

TS-HC Series snap-in style

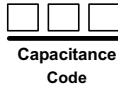


- **Highly miniaturized version (30% smaller than HB series)**
- **2 and 3 pin versions available**
- **2000 hour life at 105°C**
- **Can vent construction**

Rated Working Voltage:	10 ~ 250 VDC	350 ~ 450 VDC											
Operating Temperature:	-40 ~ +105°C	-25 ~ +105°C											
Nominal Capacitance:	270~100000 µF	100 ~ 820µF											
Capacitance Tolerance:	± 20%												
Dissipation Factor: (120 Hz, +20°C)	Working Voltage [V]:												
	10	16	25	35	50	63	80	100 - 450					
	Max. D.F. (%):												
	55	45	35	30	25	20	17	15					
For capacitance values > 33000µF, add the value of: $\frac{\text{rated cap. } [\mu\text{F}] - 33000}{1000}$													
Leakage Current:	3vCV (µA) max. after 5 minutes; C = Capacitance in µF, V = WV												
Ripple Current Multipliers:	Frequency(Hz):	50	60	100~120	500	1k	10k~	Ripple Current Ambient Temperature Factors*					
	10~100WV:	0.93	0.95	1.0	1.05	1.08	1.15	Ambient Temperature:	105°C	85°C	70°C	60°C	≈45°C
	160~500WV:	0.75	0.8	1.0	1.2	1.25	1.4	Multiplier:	1.0	1.7	2.0	2.2	2.35
Endurance:	2000 hours at +105°C with maximum specified ripple current (see page 4)												

*Use of temperature ripple current multipliers may limit life to the hours specified for the maximum operating temperature.

Part Number System



Diameter	Diameter / Terminal Code			
	# of pins:	2	2	3
	pin length:	6.3mm	4.0mm	4.0mm
22mm		B	H	P
25mm		C	J	Q
30mm		D	K	R
35mm		E	L	S

(Please see page 7 for details)

Top Vinyl Plate	
A	with plate
	without plate (no suffix)

TS-HC Standard Ratings (part numbers shown with 2 pins, 6.3mm length terminal, and top vinyl plate)

Cap. (µF)	Size (mm) D x L	Max 105°C R.C. (A _{rms})		20°C ESR (Ω, max.)		Panasonic Part Number
		120Hz	10kHz~	120Hz	20kHz	
10 VDC Working, 13 VDC Surge						
12000	22 x 25	2.20	2.53	0.076	0.065	EETHC1A123BA
18000	22 x 30	2.40	2.76	0.051	0.043	EETHC1A183BA
	25 x 25	2.40	2.76	0.051	0.043	EETHC1A183CA
22000	22 x 35	2.60	2.99	0.041	0.035	EETHC1A223BA
	25 x 30	2.60	2.99	0.041	0.035	EETHC1A223CA
27000	22 x 40	3.10	3.57	0.034	0.029	EETHC1A273BA
	25 x 35	3.10	3.57	0.034	0.029	EETHC1A273CA
