

Surface Mount Type

Series: **Medium-size TP** Type: **V**
High temperature Lead-Free reflow



Features

- Endurance : 125 °C 3000 to 4000 h
- High ripple current (2 to 5 times as high as TK series)
- Low ESR (40 to 70 % lower than TK series)
- Large capacitance (Up to 80 % larger than TK series)
- Vibration-proof product (30G guaranteed) is available upon request
- RoHS compliant

Specifications

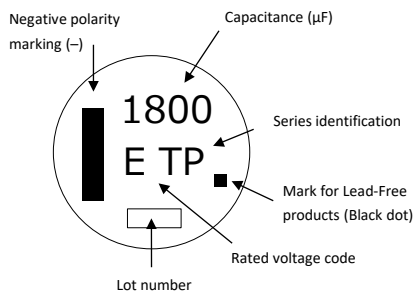
Category temp. range	-55 °C to +125 °C		
Rated voltage range	25 V.DC to 80 V.DC		
Capacitance range	390 µF to 3300 µF		
Capacitance tolerance	±20 % (120 Hz / +20 °C)		
Leakage current	I ≤ 0.01 CV (µA) After 2 minutes		
Dissipation factor (tan δ)	Please see the attached characteristics list		
Characteristics at low temperature	Rated voltage (V.DC)	25	35 to 80
	Z (-25 °C) / Z (+20 °C)	2	2
	Z (-40 °C) / Z (+20 °C)	4	3
(Impedance ratio at 120 Hz)			
Endurance	After applying rated working voltage for 4000 hours at +125 °C ± 2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits. (J16, K16 size : 3000 h)		
	Capacitance change	Within ±30 % of the initial value (35 V.DC or less : Within ±35 %)	
	Dissipation factor (tan δ)	≤ 300 % of 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)		
	Resistance to soldering heat		
	Capacitance change	Within ±10 % of the initial value	
Resistance to soldering heat	Dissipation factor (tan δ)	Within the initial limit	
	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	0.75	0.90	0.95	1.00

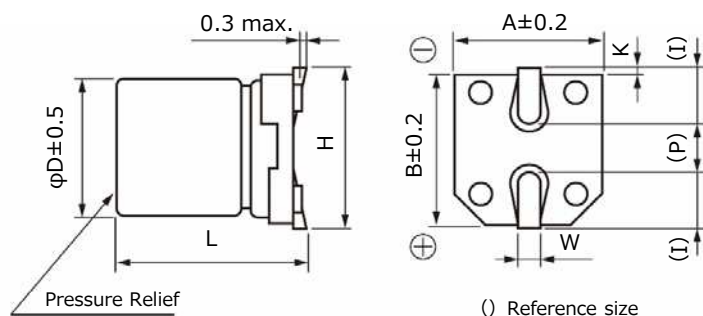
Marking

Example : 25 V.DC 1800 µF
 Marking color : BLACK



R.voltage code		Unit : V.DC	
E	25	J	63
V	35	70	70
H	50	K	80

Dimensions



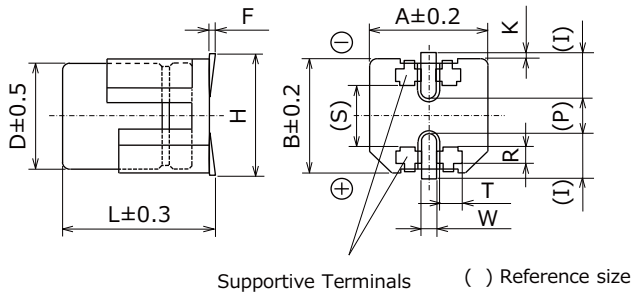
Size code	φD	L	A, B	H	I	W	P	K
J16	16.0	16.5±0.5	17.0	19.0 max.	5.5	1.20±0.3	6.7	0.70±0.3
K16	18.0	16.5±0.5	19.0	21.0 max.	6.7	1.20±0.3	6.7	0.70±0.3
K21	18.0	21.5±0.5	19.0	21.0 max.	6.7	1.20±0.3	6.7	0.70±0.3

*The dimensions of the vibration-proof products, please refer to the page of the mounting specification.

