Surface Mount Type

Series : HA

Long life
Series : HA
↑
Series : VS

■ Features
- Life time: 105°C 1000 h
- 5.5 mm height (≦φ6.3)

■ Specifications

Operating Temp.Range	-40 to +105°C
Rated W.V.Range	6.3 to 100 V .DC
Nominal Cap.Range	0.1 to 1500μF
Capacitance Tolerance	± 20 % (120Hz/+20°C)
D.C. Leakage Current	I ≦ 0.01 CV or 3(μA) after 2 minutes (Whichever is greater)
Dissipation Factor (tan δ)	Refer to standard products table.

Characteristics at Low Temperature

W.V. (V)	6.3	10	16	25	35	50	63	100
-25 / +20 °C	4	3	2	2	2	2	3	3
-40 / +20 °C	8	6	4	4	3	3	4	4

(Impedance ratio max at 120 Hz)

Endurance

After applying rated working voltage for 1000 hours for B~D size, 2000 hours for E~G size at +105°C and then being stabilized at +20°C, capacitors shall meet the following limits .

Capacitance change	±20% of initial measured value (±30% for E~G size of 6.3V & UP suffix)
D.F.	≦ 200% of initial specified value (≦300% for E~G size of 6.3V & UP suffix)
D.C leakage current	≦ initial specified value

Shelf Life

After storage for 1000 hours at +105ºC ±2°C with no voltage applied and then being stabilized at +20°C, capacitor shall meet the limits specified in “Endurance.” (With voltage treatment)

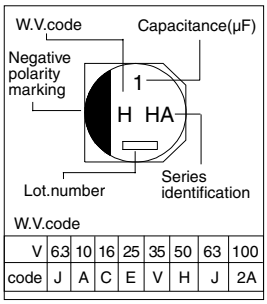
Resistance to Soldering Heat

After reflow soldering (refer to Application Guidelines) and then being stabilized at +20°C, capacitor shall meet the following limits.

Capacitance change	±10% of initial measured value
D.F.	≦ initial specified value
D.C leakage current	≦ initial specified value

■ Marking

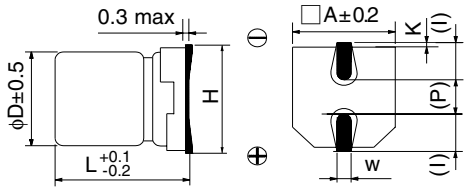
Example;50V1μF(polarized)



W.V.code

V	6.3	10	16	25	35	50	63	100
code	J	A	C	E	V	H	J	2A

■ Dimensions in mm (not to scale)



(mm)

Size code	D	L	A	H	I	W	P	K
B	4.0	5.4	4.3	5.5 MAX	1.8	0.65±0.1	1.0	0.35 +0.15 -0.20
C	5.0	5.4	5.3	6.5 MAX	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
D	6.3	5.4	6.6	7.8 MAX	2.6	0.65±0.1	1.8	0.35 +0.15 -0.20
D8	6.3	7.9	6.6	7.8 MAX	2.6	0.65±0.1	1.8	0.35 +0.15 -0.20
E	8.0	6.2	8.3	9.5 MAX	3.4	0.65±0.1	2.2	0.35 ±0.2
F	8.0	10.2	8.3	10.0 MAX	3.4	0.90±0.2	3.1	0.70 ±0.2
G	10.0	10.2	10.3	12.0 MAX	3.5	0.90±0.2	4.6	0.70 ±0.2

■ Case size
- Polarized

w.v. / Cap.(μF)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)	63 (1J)	100 (2A)
0.1						B		
0.22						B		
0.33						B		
0.47						B		
1.0						B		
2.2						B		
3.3						B		E
4.7				B	B	C		E,F
10			B	B,C	B,C	D	E	F
22	B	B	B,C	C,D	C,D	E	E,F	F,G
33	B	B,C	C	C,D	D,E	D8,E,F	G	G
47	B,C	C	C,D	D,E	E,F	D8,F,G	F,G	
100	C,D	D,E	D	E,F	D8,F,G	F,G		
220	D	D8,F	D8,F,G	F,G	F,G	G		
330	D8,F		F,G	F,G	G			
470	F	F,G	F,G	G				
1000	F,G	G						
1500	G							

