

Surface Mount Type

Series: **ZK** Type: **V**

High temperature lead-free reflow



Features

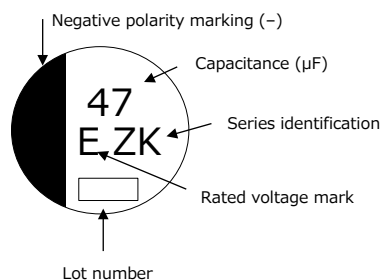
- High capacitance and High ripple current compared with ZC series
- Endurance : 4000 h at 125 °C (High temperature / Long life)
- Low ESR (85 % over, Lower ESR than Current V-TP), Low LC (0.01 CV or 3 μ A)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor
(There are little characteristics change by temperature and frequency)
- Vibration-proof product is available upon request. New lineup of ϕ 6.3 product. (ϕ 6.3, ϕ 8, ϕ 10)
- AEC-Q200 compliant
- RoHS compliant

Specifications

Size code	C	D	D8	F	G															
Category temp. range	-55 °C to +125 °C																			
Rated voltage range	25 V.DC to 35 V.DC																			
Nominal cap.range	33 µF to 47 µF	56 µF to 68 µF	100 µF to 150 µF	180 µF to 270 µF	330 µF to 470 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 characteristics list																			
Endurance	+125 °C ± 2 °C, 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																		
	ESR after Endurance (Ω / 100 kHz)(-40 °C)	<table><tr><th colspan="5">Size code</th></tr><tr><th>C</th><th>D</th><th>D8</th><th>F</th><th>G</th></tr><tr><td>2.0</td><td>1.4</td><td>0.8</td><td>0.4</td><td>0.3</td></tr></table>				Size code					C	D	D8	F	G	2.0	1.4	0.8	0.4	0.3
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C	D	D8	F	G																
2.0	1.4	0.8	0.4	0.3																
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 °C, 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																		

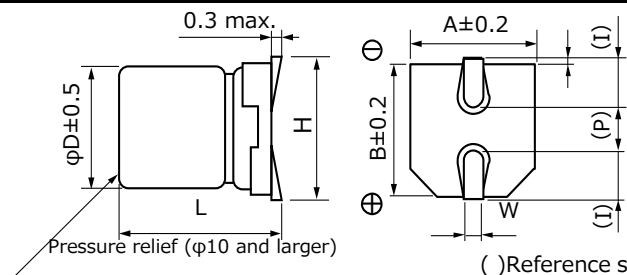
Marking

Example : 25 V.DC 47 μ F
Marking color : BLACK



Rated vol. mark	Unit : V.DC
E	25
V	35

Dimensions (not to scale)



Size code	φD	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 ^{+0.15} _{-0.20}
D	6.3	5.8 \pm 0.3	6.6	7.8 max.	2.6	0.65 \pm 0.1	1.8	0.35 ^{+0.15} _{-0.20}
D8	6.3	7.7 \pm 0.3	6.6	7.8 max.	2.6	0.65 \pm 0.1	1.8	0.35 ^{+0.15} _{-0.20}
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

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

Characteristics list

Endurance : 125 °C 4000 h

Rated vol. (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size code	Specification			Part number		Min. packaging q'ty
		φD	L		Ripple current *1 (mA r.m.s.)	ESR *2 (mΩ)	tan δ *3	Standard Product	Vibration-proof product	Taping (pcs)
25	47	5.0	5.8	C	660	80	0.14	EEHZK1E470R	–	1000
	68	6.3	5.8	D	1080	50	0.14	EEHZK1E680P	EEHZK1E680V	1000
	150	6.3	7.7	D8	1680	30	0.14	EEHZK1E151XP	EEHZK1E151XV	900
	270	8.0	10.2	F	1920	27	0.14	EEHZK1E271P	EEHZK1E271V	500
	470	10.0	10.2	G	2800	20	0.14	EEHZK1E471P	EEHZK1E471V	500
35	33	5.0	5.8	C	660	100	0.12	EEHZK1V330R	–	1000
	56	6.3	5.8	D	1080	60	0.12	EEHZK1V560P	EEHZK1V560V	1000
	100	6.3	7.7	D8	1680	35	0.12	EEHZK1V101XP	EEHZK1V101XV	900
	180	8.0	10.2	F	1920	27	0.12	EEHZK1V181P	EEHZK1V181V	500
	330	10.0	10.2	G	2800	20	0.12	EEHZK1V331P	EEHZK1V331V	500

*1: Ripple current (100 kHz / +125 °C)

*2: ESR (100 kHz / +20 °C)

*3: tan δ (120 Hz / +20 °C)

• 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)	100Hz ≤ f < 200Hz	200Hz ≤ f < 300Hz	300Hz ≤ f < 500Hz	500Hz ≤ f < 1kHz
C ≤ 47 μF	Correction factor	0.15	0.20	0.25	0.35
47 μF < 100 μF		0.15	0.25	0.30	0.40
100 μF ≤ C		0.15	0.25	0.30	0.40
Rated capacitance (C)	Frequency (f)	1kHz ≤ f < 2kHz	2kHz ≤ f < 3kHz	3kHz ≤ f < 5kHz	5kHz ≤ f < 10kHz
C ≤ 47 μF	Correction factor	0.45	0.55	0.60	0.65
47 μF < 100 μF		0.50	0.60	0.65	0.70
100 μF ≤ C		0.50	0.60	0.65	0.70
Rated capacitance (C)	Frequency (f)	10kHz ≤ f < 15kHz	15kHz ≤ f < 20kHz	20kHz ≤ f < 30kHz	30kHz ≤ f < 40kHz
C ≤ 47 μF	Correction factor	0.70	0.75	0.75	0.75
47 μF < 100 μF		0.75	0.75	0.80	0.80
100 μF ≤ C		0.75	0.80	0.85	0.85
Rated capacitance (C)	Frequency (f)	40kHz ≤ f < 50kHz	50kHz ≤ f < 100kHz	100kHz ≤ f < 500kHz	500kHz ≤ f
C ≤ 47 μF	Correction factor	0.80	0.85	1.00	1.05
47 μF < 100 μF		0.85	0.90	1.00	1.00
100 μF ≤ C		0.85	0.90	1.00	1.00

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