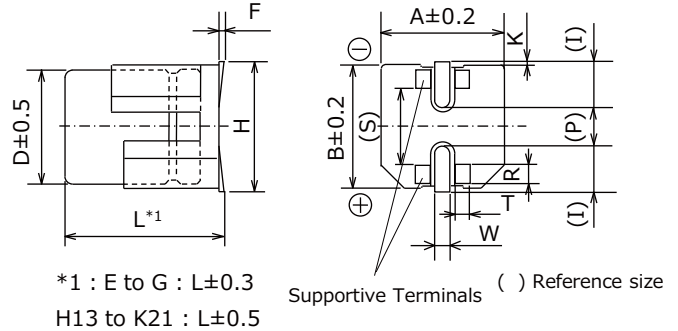
Dimensions (Vibration-proof products)

* The size and shape are different from standard products. Please inquire details of our company.

< Size code : D, D8 >



< Size code : E, F, G, H13, J16, K16, K21 >



Supportive Terminals () Reference size

Supportive Terminals () Reference size

*1 : E to G : L±0.3
H13 to K21 : L±0.5

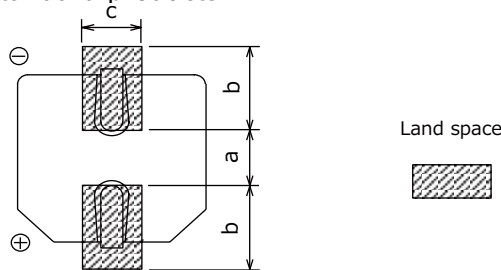
Unit : mm

Size code	φD	L	A, B	H max.	F	I	W	P	K	R	S	T
D	6.3	6.1	6.6	7.8	0 to +0.15	2.4	0.65±0.1	2.2	0.35 ^{+0.15} _{-0.20}	1.1±0.2	3.3±0.2	1.05±0.2
D8	6.3	8.0	6.6	7.8	0 to +0.15	2.4	0.65±0.1	2.2	0.35 ^{+0.15} _{-0.20}	1.1±0.2	3.3±0.2	1.05±0.2
E	8.0	6.5	8.3	9.5	0 to +0.15	3.4	0.7±0.1	2.2	0.35 ^{+0.15} _{-0.20}	0.70±0.2	5.3±0.2	1.7±0.2
F	8.0	10.5	8.3	10.0	0 to +0.15	3.4	1.2±0.2	3.1	0.70±0.2	0.70±0.2	5.3±0.2	1.3±0.2
G	10.0	10.5	10.3	12.0	0 to +0.15	3.5	1.2±0.2	4.6	0.70±0.2	0.70±0.2	6.9±0.2	1.3±0.2
H13	12.5	13.8	13.5	15.0	-0.1 to +0.15	4.7	1.2±0.2	4.4	0.70±0.3	2.2±0.2	7.1±0.2	2.4±0.2
J16	16.0	16.8	17.0	19.0	-0.1 to +0.15	5.5	1.4±0.2	6.7	0.70±0.3	3.0±0.2	9.0±0.2	1.9±0.2
K16	18.0	16.8	19.0	21.0	-0.1 to +0.15	6.7	1.4±0.2	6.7	0.70±0.3	3.0±0.2	11.0±0.2	1.9±0.2
K21	18.0	21.8	19.0	21.0	-0.1 to +0.15	6.7	1.4±0.2	6.7	0.70±0.3	3.0±0.2	11.0±0.2	1.9±0.2

Land / Pad pattern

The circuit board land/pad pattern size for chip capacitors is specified in the following table. The land pitch influences installation strength and consider it.

● Standard products



(Table of board land size vs. capacitor size)

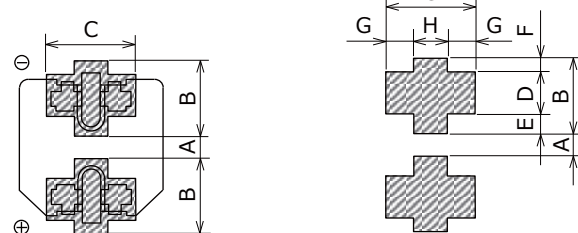
Size code	a	b	c
B (φ4)	1.0	2.5	1.6
C (φ5)	1.5	2.8	1.6
D (φ6.3)	1.8	3.2	1.6
D8 (φ6.3x7.7L)	1.8	3.2	1.6
E (φ8x6.2L)	2.2	4.0	1.6
F (φ8x10.2L)	3.1	4.0	2.0
G (φ10x10.2L)	4.6	4.1	2.0
H (φ12.5)	4.0	5.7	2.0
J (φ16)	6.0	6.5	2.5
K (φ18)	6.0	7.5	2.5

Unit : mm

When size "a" is wide, back fillet can be made, decreasing fitting strength.

