.24	30x26	3.24	35x32	3.24
				25x31	2.76							25x41	3.42				
18000		22x36	2.94	25x31	2.94					22x51	3.51	25x46	3.51	30x36	3.51	35x32	3.54
		22x41	3.12	25x36	3.12	30x26	3.08	35x27	3.20			25x46	4.08	30x36	4.08	35x32	4.08
27000						30x31	3.30					25x51	4.25				
		22x46	3.48	25x36	3.48	30x31	3.48	35x27	3.48			25x51	4.30	30x41	4.30	35x32	4.30
33000				25x46	3.72	30x36	3.72	35x27	3.65					30x46	4.83	35x37	4.83
								35x32	3.85								
39000				25x51	4.10	30x41	4.10	35x32	4.10					30x51	5.78	35x42	5.78
47000						30x46	4.38	35x37	4.38							35x47	6.32
56000						30x51	4.64	35x42	4.64							35x52	7.05
68000								35x52	4.80								

Cap (μF)	WV(SV) φ D	25 (32)								35 (44)							
		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										22x26	1.26						
2200		22x26	1.03							22x26	1.35	25x26	1.45				
										22x31	1.45						
3300		22x26	1.48	25x26	1.48					22x26	1.80	25x26	1.90	30x26	1.92		
										22x31	1.90						
3900										22x31	2.23						
4700		22x26	1.88	25x26	1.90	30x26	1.92			22x36	2.42	25x26	2.30	30x26	2.54		
		22x31	1.92								25x31	2.44					
5600		22x31	2.25							22x36	2.89	25x31	2.89	30x26	2.89		
6800		22x31	2.60	25x26	2.60	30x26	2.60			22x41	3.24	25x36	3.24	30x26	3.21	35x27	3.24
														30x31	3.43		
8200		22x36	3.14	25x31	3.14	30x26	3.14			22x51	3.57	25x41	3.57	30x31	3.57	35x27	3.57
		22x41	3.50	25x36	3.50	30x31	3.50	35x27	3.50			25x46	3.96	30x36	3.96	35x27	3.75
10000																35x32	4.00
		22x46	4.02	25x41	4.02	30x31	4.02	35x27	4.02			25x51	4.21	30x41	4.21	35x32	4.21
15000				25x46	4.58	30x36	4.58	35x32	4.58					30x46	4.69	35x37	4.69
				25x51	4.82	30x41	4.82	35x32	4.79							35x42	5.07
18000								35x37	4.82								
						30x46	5.12	35x37	5.12							35x52	5.50
27000								35x42	5.30								
								35x47	5.47								
33000								35x52	6.09								

Cap (μF)	WV(SV) φ D	50 (63)								63 (79)							
		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										22x26	0.70						
1000		22x26	0.84							22x26	0.85	25x26	0.85				
1200										22x26	0.98						
		22x26	1.10	25x26	1.12					22x26	1.10	25x26	1.12	30x26	1.14		
1500		22x31	1.12							22x31	1.15						
		22x26	1.50							22x31	1.40	25x26	1.40				
1800		22x331	1.62														
		22x31	1.65	25x26	1.65	30x26	1.65			22x36	1.65	25x31	1.65	30x26	1.65		
2200		22x31	1.85	25x26	1.85					22x41	2.07	25x36	2.07	30x26	2.07		
		22x36	1.97	25x31	1.98												
2700		22x36	2.24	25x31	2.24	30x26	2.24			22x46	2.46	25x36	2.40	30x31	2.48	35x27	2.48
										22x51	2.55	25x41	2.54				
3300		22x41	2.54	25x36	2.54	30x26	2.49					25x41	2.92	30x36	3.05	35x27	3.05
						30x31	2.66					25x46	3.07				
3900		22x46	2.95	25x36	2.80	30x31	2.95	35x27	2.95			25x51	3.43	30x41	3.43	35x32	3.43
				25x41	3.01												
4700				25x41	3.02	30x36	3.14	35x27	3.10					30x46	3.86	35x37	3.86
		22x51	3.10	25x46	3.15	30x41	3.20	35x32	3.20								
5600				25x46	3.23	30x41	3.26	35x32	3.26					30x51	4.64	35x42	4.64
				25x51	3.35												
8200					30x46	3.58	35x37	3.58							35x47	5.05	
10000					30x51	4.11	35x42	4.11							35x52	5.75	
12000								35x47	4.62								
15000								35x52	5.05								