	30 x 25	3.10	3.57	0.034	0.029	EETHC1A273DA
33000	22 x 45	3.40	3.91	0.028	0.023	EETHC1A333BA
	25 x 40	3.40	3.91	0.028	0.023	EETHC1A333CA
39000	25 x 45	3.70	4.26	0.026	0.022	EETHC1A393CA
	30 x 30	3.70	4.26	0.026	0.023	EETHC1A393DA
	35 x 25	3.70	4.26	0.026	0.022	EETHC1A393EA
47000	25 x 50	4.20	4.83	0.024	0.021	EETHC1A473CA
	30 x 35	4.20	4.83	0.024	0.022	EETHC1A473DA
	35 x 30	4.20	4.83	0.024	0.021	EETHC1A473EA
56000	30 x 40	5.00	5.75	0.023	0.021	EETHC1A563DA
	35 x 35	5.00	5.75	0.023	0.020	EETHC1A563EA
68000	30 x 45	5.40	6.21	0.022	0.020	EETHC1A683DA
	35 x 40	5.40	6.21	0.022	0.019	EETHC1A683EA
82000	35 x 45	6.10	7.02	0.021	0.019	EETHC1A823EA
100000	35 x 50	6.90	7.94	0.020	0.019	EETHC1A104EA
16 VDC Working, 20 VDC Surge						
10000	22 x 25	2.60	2.99	0.075	0.063	EETHC1C103BA
12000	22 x 30	2.90	3.34	0.062	0.053	EETHC1C123BA
	25 x 25	2.90	3.34	0.062	0.053	EETHC1C123CA
15000	22 x 35	3.20	3.68	0.050	0.042	EETHC1C153BA
16 VDC Working, 20 VDC Surge (continued)						
18000	22 x 40	3.50	4.03	0.041	0.035	EETHC1C183BA
	25 x 30	3.50	4.03	0.041	0.035	EETHC1C183CA
22000	22 x 45	3.80	4.37	0.034	0.029	EETHC1C223BA
	25 x 35	3.80	4.37	0.034	0.029	EETHC1C223CA
	30 x 25	3.80	4.37	0.034	0.029	EETHC1C223DA
27000	22 x 50	4.20	4.83	0.028	0.023	EETHC1C273BA
	25 x 40	4.20	4.83	0.028	0.023	EETHC1C273CA
	30 x 30	4.20	4.83	0.028	0.023	EETHC1C273DA
	35 x 25	4.20	4.83	0.028	0.023	EETHC1C273EA
33000	25 x 45	4.70	5.41	0.023	0.019	EETHC1C333CA
	30 x 35	4.70	5.41	0.023	0.019	EETHC1C333DA
	35 x 30	4.70	5.41	0.023	0.020	EETHC1C333EA
39000	30 x 40	5.10	5.87	0.022	0.018	EETHC1C393DA
	35 x 35	5.10	5.87	0.022	0.020	EETHC1C393EA
47000	30 x 45	5.50	6.33	0.016	0.014	EETHC1C473DA
	35 x 40	5.50	6.33	0.021	0.019	EETHC1C473EA
	30 x 50	6.00	6.90	0.020	0.018	EETHC1C563DA
35 x 45	6.00	6.90	0.020	0.018	EETHC1C563EA	
25 VDC Working, 32 VDC Surge						
6800	22 x 25	2.40	2.76	0.085	0.064	EETHC1E682BA
8200	22 x 30	2.70	3.11	0.071	0.053	EETHC1E822BA
	25 x 25	2.70	3.11	0.071	0.053	EETHC1E822CA
10000	22 x 35	3.00	3.45	0.058	0.044	EETHC1E103BA
12000	22 x 40	3.20	3.68	0.048	0.036	EETHC1E123BA
	25 x 30	3.20	3.68	0.048	0.036	EETHC1E123CA
15000	22 x 45	3.60	4.14	0.039	0.029	EETHC1E153BA
	25 x 35	3.60	4.14	0.039	0.029	EETHC1E153CA