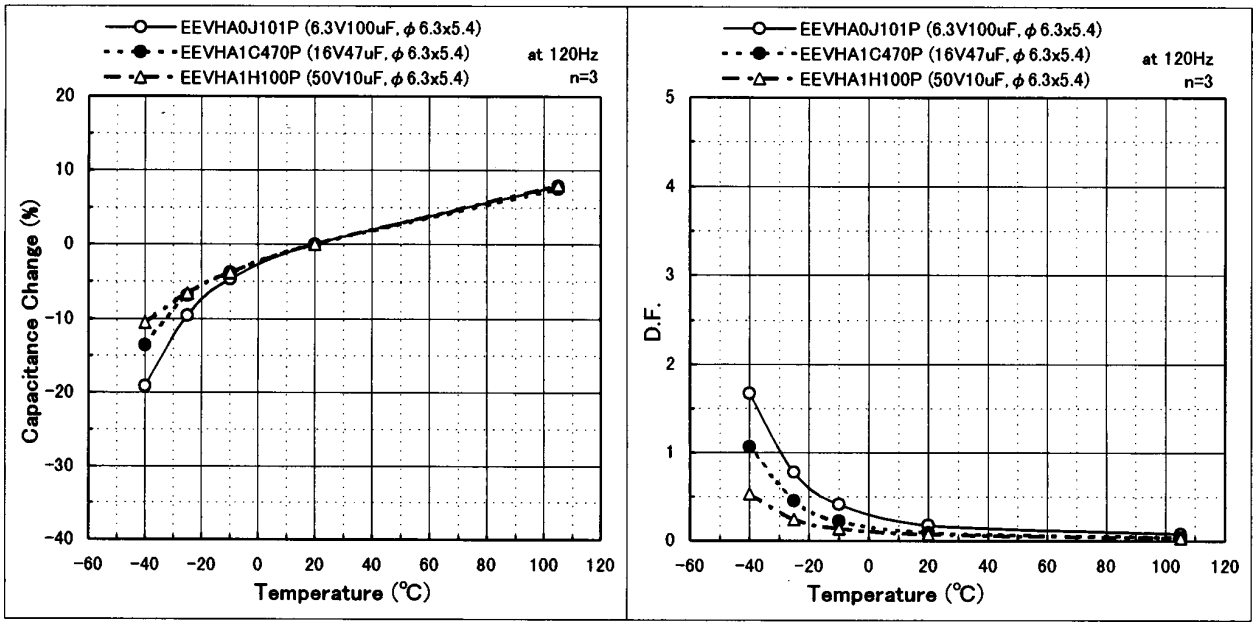
■ Standard Products

W.V. [V.DC]	Cap. [μF]	Part No.	tan δ	R.C. [mA rms]	Size [mm] D	L
6.3	22	EEVHA0J220R	0.30	29	4	5.4
	33	EEVHA0J330WR	0.35	29	4	5.4
	47	EEVHA0J470WR	0.35	36	4	5.4
		EEVHA0J470R	0.30	46	5	5.4
	100	EEVHA0J101WR	0.35	47	5	5.4
		EEVHA0J101P	0.30	71	6.3	5.4
	220	EEVHA0J221WP	0.35	74	6.3	5.4
	330	EEVHA0J331XP	0.30	105	6.3	7.9
		EEVHA0J331P	0.35	230	8	10.2
	470	EEVHA0J471UP	0.35	300	8	10.2
	1000	EEVHA0J102UP	0.35	300	8	10.2
		EEVHA0J102P	0.35	400	10	10.2
	1500	EEVHA0J152P	0.35	480	10	10.2
10	22	EEVHA1A220WR	0.30	28	4	5.4
	33	EEVHA1A330WR	0.30	29	4	5.4
		EEVHA1A330R	0.22	43	5	5.4
	47	EEVHA1A470WR	0.30	43	5	5.4
	100	EEVHA1A101WP	0.30	70	6.3	5.4
		EEVHA1A101P	0.26	110	8	6.2
	220	EEVHA1A221XP	0.22	105	6.3	7.9
		EEVHA1A221P	0.26	160	8	10.2
	470	EEVHA1A471UP	0.26	200	8	10.2
		EEVHA1A471P	0.26	270	10	10.2
	1000	EEVHA1A102P	0.26	580	10	10.2
16	10	EEVHA1C100R	0.16	28	4	5.4
	22	EEVHA1C220WR	0.26	28	4	5.4
		EEVHA1C220R	0.16	39	5	5.4
	33	EEVHA1C330WR	0.26	35	5	5.4
	47	EEVHA1C470WR	0.26	39	5	5.4
		EEVHA1C470P	0.16	70	6.3	5.4
	100	EEVHA1C101WP	0.26	70	6.3	5.4
	220	EEVHA1C221XP	0.16	105	6.3	7.9
		EEVHA1C221UP	0.20	150	8	10.2
		EEVHA1C221P	0.20	210	10	10.2
	330	EEVHA1C331UP	0.20	170	8	10.2
		EEVHA1C331P	0.20	230	10	10.2
	470	EEVHA1C471UP	0.20	190	8	10.2
		EEVHA1C471P	0.20	340	10	10.2
25	4.7	EEVHA1E4R7R	0.14	22	4	5.4
	10	EEVHA1E100WR	0.20	22	4	5.4
		EEVHA1E100R	0.14	28	5	5.4
	22	EEVHA1E220WR	0.20	35	5	5.4
		EEVHA1E220P	0.14	55	6.3	5.4
	33	EEVHA1E330WR	0.20	42	5	5.4
		EEVHA1E330P	0.14	65	6.3	5.4
	47	EEVHA1E470WP	0.20	70	6.3	5.4
		EEVHA1E470P	0.16	91	8	6.2
	100	EEVHA1E101UP	0.16	91	8	6.2
		EEVHA1E101P	0.16	130	8	10.2
	220	EEVHA1E221UP	0.16	160	8	10.2
		EEVHA1E221P	0.16	190	10	10.2

