Surface Mount Type

Series: **ZC** Type: **V**

High temperature lead-free reflow

UPGRADE

Features

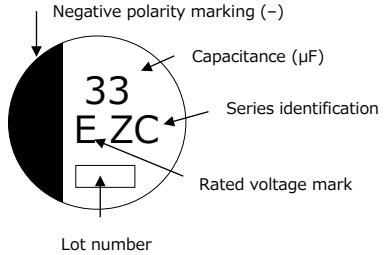
- Endurance: 4000 h at 125 °C (High temperature / Long life)
- Low ESR and high ripple current (85 % over, Lower ESR than current V-TP)
- High-withstand voltage (to 80 V.DC), Low LC (0.01 CV or 3 μA)
- Equivalent to conductive polymer type aluminum electrolytic capacitor
  (There are little characteristics change by temperature and frequency)
- Vibration-proof product is available upon request. New lineup of φ6.3 product. (φ6.3, φ8, φ10)
- AEC-Q200 compliant
- RoHS compliant

Specifications

Size code	C	D	D8	F	G
Category temp. range	−55 ℃ to +125 ℃				
Rated voltage range	25 V.DC to 50 V.DC	25 V.DC to 63 V.DC		25 V.DC to 80 V.DC	
Nominal cap.range	10 μF to 33 μF	10 μF to 56 μF	22 μF to 100 μF	22 μF to 220 μF	33 μF to 330 μF
Capacitance tolerance	±20 % (120 Hz / +20 ℃)				
DC leakage current	I ≦ 0.01 CV or 3 (μA) After 2 minutes (whichever is greater)				
Dissipation factor (tan δ)	Please see the attached characteristics list				
Endurance 1	+125 °C ± 2 ℃, 4000 h, apply the rated ripple current without exceeding the rated voltage.				
	Capacitance change	Within ±30% of the initial value			
	Dissipation factor (tan δ)	≦ 200 % of the initial limit			
	ESR	≦ 200 % of the initial limit			
	DC leakage current	Within the initial limit			
Endurance 2	+125 °C ± 2 ℃, 3000 h, apply the rated ripple current without exceeding the rated voltage.				
	Capacitance change	Within ±30% of the initial value			
	Dissipation factor (tan δ)	≦ 200 % of the initial limit			
	ESR	≦ 300 % of the initial limit			
	DC leakage current	Within the initial limit			
Shelf life	After storage for 1000 hours at +125 °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)				
Damp heat (Load)	+85 °C ± 2 ℃, 85 % to 90 %, 2000 h, rated voltage applied				
	Capacitance change	Within ±30% of the initial value			
	Dissipation factor (tan δ)	≦ 200 % of the initial limit			
	ESR	≦ 200 % of the initial limit			
	DC leakage current	Within the initial limit			
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			
	Dissipation factor (tan δ)	Within the initial limit			
	DC leakage current	Within the initial limit			

Marking

Example : 25 V.DC 33 μF
Marking color : BLACK

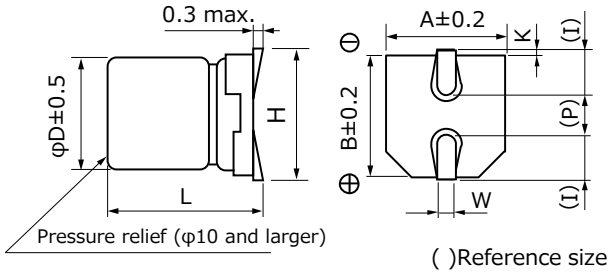


Rated voltage mark	
E	25
V	35
H	50

Unit : V.DC

J	63
K	80

Dimensions (not to scale)



( )Reference size

Unit : mm

Size code	φD	L	A,B	H	I	W	P	K
C	5.0	5.8±0.3	5.3	6.5 max.	2.2	0.65±0.1	1.5	0.35 +0.15 -0.20
D	6.3	5.8±0.3	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
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

·The dimensions of the vibration-proof products, please refer to the page of the mounting specification.

