



Surface Mount Type

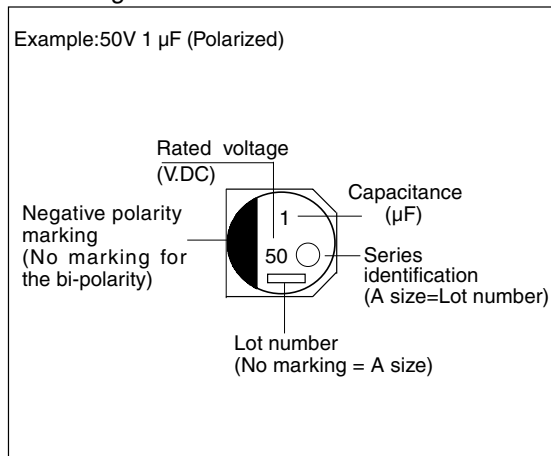
Series: S Type : V

- Features Endurance: 85°C 2000 h
5.4 mm (≦φ6.3) height, RoHS directive compliant (Parts No:EEE*)

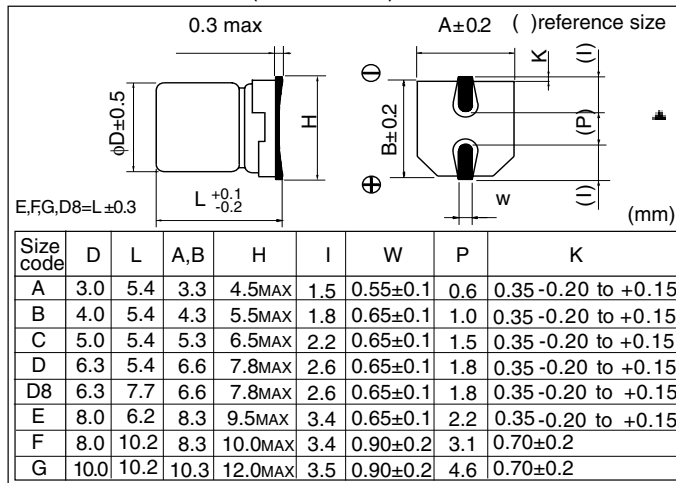
■ Specifications

Category temp. range	-40 to +85°C											
Rated W.V. Range	4 to 100 V .DC											
Nominal Cap. Range	0.1 to 1500 μF											
Capacitance Tolerance	±20 % (120Hz/+20°C)											
DC Leakage Current	I ≤ 0.01 CV or 3(μA) after 2 minutes (Bi-Polar I ≤ 0.02 CV or 6 (μA)) (Whichever is greater)											
tan δ	Please see the attached standard products list											
Characteristics at Low Temperature	W.V. (V)	4	6.3	10	16	25	35	50	63	100	(Impedance ratio at 120 Hz)	
	-25 / +20 °C	7	4	3	2	2	2	2	3	3		
	-40 / +20 °C	15	8	6	4	4	3	3	4	4		
Endurance	After applying rated working voltage for 2000 hours at +85±2°C and then being stabilized at +20°C, capacitors shall meet the following limits.											
	Capacitance change : ±20% of initial measured value										tan δ	≤200% of initial specified value
	Size code	Rated W.V.	Cap. change		DC leakage current							≤ initial specified value
	A(φ3)	4 to 50W.V.	±30%	Initial measured value for 1000 hours								
A(φ3) to D8(φ6.3)	4 W.V.											
	6.3 W.V.											
	≤ D(φ6.3)Miniature	≥ 10 W.V.	±20%									
Shelf Life	After storage for 1000 hours at +85±2°C with no voltage applied and then being stabilized at +20°C, capacitors shall meet the limits specified in Endurance. (With voltage treatment)											
Resistance to Soldering Heat	After reflow soldering (Refer to page 86 for recommended temperature profile) and then being stabilized at +20°C, capacitor shall meet the following limits.											
	Capacitance change	±10% of initial measured value										
	tan δ	≤ initial specified value										
	DC leakage current	≤ initial specified value										

■ Marking



■ Dimensions in mm (not to scale)



■ Case size

W.V.(V)	4 (0G)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)	63 (1J)	100 (2A)
Cap.(μF)	Polar-ized	Polar-ized	Bi-polar	Polar-ized	Bi-polar	Polar-ized	Bi-polar	Polar-ized	Bi-polar
0.1							A,B		
0.22							A,B	B	
0.33							A,B	B	
0.47							A,B	B	
1.0							A,B	B	
2.2						A	A,B	C	
3.3					B	A	B	C	E
4.7					B	A,B	C	D	F(E)
10					C	C(B)	D	D(C)	F(E)
22	A	B(A)	C	(B)	B	C(B)	D	D(C)	G(F)
33	B	(B)		C(B)	D	(C)	D	D(C)	
47	B	C(B)	D	(C)	D	D(C)	E(D)	F(E),D8	G
100	C	D(C)		D(C)	E(D)	(D)	E(D)	G(F),D8	
220	D	(D)		E,D8	F,D8	G(F)	G(F)	G	
330	(D)	E,D8		F	G(F)	G(F)	G		
470	D8	F		G(F)	G(F)				
1000		G(F)		G					
1500		G							