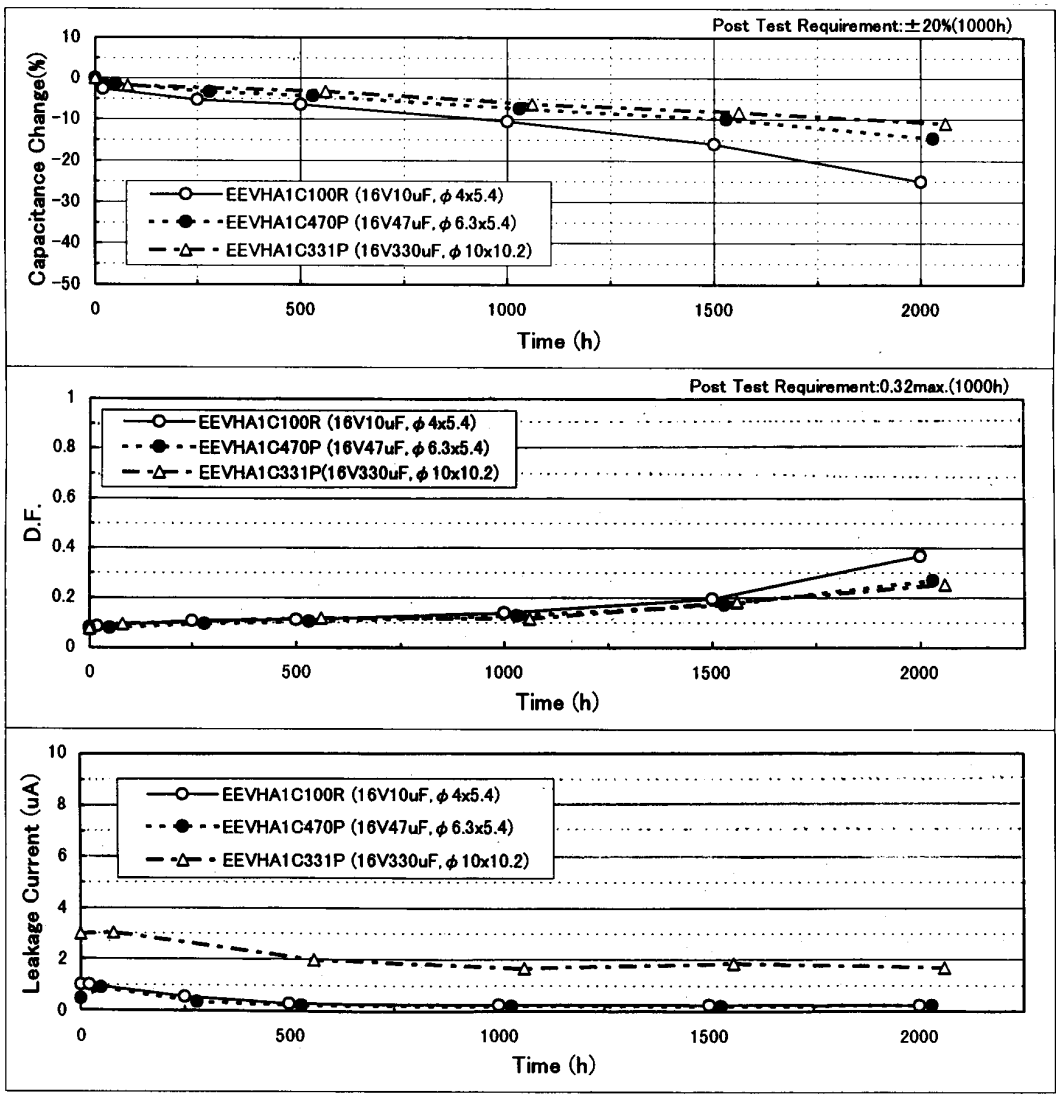
W.V. [V.DC]	Cap. [μF]	Part No.	tan δ	R.C. [mA rms]	Size [mm] D	L
25	330	EEVHA1E331UP	0.16	180	8	10.2
		EEVHA1E331P	0.16	340	10	10.2
	470	EEVHA1E471P	0.16	360	10	10.2
35	4.7	EEVHA1V4R7R	0.12	22	4	5.4
	10	EEVHA1V100WR	0.16	22	4	5.4
		EEVHA1V100R	0.12	30	5	5.4
	22	EEVHA1V220WR	0.16	35	5	5.4
		EEVHA1V220P	0.12	60	6.3	5.4
	33	EEVHA1V330WP	0.16	42	6.3	5.4
		EEVHA1V330P	0.14	84	8	6.2
	47	EEVHA1V470UP	0.14	84	8	6.2
		EEVHA1V470P	0.14	98	8	10.2
	100	EEVHA1V101XP	0.12	84	6.3	7.9
		EEVHA1V101UP	0.14	120	8	10.2
		EEVHA1V101P	0.14	160	10	10.2
	220	EEVHA1V221UP	0.14	170	8	10.2
		EEVHA1V221P	0.14	210	10	10.2
	330	EEVHA1V331P	0.14	250	10	10.2
50	0.1	EEVHA1HR10R	0.12	1	4	5.4
	0.22	EEVHA1HR22R	0.12	2	4	5.4
	0.33	EEVHA1HR33R	0.12	3	4	5.4
	0.47	EEVHA1HR47R	0.12	5	4	5.4
	1	EEVHA1H1R0R	0.12	10	4	5.4
