Surface Mount Type

Series: **S** Type: **V**

Features

- Endurance : 85 °C 2000 h
- Vibration-proof product is available upon request. (φ8 mm and larger)
- RoHS compliant

Specifications

Category temp. range	−40 ℃ to +85 ℃										
Rated voltage range	4 V.DC to 100 V.DC										
Capacitance range	1 μF to 1500 μF										
Capacitance tolerance	±20 % (120 Hz/+20℃)										
Leakage cur rent	I ≦ 0.01 CV or 3 (μA) (Bi-Polar I ≦ 0.02 CV or 6 (μA)) After 2 minutes (Whichever is greater)										
Dissipation factor (tan δ)	Please see the attached characteristics list										
Characteristics at low temperature	V.DC	4	6.3	10	16	25	35	50	63	100	(Impedance ratio at 120 Hz)
	Z(-25 °C)/Z(+20 °C)	7	4	3	2	2	2	2	3	3	
	Z(-40 °C)/Z(+20 °C)	15	8	6	4	4	3	3	4	4	

Endurance

After applying rated working voltage for 2000 h (Bi-polar:1000 h for each polarity) at +85 °C±2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits.

Capacitance change	Within ±20 % of the initial value		
	Size code	Rated voltage	Cap. Change
	B(φ4) to D, D8(φ6.3)	4 V.DC	1000 hours ±30 %
	≦ D(φ6.3) Miniature	6.3 V.DC	
		≧ 10 V.DC	1000 hours ±20 %
tan δ	≦200 % of the initial limit		
DC leakege current	Within the initial limit		

Shelf life

After storage for 1000 h at +85 °C±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 and then being stabilized at +20 °C, capacitors shall meet the following limits.

Capacitance change	Within ±10 % of the initial value
tan δ	Within the initial limit
DC leakege current	Within the initial limit

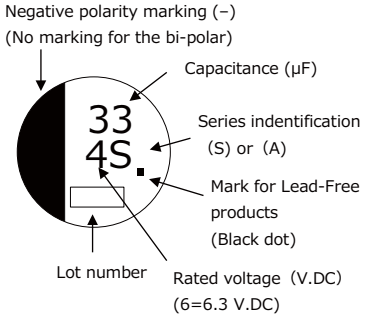
AEC-Q200	AEC-Q200 compliant

Frequency correction factor for ripple current

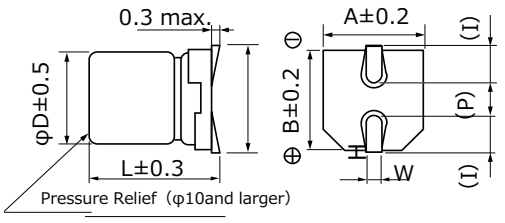
Frequency (Hz)	50, 60	120	1 k	10 k to
Correction factor	0.70	1.00	1.30	1.70

Marking

Example : 4 V.DC 33 μF
Marking color : BLACK



Dimensions



( )Reference size

Unit : mm

Size code	D	L	A,B	H	I	W	P	K
B	4.0	5.4 $^{+0.1}_{-0.2}$	4.3	5.5 max.	1.8	0.65±0.1	1.0	0.35 $^{+0.15}_{-0.20}$
C	5.0	5.4 $^{+0.1}_{-0.2}$	5.3	6.5 max.	2.2	0.65±0.1	1.5	0.35 $^{+0.15}_{-0.20}$
D	6.3	5.4 $^{+0.1}_{-0.2}$	6.6	7.8 max.	2.6	0.65±0.1	1.8	0.35 $^{+0.15}_{-0.20}$
D8	6.3	7.7±0.3	6.6	7.8 max.	2.6	0.65±0.1	1.8	0.35 $^{+0.15}_{-0.20}$
E	8.0	6.2±0.3	8.3	9.5 max.	3.4	0.65±0.1	2.2	0.35 $^{+0.15}_{-0.20}$
F	8.0	10.2±0.3	8.3	10.0 max.	3.4	0.90±0.2	3.1	0.70±0.2
G	10.0	10.2±0.3	10.3	12.0 max.	3.5	0.90±0.2	4.6	0.70±0.2

