

Surface Mount Type

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

High temperature lead-free reflow

UPGRADE



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 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 °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 82 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)	Size code				
	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			
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 μF
Marking color : BLACK

Negative polarity marking (-)

Capacitance (μF)

Series identification

Rated voltage mark

Lot number

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

Dimensions (not to scale)

0.3 max.

φD±0.5

L

A±0.2

B±0.2

H

I

W

P

K

Pressure relief (φ10 and larger)

() 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 : 125 °C 4000 h

Rated volt. (V.DC)	Capacitance (±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)
			Standard	Vibration-proof							
25	47	5.0	5.8	-	C	850	80	0.14	EEHZK1E470R	-	1000
	68	6.3	5.8	6.1	D	1300	50	0.14	EEHZK1E680P	EEHZK1E680V	1000
	82	6.3	5.8	6.1	D	1300	50	0.14	EEHZK1E820P	EEHZK1E820V	1000
	150	6.3	7.7	8.0	D8	1800	30	0.14	EEHZK1E151XP	EEHZK1E151XV	900
	270	8.0	10.2	10.5	F	2000	27	0.14	EEHZK1E271P	EEHZK1E271V	500
	470	10.0	10.2	10.5	G	2800	20	0.14	EEHZK1E471P	EEHZK1E471V	500
35	33	5.0	5.8	-	C	750	100	0.12	EEHZK1V330R	-	1000
	56	6.3	5.8	6.1	D	1200	60	0.12	EEHZK1V560P	EEHZK1V560V	1000
	100	6.3	7.7	8.0	D8	1700	35	0.12	EEHZK1V101XP	EEHZK1V101XV	900
	180	8.0	10.2	10.5	F	2000	27	0.12	EEHZK1V181P	EEHZK1V181V	500
	330	10.0	10.2	10.5	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)	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	0.15	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)	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	0.45	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)	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	0.70	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)	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 < 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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