■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS: not compliant)	Reflow	Part No. (RoHS: compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
		Dia. (mm)	Length (mm)	Size Code	Ripple Current (120Hz) (+85°C) (mA)	tan δ (120Hz) (+20°C)	Endur- ance (hours)					
4	22	3	5.4	A	19	0.37	1000	ECEV0GS220SR	(1)	EEE0GS220SR	(4)	2000
	33	4	5.4	B	26	0.35	1000	ECEV0GA330SR	(1)	EEE0GA330SR	(4)	2000
	47	4	5.4	B	34	0.35	1000	ECEV0GA470SR	(1)	EEE0GA470SR	(4)	2000
	100	5	5.4	C	61	0.35	1000	ECEV0GA101SR	(1)	EEE0GA101SR	(4)	1000
	220	6.3	5.4	D	82	0.35	1000	ECEV0GA221SP	(1)	EEE0GA221SP	(4)	1000
	330	6.3	5.4	D	80	0.50	1000	ECEV0GA331WP	(1)	EEE0GA331WP	(4)	1000
	470	6.3	7.7	D8	200	0.35	2000	ECEV0GA471XP	(1)	EEE0GA471XP	(4)	900
6.3	22	3	5.4	A	20	0.35	1000	ECEV0JS220WR	(1)	EEE0JS220WR	(4)	2000
		4	5.4	B	29	0.26	2000	ECEV0JA220SR	(1)	EEE0JA220SR	(4)	2000
	33	4	5.4	B	22	0.35	1000	ECEV0JA330WR	(1)	EEE0JA330WR	(4)	2000
		4	5.4	B	36	0.35	1000	ECEV0JA470WR	(1)	EEE0JA470WR	(4)	2000
	47	5	5.4	C	46	0.26	2000	ECEV0JA470SR	(1)	EEE0JA470SR	(4)	1000
		5	5.4	C	47	0.35	1000	ECEV0JA101WR	(1)	EEE0JA101WR	(4)	1000
	100	6.3	5.4	D	71	0.26	2000	ECEV0JA101SP	(1)	EEE0JA101SP	(4)	1000
		6.3	5.4	D	74	0.35	1000	ECEV0JA221WP	(1)	EEE0JA221WP	(4)	1000
	330	6.3	7.7	D8	188	0.26	2000	ECEV0JA331XP	(1)	EEE0JA331XP	(4)	900
		8	6.2	E	300	0.35	2000	ECEV0JA331P	(2)	EEE0JA331P	(5)	1000
	470	8	10.2	F	380	0.35	2000	ECEV0JA471P	(2)	EEE0JA471P	(5)	500
1000	8	10.2	F	500	0.35	2000	ECEV0JA102UP	(2)	EEE0JA102UP	(5)	500	
	10	10.2	G	700	0.35	2000	ECEV0JA102P	(2)	EEE0JA102P	(5)	500	
1500	10	10.2	G	750	0.35	2000	ECEV0JA152P	(2)	EEE0JA152P	(5)	500	
10	22	4	5.4	B	28	0.30	1000	ECEV1AA220WR	(1)	EEE1AA220WR	(4)	2000
		4	5.4	B	29	0.30	1000	ECEV1AA330WR	(1)	EEE1AA330WR	(4)	2000
	33	5	5.4	C	43	0.20	2000	ECEV1AA330SR	(1)	EEE1AA330SR	(4)	1000
		5	5.4	C	47	0.30	1000	ECEV1AA470WR	(1)	EEE1AA470WR	(4)	1000
	100	5	5.4	C	50	0.30	1000	ECEV1AA101WR	(1)	EEE1AA101WR	(4)	1000
		6.3	5.4	D	70	0.26	2000	ECEV1AA101SP	(1)	EEE1AA101SP	(4)	1000
	220	6.3	7.7	D8	173	0.20	2000	ECEV1AA221XP	(1)	EEE1AA221XP	(4)	900
		8	6.2	E	250	0.26	2000	ECEV1AA221P	(2)	EEE1AA221P	(5)	1000
	330	8	10.2	F	390	0.26	2000	ECEV1AA331P	(2)	EEE1AA331P	(5)	500
	470	8	10.2	F	390	0.26	2000	ECEV1AA471UP	(2)	EEE1AA471UP	(5)	500
10		10.2	G	400	0.26	2000	ECEV1AA471P	(2)	EEE1AA471P	(5)	500	
1000	10	10.2	G	580	0.26	2000	ECEV1AA102P	(2)	EEE1AA102P	(5)	500	
16	10	3	5.4	A	20	0.18	1000	ECEV1CS100SR	(1)	EEE1CS100SR	(4)	2000
		4	5.4	B	28	0.16	2000	ECEV1CA100SR	(1)	EEE1CA100SR	(4)	2000
	22	4	5.4	B	28	0.26	1000	ECEV1CA220WR	(1)	EEE1CA220WR	(4)	2000
		5	5.4	C	39	0.16	2000	ECEV1CA220SR	(1)	EEE1CA220SR	(4)	1000
	33	5	5.4	C	35	0.26	1000	ECEV1CA330WR	(1)	EEE1CA330WR	(4)	1000
		5	5.4	C	39	0.26	1000	ECEV1CA470WR	(1)	EEE1CA470WR	(4)	1000
	47	6.3	5.4	D	70	0.16	2000	ECEV1CA470SP	(1)	EEE1CA470SP	(4)	1000
		6.3	5.4	D	70	0.26	1000	ECEV1CA101WP	(1)	EEE1CA101WP	(4)	1000
	100	8	6.2	E	200	0.20	2000	ECEV1CA101P	(2)	EEE1CA101P	(5)	1000
		6.3	7.7	D8	162	0.16	2000	ECEV1CA221XP	(1)	EEE1CA221XP	(4)	900
	220	8	10.2	F	280	0.20	2000	ECEV1CA221P	(2)	EEE1CA221P	(5)	500

