

HL Series Snap-in type 85°C

HL 系列

Features

- Directly mountable on printed circuit board without holders.
- Load life 6000 hrs at 85°C
- Safety vent construction design
- RoHS Compliant



Specifications

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Item	Performance Characteristics							
Operating Temp. Range	-40~+85℃ -25~+85℃							
Rated Voltage Range	10 to 100 VDC 160 to 450 VDC							
Capacitance Range	470 to 68000 μ F 47 to 2700 μ F							
Capacitance Tolerance	± 20% (120Hz, 20℃)							
Leakage Current	$I_L \cong 3\sqrt{CV}$ (μ A) After 5 minutes with rated working voltage applied							
Dissipation Factor(Tan δ) (max, 120Hz, 20℃)	W.V (μ F / VDC)	10~16	25~35	50~63	80~100	160~250	350~450	
	D.F(%)	47~390					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			
56000~68000	50	45						
Low Temp. Characteristic	$Z_{-25^{\circ}}/Z_{+25^{\circ}}$	3						
(Max Impedance Ratio) (120Hz)	$Z_{-40^{\circ}}/Z_{+25^{\circ}}$	12						
Load Life	Test conditions Duration time: 6000hrs Ambient temperature: +85℃ Applied voltage: Rated DC working voltage After test requirements at +20℃ 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: +85℃ Applied voltage: None After test requirements at +20℃ : 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

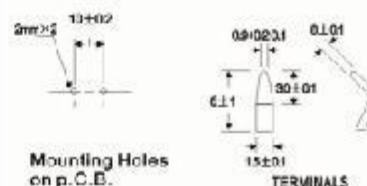
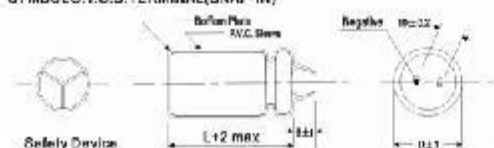
Cap. (μ F)	50(60)	120	1K	10K	100K
≤ 100	0.8	1.0	1.36	1.48	1.53
120~1000	0.8	1.0	1.25	1.35	1.38
> 1000	0.8	1.0	1.17	1.25	1.28

Multiplier for ripple current vs temperature

Temp. (°C)	45	60	70	85
Multiplier	1.55	1.3	1.2	1.0

Diagram of dimensions(cunit:mm)

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



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● Case Size



WV(SV) Cap(μF)	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
4700	22*21	2.40							22*21	2.40						
6800	22*26	2.84							22*26	2.84						
8200	22*26	2.90							22*26	2.90						
10000	22*31	3.06	25*26	3.06					22*31	3.06	25*26	3.06				
12000	22*31	3.43	25*26	3.43					22*31	3.43	25*26	3.43				
15000	22*36	3.94	25*31	3.94					22*36	3.94	25*31	3.94				
18000	22*41	4.34	25*31	4.34					22*41	4.34	25*31	4.34				
22000	22*46	4.80	25*36	4.8	30*31	4.80			22*46	4.80	25*36	4.8	30*31	4.80		
27000			25*46	7.57	30*36	7.57					25*46	7.57	30*36	7.57		
33000			25*51	8.20	30*41	8.20	35*32	8.20			25*51	8.20	30*41	8.20	35*32	8.20
39000					30*46	8.33	35*37	8.33					30*46	8.33	35*37	8.33
47000					30*51	8.96	35*42	8.96					30*51	8.96	35*42	8.96
56000							35*47	10.5					30*56	4.80	35*47	10.8
68000							35*52	10.8								

Ripple Current (A, rms) at 85°C, 120Hz

WV(SV) Cap(μF)	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
2200									22*26	2.18						
3300									22*26	2.46						
3900									22*31	2.64						
4700	22*26	2.64							22*31	2.68	25*26	2.68				
5600	22*31	2.78														
6800	22*31	2.93	25*56	2.93					22*36	3.06	25*31	3.06				
8200	22*31	3.05	25*26	3.05												
10000	22*36	3.43	25*31	3.43	30*26	3.43			22*46	3.60	25*41	3.60	30*31	3.60		
12000	22*41	3.84	25*36	3.84	30*31	3.84					25*46	3.92	30*36	4.08	35*32	3.92
15000	22*51	4.39	25*41	4.39	30*31	4.39					25*51	4.08	30*41	3.92	35*32	4.08
18000			25*46	4.8	30*36	4.80							30*46	4.70	35*37	4.70
22000			25*51	5.40	30*41	5.40							30*51	5.45	35*42	5.45
27000					30*46	5.97	35*37	5.97							35*47	5.78
33000					30*51	6.24	35*42	6.24							35*52	6.36
39000							35*47	7.10								
47000							35*52	7.60								

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WV(V)	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
1000									22*26	1.58						
1500	22*26	1.44							22*26	1.68						
2200	22*26	2.04							22*31	2.52	25*26	2.52				
2700	22*31	2.30							22*36	2.82	25*31	2.82				
3300	22*31	2.64	25*26	2.64					22*41	3.12	25*31	3.12	30*26	3.12		
3900									22*46	3.21	25*36	3.21	30*31	3.21		
4700	22*36	2.88	25*31	2.88	30*26	2.88			22*51	3.28	25*41	3.28			35*27	3.28
5600	22*41	3.06	25*36	3.06	30*31	3.06					25*46	3.86	30*36	3.86	35*32	3.86
6800	22*51	3.24	25*41	3.24	30*31	3.24					25*51	4.32	30*41	4.32	35*32	4.32
8200			25*46	3.48	30*36	3.48							30*46	4.44	35*37	4.44
10000			25*51	3.96	30*41	3.96	35*32	3.96							35*47	4.77
12000					30*46	4.10	35*37	4.10								
15000					30*51	4.70	35*42	4.70							35*57	5.04
18000							35*47	5.31								
22000							35*52	5.85								

