

**HP Series Snap-in type 105°C**

**HP系列**

**Features**

- Directly mountable on printed circuit board without holders.
- Load life 3000 hrs at 105°C
- Safety vent construction design
- RoHS Compliant



**Specifications**

Item	Performance Characteristics														
	-40~+105°C						-25~+105°C								
Operating Temp. Range	-40~+105°C						-25~+105°C								
Rated Voltage Range	10 to 100 VDC						160 to 500VDC								
Capacitance Range	330 to 68000 μF						33 to 2200 μF								
Capacitance Tolerance	±20% (120Hz, 20°C)														
Leakage Current	I <sub>L</sub> ≦ 3√CV (μA) After 5 minutes with rated working voltage applied														
Dissipation Factor(Tan δ) (max, 120Hz, 20°C)	W.V. (μF / VDC)	D.F.(%)	10~16		25~35		50~63		80~100		160~400		450~500		
			33~390								15	20			
			470~3900		25	20	20	20	20	25		15	20		
			4700~8200		35	30	30	30							
			10000~22000		40	35	30								
			27000~47000		45	40	35								
Low Temp. Characteristics (Max Impedance Ratio) (120Hz)	W.V. (VDC)	10	16	25	35	50	63	100	160	200	250	400	450		
		Z <sub>(-25°C)</sub> /Z <sub>(+25°C)</sub>	5	5	4	4	4	4	4	4	4	4	8	8	
		Z <sub>(-40°C)</sub> /Z <sub>(+25°C)</sub>	15	15	15	12	12	12	12	-	-	-	-	-	
Load Life	Test conditions Duration time: 3000hrs Ambient temperature: +105°C Applied voltage: Rated DC working voltage After test requirements 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: 1000hrs Ambient temperature: +105°C Applied voltage: None After test requirements at +20°C : Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30minutes														
Industrial Standard	JIS C-5101-4(IEC 60384-4)														

**Multiplier for ripple current vs frequency**

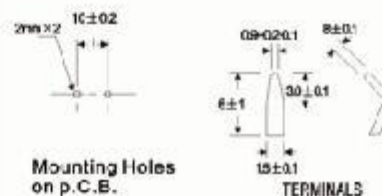
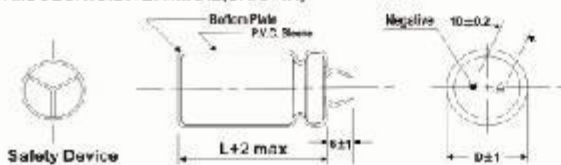
Cap.(μF)	Fre.(Hz)				
	50(60)	120	1K	10K	100K
≤ 100	0.8	1.0	1.23	1.48	1.53
120~1000	0.8	1.0	1.16	1.35	1.38
> 1000	0.8	1.0	1.11	1.25	1.28

**Multiplier for ripple current vs temperature**

Temp.(°C)	Multiplier			
	45	60	85	105
Multiplier	2.10	1.90	1.40	1.00

**Diagram of dimensions(cunit:mm)**

SYMBOL G.T.C.B.TERMINAL(SNAP-IN)



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● **Case Size**

WV <sub>(SV)</sub>	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										22*26	1.17						
4700	22*26	1.24								22*31	1.53	25*26	1.53				
6800	22*26	1.56	25*26	1.56						22*31	2.02	25*26	2.02	30*26	2.02		
8200	22*26	2.04								22*31	2.20						
10000	22*31	2.20	25*26	2.20	30*26	2.20				22*36	2.79	25*31	2.79	30*26	2.79		
12000	22*36	2.34								22*36	3.06	25*31	3.06	30*26	3.06		
15000	22*36	2.76	25*31	2.76	30*26	2.76				22*51	3.24	25*41	3.24	30*36	3.24	35*32	3.24
18000	22*36	2.94	25*31	2.94						22*51	3.51	25*46	3.51	30*36	3.51	35*32	3.51
22000	22*41	3.12	25*36	3.12	30*31	3.12	35*27	3.12			25*51	4.08	30*41	4.08	35*32	4.08	
27000	22*46	3.48	25*36	3.48	30*31	3.48	35*27	3.48			25*51	4.30	30*46	4.30	35*37	4.30	
33000			25*46	3.72	30*36	3.72	35*32	3.72					30*46	4.83	35*37	4.83	
39000			25*51	4.10	30*41	4.10	35*32	4.10					30*51	5.78	35*42	5.78	
47000					30*46	4.38	35*37	4.38							35*47	6.32	
56000					30*51	4.64	35*42	4.64							35*52	7.05	
68000							35*52	4.80									