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS: not compliant)	Reflow	Part No. (RoHS: compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
		Dia. (mm)	Length (mm)	Size Code	Ripple Current (120Hz) (+85°C) (mA)	tan δ (120Hz) (+20°C)	Endur- ance (hours)					
16	330	8	10.2	F	320	0.20	2000	ECEV1CA331UP	(2)	EEE1CA331UP	(5)	500
		10	10.2	G	380	0.20	2000	ECEV1CA331P	(2)	EEE1CA331P	(5)	500
	470	8	10.2	F	350	0.20	2000	ECEV1CA471UP	(2)	EEE1CA471UP	(5)	500
		10	10.2	G	420	0.20	2000	ECEV1CA471P	(2)	EEE1CA471P	(5)	500
25	4.7	3	5.4	A	12	0.16	1000	ECEV1ES4R7SR	(1)	EEE1ES4R7SR	(4)	2000
		4	5.4	B	22	0.14	2000	ECEV1EA4R7SR	(1)	EEE1EA4R7SR	(4)	2000
	10	4	5.4	B	22	0.20	1000	ECEV1EA100WR	(1)	EEE1EA100WR	(4)	2000
		5	5.4	C	28	0.14	2000	ECEV1EA100SR	(1)	EEE1EA100SR	(4)	1000
	22	5	5.4	C	35	0.20	1000	ECEV1EA220WR	(1)	EEE1EA220WR	(4)	1000
		6.3	5.4	D	55	0.14	2000	ECEV1EA220SP	(1)	EEE1EA220SP	(4)	1000
	33	5	5.4	C	42	0.20	1000	ECEV1EA330WR	(1)	EEE1EA330WR	(4)	1000
		6.3	5.4	D	65	0.14	2000	ECEV1EA330SP	(1)	EEE1EA330SP	(4)	1000
	47	6.3	5.4	D	70	0.20	1000	ECEV1EA470WP	(1)	EEE1EA470WP	(4)	1000
	100	6.3	7.7	D8	143	0.14	2000	ECEV1EA101XP	(1)	EEE1EA101XP	(4)	900
		8	6.2	E	91	0.16	2000	ECEV1EA101UP	(2)	EEE1EA101UP	(5)	1000
		8	10.2	F	180	0.16	2000	ECEV1EA101P	(2)	EEE1EA101P	(5)	500
	220	8	10.2	F	230	0.16	2000	ECEV1EA221UP	(2)	EEE1EA221UP	(5)	500
		10	10.2	G	310	0.16	2000	ECEV1EA221P	(2)	EEE1EA221P	(5)	500
	330	8	10.2	F	270	0.16	2000	ECEV1EA331UP	(2)	EEE1EA331UP	(5)	500
		10	10.2	G	340	0.16	2000	ECEV1EA331P	(2)	EEE1EA331P	(5)	500
470	10	10.2	G	380	0.16	2000	ECEV1EA471P	(2)	EEE1EA471P	(5)	500	
35	2.2	3	5.4	A	8	0.14	1000	ECEV1VS2R2SR	(1)	EEE1VS2R2SR	(4)	2000
	3.3	3	5.4	A	10	0.14	1000	ECEV1VS3R3SR	(1)	EEE1VS3R3SR	(4)	2000
	4.7	4	5.4	B	22	0.12	2000	ECEV1VA4R7SR	(1)	EEE1VA4R7SR	(4)	2000
	10	4	5.4	B	22	0.16	1000	ECEV1VA100WR	(1)	EEE1VA100WR	(4)	2000
		5	5.4	C	30	0.12	2000	ECEV1VA100SR	(1)	EEE1VA100SR	(4)	1000
	22	5	5.4	C	36	0.16	1000	ECEV1VA220WR	(1)	EEE1VA220WR	(4)	1000
		6.3	5.4	D	60	0.12	2000	ECEV1VA220SP	(1)	EEE1VA220SP	(4)	1000
	33	6.3	5.4	D	60	0.16	1000	ECEV1VA330WP	(1)	EEE1VA330WP	(4)	1000
		8	6.2	E	130	0.14	2000	ECEV1VA330P	(2)	EEE1VA330P	(5)	1000
	47	6.3	5.4	D	70	0.16	1000	ECEV1VA470WP	(1)	EEE1VA470WP	(4)	1000
		8	6.2	E	165	0.14	2000	ECEV1VA470P	(2)	EEE1VA470P	(5)	1000
	100	6.3	7.7	D8	132	0.12	2000	ECEV1VA101XP	(1)	EEE1VA101XP	(4)	900
		8	10.2	F	140	0.14	2000	ECEV1VA101UP	(2)	EEE1VA101UP	(5)	500
		10	10.2	G	210	0.14	2000	ECEV1VA101P	(2)	EEE1VA101P	(5)	500
	220	8	10.2	F	200	0.14	2000	ECEV1VA221UP	(2)	EEE1VA221UP	(5)	500
		10	10.2	G	310	0.14	2000	ECEV1VA221P	(2)	EEE1VA221P	(5)	500
330	10	10.2	G	350	0.14	2000	ECEV1VA331P	(2)	EEE1VA331P	(5)	500	
50	0.1	3	5.4	A	1	0.14	1000	ECEV1HS0R1SR	(1)	EEE1HS0R1SR	(4)	2000
		4	5.4	B	1	0.12	2000	ECEV1HA0R1SR	(1)	EEE1HA0R1SR	(4)	2000
	0.22	3	5.4	A	2	0.14	1000	ECEV1HSR22SR	(1)	EEE1HSR22SR	(4)	2000
		4	5.4	B	2	0.12	2000	ECEV1HAR22SR	(1)	EEE1HAR22SR	(4)	2000
	0.33	3	5.4	A	3	0.14	1000	ECEV1HSR33SR	(1)	EEE1HSR33SR	(4)	2000
		4	5.4	B	3	0.12	2000	ECEV1HAR33SR	(1)	EEE1HAR33SR	(4)	2000