	2.2	EEVHA1H2R2R	0.12	16	4	5.4
	3.3	EEVHA1H3R3R	0.12	16	4	5.4
	4.7	EEVHA1H4R7R	0.12	23	5	5.4
	10	EEVHA1H100P	0.12	35	6.3	5.4
	22	EEVHA1H220P	0.12	70	8	6.2
	33	EEVHA1H330XP	0.12	60	6.3	7.9
		EEVHA1H330UP	0.12	70	8	6.2
		EEVHA1H330P	0.12	91	8	10.2
	47	EEVHA1H470XP	0.12	63	6.3	7.9
		EEVHA1H470UP	0.12	95	8	10.2
		EEVHA1H470P	0.12	100	10	10.2
	100	EEVHA1H101UP	0.12	110	8	10.2
		EEVHA1H101P	0.12	120	10	10.2
	220	EEVHA1H221P	0.12	150	10	10.2
63	10	EEVHA1J100P	0.18	25	8	6.2
	22	EEVHA1J220UP	0.18	30	8	6.2
		EEVHA1J220P	0.18	30	8	10.2
	33	EEVHA1J330P	0.18	45	10	10.2
	47	EEVHA1J470UP	0.18	50	8	10.2
		EEVHA1J470P	0.18	50	10	10.2
100	3.3	EEVHA2A3R3P	0.18	30	8	6.2
	4.7	EEVHA2A4R7UP	0.18	30	8	6.2
		EEVHA2A4R7P	0.18	50	8	10.2
	10	EEVHA2A100P	0.18	55	8	10.2
	22	EEVHA2A220UP	0.18	55	8	10.2
		EEVHA2A220P	0.18	60	10	10.2
	33	EEVHA2A330P	0.18	65	10	10.2