Characteristics list

Rated voltage (V.DC)	Capacitance (±20 %) (μF)	Case size (mm) φD	Case size (mm) L	Size code *1	Specification Ripple current *2 (mA r.m.s.)	Specification tan δ *3	Specification Endurance (hours)	Part number	Reflow	Min. Packaging Q'ty Taping (pcs)
4	33	4.0	5.4	B	26	0.35	1000	EEE0GA330SR	(1)	2000
	47	4.0	5.4	B	34	0.35	1000	EEE0GA470SR	(1)	2000
	100	5.0	5.4	C	61	0.35	1000	EEE0GA101SR	(1)	1000
	220	6.3	5.4	D	82	0.35	1000	EEE0GA221SP	(1)	1000
	330	6.3	5.4	(D)	80	0.50	1000	EEE0GA331WP	(1)	1000
	470	6.3	7.7	D8	200	0.35	1000	EEE0GA471XP	(1)	900
6.3	22	4.0	5.4	B	29	0.26	2000	EEE0JA220SR	(1)	2000
	33	4.0	5.4	(B)	22	0.35	1000	EEE0JA330WR	(1)	2000
	47	4.0	5.4	(B)	36	0.35	1000	EEE0JA470WR	(1)	2000
		5.0	5.4	C	46	0.26	2000	EEE0JA470SR	(1)	1000
	100	5.0	5.4	(C)	47	0.35	1000	EEE0JA101WR	(1)	1000
		6.3	5.4	D	71	0.26	2000	EEE0JA101SP	(1)	1000
	220	6.3	5.4	(D)	74	0.35	1000	EEE0JA221WP	(1)	1000
	330	6.3	7.7	D8	188	0.26	2000	EEE0JA331XP	(1)	900
		8.0	6.2	E	300	0.35	2000	EEE0JA331P	(2)	1000
	470	8.0	10.2	F	380	0.35	2000	EEE0JA471P	(2)	500
	1000	8.0	10.2	(F)	500	0.35	2000	EEE0JA102UP	(2)	500
		10.0	10.2	G	700	0.35	2000	EEE0JA102P	(2)	500
	1500	10.0	10.2	G	750	0.35	2000	EEE0JA152P	(2)	500
10	22	4.0	5.4	(B)	28	0.30	1000	EEE1AA220WR	(1)	2000
	33	4.0	5.4	(B)	29	0.30	1000	EEE1AA330WR	(1)	2000
		5.0	5.4	C	43	0.20	2000	EEE1AA330SR	(1)	1000
	47	5.0	5.4	(C)	43	0.30	1000	EEE1AA470WR	(1)	1000
	100	5.0	5.4	(C)	50	0.30	1000	EEE1AA101WR	(1)	1000
		6.3	5.4	D	70	0.26	2000	EEE1AA101SP	(1)	1000
	220	6.3	7.7	D8	173	0.20	2000	EEE1AA221XP	(1)	900
		8.0	6.2	E	250	0.26	2000	EEE1AA221P	(2)	1000
	330	8.0	10.2	F	390	0.26	2000	EEE1AA331P	(2)	500
	470	8.0	10.2	(F)	390	0.26	2000	EEE1AA471UP	(2)	500
		10.0	10.2	G	400	0.26	2000	EEE1AA471P	(2)	500
	1000	10.0	10.2	G	580	0.26	2000	EEE1AA102P	(2)	500
16	10	4.0	5.4	B	28	0.16	2000	EEE1CA100SR	(1)	2000
	22	4.0	5.4	(B)	28	0.26	1000	EEE1CA220WR	(1)	2000
		5.0	5.4	C	39	0.16	2000	EEE1CA220SR	(1)	1000
	33	5.0	5.4	(C)	35	0.26	1000	EEE1CA330WR	(1)	1000
	47	5.0	5.4	(C)	39	0.26	1000	EEE1CA470WR	(1)	1000
		6.3	5.4	D	70	0.16	2000	EEE1CA470SP	(1)	1000
	100	6.3	5.4	(D)	70	0.26	1000	EEE1CA101WP	(1)	1000
		8.0	6.2	E	200	0.20	2000	EEE1CA101P	(2)	1000
	220	6.3	7.7	D8	162	0.16	2000	EEE1CA221XP	(1)	900
		8.0	6.2	E	200	0.20	2000	EEE1CA221UP	(2)	1000
		8.0	10.2	F	280	0.20	2000	EEE1CA221P	(2)	500
	330	8.0	10.2	(F)	320	0.20	2000	EEE1CA331UP	(2)	500
		10.0	10.2	G	380	0.20	2000	EEE1CA331P	(2)	500
	470	8.0	10.2	(F)	350	0.20	2000	EEE1CA471UP	(2)	500
		10.0	10.2	G	420	0.20	2000	EEE1CA471P	(2)	500

*1: Size code( ) : Miniaturization product
*2: Ripple current (120 Hz / +85 ℃)
*3: tanδ (120 Hz / +20 ℃)
・Please refer to the page of “Refl ow Profi le” and “The Taping Dimensions”.
・When requesting vibration-proof product, please put the last “V” instead to “P”