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

■ Standard Products

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS: not compliant)		Part No. (RoHS: compliant)		Min. Packaging Q'ty Taping (pcs)
		Dia. (mm)	Length (mm)	Size Code	Ripple Current (120Hz) (+85°C) (mA)	tan δ (120Hz) (+20°C)	Endur- ance (hours)		Reflow		Reflow	
50	0.47	3	5.4	A	5	0.14	1000	ECEV1HSR47SR	(1)	EEE1HSR47SR	(4)	2000
		4	5.4	B	5	0.12	2000	ECEV1HAR47SR	(1)	EEE1HAR47SR	(4)	2000
	1	3	5.4	A	8	0.14	1000	ECEV1HS010SR	(1)	EEE1HS010SR	(4)	2000
		4	5.4	B	10	0.12	2000	ECEV1HA010SR	(1)	EEE1HA010SR	(4)	2000
	2.2	3	5.4	A	10	0.14	1000	ECEV1HS2R2SR	(1)	EEE1HS2R2SR	(4)	2000
		4	5.4	B	16	0.12	2000	ECEV1HA2R2SR	(1)	EEE1HA2R2SR	(4)	2000
	3.3	4	5.4	B	16	0.12	2000	ECEV1HA3R3SR	(1)	EEE1HA3R3SR	(4)	2000
	4.7	4	5.4	B	18	0.14	1000	ECEV1HA4R7WR	(1)	EEE1HA4R7WR	(4)	2000
		5	5.4	C	23	0.12	2000	ECEV1HA4R7SR	(1)	EEE1HA4R7SR	(4)	1000
	10	5	5.4	C	27	0.14	1000	ECEV1HA100WR	(1)	EEE1HA100WR	(4)	1000
		6.3	5.4	D	35	0.12	2000	ECEV1HA100SP	(1)	EEE1HA100SP	(4)	1000
	22	6.3	5.4	D	40	0.14	1000	ECEV1HA220WP	(1)	EEE1HA220WP	(4)	1000
		8	6.2	E	120	0.12	2000	ECEV1HA220P	(2)	EEE1HA220P	(5)	1000
	33	6.3	7.7	D8	65	0.12	2000	ECEV1HA330XP	(1)	EEE1HA330XP	(4)	900
		8	6.2	E	65	0.12	2000	ECEV1HA330UP	(2)	EEE1HA330UP	(5)	1000
		8	10.2	F	110	0.12	2000	ECEV1HA330P	(2)	EEE1HA330P	(5)	500
	47	6.3	7.7	D8	105	0.12	2000	ECEV1HA470XP	(1)	EEE1HA470XP	(4)	900
		8	10.2	F	110	0.12	2000	ECEV1HA470UP	(2)	EEE1HA470UP	(5)	500
		10	10.2	G	130	0.12	2000	ECEV1HA470P	(2)	EEE1HA470P	(5)	500
	100	8	10.2	F	200	0.12	2000	ECEV1HA101UP	(2)	EEE1HA101UP	(5)	500
10		10.2	G	250	0.12	2000	ECEV1HA101P	(2)	EEE1HA101P	(5)	500	
220	10	10.2	G	300	0.12	2000	ECEV1HA221P	(2)	EEE1HA221P	(5)	500	
63	22	8	6.2	E	35	0.18	2000	ECEV1JA220UP	(2)	EEE1JA220UP	(5)	1000
		8	10.2	F	40	0.18	2000	ECEV1JA220P	(2)	EEE1JA220P	(5)	500
	33	8	10.2	F	45	0.18	2000	ECEV1JA330P	(2)	EEE1JA330P	(5)	500
	47	8	10.2	F	45	0.18	2000	ECEV1JA470UP	(2)	EEE1JA470UP	(5)	500
		10	10.2	G	50	0.18	2000	ECEV1JA470P	(2)	EEE1JA470P	(5)	500
100	10	10.2	G	60	0.18	2000	ECEV1JA101P	(2)	EEE1JA101P	(5)	500	
100	3.3	8	6.2	E	50	0.18	2000	ECEV2AA3R3P	(2)	EEE2AA3R3P	(5)	1000
		8	6.2	E	50	0.18	2000	ECEV2AA4R7UP	(2)	EEE2AA4R7UP	(5)	1000
	4.7	8	10.2	F	80	0.18	2000	ECEV2AA4R7P	(2)	EEE2AA4R7P	(5)	500
		8	6.2	E	50	0.18	2000	ECEV2AA100UP	(2)	EEE2AA100UP	(5)	1000
	10	8	10.2	F	85	0.18	2000	ECEV2AA100P	(2)	EEE2AA100P	(5)	500
		8	10.2	F	70	0.18	2000	ECEV2AA220UP	(2)	EEE2AA220UP	(5)	500
	22	10	10.2	G	85	0.18	2000	ECEV2AA220P	(2)	EEE2AA220P	(5)	500
		33	10	10.2	G	90	0.18	2000	ECEV2AA330P	(2)	EEE2AA330P	(5)

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

■ Standard Products(Bi-polar)

W.V. (V)	Cap. (±20%) (μF)	Case size			Specification			Part No. (RoHS: not compliant)	Reflow	Part No. (RoHS: compliant)	Reflow	Min. Packaging Q'ty Taping (pcs)
		Dia. (mm)	Length (mm)	Size Code	Ripple Current (120Hz) (+85°C) (mA)	tan δ (120Hz) (+20°C)	Endur- ance (hours)					
6.3	22	5	5.4	C	29	0.52	2000	ECEV0JA220NR	(1)	EEE0JA220NR	(4)	1000
	47	6.3	5.4	D	46	0.52	2000	ECEV0JA470NP	(1)	EEE0JA470NP	(4)	1000
10	10	4	5.4	B	25	0.40	2000	ECEV1AA100NR	(1)	EEE1AA100NR	(4)	2000
	33	6.3	5.4	D	43	0.40	2000	ECEV1AA330NP	(1)	EEE1AA330NP	(4)	1000
16	4.7	4	5.4	B	20	0.32	2000	ECEV1CA4R7NR	(1)	EEE1CA4R7NR	(4)	2000
	10	5	5.4	C	25	0.32	2000	ECEV1CA100NR	(1)	EEE1CA100NR	(4)	1000
	22	6.3	5.4	D	39	0.32	2000	ECEV1CA220NP	(1)	EEE1CA220NP	(4)	1000
25	3.3	4.0	5.4	B	12	0.28	2000	ECEV1EA3R3NR	(1)	EEE1EA3R3NR	(4)	2000
	4.7	5	5.4	C	21	0.28	2000	ECEV1EA4R7NR	(1)	EEE1EA4R7NR	(4)	1000
	10	6.3	5.4	D	28	0.28	2000	ECEV1EA100NP	(1)	EEE1EA100NP	(4)	1000
35	2.2	4	5.4	B	12	0.24	2000	ECEV1VA2R2NR	(1)	EEE1VA2R2NR	(4)	2000
	4.7	5	5.4	C	22	0.24	2000	ECEV1VA4R7NR	(1)	EEE1VA4R7NR	(4)	1000
	10	6.3	5.4	D	30	0.24	2000	ECEV1VA100NP	(1)	EEE1VA100NP	(4)	1000
50	0.22	4	5.4	B	2	0.24	2000	ECEV1HAR22NR	(1)	EEE1HAR22NR	(4)	2000
	0.33	4	5.4	B	3	0.24	2000	ECEV1HAR33NR	(1)	EEE1HAR33NR	(4)	2000
	0.47	4	5.4	B	5	0.24	2000	ECEV1HAR47NR	(1)	EEE1HAR47NR	(4)	2000
	1	4	5.4	B	10	0.24	2000	ECEV1HA010NR	(1)	EEE1HA010NR	(4)	2000
	2.2	5	5.4	C	16	0.24	2000	ECEV1HA2R2NR	(1)	EEE1HA2R2NR	(4)	1000
	3.3	5	5.4	C	21	0.24	2000	EEVNZ1H3R3R	(1)	EEE1H3R3NR	(4)	1000
	4.7	6.3	5.4	D	31	0.24	2000	ECEV1HA4R7NP	(1)	EEE1HA4R7NP	(4)	1000