TS-HC Standard Ratings (continued)

Table with columns: Cap. (µF), Size (mm) D x L, Max 105°C R.C. (Arms), 20°C ESR (Ω, max.), Panasonic Part Number. It is divided into multiple sections based on working voltage (25VDC, 35VDC, 50VDC, 63VDC, 80VDC, 100VDC, 120VDC, 160VDC) and surge voltage (32VDC, 44VDC, 63VDC, 79VDC, 100VDC, 125VDC, 200VDC).

TS-HC Standard Ratings (continued)

Cap. (μF)	Size (mm) D x L	Max 105°C R.C. (A _{rms})		20°C ESR (Ω, max.)		Panasonic Part Number	Cap. (μF)	Size (mm) D x L	Max 105°C R.C. (A _{rms})		20°C ESR (Ω, max.)		Panasonic Part Number
		120Hz	10kHz~	120Hz	20kHz				120Hz	10kHz~	120Hz	20kHz	
160 VDC Working, 200 VDC Surge (continued)							350 VDC Working, 400 VDC Surge (continued)						
1000	25 x 35 30 x 25	2.20 2.20	3.08 3.08	0.199 0.216	0.090 0.108	EETHC2C102CA EETHC2C102DA	330	25 x 40 30 x 30	1.20 1.20	1.68 1.68	0.502 0.502	0.226 0.226	EETHC2V331CA EETHC2V331DA
1200	22 x 45 25 x 40 30 x 30 35 x 25	2.30 2.30 2.30 2.30	3.22 3.22 3.22 3.22	0.166 0.166 0.166 0.180	0.075 0.075 0.075 0.090	EETHC2C122BA EETHC2C122CA EETHC2C122DA EETHC2C122EA	390	25 x 45 30 x 35	1.30 1.30	1.82 1.82	0.425 0.425	0.191 0.191	EETHC2V391CA EETHC2V391DA
1500	25 x 45 30 x 35 35 x 30	2.50 2.50 2.50	3.50 3.50 3.50	0.133 0.133 0.155	0.060 0.060 0.077	EETHC2C152CA EETHC2C152DA EETHC2C152EA	470	25 x 50 35 x 30	1.40 1.40	1.96 1.96	0.353 0.353	0.159 0.159	EETHC2V471CA EETHC2V471EA
1800	25 x 50 30 x 40 35 x 30	2.70 2.70 2.70	3.78 3.78 3.78	0.111 0.111 0.120	0.050 0.050 0.060	EETHC2C182CA EETHC2C182DA EETHC2C182EA	560	30 x 45 35 x 35	1.50 1.50	2.10 2.10	0.296 0.296	0.133 0.133	EETHC2V561DA EETHC2V561EA
2200	30 x 45 35 x 35	2.90 2.90	4.06 4.06	0.090 0.098	0.041 0.049	EETHC2C222DA EETHC2C222EA	680	30 x 50 35 x 40	1.70 1.70	2.38 2.38	0.244 0.244	0.110 0.110	EETHC2V681DA EETHC2V681EA
2700	30 x 50 35 x 40	3.10 3.10	4.34 4.34	0.080 0.086	0.040 0.043	EETHC2C272DA EETHC2C272EA	820	35 x 45	1.90	2.66	0.202	0.091	EETHC2V821EA
3300	35 x 50	3.30	4.62	0.070	0.042	EETHC2C332EA	400 VDC Working, 450 VDC Surge						
200 VDC Working, 250 VDC Surge							100	22 x 25	0.70	0.98	1.824	0.821	EETHC2G101BA
390	22 x 25	1.31	1.83	0.510	0.230	EETHC2D391BA	120	22 x 30	0.75	1.05	1.520	0.684	EETHC2G121BA
470	22 x 30	1.45	2.03	0.423	0.190	EETHC2D471BA	150	22 x 30	0.88	1.23	1.216	0.547	EETHC2G151BA
560	22 x 30	1.67	2.34	0.355	0.160	EETHC2D561BA	180	22 x 35 25 x 30	0.95 0.95	1.33 1.33	1.013 1.013	0.456 0.456	EETHC2G181BA EETHC2G181CA
680	22 x 40 25 x 30	1.75 1.75	2.45 2.45	0.293 0.293	0.132 0.132	EETHC2D681BA EETHC2D681CA	220	22 x 45 25 x 35 30 x 25	1.10 1.10 1.10	1.54 1.54 1.54	0.829 0.829 0.829	0.373 0.373 0.373	EETHC2G221BA EETHC2G221CA EETHC2G221DA
820	22 x 45 25 x 35 30 x 25	2.04 2.04 2.04	2.86 2.86 2.86	0.243 0.243 0.243	0.109 0.109 0.109	EETHC2D821BA EETHC2D821CA EETHC2D821DA	270	22 x 50 25 x 40 30 x 30 35 x 25	1.22 1.22 1.22 1.22	1.71 1.71 1.71 1.71	0.675 0.675 0.675 0.675	0.304 0.304 0.304 0.304	EETHC2G271BA EETHC2G271CA EETHC2G271DA EETHC2G271EA
1000	22 x 50 25 x 45 30 x 30 35 x 25	2.30 2.30 2.30 2.30	3.22 3.22 3.22 3.22	0.199 0.199 0.199 0.216	0.090 0.090 0.090 0.097	EETHC2D102BA EETHC2D102CA EETHC2D102DA EETHC2D102EA	330	25 x 45 30 x 35 35 x 30	1.44 1.44 1.44	2.02 2.02 2.02	0.553 0.553 0.553	0.249 0.249 0.249	EETHC2G331CA EETHC2G331DA EETHC2G331EA
