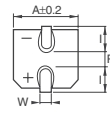
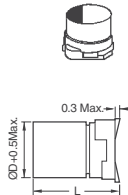


**Panasonic** HA Series Aluminum Electrolytic Capacitors, Surface Mount Type – High Temperature (260°C) (Cont.)



Rated W.V. (VDC)	Nom. Cap. (µF)	tan δ ≤ Spec. Values (120Hz, +20°C)	Max. Leak. Current (µA)	Size Code	Max. Ripple Cur. 120Hz, 105°C (mA rms)	Digi-Key Part No.	Cut Tape Pricing		Digi-Key Part No.	Tape and Reel		Panasonic Part No.	
							1	100		Qty.	Pricing		
2.2	0.12	3.0	B	16	PCE4672CT-ND	36	10.26	17.10	PCE4672TR-ND	2,000	60.31/M	EEE-HA1H2R2AR	
3.3	0.12	3.0	B	16	PCE4674CT-ND	36	10.26	17.10	PCE4674TR-ND	2,000	60.31/M	EEE-HA1H3R3AR	
4.7	0.12	3.0	C	23	PCE4676CT-ND	43	12.24	20.40	PCE4676TR-ND	1,000	76.83	EEE-HA1H4R7AR	
10	0.12	5.0	D	35	PCE4668CT-ND	50	14.42	24.04	PCE4668TR-ND	1,000	90.04	EEE-HA1H100AP	
22	0.12	11.0	E	70	PCE4671CT-ND	63	18.88	33.03	PCE4671TR-ND	1,000	132.18	EEE-HA1H220AP	
50	33	0.14	16.5	D8	70	PCE4644CT-ND	52	15.72	24.04	PCE4644TR-ND	1,000	90.04	EEE-HA1H30XAP
	33	0.12	16.5	E	70	PCE4715CT-ND	63	18.88	33.03	PCE4715TR-ND	1,000	132.18	EEE-HA1H30UAP
	33	0.12	16.5	F	91	PCE4673CT-ND	82	24.49	42.85	PCE4673TR-ND	500	100.78	EEE-HA1H330AP
	47	0.14	23.5	D8	63	PCE4717CT-ND	52	15.72	27.52	PCE4717TR-ND	900	104.83	EEE-HA1H470XAP
	47	0.12	23.5	F	95	PCE4716CT-ND	82	24.49	42.85	PCE4716TR-ND	500	100.78	EEE-HA1H470UAP
	47	0.12	23.5	G	100	PCE4675CT-ND	74	23.86	42.94	PCE4675TR-ND	500	111.94	EEE-HA1H470AP
	100	0.18	50.0	F	110	PCE4713CT-ND	69	22.12	39.82	PCE4713TR-ND	500	103.68	EEE-HA1H101UAP
	100	0.12	50.0	G	120	PCE4669CT-ND	74	23.86	42.94	PCE4669TR-ND	500	111.94	EEE-HA1H101AP
220	0.18	110.0	G	150	PCE4714CT-ND	82	26.19	47.14	PCE4714TR-ND	500	122.68	EEE-HA1H221UAP	

**Panasonic** HA Series Aluminum Electrolytic Capacitors, Surface Mount Type



**Features:** • General Purpose • Life Time: 1000H @105°C • Surface Mount Type • High CV Volumetric Efficiency • Tape and Reel Packaging for Automatic Placement  
**Specifications:** • Operating Temperature Range: -40°C ~ 105°C • Capacitance Tolerance: ±20% (120Hz, 20°C) • Leakage Current: I ≤ 0.01CV or 3(µA) whichever is greater measured after a 2 min. application of rated working voltage at 20°C • Low Temperature Characteristics: Impedance ratio (120Hz) • Soldering Reflow: 4 - 6.3mm case size 250°C for five seconds, 8 - 10mm case size 235°C for five seconds



Following specified values:

Series	Impedance 120Hz	Working Voltage							
		6.3V	10V	16V	25V	35V	50V	63V	100V
HA	-25°C/+20°C	4	3	2	2	2	2	3	3
	-40°C/+20°C	8	6	4	4	3	3	4	4

Series	Case Code	Dimensions – mm					
		D	L	A	I	W	P
HA	B	4.0	5.4	4.3	1.8	0.65 ±0.1	1.0
	C	5.0	5.4	5.3	2.2	0.65 ±0.1	1.5
	D	6.3	5.4	6.6	2.6	0.65 ±0.1	1.8
	D8	6.3	7.7	6.6	2.6	0.65 ±0.1	1.8
	E	8.0	6.2	8.3	3.4	0.65 ±0.1	2.2
	F	8.0	10.2	8.3	3.4	0.90 ±0.2	3.1
	G	10.0	10.2	10.3	3.5	0.90 ±0.2	4.6

