



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## Surface Mount Type

Series : **TK** Type : **V**



### Features

- Endurance : 125 °C 3000 h
- Low ESR at -40 °C (50 % lower than TG series)
- Added ESR specification after the endurance test
- Vibration-proof product is available upon request.
- RoHS compliant

### Specifications

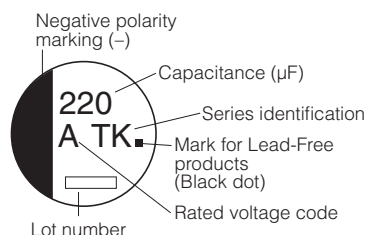
Category temperature range	-40 °C to +125 °C					
Rated voltage range	10 V.DC to 35 V.DC					
Capacitance range	47 μF to 470 μF					
Capacitance tolerance	±20 % (120 Hz/+20 °C)					
Leakage current	I ≤ 0.01 CV After 2 minutes					
Dissipation factor (tan δ)	Please see the attached characteristics list					
Characteristics at low temperature	V.DC	10	16	25	35	(Impedance ratio at 120 Hz)
	Z(-25 °C)/Z(+20 °C)	3	2	2	2	
	Z(-40 °C)/Z(+20 °C)	4	3	3	3	
Endurance	After the life test with DC rated working voltage at +125 °C ±2 °C for 3000 hours, the capacitors shall meet the limits specified below.					
	Capacitance change	Within ±30 % of the initial value (code U : ±35 %)				
	tan δ	≤300 % of the initial limit (code U : ±350 %)				
	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)					
ESR after the life test	After the life test with DC rated working voltage at +125 °C±2 °C for 3000 hours, ESR value shall meet the specified below.					
	After 1000 hours	20 °C	≤ 150 % of the initial limit			
		-40 °C	≤ 200 % of the initial limit			
	After 2000 hours	20 °C	≤ 300 % of the initial limit			
		-40 °C	≤ 400 % of the initial limit			
	After 3000 hours	20 °C	≤ 1000 % of the initial limit			
-40 °C		≤ 1500 % of the initial limit				
AEC-Q200	AEC-Q200 compliant					

### Frequency correction factor for ripple current

Frequency (Hz)	120	1 k	10 k	100 k to
Correction factor	0.65	0.85	0.95	1.00

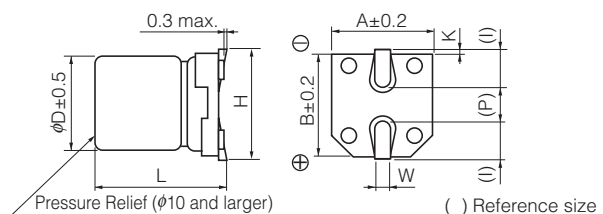
### Marking

Example : 10 V.DC 220 μF  
Marking color : BLACK



R. Voltage (V.DC)	10	16	25	35
Code	A	C	E	V

### Dimensions



(Unit : mm)

Size code	φD	L	A, B	H	I	W	P	K
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

## Characteristics list

Endurance : 125 °C 3000 h

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty	
		φD	L		Ripple current (100 kHz) (+125 °C) (mA r.m.s.)	ESR (100 kHz) (Ω)				tan δ (120 Hz) (+20 °C)	Taping (pcs)
						+20 °C	-40 °C				
10	220	8	10.2	F	197	0.3	5	0.30	EEETK1A221P	(8)	500
		8	10.2	(F)	197	0.3	5	0.30	EEETK1A331UP	(8)	500
	330	10	10.2	G	270	0.2	3	0.30	EEETK1A331P	(8)	500
		470	10	10.2	(G)	270	0.2	3	0.30	EEETK1A471UP	(8)
16	100	8	10.2	F	197	0.3	5	0.23	EEETK1C101P	(8)	500
		8	10.2	(F)	197	0.3	5	0.23	EEETK1C221UP	(8)	500
	220	10	10.2	G	270	0.2	3	0.23	EEETK1C221P	(8)	500
		330	10	10.2	(G)	270	0.2	3	0.23	EEETK1C331UP	(8)
25	100	8	10.2	F	197	0.3	5	0.18	EEETK1E101P	(8)	500
		8	10.2	(F)	197	0.3	5	0.18	EEETK1E221UP	(8)	500
	220	10	10.2	G	270	0.2	3	0.18	EEETK1E221P	(8)	500
		330	10	10.2	(G)	270	0.2	3	0.18	EEETK1E331UP	(8)
35	47	8	10.2	F	197	0.3	5	0.16	EEETK1V470P	(8)	500
		8	10.2	(F)	197	0.3	5	0.16	EEETK1V101UP	(8)	500
	100	10	10.2	G	270	0.2	3	0.16	EEETK1V101P	(8)	500
		220	10	10.2	(G)	270	0.2	3	0.16	EEETK1V221UP	(8)

\* Size code( ) : Miniaturization product

· 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"