tan δ = at 120Hz/+20°C, Ripple current = at 120Hz/+105°C

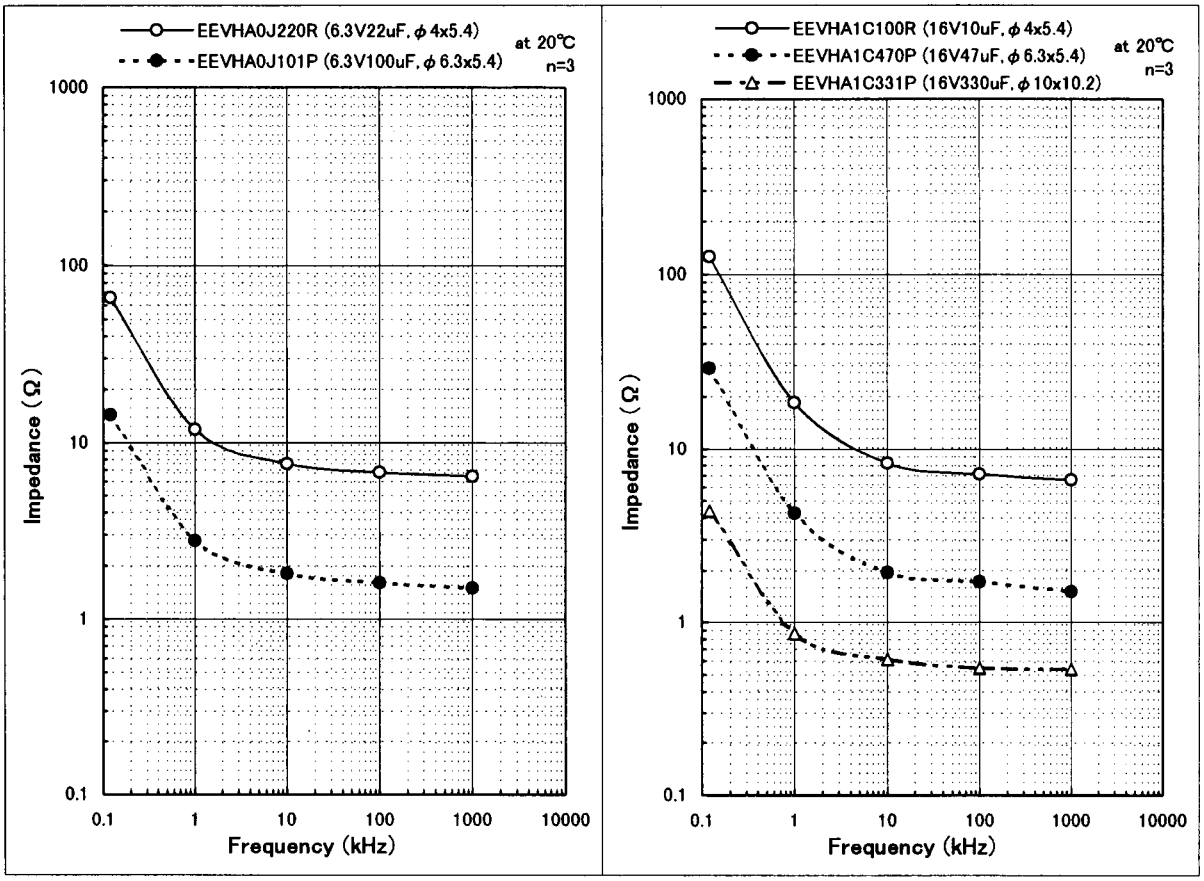
■ Temperature Characteristics Data