Rated W.V. (VDC)	Nom. Cap. (µF)	tan δ ≤ Spec. Values (120Hz, +20°C)	Max. Leak. Current (µA)	Size Code	Max. Ripple Cur. 120Hz, 105°C (mA rms)	Digi-Key Part No.	Cut Tape Pricing		Digi-Key Part No.	Tape and Reel		Panasonic Part No.	
							1	100		Qty.	Pricing		
<b>HA Long Life Series: -40°C ~ 105°C (1,000 Hour Life)</b>													
6.3	22	0.30	3.0	B	29	PCE4160CT-ND	.43	11.08	17.58	PCE4160TR-ND	2,000	59.32/M	EEE-HA0J220R
	33	0.35	3.0	B	29	PCE4162CT-ND	.36	10.16	16.94	PCE4162TR-ND	2,000	65.76/M	EEE-HA0J330WR
	47	0.35	3.0	B	36	PCE4166CT-ND	.36	10.16	16.94	PCE4166TR-ND	2,000	65.76/M	EEE-HA0J470WR
	47	0.30	3.0	C	46	PCE4165CT-ND	.38	10.95	18.26	PCE4165TR-ND	1,000	67.02	EEE-HA0J470R
	100	0.35	6.3	C	47	PCE4156CT-ND	.42	11.92	19.87	PCE4156TR-ND	1,000	73.14	EEE-HA0J101WR
	100	0.30	6.3	D	71	PCE4155CT-ND	.45	12.89	21.48	PCE4155TR-ND	1,000	79.11	EEE-HA0J101P
	220	0.35	13.8	D	74	PCE4161CT-ND	.54	15.24	25.40	PCE4161TR-ND	1,000	93.70	EEE-HA0J221WP
	330	0.30	20.8	D8	105	PCE4164CT-ND	.47	14.08	24.63	PCE4164TR-ND	900	102.16	EEE-HA0J331XP
	330	0.35	20.8	F	230	PCE4163CT-ND	.73	21.87	38.27	PCE4163TR-ND	500	88.39	EEE-HA0J331P
	470	0.35	29.6	F	300	PCE4167CT-ND	.73	21.87	38.27	PCE4167TR-ND	500	88.39	EEE-HA0J471UP
10	1,000	0.35	63.0	G	300	PCE4158CT-ND	.73	21.87	38.27	PCE4158TR-ND	500	88.39	EEE-HA0J102UP
	1,000	0.35	63.0	G	400	PCE4157CT-ND	.85	25.62	44.82	PCE4157TR-ND	500	103.35	EEE-HA0J102P
	1,500	0.35	94.5	G	480	PCE4159CT-ND	.74	23.43	42.17	PCE4159TR-ND	500	107.91	EEE-HA0J152P
	22	0.30	3.0	B	28	PCE4171CT-ND	.43	11.08	17.58	PCE4171TR-ND	2,000	59.32/M	EEE-HA1A220WR
	33	0.30	3.3	B	29	PCE4175CT-ND	.36	10.16	16.94	PCE4175TR-ND	2,000	65.76/M	EEE-HA1A330WR
	33	0.22	3.3	C	43	PCE4174CT-ND	.38	10.95	18.26	PCE4174TR-ND	1,000	67.02	EEE-HA1A330R
	47	0.30	4.7	C	43	PCE4176CT-ND	.42	11.92	19.87	PCE4176TR-ND	1,000	73.14	EEE-HA1A470WR
	100	0.30	10.0	D	71	PCE4169CT-ND	.45	12.89	21.48	PCE4169TR-ND	1,000	79.11	EEE-HA1A101WP
	100	0.26	10.0	E	110	PCE4168CT-ND	.56	16.85	29.49	PCE4168TR-ND	1,000	115.86	EEE-HA1A101P
	220	0.22	22.0	D8	105	PCE4173CT-ND	.47	14.08	24.63	PCE4173TR-ND	900	102.16	EEE-HA1A221XP
16	220	0.26	22.0	F	160	PCE4172CT-ND	.73	21.87	38.27	PCE4172TR-ND	500	88.39	EEE-HA1A221P
	470	0.26	47.0	F	200	PCE4178CT-ND	.73	21.87	38.27	PCE4178TR-ND	500	88.39	EEE-HA1A471UP
	470	0.26	47.0	G	270	PCE4177CT-ND	.85	25.62	44.82	PCE4177TR-ND	500	103.35	EEE-HA1A471P
	1,000	0.26	100.0	G	400	PCE4170CT-ND	.74	23.43	42.17	PCE4170TR-ND	500	107.91	EEE-HA1A102P
	10	0.16	3.0	B	28	PCE4179CT-ND	.43	11.08	17.58	PCE4179TR-ND	2,000	59.32/M	EEE-HA1C100R
	22	0.26	3.5	B	28	PCE4182CT-ND	.36	10.16	16.94	PCE4182TR-ND	2,000	65.76/M	EEE-HA1C220WR