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

WV <sub>(SV)</sub>	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										22*26	1.26						
2200	22*26	1.03								22*31	1.35	25*26	1.35				
3300	22*26	1.48	25*26	1.48						22*31	1.84	25*26	1.84	30*26	1.84		
3900										22*31	2.23						
4700	22*31	1.92	25*26	1.92	30*26	1.92				22*36	2.42	25*31	2.42	30*26	2.42		
5600	22*31	2.25								22*36	2.89	25*31	2.89	30*26	2.89		
6800	22*31	2.60	25*36	2.60	30*26	2.60				22*41	3.24	25*36	3.24	30*31	3.24	35*27	3.24
8200	22*36	3.14	25*31	3.14	30*26	3.14				22*51	3.57	25*41	3.57	30*31	3.57	35*27	3.57
10000	22*41	3.50	25*36	3.50	30*31	3.50	35*27	3.50			25*46	3.96	30*36	3.96	35*32	3.96	
12000	22*46	4.02	25*41	4.02	30*31	4.02	35*27	4.02			25*51	4.21	30*41	4.21	35*32	4.21	
15000			25*46	4.58	30*36	4.58	35*32	4.58					30*46	4.69	35*37	4.69	
18000			25*51	4.82	30*41	4.82	35*37	4.82							35*42	5.07	
22000					30*46	5.12	35*37	5.12							35*52	5.50	
27000							35*47	5.47									
33000							35*52	6.09									

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

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● **Case Size**

WV(sv) Cap(μF)	50 (63)								63 (72)							
	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									22*26	0.70						
1000	22*26	0.84							22*26	0.85	25*26	0.85				
1200									22*26	0.98						
1500	22*31	1.10	25*26	1.10					22*31	1.10	25*26	1.10	30*26	1.10		
1800	22*31	1.54							22*31	1.40	25*26	1.40				
2200	22*31	1.65	25*26	1.65	30*26	1.65			22*36	1.65	25*31	1.65	30*26	1.65		
2700	22*36	1.94	25*31	1.94					22*41	2.07	25*36	2.07	30*26	2.07		
3300	22*36	2.24	25*31	2.24	30*26	2.24			22*51	2.48	25*41	2.48	30*31	2.48	35*27	2.48
3900	22*41	2.54	25*36	2.54	30*31	2.54					25*46	3.05	30*36	3.05	35*32	3.05
4700	22*46	2.95	25*41	2.95	30*31	2.95	35*27	2.95			25*51	3.43	30*41	3.43	35*32	3.43
5600	22*51	3.10	25*46	3.10	30*41	3.10	35*32	3.10					30*46	3.86	35*37	3.86
6800			25*51	3.26	30*41	3.26	35*32	3.26					30*51	4.64	35*42	4.64
8200					30*46	3.58	35*37	3.58							35*47	5.05
10000					30*51	4.11	35*42	4.11							35*52	5.75
12000							35*47	4.62								
15000							35*52	5.05								

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

WV(sv) Cap(μF)	80 (92)								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									22*26	0.54						
470	22*26	0.63							22*31	0.79	25*26	0.79				
560	22*31	0.70							22*31	0.90	25*26	0.90				
680	22*31	0.84	25*26	0.84					22*31	1.02	25*26	1.02	30*26	1.02		
820	22*31	1.02	25*31	1.02					22*31	1.26	25*26	1.26	30*26	1.26		
1000	22*36	1.16	25*31	1.16	30*26	1.16			22*36	1.38	25*31	1.38	30*26	1.38		
1200	22*36	1.46	25*31	1.46	30*31	1.46			22*41	1.65	25*36	1.65	30*31	1.65		
1500	22*41	1.74	25*36	1.74	30*31	1.74			22*46	1.83	25*41	1.83	30*31	1.83	35*27	1.83
1800	22*46	1.95	25*41	1.95	30*31	1.95					25*41	2.52	30*36	2.52	35*32	2.52
2200	22*51	2.25	25*46	2.25	30*36	2.25	35*32	2.25			25*51	3.03	30*41	3.03	35*32	3.03
2700			25*51	2.68	30*41	2.68	35*37	2.68					30*46	4.10	35*37	4.10
3300			25*56	3.30	30*51	3.30	35*42	3.30					30*51	4.59	35*47	4.59
3900					30*51	3.85	35*42	3.85							35*47	4.98
4700					30*51	4.29	35*42	4.29							35*52	5.43
5600							35*47	5.10								
6800							35*52	5.66								