φ DxDL(mm)

Cap (μF)	WV(SV) φ D	80 (100)								100 (125)							
		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										22x26	0.54						
470		22x26	0.63							22x26	0.79	25x26	0.81				
560		22x26	0.70							22x31	0.85						
		22x31	0.75							22x26	0.90	25x26	0.95				
680		22x26	0.81	25x26	0.86					22x31	1.02	25x26	1.02	30x26	1.14		
		22x31	0.87														
820		22x31	1.02	25x26	1.02					22x31	1.26	25x26	1.26	30x26	1.32		
				25x31	1.09												
1000		22x31	1.11	25x31	1.16	30x26	1.16			22x36	1.38	25x31	1.38	30x26	1.38		
		22x36	1.18														
1200		22x36	1.46	25x31	1.46	30x26	1.46			22x41	1.65	25x36	1.65	30x31	1.65		
						30x31	1.56										
1500		22x41	1.74	25x36	1.74	30x26	1.70			22x46	1.83	25x41	1.83	30x31	1.83	35x27	1.83
						30x31	1.82										
1800		22x46	1.95	25x36	1.89	30x31	1.95	35x27	1.95			25x41	2.52	30x36	2.52	35x32	2.52
				25x41	1.99												
2200		22x51	2.25	25x41	2.20	30x31	2.20	35x27	2.25			25x51	3.03	30x41	3.03	35x32	3.03
				25x46	2.31	30x36	2.31	35x32	2.40								
2700				25x46	2.58	30x36	2.58	35x32	2.68					30x46	4.10	35x37	4.10
				25x51	2.70	30x41	2.72	35x37	2.85								
3300				25x51	3.30	30x41	3.30	35x37	3.30					30x56	4.59	35x47	4.59
				25x56	3.45	30x46	3.50	35x42	3.50								
3900						30x46	3.73	35x37	3.73							35x47	4.98
						30x51	3.90	35x42	3.93								
4700						30x51	4.29	35x42	4.29							35x52	5.43
5600								35x47	5.10								
6800								35x52	5.66								

Cap (μF)	WV(SV) φ D	160 (200)								200 (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
100										22x26	0.38						
150		22x26	0.37							22x26	0.54	25x26	0.54				
220		22x26	0.42							22x31	0.92	25x26	0.92	30x26	0.92		
270		22x26	0.74							22x31	1.03	25x26	1.03	30x26	1.05		
330		22x31	0.98	25x26	0.98	30x26	1.00			22x36	1.21	25x31	1.21	30x26	1.21		
		22x31	1.09	25x31	1.10	30x26	1.10			22x36	1.33	25x31	1.34	30x31	1.45		
390		22x36	1.15							22x41	1.41	25x36	1.43				
		22x36	1.21	25x31	1.21	30x26	1.21			22x41	1.57	25x36	1.59	30x31	1.65	35x27	1.65
470										22x46	1.65	25x41	1.68				
		22x41	1.40	25x36	1.40	30x31	1.40	35x27	1.40	22x46	1.81	25x41	1.85	30x31	1.85	35x27	1.85
560										22x51	1.90	25x46	1.94	30x36	1.94		
		22x46	1.64	25x36	1.58	30x31	1.65	35x27	1.71	22x51	2.04	25x46	2.07	30x31	2.04	35x32	2.17
680				25x41	1.67	30x36	1.75	35x32	1.80	22x56	2.12	25x51	2.17	30x36	2.17		
				25x41	1.76	30x36	1.85	35x32	1.85			25x51	2.30	30x36	2.30	35x37	2.31
820				25x46	1.85							25x56	2.40	30x41	2.40		
				25x51	2.15	30x41	2.15	35x32	2.15					30x41	2.62	35x37	2.62
1000														30x46	2.75	35x42	2.75
1200				25x56	2.46	30x46	2.46	35x37	2.46					30x51	3.00	35x42	3.00
1500						30x51	2.80	35x42	2.80							35x47	3.28
1800																35x52	3.46
2200						30x51	3.13	35x42	3.13							35x52	4.01
								35x52	3.26								
								35x57	3.39								