	22	0.16	3.5	C	39	PCE4181CT-ND	.38	10.95	18.26	PCE4181TR-ND	1,000	67.02	EEE-HA1C220R
	33	0.26	5.2	C	35	PCE4186CT-ND	.42	11.92	19.87	PCE4186TR-ND	1,000	73.14	EEE-HA1C330WR
	47	0.26	7.5	C	39	PCE4190CT-ND	.42	11.92	19.87	PCE4190TR-ND	1,000	73.14	EEE-HA1C470WR
	47	0.16	7.5	D	70	PCE4189CT-ND	.45	12.89	21.48	PCE4189TR-ND	1,000	79.11	EEE-HA1C470P
25	100	0.16	16.0	D	70	PCE4180CT-ND	.54	15.24	25.40	PCE4180TR-ND	1,000	93.70	EEE-HA1C101WP
	220	0.16	35.2	D8	105	PCE4185CT-ND	.47	14.08	24.63	PCE4185TR-ND	900	102.16	EEE-HA1C221XP
	220	0.20	35.2	F	150	PCE4184CT-ND	.73	21.87	38.27	PCE4184TR-ND	500	88.39	EEE-HA1C221UP
	220	0.20	35.2	G	210	PCE4183CT-ND	.85	25.62	44.82	PCE4183TR-ND	500	103.35	EEE-HA1C221P
	330	0.20	52.8	F	170	PCE4188CT-ND	.73	21.87	38.27	PCE4188TR-ND	500	88.39	EEE-HA1C331UP
	330	0.20	52.8	G	230	PCE4187CT-ND	.85	25.62	44.82	PCE4187TR-ND	500	103.35	EEE-HA1C331P
	470	0.20	75.2	F	340	PCE4192CT-ND	.79	23.73	41.53	PCE4192TR-ND	500	95.91	EEE-HA1C471UP
	470	0.20	75.2	G	340	PCE4191CT-ND	.85	25.62	44.82	PCE4191TR-ND	500	103.35	EEE-HA1C471P
	4.7	0.14	3.0	B	22	PCE4208CT-ND	.43	11.08	17.58	PCE4208TR-ND	2,000	59.32/M	EEE-HA1E4R7R
	10	0.20	3.0	B	22	PCE4194CT-ND	.36	10.16	16.94	PCE4194TR-ND	2,000	65.76/M	EEE-HA1E100WR
35	10	0.14	3.0	C	28	PCE4193CT-ND	.38	10.95	18.26	PCE4193TR-ND	1,000	67.02	EEE-HA1E100R
	22	0.20	5.5	C	35	PCE4198CT-ND	.42	11.92	19.87	PCE4198TR-ND	1,000	73.14	EEE-HA1E220WR
	22	0.14	5.5	D	55	PCE4197CT-ND	.45	12.89	21.48	PCE4197TR-ND	1,000	79.11	EEE-HA1E220P
	33	0.20	8.2	C	45	PCE4202CT-ND	.42	11.92	19.87	PCE4202TR-ND	1,000	73.14	EEE-HA1E330WR
	33	0.14	8.3	D	65	PCE4201CT-ND	.45	12.89	21.48	PCE4201TR-ND	1,000	79.11	EEE-HA1E330P
	47	0.20	11.7	D	70	PCE4206CT-ND	.54	15.24	25.40	PCE4206TR-ND	1,000	93.70	EEE-HA1E470WP
	47	0.16	11.8	E	91	PCE4205CT-ND	.56	16.85	29.49	PCE4205TR-ND	1,000	115.86	EEE-HA1E470P
	100	0.16	25.0	E	91	PCE4196CT-ND	.56	16.85	29.49	PCE4196TR-ND	1,000	115.86	EEE-HA1E101UP
	100	0.16	25.0	F	130	PCE4195CT-ND	.73	21.87	38.27	PCE4195TR-ND	500	88.39	EEE-HA1E101P
	220	0.16	55.0	F	160	PCE4200CT-ND	.79	23.78	41.60	PCE4200TR-ND	500	96.08	EEE-HA1E221UP
50	220	0.16	55.0	G	190	PCE4199CT-ND	.85	25.62	44.82	PCE4199TR-ND	500	103.35	EEE-HA1E221P
	330	0.16	82.5	F	180	PCE4204CT-ND	.79	23.78	41.60	PCE4204TR-ND	500	96.08	EEE-HA1E331UP
	330	0.16	82.5	G	340	PCE4203CT-ND	.85	25.62	44.82	PCE4203TR-ND	500	103.35	EEE-HA1E331P
	470	0.16	117.5	G	360	PCE4207CT-ND	.74	23.43	42.17	PCE4207TR-ND	500	107.91	EEE-HA1E471P
	4.7	0.12	3.0	B	22	PCE4248CT-ND	.43	11.08	17.58	PCE4248TR-ND	2,000	59.32/M	EEE-HA1V4R7R
	10	0.16	3.5										