

## Surface Mount Type

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

**High temperature Lead-Free reflow**



### Features

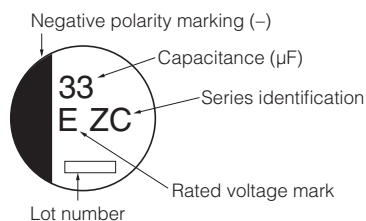
- Endurance: 4000 h at 125 °C (High temperature / Long life)
- Low ESR and high ripple current (85 % over, Lower ESR than current V-TP)
- High-withstand voltage (25 V.DC to 80 V.DC), Low LC (0.01 CV or 3  $\mu$ A)
- Equivalent to conductive polymer type aluminum electrolytic capacitor  
(There are little characteristics change by temperature and frequency)
- Vibration-proof product is available upon request. ( $\phi$ 8 mm and larger)
- AEC-Q200 compliant
- RoHS directive compliant

### Specifications

Size code	C	D	D8	F	G
Category temp. range	-55 °C to +125 °C				
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 °C)				
DC leakage current	I ≤ 0.01 CV or 3 (μA) After 2 minutes (whichever is greater)				
Dissipation factor (tan δ)	Please see the attached standard products list				
Endurance 1	125 °C, 4000 h, apply the rated ripple current without exceeding the rated voltage				
	Capacitance change	Within ±30% of the initial value			
	tan δ	≤ 200 % of the initial limit			
	E. S. R.	≤ 200 % of the initial limit			
	DC leakage current	Within the initial limit			
Endurance 2	125 °C, 3000 h, apply the rated ripple current without exceeding the rated voltage				
	Capacitance change	Within ±30% of the initial value			
	tan δ	≤ 200 % of the initial limit			
	E. S. R.	≤ 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, 85 % to 95 %, 2000 h, rated voltage applied				
	Capacitance change	Within ±30% of the initial value			
	tan δ	≤ 200 % of the initial limit			
	E. S. R.	≤ 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			
	tan δ	Within the initial limit			
	DC leakage current	Within the initial limit			

### Marking

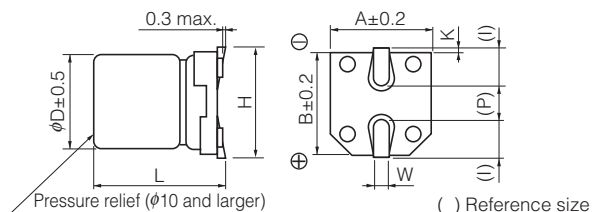
Example : 25 V.DC 33  $\mu$ F Marking color : BLACK



Rated voltage mark

E	25 V.DC	J	63 V.DC
V	35 V.DC	K	80 V.DC
H	50 V.DC		

### Dimensions (not to scale)



( ) Reference size

(Unit : mm)

Size code	D	L	A, B	H	I	W	P	K
C	5.0	5.8 $\pm$ 0.3	5.3	6.5 max.	2.2	0.65 $\pm$ 0.1	1.5	0.35 $\pm$ 0.15
D	6.3	5.8 $\pm$ 0.3	6.6	7.8 max.	2.6	0.65 $\pm$ 0.1	1.8	0.35 $\pm$ 0.15
D8	6.3	7.7 $\pm$ 0.3	6.6	7.8 max.	2.6	0.65 $\pm$ 0.1	1.8	0.35 $\pm$ 0.15
F	8.0	10.2 $\pm$ 0.3	8.3	10.0 max.	3.4	0.90 $\pm$ 0.2	3.1	0.70 $\pm$ 0.2
G	10.0	10.2 $\pm$ 0.3	10.3	12.0 max.	3.5	0.90 $\pm$ 0.2	4.6	0.70 $\pm$ 0.2

## Standard products

Endurance 1 : 125 °C 4000 h  
Endurance 2 : 125 °C 3000 h

Rated voltage (V.DC)	Capacitance (±20 %) (μF)	Case size (mm)		Size code	Specification				Part number	Min. packaging q'ty
		φD	L		Ripple current (100 kHz) (+125 °C) (mA r.m.s.)		ESR (100 kHz) (+20 °C) (mΩ)	tanδ (120 Hz) (+20 °C)		Taping (pcs)
					Endurance 1	Endurance 2				
25	33	5	5.8	C	550	—	80	0.14	EEHZA1E330R	1000
	56	6.3	5.8	D	900	—	50	0.14	EEHZA1E560P	1000
	100	6.3	7.7	D8	1400	—	30	0.14	EEHZA1E101XP	900
	220	8	10.2	F	1600	1900	27	0.14	EEHZA1E221P	500
	330	10	10.2	G	2000	2900	20	0.14	EEHZA1E331P	500
35	22	5	5.8	C	550	—	100	0.12	EEHZA1V220R	1000
	47	6.3	5.8	D	900	—	60	0.12	EEHZA1V470P	1000
	68	6.3	7.7	D8	1400	—	35	0.12	EEHZA1V680XP	900
	150	8	10.2	F	1600	1900	27	0.12	EEHZA1V151P	500
	270	10	10.2	G	2000	2800	20	0.12	EEHZA1V271P	500
50	10	5	5.8	C	500	—	120	0.10	EEHZA1H100R	1000
	22	6.3	5.8	D	750	—	80	0.10	EEHZA1H220P	1000
	33	6.3	7.7	D8	1100	—	40	0.10	EEHZA1H330XP	900
	68	8	10.2	F	1250	—	30	0.10	EEHZA1H680P	500
	100	10	10.2	G	1600	—	28	0.10	EEHZA1H101P	500
	<b>NEW</b> 120	10	10.2	G	1600	—	28	0.10	EEHZA1H121P	500
63	10	6.3	5.8	D	700	—	120	0.08	EEHZA1J100P	1000
	22	6.3	7.7	D8	900	—	80	0.08	EEHZA1J220XP	900
	33	8	10.2	F	1100	—	40	0.08	EEHZA1J330P	500
	56	10	10.2	G	1400	—	30	0.08	EEHZA1J560P	500
	<b>NEW</b> 68	10	10.2	G	1400	—	30	0.08	EEHZA1J680P	500
80	<b>NEW</b> 22	8	10.2	F	1050	—	45	0.08	EEHZA1K220P	500
	<b>NEW</b> 33	10	10.2	G	1360	—	36	0.08	EEHZA1K330P	500
	<b>NEW</b> 47	10	10.2	G	1360	—	36	0.08	EEHZA1K470P	500

- Please refer to the page of "Reflow profile" and "The taping dimensions".
- When requesting vibration-proof product, please put the last "V" instead to "P".

## Frequency correction factor for ripple current

Rated capacitance	Frequency	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	Frequency	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	Frequency	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	Frequency	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	φ5×5.8	φ6.3×5.8	φ6.3×7.7	φ8×10.2	φ10×10.2
ESR (Ω)	2.0	1.4	0.8	0.4	0.3

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Authorized Distributor

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