1200	25 x 50 30 x 35 35 x 30	2.65 2.65 2.65	3.71 3.71 3.71	0.166 0.166 0.180	0.075 0.075 0.090	EETHC2D122CA EETHC2D122DA EETHC2D122EA	390	25 x 50 30 x 40 35 x 30	1.55 1.55 1.55	2.17 2.17 2.17	0.468 0.468 0.468	0.210 0.210 0.210	EETHC2G391CA EETHC2G391DA EETHC2G391EA
1500	30 x 40 35 x 30	2.80 2.80	3.92 3.92	0.133 0.144	0.060 0.072	EETHC2D152DA EETHC2D152EA	470	30 x 45 35 x 35	1.68 1.68	2.35 2.35	0.388 0.388	0.175 0.175	EETHC2G471DA EETHC2G471EA
1800	30 x 45 35 x 40	3.08 3.08	4.31 4.31	0.111 0.129	0.050 0.064	EETHC2D182DA EETHC2D182EA	560	30 x 50 35 x 40	1.90 1.90	2.66 2.66	0.326 0.326	0.147 0.147	EETHC2G561DA EETHC2G561EA
2200	30 x 50 35 x 45	3.48 3.48	4.87 4.87	0.090 0.098	0.041 0.044	EETHC2D222DA EETHC2D222EA	680	35 x 45	2.12	2.97	0.268	0.121	EETHC2G681EA
250 VDC Working, 300 VDC Surge							450 VDC Working, 500 VDC Surge						
270	22 x 25	1.10	1.54	0.614	0.276	EETHC2E271BA	100	22 x 30 25 x 25	0.64 0.64	0.90 0.90	1.824 1.824	0.821 0.821	EETHC2W101BA EETHC2W101CA
330	22 x 30 25 x 25	1.20 1.20	1.68 1.68	0.502 0.502	0.226 0.226	EETHC2E331BA EETHC2E331CA	120	22 x 35 25 x 30	0.72 0.72	1.01 1.01	1.520 1.520	0.684 0.684	EETHC2W121BA EETHC2W121CA
390	22 x 35 25 x 25	1.30 1.30	1.82 1.82	0.425 0.425	0.191 0.191	EETHC2E391BA EETHC2E391CA	150	22 x 40 25 x 30 30 x 25	0.79 0.79 0.79	1.11 1.11 1.11	1.216 1.216 1.216	0.547 0.547 0.547	EETHC2W151BA EETHC2W151CA EETHC2W151DA
470	22 x 40 25 x 30 30 x 25	1.40 1.40 1.40	1.96 1.96 1.96	0.353 0.353 0.353	0.159 0.159 0.159	EETHC2E471BA EETHC2E471CA EETHC2E471DA	180	22 x 45 25 x 40 30 x 30	0.87 0.87 0.87	1.22 1.22 1.22	1.013 1.013 1.013	0.456 0.456 0.456	EETHC2W181BA EETHC2W181CA EETHC2W181DA
560	22 x 45 25 x 35 30 x 25	1.50 1.50 1.50	2.10 2.10 2.10	0.296 0.296 0.296	0.133 0.133 0.133	EETHC2E561BA EETHC2E561CA EETHC2E561DA	220	25 x 45 30 x 30	1.00 1.00	1.40 1.40	0.829 0.829	0.373 0.373	EETHC2W221CA EETHC2W221DA
680	22 x 50 25 x 40 30 x 30 35 x 25	1.70 1.70 1.70 1.70	2.38 2.38 2.38 2.38	0.244 0.244 0.244 0.244	0.110 0.110 0.110 0.110	EETHC2E681BA EETHC2E681CA EETHC2E681DA EETHC2E681EA	220	35 x 25	1.00	1.40	0.829	0.373	EETHC2W221EA
820	25 x 45 30 x 35 35 x 30	2.00 2.00 2.00	2.80 2.80 2.80	0.202 0.202 0.202	0.091 0.091 0.091	EETHC2E821CA EETHC2E821DA EETHC2E821EA	270	25 x 50 30 x 40 35 x 30	1.19 1.19 1.19	1.67 1.67 1.67	0.675 0.675 0.675	0.304 0.304 0.304	EETHC2W271CA EETHC2W271DA EETHC2W271EA
1000	30 x 40	2.20	3.08	0.166	0.075	EETHC2E102DA	330	30 x 45 35 x 35	1.38 1.38	1.93 1.93	0.553 0.553	0.249 0.249	EETHC2W331DA EETHC2W331EA
1200	30 x 45	2.30	3.22	0.138	0.062	EETHC2E122DA	390	30 x 50 35 x 40	1.55 1.55	2.17 2.17	0.468 0.468	0.210 0.210	EETHC2W391DA EETHC2W391EA
1500	35 x 45	2.50	3.50	0.111	0.050	EETHC2E152EA	470	35 x 45	1.74	2.44	0.388	0.175	EETHC2W471EA
1800	35 x 50	2.70	3.78	0.092	0.041	EETHC2E182EA	560	35 x 50	1.90	2.66	0.326	0.147	EETHC2W561EA
350 VDC Working, 400 VDC Surge													
120	22 x 25	0.75	1.05	1.382	0.622	EETHC2V121BA							
150	22 x 30	0.82	1.15	1.105	0.497	EETHC2V151BA							
180	22 x 30 25 x 25	0.90 0.90	1.26 1.26	0.921 0.921	0.414 0.414	EETHC2V181BA EETHC2V181CA							
220	22 x 35 25 x 30	1.00 1.00	1.40 1.40	0.754 0.754	0.339 0.339	EETHC2V221BA EETHC2V221CA							
270	25 x 35 30 x 25	1.10 1.10	1.54 1.54	0.614 0.614	0.276 0.276	EETHC2V271CA EETHC2V271DA							