

### **Surface Mount Type**

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

High temperature lead-free reflow



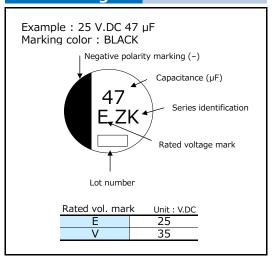


#### **Features**

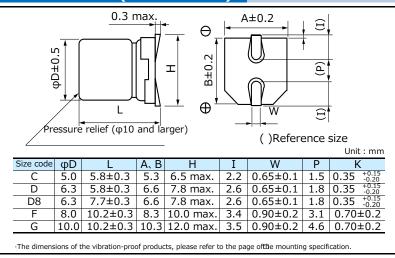
- High capacitance and High ripple current compared with ZC series
- Endurance: 4000 h at 125 °C (High temperature / Long life)
- Low ESR (85 % over, Lower ESR than Current V-TP), Low LC (0.01 CV or 3 μA)
- Equivalent to conductive polymer type Aluminum Electrolytic Capacitor (There are little characteristics 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	С	D	D8		F	(	G			
Category temp. range	-55 ℃ to +125 ℃									
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 ℃)									
DC leakage current	I $\leq$ 0.01 CV or 3 ( $\mu$ A) After 2 minutes (whichever is greater)									
Dissipation factor (tan $\delta$ )										
	$\pm$ 125 °C $\pm$ 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 $\delta$ ) $\leq$ 200 % of the initial limit									
Endurance	ESR ≤ 200 % of the initial limit									
Endurance	DC leakage current	Within the	Within the initial limit							
	ESR after Endurance		Size code							
	(Ω / 100 kHz)(-40 °C)	С	D	D8	F	G				
		2.0	1.4	0.8	0.4	0.3				
	After storage for 1000 hours at $+125$ °C $\pm$ 2 °C with no voltage applied and then being									
Shelf life	stabilized at +20 °C, capacitors shall meet the limits specified in Endurance.									
	(With voltage treatment)									
	+85 °C ± 2 °C, 85 % to 90 %, 2000 h, rated voltage applied									
Damp heat (Load)	Capacitance change Within ±30% of the initial value									
	Dissipation factor (tan $\delta$ ) $\leq$ 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**



#### Dimensions (not to scale)



#### **Characteristics list**

Endurance : 125 ℃ 4000 h

Rated volt. (V.DC)	Capaci- tance (±20 %) (µF)	Case size (mm)				Specification		Part number		Min.packaging q'ty	
		φD	L		Size	Ripple	ESR*2	***	Standard	Vibration-proof	Taping
			Standard	Vibration -proof	code	current*1 (mA r.m.s.)	(mΩ)	tan δ <sup>*3</sup>	Product	product	(pcs)
	47	5.0	5.8	-	С	850	80	0.14	EEHZK1E470R	-	1000
25 NE	68	6.3	5.8	6.1	D	1300	50	0.14	EEHZK1E680P	EEHZK1E680V	1000
	w 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	-	С	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

<sup>\*1:</sup> Ripple current (100 kHz / +125 °C)

<sup>•</sup> 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	lactor	0.15	0.25	0.30	0.40					
Rated capacitance (C)	Frequency (f)	$1 \text{ kHz} \le f < 2 \text{ kHz}$	2 kHz ≦ f< 3 kHz	3 kHz ≦ f< 5 kHz	$5 \text{ kHz} \le f < 10 \text{ kHz}$					
C ≦ 47 µF	Correction	0.45	0.55	0.60	0.65					
47 μF < 100 μF		0.50	0.60	0.65	0.70					
100 μF ≦ C	iactoi	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	$30 \text{ kHz} \le f < 40 \text{ kHz}$					
C ≦ 47 µF	C	0.70	0.75	0.75	0.75					
47 μF < 100 μF	Correction factor	0.75	0.75	0.80	0.80					
100 μF ≦ C	lactor	0.75	0.80	0.85	0.85					
Rated capacitance (C)	Frequency (f)	$40 \text{ kHz} \le f < 50 \text{ kHz}$	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	iactoi	0.85	0.90	1.00	1.00					

<sup>\*2:</sup> ESR (100 kHz / +20 °C) \*3:  $\tan \delta$  (120 Hz / +20 °C)

<sup>·</sup> Please refer to the page of "Reflow profile" and "The taping dimensions".



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