Characteristics list

Rated voltage (V.DC)	Capacitance (±20 %) (μF)	Case size (mm)		Size code *1	Specification			Part number	Reflow	Min. Packaging Q'ty
		φD	L		Ripple current *2 (mA r.m.s.)	tan δ *3	Endurance (hours)			Taping (pcs)
25	4.7	4.0	5.4	B	22	0.14	2000	EEE1EA4R7SR	(1)	2000
	10	4.0	5.4	(B)	22	0.20	1000	EEE1EA100WR	(1)	2000
		5.0	5.4	C	28	0.14	2000	EEE1EA100SR	(1)	1000
	22	5.0	5.4	(C)	35	0.20	1000	EEE1EA220WR	(1)	1000
		6.3	5.4	D	55	0.14	2000	EEE1EA220SP	(1)	1000
	33	5.0	5.4	(C)	42	0.20	1000	EEE1EA330WR	(1)	1000
		6.3	5.4	D	65	0.14	2000	EEE1EA330SP	(1)	1000
	47	6.3	5.4	(D)	70	0.20	1000	EEE1EA470WP	(1)	1000
	100	6.3	7.7	D8	143	0.14	2000	EEE1EA101XP	(1)	900
		8.0	6.2	(E)	91	0.16	2000	EEE1EA101UP	(2)	1000
		8.0	10.2	F	180	0.16	2000	EEE1EA101P	(2)	500
	220	8.0	10.2	(F)	230	0.16	2000	EEE1EA221UP	(2)	500
		10.0	10.2	G	310	0.16	2000	EEE1EA221P	(2)	500
	330	8.0	10.2	(F)	270	0.16	2000	EEE1EA331UP	(2)	500
		10.0	10.2	G	340	0.16	2000	EEE1EA331P	(2)	500
	470	10.0	10.2	G	380	0.16	2000	EEE1EA471P	(2)	500
35	4.7	4.0	5.4	B	22	0.12	2000	EEE1VA4R7SR	(1)	2000
	10	4.0	5.4	(B)	22	0.16	1000	EEE1VA100WR	(1)	2000
		5.0	5.4	C	30	0.12	2000	EEE1VA100SR	(1)	1000
	22	5.0	5.4	(C)	36	0.16	1000	EEE1VA220WR	(1)	1000
		6.3	5.4	D	60	0.12	2000	EEE1VA220SP	(1)	1000
	33	6.3	5.4	(D)	60	0.16	1000	EEE1VA330WP	(1)	1000
		8.0	6.2	E	130	0.14	2000	EEE1VA330P	(2)	1000
	47	6.3	5.4	(D)	70	0.16	1000	EEE1VA470WP	(1)	1000
		8.0	6.2	E	165	0.14	2000	EEE1VA470P	(2)	1000
	100	6.3	7.7	D8	132	0.12	2000	EEE1VA101XP	(1)	900
		8.0	10.2	(F)	140	0.14	2000	EEE1VA101UP	(2)	500
		10.0	10.2	G	210	0.14	2000	EEE1VA101P	(2)	500
	220	8.0	10.2	(F)	200	0.14	2000	EEE1VA221UP	(2)	500
		10.0	10.2	G	310	0.14	2000	EEE1VA221P	(2)	500
	330	10.0	10.2	G	350	0.14	2000	EEE1VA331P	(2)	500

*1: Size code( ) : Miniaturization product
*2: Ripple current (120 Hz / +85 ℃)
*3: tanδ (120 Hz / +20 ℃)
・Please refer to the page of “Refl ow Profi le” and “The Taping Dimensions”.
・When requesting vibration-proof product, please put the last “V” instead to “P”

