

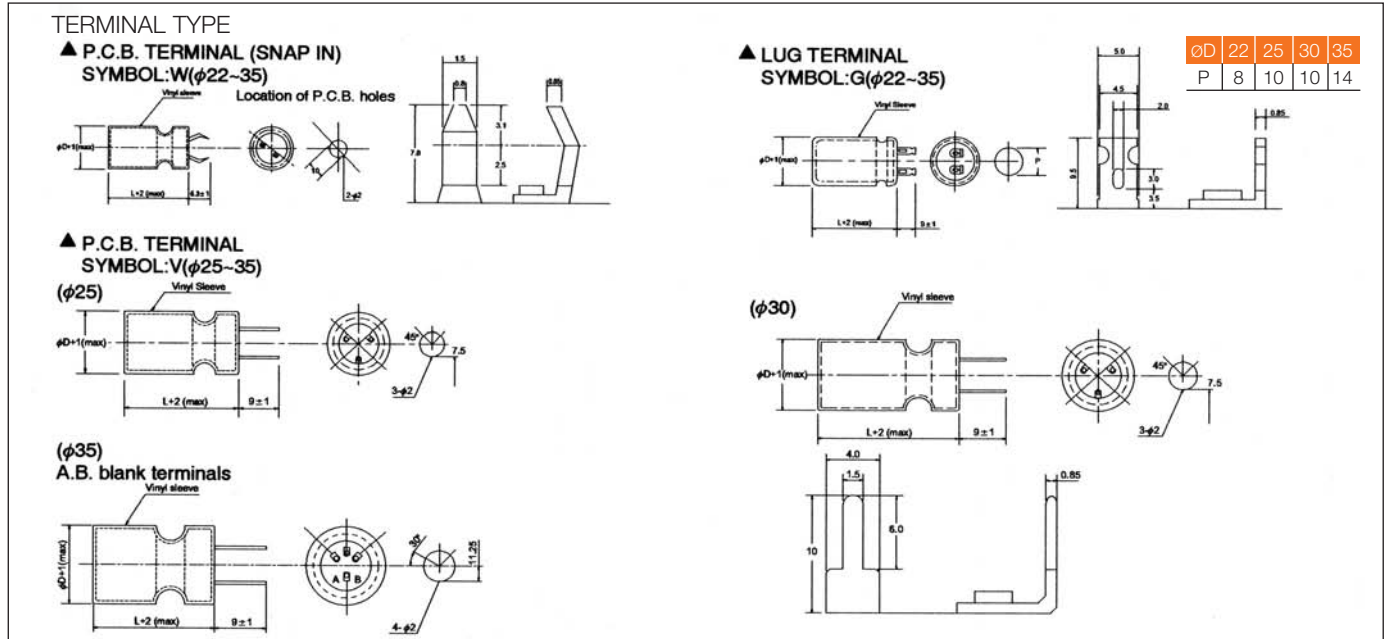
HS SERIES
Wide Temperature Range
Miniature Sized



- Smaller case sized than HP series.
- Withstanding 2,000 hours application of high ripple current at 105 °C.

