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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 : **TP** Type : **V**

**High temperature**

**Lead-Free reflow (suffix : A\*)**



### Features

- Lower ESR at Low temperature after endurance
- Endurance : 125 °C 3000 h (D8 size : 2000 h)
- Automotive
- Vibration-proof product is available upon request. ( $\phi 8$  mm and larger)
- RoHS compliant

### Specifications

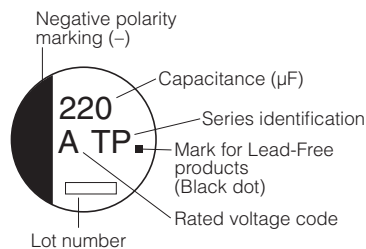
Category temperature range	-40 °C to +125 °C																	
Rated voltage range	10 V.DC to 35 V.DC																	
Capacitance range	47 $\mu$ F to 470 $\mu$ F																	
Capacitance tolerance	$\pm 20$ % (120 Hz/+20 °C)																	
Leakage current	$I \leq 0.01 CV$ ( $\mu$ A) After 2 minutes																	
Dissipation factor (tan $\delta$ )	Please see the attached characteristics list																	
Endurance	After the life test with DC rated working voltage at +125 °C $\pm 2$ °C for 3000 hours (D8 size : 2000 h), the capacitors shall meet the limits specified below.																	
	Capacitance change	Within $\pm 30$ % of the initial value																
	tan $\delta$	$\leq 300$ % of the initial limit																
	DC leakage current	Within the initial limit																
	ESR after endurance ( $\Omega/100$ kHz)		<table border="1"> <thead> <tr> <th rowspan="3"></th> <th colspan="3">Size Code</th> </tr> <tr> <th>D8</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>Initial (+20 °C)</td> <td>0.45</td> <td>0.2</td> <td>0.15</td> </tr> <tr> <td>After 2000 h (-40 °C)</td> <td>40</td> <td>4.5</td> <td>3.5</td> </tr> </tbody> </table>			Size Code			D8	F	G	Initial (+20 °C)	0.45	0.2	0.15	After 2000 h (-40 °C)	40	4.5
	Size Code																	
	D8	F	G															
	Initial (+20 °C)	0.45	0.2	0.15														
After 2000 h (-40 °C)	40	4.5	3.5															
Shelf life	After storage for 1000 hours at +125 °C $\pm 2$ °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment)																	
Resistance to soldering heat	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.																	
	Capacitance change	Within $\pm 10$ % of the initial value																
	tan $\delta$	Within the initial limit																
	DC leakage current	Within 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

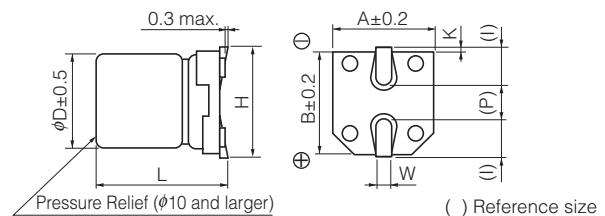
### Marking

Example : 10 V.DC 220  $\mu$ F  
Marking color : BLACK



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

### Dimensions



(Unit : mm)

Size code	$\phi D$	L	A, B	H	I	W	P	K
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 $\pm 0.20$
G	10.0	10.2 $\pm 0.3$	10.3	12.0 max.	3.5	0.90 $\pm 0.2$	4.6	0.70 $\pm 0.20$

## Characteristics list

Endurance : 125 °C 3000 h ( $\phi 6.3 \times 7.7$  : 2000 h)

Rated voltage (V.DC)	Cap. ( $\pm 20\%$ ) ( $\mu\text{F}$ )	Case size (mm)		Size* code	Specification			Part No.	Reflow	Min. Packaging Qty	
		$\phi\text{D}$	L		Ripple current (100 kHz) (+125 °C) (mA r.m.s.)	ESR (100 kHz) ( $\Omega$ )				$\tan \delta$ (120 Hz) (+20 °C)	Taping (pcs)
						+20 °C	-40 °C				
10	220	8	10.2	F	270	0.20	3	0.30	EEETP1A221AP	(8)	500
	330	8	10.2	(F)	270	0.20	3	0.30	EEETPA331UAP	(8)	500
		10	10.2	G	500	0.15	2	0.30	EEETP1A331AP	(8)	500
		470	10	10.2	G	500	0.15	2	0.30	EEETP1A471AP	(8)
16	100	6.3	7.7	D8	197	0.45	5	0.23	EEETPC101XAP	(8)	900
		8	10.2	F	270	0.20	3	0.23	EEETP1C101AP	(8)	500
	220	8	10.2	F	270	0.20	3	0.23	EEETP1C221AP	(8)	500
	330	10	10.2	G	500	0.15	2	0.23	EEETP1C331AP	(8)	500
	470	10	10.2	G	500	0.15	2	0.23	EEETP1C471AP	(8)	500
	25	100	8	10.2	F	270	0.20	3	0.18	EEETP1E101AP	(8)
220		10	10.2	G	500	0.15	2	0.18	EEETP1E221AP	(8)	500
330		10	10.2	G	500	0.15	2	0.18	EEETP1E331AP	(8)	500
35	47	6.3	7.7	D8	197	0.45	5	0.16	EEETPV470XAP	(8)	900
		8	10.2	F	270	0.20	3	0.16	EEETP1V470AP	(8)	500
	100	8	10.2	F	270	0.20	3	0.16	EEETP1V101AP	(8)	500
	220	10	10.2	G	500	0.15	2	0.16	EEETP1V221AP	(8)	500

\* Size code( ) : Miniaturization product

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J → J, 1A → A, 1C → C, 1E → E, 1V → V

· 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"