Characteristics list

Rated voltage (V.DC)	Capacitance (±20 %) (μF)	Case size (mm)		Size code *1	Specification			Part number	Reflow	Min. Packaging Q'ty
		φD	L		Ripple current *2 (mA r.m.s.)	tan δ *3	Endurance (hours)			Taping (pcs)
50	1.0	4.0	5.4	B	10	0.12	2000	EEE1HA010SR	(1)	2000
	2.2	4.0	5.4	B	16	0.12	2000	EEE1HA2R2SR	(1)	2000
	3.3	4.0	5.4	B	16	0.12	2000	EEE1HA3R3SR	(1)	2000
	4.7	4.0	5.4	(B)	18	0.14	1000	EEE1HA4R7WR	(1)	2000
		5.0	5.4	C	23	0.12	2000	EEE1HA4R7SR	(1)	1000
	10	5.0	5.4	(C)	27	0.14	1000	EEE1HA100WR	(1)	1000
		6.3	5.4	D	35	0.12	2000	EEE1HA100SP	(1)	1000
	22	6.3	5.4	(D)	40	0.14	1000	EEE1HA220WP	(1)	1000
		8.0	6.2	E	120	0.12	2000	EEE1HA220P	(2)	1000
	33	6.3	7.7	D8	85	0.12	2000	EEE1HA330XP	(1)	900
		8.0	6.2	(E)	65	0.12	2000	EEE1HA330UP	(2)	1000
		8.0	10.2	F	110	0.12	2000	EEE1HA330P	(2)	500
	47	6.3	7.7	D8	105	0.12	2000	EEE1HA470XP	(1)	900
		8.0	10.2	(F)	110	0.12	2000	EEE1HA470UP	(2)	500
		10.0	10.2	G	130	0.12	2000	EEE1HA470P	(2)	500
	100	8.0	10.2	(F)	200	0.12	2000	EEE1HA101UP	(2)	500
		10.0	10.2	G	250	0.12	2000	EEE1HA101P	(2)	500
	220	10.0	10.2	G	300	0.12	2000	EEE1HA221P	(2)	500
63	22	8.0	6.2	(E)	40	0.18	2000	EEE1JA220UP	(2)	1000
		8.0	10.2	F	40	0.18	2000	EEE1JA220P	(2)	500
	33	8.0	10.2	F	45	0.18	2000	EEE1JA330P	(2)	500
	47	8.0	10.2	(F)	45	0.18	2000	EEE1JA470UP	(2)	500
		10.0	10.2	G	45	0.18	2000	EEE1JA470P	(2)	500
	100	10.0	10.2	G	60	0.18	2000	EEE1JA101P	(2)	500
100	4.7	8.0	6.2	(E)	50	0.18	2000	EEE2AA4R7UP	(2)	1000
	10	8.0	6.2	(E)	50	0.18	2000	EEE2AA100UP	(2)	1000
		8.0	10.2	F	85	0.18	2000	EEE2AA100P	(2)	500
	22	8.0	10.2	(F)	55	0.18	2000	EEE2AA220UP	(2)	500
		10.0	10.2	G	85	0.18	2000	EEE2AA220P	(2)	500
	33	10.0	10.2	G	90	0.18	2000	EEE2AA330P	(2)	500

*1: Size code( ) : Miniaturization product
*2: Ripple current (120 Hz / +85 ℃)
*3: tanδ (120 Hz / +20 ℃)
・Please refer to the page of “Refl ow Profi le” and “The Taping Dimensions”.
・When requesting vibration-proof product, please put the last “V” instead to “P”

Characteristics list

Rated voltage (V.DC)	Capacitance (±20 %) (μF)	Case size(mm)		Size code	Specification		Part number	Reflow	Min. Packaging Q'ty
		φD	L		Ripple current *1 (mA r.m.s.)	tan δ *2			Taping (pcs)
6.3	22	5.0	5.4	C	29	0.52	EEE0JA220NR	(1)	1000
	47	6.3	5.4	D	46	0.52	EEE0JA470NP	(1)	1000
10	10	4.0	5.4	B	25	0.40	EEE1AA100NR	(1)	2000
	33	6.3	5.4	D	43	0.40	EEE1AA330NP	(1)	1000
16	4.7	4.0	5.4	B	20	0.32	EEE1CA4R7NR	(1)	2000
	10	5.0	5.4	C	25	0.32	EEE1CA100NR	(1)	1000
	22	6.3	5.4	D	39	0.32	EEE1CA220NP	(1)	1000
25	3.3	4.0	5.4	B	12	0.28	EEE1EA3R3NR	(1)	2000
	4.7	5.0	5.4	C	21	0.28	EEE1EA4R7NR	(1)	1000
	10	6.3	5.4	D	28	0.28	EEE1EA100NP	(1)	1000
35	2.2	4.0	5.4	B	12	0.24	EEE1VA2R2NR	(1)	2000
	4.7	5.0	5.4	C	22	0.24	EEE1VA4R7NR	(1)	1000
	10	6.3	5.4	D	30	0.24	EEE1VA100NP	(1)	1000
50	1.0	4.0	5.4	B	10	0.24	EEE1HA010NR	(1)	2000
	2.2	5.0	5.4	C	16	0.24	EEE1HA2R2NR	(1)	1000
	3.3	5.0	5.4	C	21	0.24	EEENZ1H3R3R	(1)	1000
	4.7	6.3	5.4	D	31	0.24	EEE1HA4R7NP	(1)	1000

*1: Ripple current (120 Hz / +85 ℃)
*2: tanδ (120 Hz / +20 ℃)
・Please refer to the page of “Refl ow Profi le” and “The Taping Dimensions”.
・When requesting vibration-proof product, please put the last “V” instead to “P”