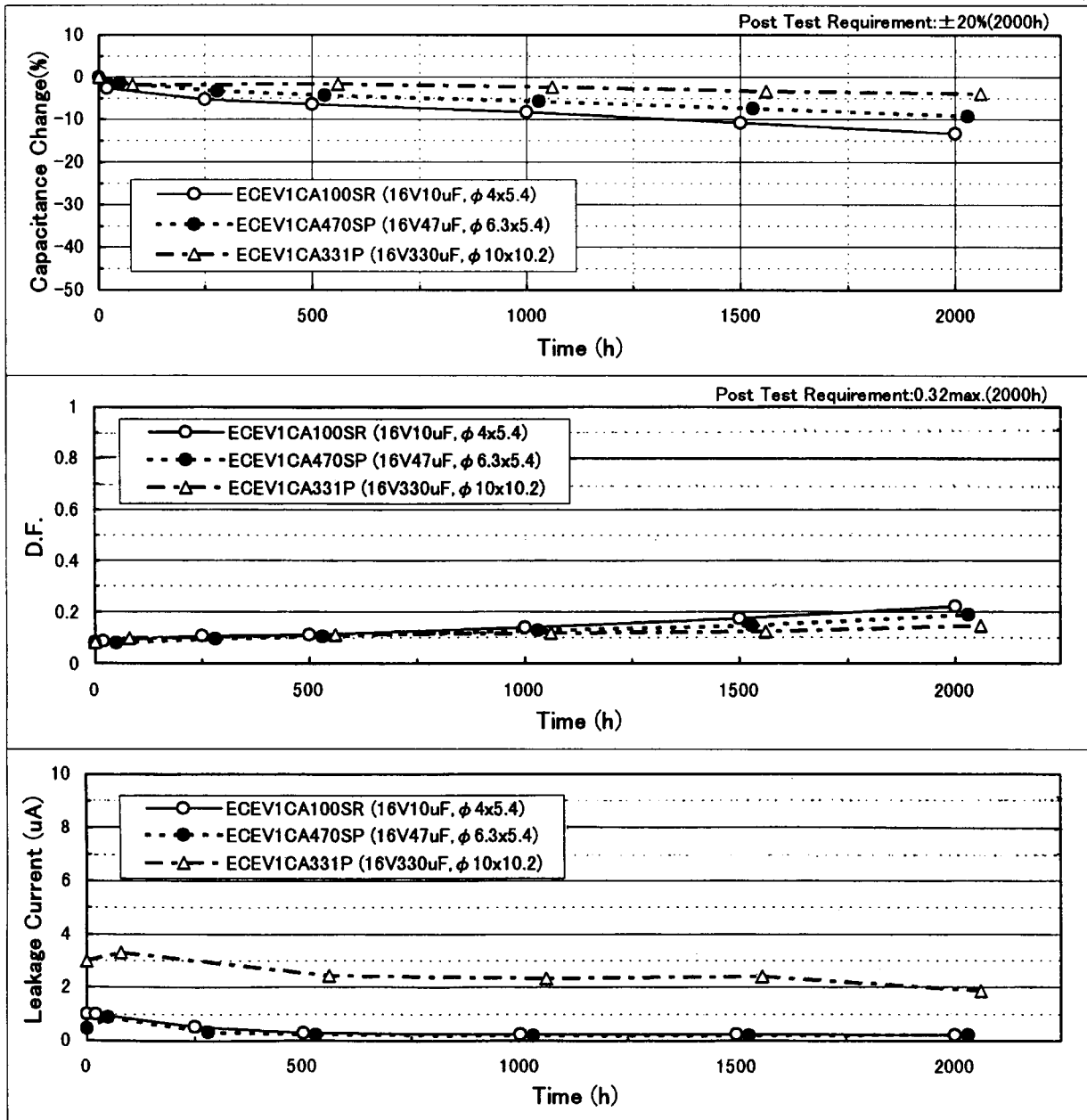
An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