Ripple Current (A, rms) at 85°C, 120Hz

WV(V)	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
470									22*21	1.34						
680	22*21	1.34							22*26	1.53						
1000	22*26	1.62							22*31	1.62	25*26	1.62				
1200	22*31	1.65							22*36	1.74	25*31	1.74				
1500	22*31	1.76	25*26	1.76					22*41	1.85	25*36	1.85	30*31	1.85		
1800	22*36	1.82	25*31	1.82					22*46	2.20	25*41	2.20	30*31	2.20		
2200	22*41	2.52	25*31	2.52	30*26	2.52			22*51	2.64	25*41	2.64	30*31	2.64		
2700	22*46	2.75	25*36	2.76	30*31	2.76					25*46	3.16	30*36	3.16		
3300	22*51	3.24	25*41	3.24	30*31	3.24					25*51	3.42	30*41	3.42		
3900			25*46	3.40	30*36	3.40							30*46	3.58	35*37	3.58
4700			25*51	3.60	30*41	3.60							30*51	3.72	35*42	3.72
5600					30*46	3.78	35*37	3.78							35*47	3.92
6800					30*51	4.60	35*42	4.60							35*52	4.10
8200							35*52	4.92								
10000							35*63	5.04								

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Case Size



Cap(μF)	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	Size	Ripple
150											22*21	0.96						
180	22*21	1.12									22*26	1.0						
220	22*26	1.20									22*26	1.36						
270	22*26	1.35									22*31	1.50						
330	22*31	1.44									22*31	1.89	25*26	1.89				
390	22*31	1.66	25*26	1.66							22*31	1.92	25*26	1.92				
470	22*36	1.76	25*31	1.76							22*36	2.23	25*31	2.23	30*26	2.23		
560	22*36	2.03	25*31	2.03	30*26	2.03					22*41	2.57	25*36	2.57	30*26	2.57		
680	22*41	2.36	25*36	2.36	30*26	2.36					22*46	2.98	25*36	2.98	30*31	2.98		
820	22*46	2.72	25*41	2.72	30*36	2.72							25*46	3.26	30*36	3.26		
1000			25*46	3.13	30*36	3.13	35*32	3.13					25*51	3.92	30*41	3.92	35*27	3.26
1200			25*51	3.44	30*36	3.44	35*37	3.44							30*46	4.25	35*32	3.92
1500					30*46	3.96	35*37	3.96							30*51	4.99	35*37	4.26
1800					30*51	4.47	35*42	4.47										
2200							35*47	4.65									35*47	5.84
2700							35*52	4.76									35*52	6.07

Ripple Current (A, rms) at 85°C, 120Hz

Cap(μF)	WV(SV)		250 (300)								350(400)							
			22		25		30		35		22		25		30		35	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
100	22*21	0.85									22*26	0.76						
120	22*26	0.98									22*31	0.89	25*26	0.89				
150	22*26	1.12									22*36	0.99	25*31	0.99	30*26	0.99		
180	22*31	1.36	25*26	1.36							22*41	1.15	25*36	1.15	30*26	1.15		
220	22*31	1.60	25*26	1.60							22*46	1.40	25*41	1.40	30*31	1.40		
270	22*36	1.87	25*31	1.87									25*46	1.63	30*36	1.63	35*27	1.40
330	22*41	2.04	25*36	2.04	30*26	1.87							25*51	1.88	30*41	1.88	35*27	1.63
390	22*46	2.38	25*41	2.38	30*26	2.04									30*46	2.12	35*32	1.88
470			25*46	2.81	30*31	2.38	30*27	2.81							30*51	2.41	35*37	2.12
560			25*51	3.11	30*36	2.81	35*32	3.11									35*42	2.41
680					30*41	3.11	35*37	3.55									35*47	2.90
820					30*46	3.55	35*42	4.00									35*52	3.20
1000					30*51	4.00	35*47	4.55										
1200							35*52	5.34										

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● Case Size

WV(V) Cap(μF)	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
47	22*21	0.42							22*26	0.36						
68	22*26	0.51							22*31	0.50						
82	22*26	0.83							22*31	0.89	25*26	0.89				
100	22*31	1.03	25*26	1.03					22*36	1.03	25*31	1.03				
120	22*31	1.07	25*26	1.07					22*41	1.19	25*36	1.19				
150	22*36	1.26	25*31	1.26	30*26	1.26			22*51	1.39	25*41	1.39	30*31	1.39		
180	22*41	1.46	25*36	1.46	30*31	1.46			22*51	1.52	25*46	1.52	30*36	1.52		
220	22*46	1.75	25*41	1.75	30*36	1.75					25*51	1.76	30*41	1.76	35*37	1.76
270			25*46	1.96	30*36	1.96	35*32	1.96					30*46	2.00	35*37	2.00
330			25*51	2.26	30*41	2.26	35*37	2.26					30*46	2.29	35*37	2.29
390					30*46	2.50	35*42	2.50							35*42	2.54
470							35*47	2.80							35*47	2.89
560							35*52	3.16							35*52	3.3
680							35*60	3.69							35*60	3.9

Ripple Current (A, rms) at 85°C, 120Hz

● For special designing requirement, please contact us.