Cap (μF)	WV(SV) φ D	220 (270)								250 (300)							
		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										22x26	0.27						
100										22x31	0.44	25x26	0.44				
150		22x26	0.50	25x26	0.50					22x31	0.60	25x26	0.60	30x26	0.60		
180		22x26	0.60	25x26	0.60					22x31	0.69	25x26	0.69	30x26	0.69		
220		22x31	0.85	25x26	0.85	30x26	0.85			22x36	1.00	25x31	1.00	30x26	1.00		
270		22x31	1.05	25x26	1.05	30x26	1.05			22x41	1.16	25x36	1.16	30x31	1.16		
330		22x36	1.15	25x31	1.15	30x26	1.15			22x46	1.28	25x36	1.28	30x31	1.28	35x27	1.28
		22x41	1.25	25x31	1.20	30x26	1.25			22x46	1.48	25x36	1.48	30x31	1.48	35x27	1.48
390				25x36	1.28	30x31	1.33										
		22x46	1.35	25x36	1.31	30x31	1.35	35x27	1.35			25x41	1.76	30x36	1.76	35x32	1.76
470				25x41	1.38							25x46	1.85				
		22x51	1.60	25x46	1.60	30x36	1.60	35x27	1.60			25x51	1.93	30x41	1.93	35x32	1.93
680		22x56	1.70	25x51	1.75	30x41	1.75	35x32	1.75					30x46	2.22	35x37	2.22
820				25x56	2.00	30x46	2.00	35x37	2.00					30x51	2.48	35x42	2.48
1000						30x51	2.30	35x42	2.30							35x47	2.80
1200								35x47	2.35							35x52	3.17
1500								35x52	2.40								
1800								35x56	2.50								

φ DxL(mm)

Cap (μF)	WV(SV) φ D	400 (450)								420 (470)							
		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		22x26	0.39							22x26	0.32						
47		22x26	0.56	25x26	0.56					22x26	0.45	25x26	0.45				
56		22x26	0.63	25x26	0.68					22x26	0.52	25x26	0.52				
		22x31	0.68														
68		22x31	0.72	25x26	0.72	30x26	0.72			22x31	0.64	25x26	0.64	30x26	0.64		
82		22x31	0.77	25x31	0.82	30x26	0.85			22x31	0.75	25x31	0.75	30x26	0.75		
		22x36	0.82														
100		22x36	0.82	25x31	0.82	30x26	0.82			22x36	0.78	25x31	0.78	30x26	0.78		
120		22x36	0.90	25x31	0.90	30x26	0.90			22x36	0.84	25x36	1.84	30x26	0.84		
150		22x41	0.98	25x36	0.98	30x31	0.95	35x27	0.95	22x41	0.97	25x36	0.97	30x31	0.97		
180		22x46	1.14	25x41	1.14	30x36	1.14	35x32	1.14	22x46	1.02	25x41	1.02	30x36	1.02	35x27	1.02
220				25x46	1.21	30x41	1.21	35x32	1.21			25x46	1.22	30x41	1.22	35x32	1.22
270						30x46	1.40	35x37	1.40					30x46	1.5	35x37	1.5
330						30x51	1.57	35x42	1.57					30x51	1.68	35x42	1.68
390								35x42	1.71							35x47	1.76
								35x47	1.79								
470								35x47	1.94							35x52	1.87
								35x52	2.03								
560								35x52	2.23								

Cap (μF)	WV(SV) φ D	450 (500)							
		22		25		30		35	
		Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
33		22x26	0.24						
47		22x31	0.35	25x26	0.35				
56		22x31	0.41	25x26	0.41				
68		22x36	0.55	25x31	0.55	30x26	0.55		
82		22x36	0.64	25x31	0.64	30x26	0.64		
100		22x41	0.74	25x31	0.74	30x31	0.74		
120		22x46	0.82	25x36	0.82	30x31	0.82		
150		22x51	0.96	25x41	0.96	30x36	0.96	35x27	0.96
180				25x46	1.14	30x36	1.10	35x32	1.14
						30x41	1.16		
220						30x41	1.24	35x37	1.24
270						30x51	1.48	35x42	1.48
330								35x47	1.64
390								35x52	1.86
470									
560									

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