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



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● **Case Size**

WV(sv)	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										22*26	0.38						
150	22*26	0.37								22*26	0.54	25*26	0.54				
220	22*26	0.42								22*31	0.92	25*26	0.92	30*26	0.92		
270	22*26	0.74								22*31	1.03	25*26	1.03	30*26	1.03		
330	22*31	0.98	25*26	0.98	30*26	0.98				22*36	1.21	25*31	1.21	30*26	1.21		
390	22*36	1.10	25*31	1.10						22*41	1.39	25*36	1.39	30*31	1.39		
470	22*36	1.21	25*31	1.21						22*46	1.62	25*41	1.62	30*31	1.62	35*27	1.62
560	22*41	1.40	25*36	1.40	30*31	1.40				22*51	1.85	25*41	1.85	30*36	1.85		
680	22*46	1.64	25*41	1.64	30*36	1.64	35*32	1.64		22*56	2.04	25*51	2.04	30*36	2.04		
820			25*46	1.85	30*36	1.85	35*32	1.85				25*56	2.34	30*41	2.34	35*37	2.34
1000			25*51	2.15	30*41	2.15								30*51	2.70	35*42	2.70
1200			25*56	2.46	30*46	2.46								30*51	3.00	35*42	3.00
1500					30*51	2.80	35*42	2.80								35*52	3.43
1800					30*51	3.13	35*42	3.13								35*52	4.01
2200							35*52	3.39									

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

WV(sv)	220(250)								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										22*26	0.27						
100										22*31	0.44	25*26	0.44				
150	22*26	0.50	25*26	0.50						22*31	0.60	25*26	0.60	30*26	0.60		
180	22*26	0.60	25*26	0.60						22*31	0.69	25*26	0.69				
220	22*31	0.85	25*26	0.85	30*26	0.85				22*36	1.00	25*31	1.00	30*26	1.00		
270	22*31	1.05	25*26	1.05	30*26	1.05				22*41	1.16	25*36	1.16	30*31	1.16		
330	22*36	1.15	25*31	1.15	30*26	1.15				22*46	1.28	25*36	1.28	30*31	1.28	35*27	1.28
390	22*41	1.25	25*36	1.25	30*31	1.25				22*46	1.48	25*36	1.48	30*31	1.48		
470	22*46	1.35	25*41	1.35	30*31	1.35	35*27	1.35				25*46	1.76	30*36	1.76	35*32	1.76
560	22*51	1.60	25*46	1.60	30*36	1.60	35*27	1.60				25*51	1.93	30*41	1.93	35*32	1.93
680	22*56	1.75	25*51	1.75	30*41	1.75	35*27	1.75						30*46	2.22	35*37	2.22
820			25*56	2.0	30*46	2.00	35*37	2.00						30*51	2.48	35*42	2.48
1000					30*51	2.30	35*42	2.30								35*47	2.80
1200							35*47	2.40								35*52	3.17
1500								35*52	2.50								
1800								35*57	2.60								

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

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**Case Size**

WV(sV)	400 (450)								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	22*26	0.39								22*26	0.24						
47	22*26	0.56	25*26	0.56						22*31	0.35	25*26	0.35				
56	22*31	0.68	25*26	0.68						22*31	0.41	25*26	0.41				
68	22*31	0.72	25*26	0.72	30*26	0.72				22*36	0.55	25*31	0.55	30*26	0.55		
82	22*36	0.82	25*31	0.82	30*26	0.75				22*36	0.64	25*31	0.64	30*26	0.64		
100	22*36	0.82	25*31	0.82	30*26	0.82				22*41	0.74	25*31	0.74	30*31	0.74		
120	22*36	0.90	25*31	0.90	30*26	0.90				22*46	0.82	25*41	0.82	30*31	0.82		
150	22*46	0.98	25*41	0.98	30*31	0.98				22*51	0.96	25*41	0.96	30*36	0.96		
180			25*46	1.14	30*36	1.14	35*32	1.14				25*51	1.14	30*41	1.14	35*32	1.14
220			25*51	1.21	30*41	1.21	35*32	1.21						30*46	1.24	35*37	1.24
270					30*46	1.40	35*37	1.40						30*51	1.48	35*42	1.48
330					30*51	1.57	35*42	1.57								35*47	1.64
390							35*47	1.74								35*52	1.86
470							35*52	1.98									
560							35*52	2.23									

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

WV(sV)	500(550)							
	22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
68	22*30	0.69	25*25	0.68				
82	22*35	0.85	25*30	0.88				
100	22*40	0.94	25*35	0.94				
68	22*31	0.72	25*26	0.72				
82	22*36	0.82	25*31	0.82				
100	22*36	0.82	25*31	0.82				
120	22*46	1.06	25*40	1.09	30*35	1.13		
150	22*50	1.19	25*45	1.23	30*40	1.26		
180			25*50	1.39	30*45	1.43		
220					30*50	1.60	35*35	1.62
270							35*40	1.85
330							35*50	2.08
390							35*55	2.31
470							35*60	2.61
560								

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

● For special designing requirement, please contact us.