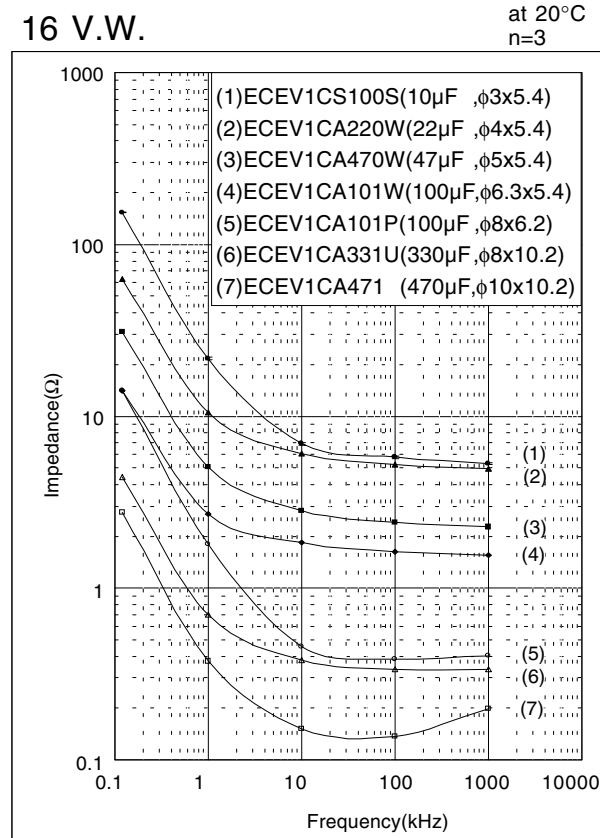
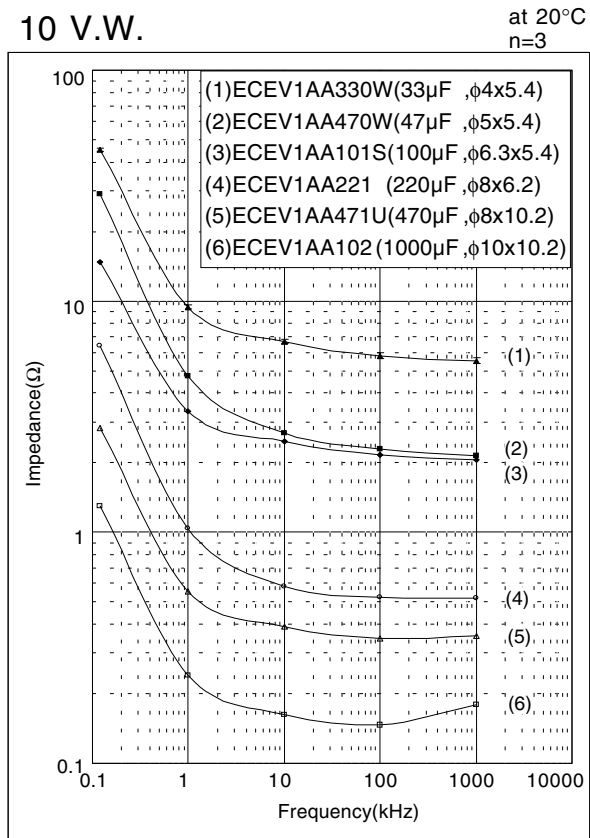
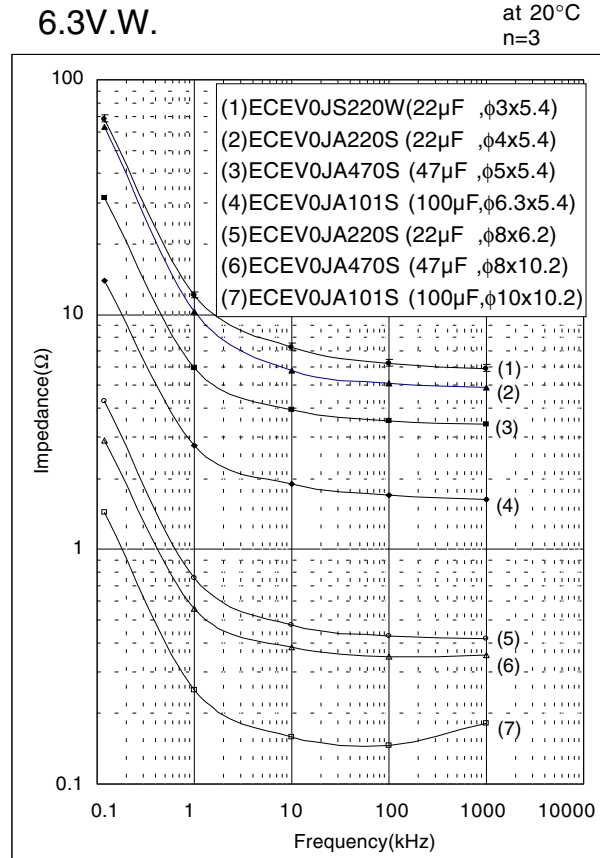
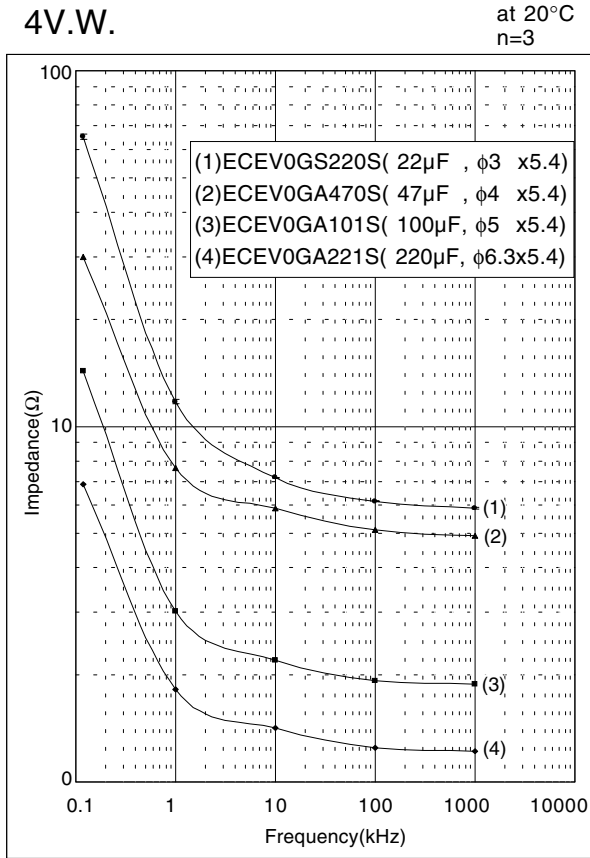
■ Frequency Correction Factor of Rated Ripple Current