Characteristics list

Endurance 1 : 125 ℃ 4000 h
Endurance 2 : 125 ℃ 3000 h

Rated volt. (V.DC)	Capacitance (±20 %) (μF)	Case size (mm) φD	Case size (mm) L Standard	Case size (mm) L Vibration-proof	Size code	Specification Ripple current *1 (mA r.m.s.) Endurance 1	Specification Ripple current *1 (mA r.m.s.) Endurance 2	Specification ESR *2 (mΩ)	Specification tan δ *3	Part number Standard Product	Part number Vibration-proof product	Min. packaging q'ty Taping (pcs)
	NEW 22	5.0	5.8	–	C	550	–	80	0.14	EEHZC1E220R	–	1000
	33	5.0	5.8	–	C	550	–	80	0.14	EEHZC1E330R	–	1000
	NEW 47	6.3	5.8	6.1	D	900	–	50	0.14	EEHZC1E470P	EEHZC1E470V	1000
	56	6.3	5.8	6.1	D	900	–	50	0.14	EEHZC1E560P	EEHZC1E560V	1000
25	NEW 68	6.3	7.7	8.0	D8	1400	–	30	0.14	EEHZC1E680XP	EEHZC1E680XV	900
	100	6.3	7.7	8.0	D8	1400	–	30	0.14	EEHZC1E101XP	EEHZC1E101XV	900
	NEW 150	8.0	10.2	10.5	F	1600	1900	27	0.14	EEHZC1E151P	EEHZC1E151V	500
	220	8.0	10.2	10.5	F	1600	1900	27	0.14	EEHZC1E221P	EEHZC1E221V	500
	330	10.0	10.2	10.5	G	2000	2900	20	0.14	EEHZC1E331P	EEHZC1E331V	500
	NEW 10	5.0	5.8	–	C	550	–	100	0.12	EEHZC1V100R	–	1000
	22	5.0	5.8	–	C	550	–	100	0.12	EEHZC1V220R	–	1000
	NEW 33	6.3	5.8	6.1	D	900	–	60	0.12	EEHZC1V330P	EEHZC1V330V	1000
	47	6.3	5.8	6.1	D	900	–	60	0.12	EEHZC1V470P	EEHZC1V470V	1000
35	68	6.3	7.7	8.0	D8	1400	–	35	0.12	EEHZC1V680XP	EEHZC1V680XV	900
	NEW 100	8.0	10.2	10.5	F	1600	1900	27	0.12	EEHZC1V101P	EEHZC1V101V	500
	150	8.0	10.2	10.5	F	1600	1900	27	0.12	EEHZC1V151P	EEHZC1V151V	500
	NEW 220	10.0	10.2	10.5	G	2000	2800	20	0.12	EEHZC1V221P	EEHZC1V221V	500
	270	10.0	10.2	10.5	G	2000	2800	20	0.12	EEHZC1V271P	EEHZC1V271V	500
	10	5.0	5.8	–	C	500	–	120	0.10	EEHZC1H100R	–	1000
	22	6.3	5.8	6.1	D	750	–	80	0.10	EEHZC1H220P	EEHZC1H220V	1000
	33	6.3	7.7	8.0	D8	1100	–	40	0.10	EEHZC1H330XP	EEHZC1H330XV	900
50	NEW 47	8.0	10.2	10.5	F	1250	–	30	0.10	EEHZC1H470P	EEHZC1H470V	500
	68	8.0	10.2	10.5	F	1250	–	30	0.10	EEHZC1H680P	EEHZC1H680V	500
	100	10.0	10.2	10.5	G	1600	–	28	0.10	EEHZC1H101P	EEHZC1H101V	500
	120	10.0	10.2	10.5	G	1600	–	28	0.10	EEHZC1H121P	EEHZC1H121V	500
	10	6.3	5.8	6.1	D	700	–	120	0.08	EEHZC1J100P	EEHZC1J100V	1000
	22	6.3	7.7	8.0	D8	900	–	80	0.08	EEHZC1J220XP	EEHZC1J220XV	900
	33	8.0	10.2	10.5	F	1100	–	40	0.08	EEHZC1J330P	EEHZC1J330V	500
63	47	8.0	10.2	10.5	F	1100	–	40	0.08	EEHZC1J470P	EEHZC1J470V	500
	56	10.0	10.2	10.5	G	1400	–	30	0.08	EEHZC1J560P	EEHZC1J560V	500
	68	10.0	10.2	10.5	G	1400	–	30	0.08	EEHZC1J680P	EEHZC1J680V	500
	82	10.0	10.2	10.5	G	1400	–	30	0.08	EEHZC1J820P	EEHZC1J820V	500
	22	8.0	10.2	10.5	F	1050	–	45	0.08	EEHZC1K220P	EEHZC1K220V	500
80	33	10.0	10.2	10.5	G	1360	–	36	0.08	EEHZC1K330P	EEHZC1K330V	500
	47	10.0	10.2	10.5	G	1360	–	36	0.08	EEHZC1K470P	EEHZC1K470V	500

*1: Ripple current (100 kHz / +125 ℃) *2: ESR (100 kHz / +20 ℃) *3: tan δ (120 Hz / +20 ℃)

- Please refer to the page of “Reflow profile” and “The taping dimensions”.
- The dimensions of the vibration-proof products, please refer to the page of the mounting specification.

Frequency correction factor for ripple current

Rated capacitance (C)	Frequency (f)	100 Hz ≦ f < 200 Hz	200 Hz ≦ f < 300 Hz	300 Hz ≦ f < 500 Hz	500 Hz ≦ f < 1 kHz
C < 47 μF	Correction factor	0.10	0.10	0.15	0.20
47 μF ≦ C < 150 μF		0.15	0.20	0.25	0.30
150 μF ≦ C		0.15	0.25	0.25	0.30

Rated capacitance (C)	Frequency (f)	1 kHz ≦ f < 2 kHz	2 kHz ≦ f < 3 kHz	3 kHz ≦ f < 5 kHz	5 kHz ≦ f < 10 kHz
C < 47 μF	Correction factor	0.30	0.40	0.45	0.50
47 μF ≦ C < 150 μF		0.40	0.45	0.55	0.60
150 μF ≦ C		0.45	0.50	0.60	0.65

Rated capacitance (C)	Frequency (f)	10 kHz ≦ f < 15 kHz	15 kHz ≦ f < 20 kHz	20 kHz ≦ f < 30 kHz	30 kHz ≦ f < 40 kHz
C < 47 μF	Correction factor	0.60	0.65	0.70	0.75
47 μF ≦ C < 150 μF		0.70	0.75	0.80	0.80
150 μF ≦ C		0.75	0.80	0.85	0.85

Rated capacitance (C)	Frequency (f)	40 kHz ≦ f < 50 kHz	50 kHz ≦ f < 100 kHz	100 kHz ≦ f < 500 kHz	500 kHz ≦ f
C < 47 μF	Correction factor	0.80	0.85	1.00	1.05
47 μF ≦ C < 150 μF		0.85	0.90	1.00	1.00
150 μF ≦ C		0.85	0.90	1.00	1.00

After endurance ESR (100 kHz, −40 °C)

Size	φ5 x L5.8	φ6.3 x L5.8	φ6.3 x L7.7	φ8 x L10.2	φ10 x L10.2
ESR (Ω)	2	1.4	0.8	0.4	0.3

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