SPECIFICATION

Item	Characteristic															
Operation Temperature Range	-40 ~ +105 °C															
Rated Working Voltage	16 ~ 500 VDC															
Capacitance Tolerance (120 Hz 20 °C)	±20%(M)															
Leakage Current (20 °C)	$I \leq 0.02CV$ or 3 (mA) *Whichever is smaller after 5 minutes I : Leakage Current (μA) C : Rated Capacitance (μF) V : Working Voltage (V)															
Surge Voltage (20 °C)	W.V.	16	25	35	50	63	80	100	160	180	200	250	350	400	450	500
	S.V.	20	32	44	63	79	100	125	200	225	250	300	400	450	500	550
Dissipation Factor (tan δ) (120 Hz 20 °C)	Rated Voltage (V)	16	25	35	50		63		80		100		≥160			
	Capacitance	-	-	-	≤6,800	≥10,000	≤6,800	≥10,000	≤3,300	≥4,700	≤3,300	≥4,700	-			
	tan δ	0.50	0.40	0.35	0.30	0.35	0.25	0.35	0.20	0.25	0.20	0.25	0.15			
Low Temperature Stability	Impedance ratio at 120 Hz															
	Rated Voltage (V)	16	25	35	50	63-100	160-250	350-500								
	-25 °C / +20 °C	6	6	6	4	3	4	6								
	-40 °C / +20 °C	15	15	10	8	6	-	-								
Load Life	After 2,000 hours application of W.V. at +105 °C, the capacitor shall meet the following limits.															
	Capacitance Change	≤ ±20% of initial value														
	Dissipation Factor	≤ 175% of initial specified value														
Shelf Life	At +105 °C, no voltage application after 1,000 hours, the capacitor shall meet the limits for load life characteristics (with voltage treatment)															
	Leakage Current	≤ initial specified value														



RIPPLE CURRENT COEFFICIENTS

Temperature (°C)	Multiplier
40	2.50
60	2.20
70	2.00
85	1.80
105	1.00

Frequency (Hz)	60	120	400	1k	10k
W.V.	Multiplier				
≤ 100V	0.80	1.00	1.10	1.20	1.20
≥ 160V	0.80	1.00	1.10	1.30	1.40

Case Size & Max Ripple Current

Case size: DxL mm - Max ripple current: A(rms) 105 °C 120 Hz

		V (Code)															
		16 (1C)				25 (1E)				35 (1V)				50 (1H)			
		øD				øD				øD				øD			
µF	Code	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
1.500	152													25			
														1.05			
2.200	222									25				30	25		
										1.17				1.31	1.25		
3.300	332					25				30	25			35	30	25	
						1.34				1.43	1.36			1.58	1.52	1.50	
4.700	472	25				30	25			35	30	25		45	35	30	25
		1.36				1.58	1.51			1.65	1.58	1.56		1.90	1.74	1.73	1.86
6.800	682	35	30			35	30	25		50	40	30	25	50	35	30	
		1.74	1.67			1.85	1.78	1.75		2.09	1.94	1.82	1.96	2.19	1.98	2.15	
10.000	103	45	35	25		45	35	30	25		50	35	30			45	40
		2.09	1.92	1.77		2.19	2.01	2.00	2.15		2.24	2.03	2.20			2.39	2.62
15.000	153		45	35	30		45	35	30			50	40				50
			2.29	2.17	2.36		2.54	2.41	2.61			2.79	2.92				3.52
22.000	223			45	35			45	40								
				2.86	2.97			3.24	3.55								
33.000	333				50				50								L (mm)
					4.21				4.78								R.C.

		V (Code)															
		63 (1J)				80 (1K)				100 (2A)				160 (2C)			
		øD				øD				øD				øD			
µF	Code	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
330	331													25			
														0.88			
390	391													30	25		
														1.03	1.03		
470	471													30	25		
														1.14	1.14		
560	561													35	30	25	
														1.32	1.33	1.38	
680	681													40	35	25	
														1.55	1.57	1.53	
820	821													45	40	30	25
														1.79	1.82	1.80	1.84
1.000	102	25				30	25			30	25				45	35	25
		0.91				1.04	0.99			1.11	1.06				2.12	2.12	2.04
1.200	122														50	35	30
															2.43	2.32	2.39
1.500	152	30	25			35	30	25		40	35	25				45	35
		1.14	1.08			1.28	1.23	1.21		1.44	1.39	1.29				2.88	2.84
1.800	182																40
																	3.28
2.200	222	35	30	25		50	40	30	25		45	35					
		1.40	1.35	1.33		1.72	1.60	1.50	1.61		1.77	1.68					
3.300	332	45	40	30	25		50	40	30			45	35				
		1.77	1.72	1.61	1.73		1.97	1.78	1.93			2.07	2.15				
4.700	472		50	35	30			50	40				45				
			2.03	1.84	2.00			2.11	2.32				2.52				
6.800	682			45	40				50								
				2.20	2.41				2.72								
10.000	103				50												L (mm)
					2.87												R.C.