	Frequency (Hz)			
	50,60	120	1k	10k~
coefficient	0.70	1.0	1.3	1.7

■ Endurance

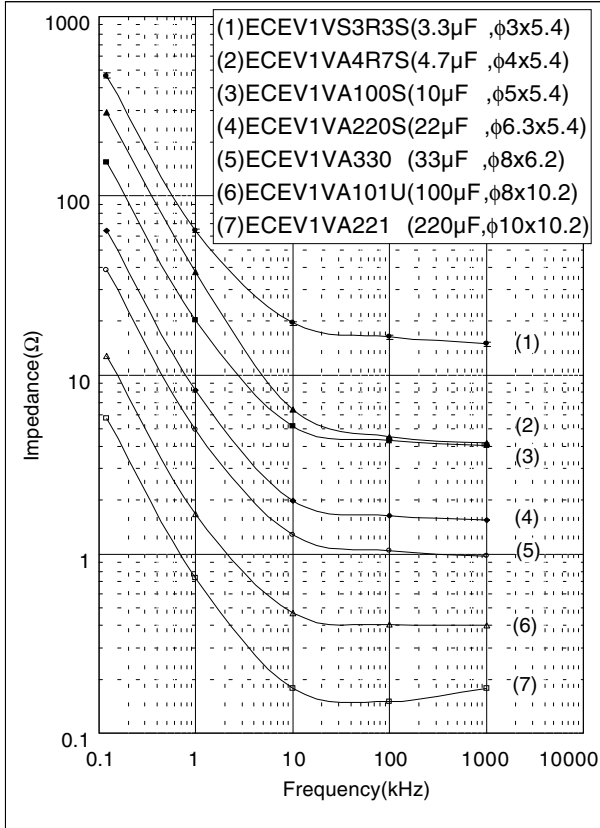


Frequency Characteristics

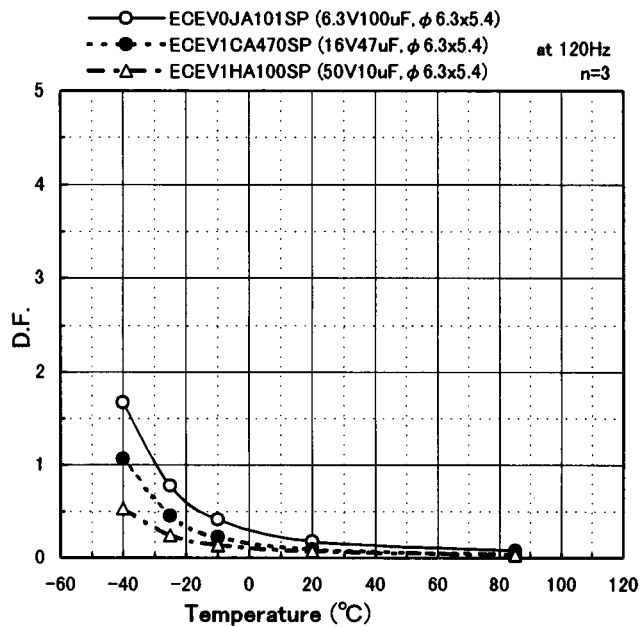
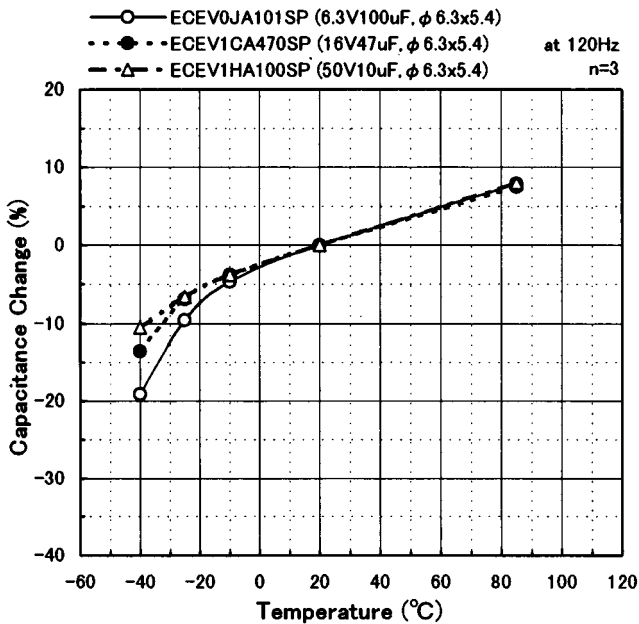