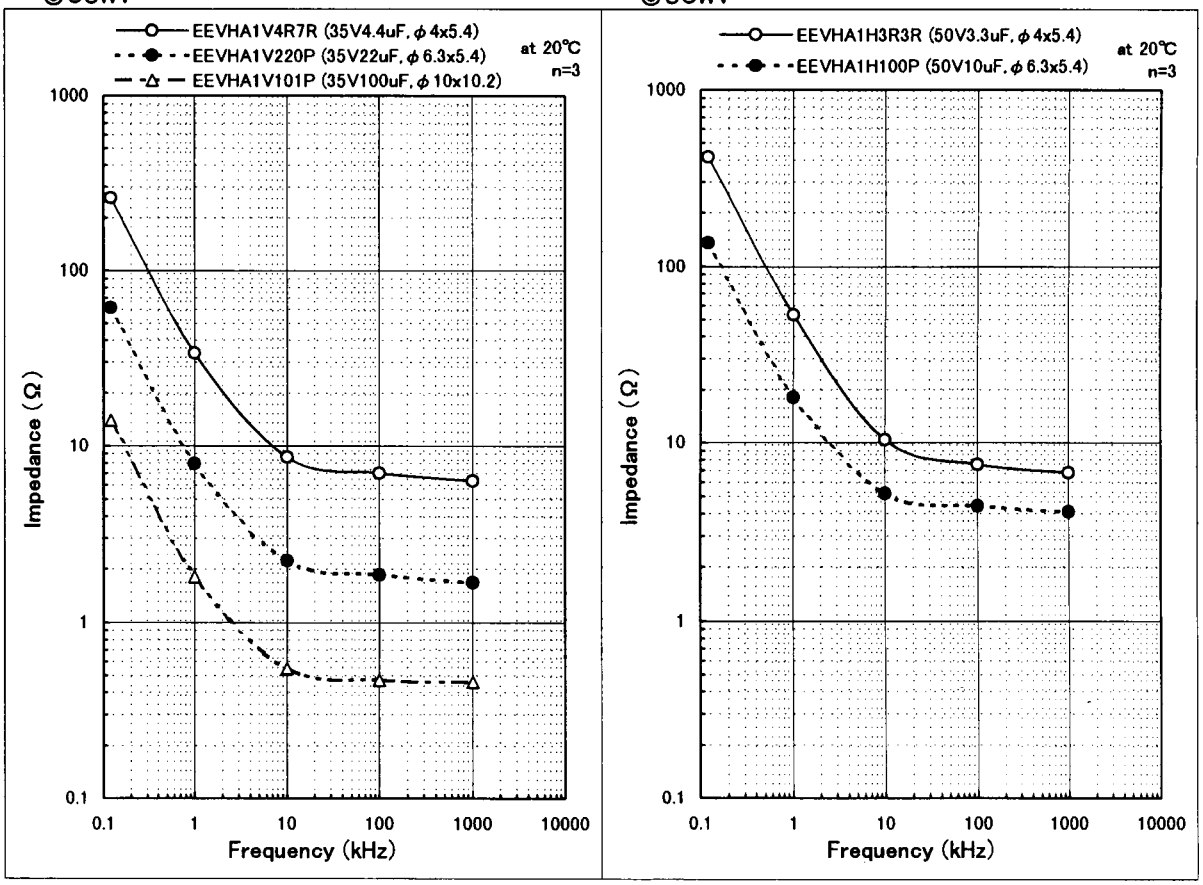
■ Load Life Data



■ Frequency Characteristics Data



◎35WV ◎50WV



■ Temperature Characteristics Data