Case Size & Max Ripple Current

Case size: DxL mm
Max ripple current: A(rms) 105 °C 120 Hz

		V (Code)											
		180 (2M)				200 (2D)				250 (2E)			
		øD				øD				øD			
µF	Code	22	25	30	35	22	25	30	35	22	25	30	35
220	221					25				30	25		
						0.85				0.91	0.91		
270	271	25				25				35	25		
		0.80				0.94				1.07	1.01		
330	331	30	25			30	25			35	30	25	
		0.95	0.95			1.12	1.12			1.19	1.20	1.24	
390	391	30	25			35	25			40	35	25	
		1.03	1.04			1.31	1.22			1.37	1.39	1.35	
470	471	35	30	25		40	30	25		50	40	30	25
		1.21	1.22	1.27		1.52	1.45	1.50		1.66	1.61	1.59	1.63
560	561	40	30	25		45	35	30			45	35	25
		1.40	1.34	1.39		1.75	1.68	1.76			1.85	1.85	1.78
680	681	45	35	30	25	50	40	30	25		50	35	30
		1.63	1.57	1.64	1.68	2.02	1.96	1.94	1.98		2.14	2.04	2.10
820	821	50	40	30	25		45	35	30			45	35
		1.88	1.83	1.80	1.85		2.27	2.26	2.33			2.49	2.45
1.000	102		45	35	30		50	40	30				40
			2.12	2.12	2.18		2.63	2.64	2.58				2.86
1.200	122			40	30			45	35				45
				2.45	2.39			3.04	3.00				3.29
1.500	152			50	35				45				50
				2.91	2.74				3.58				3.68
1.800	182				40				50				L (mm)
					3.17				4.10				R.C.

		V (Code)															
		350 (2V)				400 (2G)				450 (2W)				500 (2H)			
		øD				øD				øD				øD			
µF	Code	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
47	470									25				25			
										0.39				0.27			
68	680					25				30	25			30	25		
						0.47				0.50	0.50			0.35	0.35		
82	820	25				30	25			35	30			35	30		
		0.43				0.56	0.56			0.59	0.60			0.41	0.41		
100	101	30	25			30	25			40	35	25		40	35	30	
		0.51	0.51			0.61	0.61			0.69	0.70	0.68		0.47	0.48	0.50	
120	121	30	25			35	30	25		45	35	30	25	50	40	35	25
		0.55	0.55			0.72	0.73	0.75		0.80	0.77	0.80	0.82	0.57	0.56	0.59	0.56
150	151	35	30	25		40	35	30			45	35	30		45	40	30
		0.66	0.67	0.69		0.85	0.86	0.90			0.96	0.96	0.99		0.66	0.69	0.68
180	181	40	35	30		45	40	30	25		50	35	30		50	40	35
		0.77	0.78	0.82		0.98	1.00	0.99	1.01		1.10	1.05	1.08		0.75	0.76	0.79
220	221	50	40	30	25		45	35	30			40	35			45	40
		0.94	0.91	0.90	0.92		1.17	1.16	1.20			1.22	1.27			0.88	0.92
270	271		45	35	30		50	40	30			50	40			50	45
			1.07	1.06	1.10		1.35	1.36	1.33			1.49	1.48			1.02	1.07
330	331		50	40	30			45	35				45				50
			1.23	1.24	1.21			1.58	1.56				1.72				1.23
390	391			45	35				40				50				
				1.42	1.40				1.79				1.96				
470	471				40				45								
					1.62				2.07								
560	561				45				50								L (mm)
					1.86				2.36								R.C.