Surface Mount Type

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

TP High temperature Lead-Free reflow(suffix:A*)

■ Features

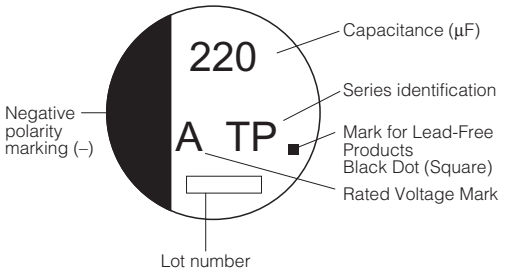
- Lower ESR at Low temperature after endurance
- Endurance: 3000 h at 125 °C(D8 size : 2000 h)
- Automotive
- Vibration-proof product is available upon request. (ϕ8 ≦)
- RoHS directive compliant

■ Specifications

Category Temp. Range	−40 °C to +125 °C				
Rated W.V.Range	10 V.DC to 35 V.DC				
Nominal Cap.Range	47 µF to 470 µF				
Capacitance Tolerance	±20 % (120 Hz/+20 °C)				
DC Leakage Current	I ≦ 0.01 CV (µA) After 2 minutes				
tan δ	Please see the attached standard products list				
Endurance	After the life test with DC rated working voltage at +125 °C±2 °C for 3000 hours(D8 size : 2000 h). the capacitors shall meet the limits specified below.				
	Capacitance change	±30 % of initial measured value			
	tan δ	≦ 300 % of initial specified value			
	DC leakage current	≦ initial specified value			
	ESR after Endurance (Ω/100kHz)		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±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	±10 % of initial measured value			
	tan δ	≦ initial specified value			
	DC leakage current	≦ initial specified value			

■ Marking

Example:10 V 220 µF Marking color : BLACK

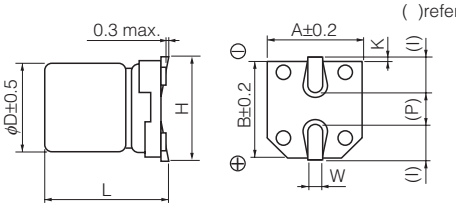


Rated Voltage Mark

A	10 V
C	16 V
E	25 V
V	35 V

■ Dimensions in mm (not to scale)

( )reference size



(mm)

Size code	D	L	A, B	H	I	W	P	K
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	10.0max.	3.4	0.90±0.2	3.1	0.70±0.20
G	10.0	10.2±0.3	10.3	12.0max.	3.5	0.90±0.2	4.6	0.70±0.20

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■ Standard Products

W.V.	Cap. (±20 %)	Case size			Specification				Part No. (RoHS:compliant)	Reflow	Min. Packaging Q'ty
		Dia.	Length	✻Size Code	Ripple Current (100 kHz) (+125 °C)	ESR (100 kHz) (Ω)		tan δ (120 Hz) (+20 °C)			Taping
(V)	(μF)	(mm)	(mm)		(mA r.m.s.)	+20 °C	-40 °C				(pcs)
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)	500
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)	500
	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; 1A→A, 1C→C, 1E→E, 1V→V
The taping dimensions are explained on EE188 of our Catalog. Please use it as a reference guide.
Reflow Profile(Fig-1 to Fig-11) listed on EE186 of our Catalog.