35 V.W.

at 20°C
n=3

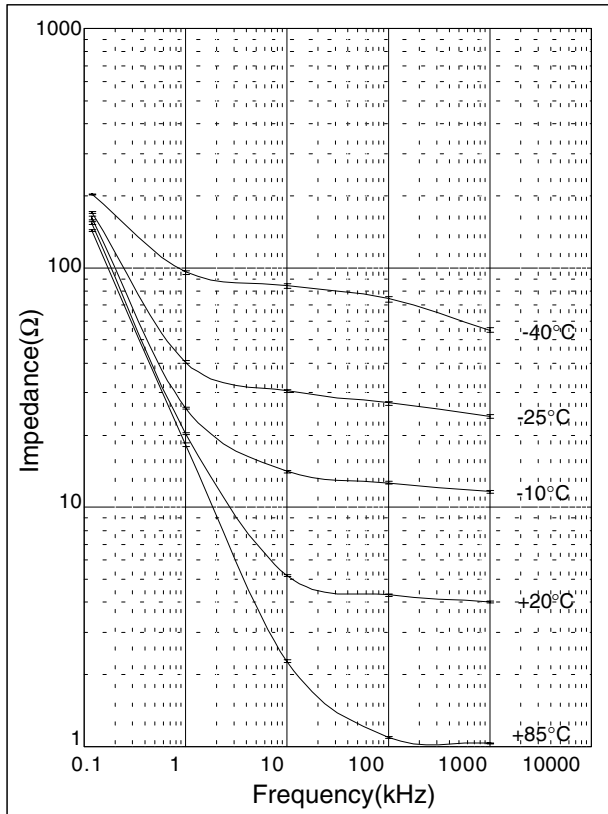


Temperature Characteristics

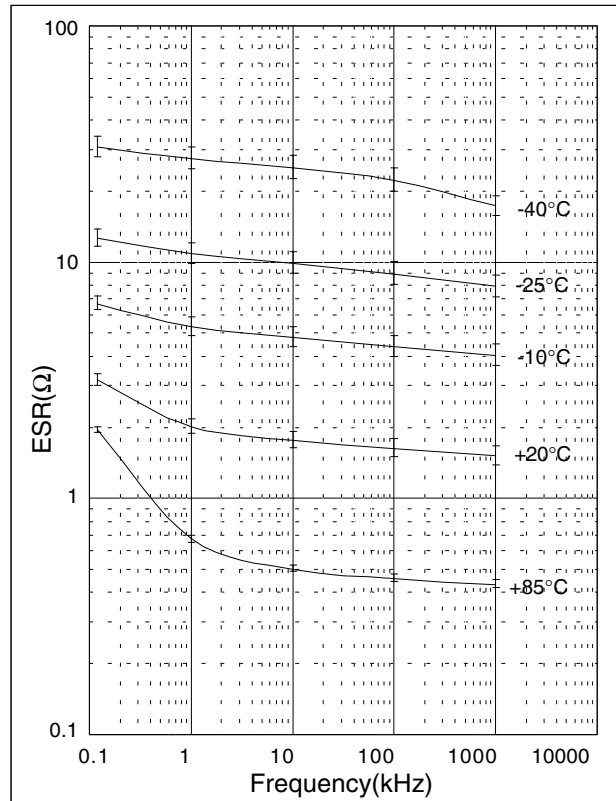
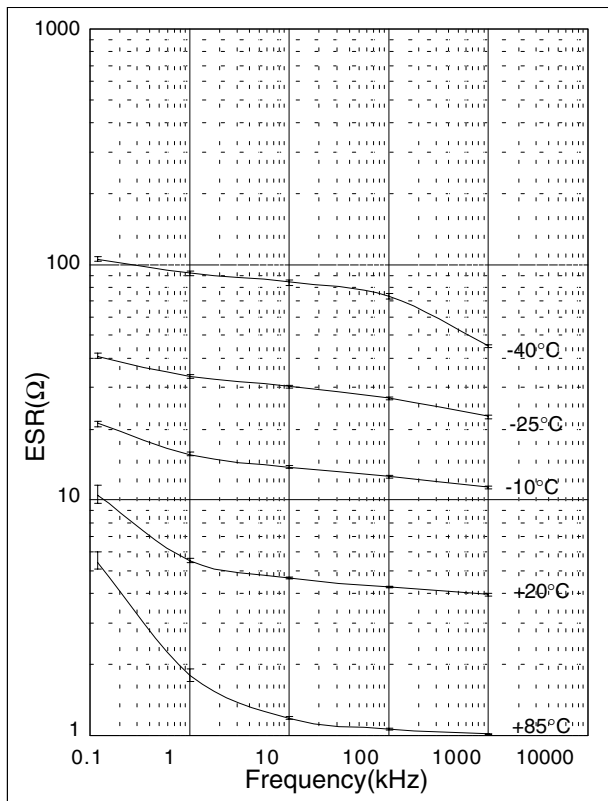
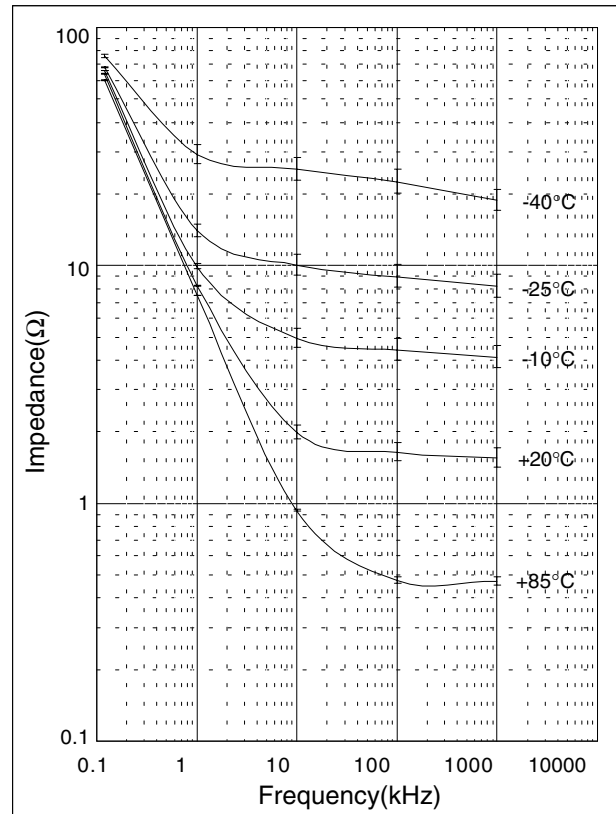


Temperature Characteristics

Parts No.; ECEV1VA100SR(35V 10 μ F)
(ϕ 5 X 5.4) n=3



Parts No.; ECEV1VA220SP(35V 22 μ F)
(ϕ 6.3 X 5.4) n=3



■ Temperature Characteristics

Parts No.:ECEV1EA101P(25V 100 μ F)
 (ϕ 8 X 10.2) n=3