● Vibration-proof products

< Size code : D, D8 >



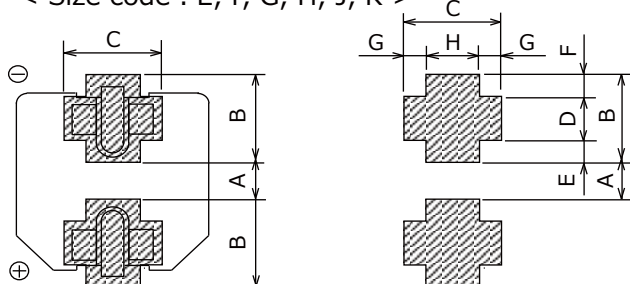
(Table of board land size vs. capacitor size)

Size code	A	B	C	D	E	F	G	H
D (φ6.3xL6.1)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
D8 (φ6.3xL8.0)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
E (φ8x6.5L)	1.8	4.2	5.0	1.3	1.5	1.4	1.5	2.0
F (φ8x10.5L)	2.7	4.0	4.7	1.3	1.0	1.7	1.1	2.5
G (φ10)	3.9	4.4	4.7	1.3	1.2	1.9	1.1	2.5
H (φ12.5)	3.9	6.0	6.9	2.8	1.3	1.9	2.2	2.5
J (φ16)	5.8	6.8	6.2	3.6	1.3	1.9	1.7	2.8
K (φ18)	5.8	7.3	6.2	3.6	1.8	1.9	1.7	2.8

Unit : mm

When size "A" is wide, back fillet can be made, decreasing fitting strength.

< Size code : E, F, G, H, J, K >



* Take mounting conditions, solderability and fitting strength into consideration when selecting parts for your company's design.

* The vibration-proof capacitors of size φ6.3 has support terminals extending from the bottom side to the lead edge. Then, make sure to find appropriate soldering conditions to form fillet on the support terminals if required for appearance inspection.

Characteristics list

Endurance : 125 °C 4000 h (J16, K16 size : 3000 h)

Rated volt. (V.DC)	Cap. (±20 %) (μF)	Case size (mm)			Size code	Specification			Part No.		Reflow	Min. Packaging Q'ty
		φD	L			Ripple current *1 (mA r.m.s.)	ESR*2 (Ω)	tan δ*3	Standard	Vibration-proof		Taping (pcs)
			Standard	Vibration -proof								
25	1800	16	16.5	16.8	J16	2400	0.047	0.18	EEETP1E182M	EEETP1E182V	(9)	125
	2700	18	16.5	16.8	K16	2600	0.045	0.20	EEETP1E272M	EEETP1E272V	(9)	125
	3300	18	21.5	21.8	K21	3250	0.032	0.22	EEETP1E332M	EEETP1E332V	(9)	75
35	1300	16	16.5	16.8	J16	2400	0.047	0.16	EEETP1V132M	EEETP1V132V	(9)	125
	1800	18	16.5	16.8	K16	2600	0.045	0.16	EEETP1V182M	EEETP1V182V	(9)	125
	2400	18	21.5	21.8	K21	3250	0.032	0.18	EEETP1V242M	EEETP1V242V	(9)	75
50	750	16	16.5	16.8	J16	2000	0.080	0.14	EEETP1H751M	EEETP1H751V	(10)	125
	1000	18	16.5	16.8	K16	2100	0.078	0.14	EEETP1H102M	EEETP1H102V	(10)	125
	1300	18	21.5	21.8	K21	2900	0.060	0.14	EEETP1H132M	EEETP1H132V	(10)	75
63	560	16	16.5	16.8	J16	1900	0.100	0.12	EEETP1J561M	EEETP1J561V	(11)	125
	750	18	16.5	16.8	K16	2000	0.095	0.12	EEETP1J751M	EEETP1J751V	(11)	125
	1000	18	21.5	21.8	K21	2600	0.068	0.12	EEETP1J102M	EEETP1J102V	(11)	75
70	470	16	16.5	16.8	J16	1900	0.100	0.12	EEETP70471M	EEETP70471V	(11)	125
	680	18	16.5	16.8	K16	2000	0.095	0.12	EEETP70681M	EEETP70681V	(11)	125
	820	18	21.5	21.8	K21	2600	0.068	0.12	EEETP70821M	EEETP70821V	(11)	75
80	390	16	16.5	16.8	J16	1900	0.100	0.12	EEETP1K391M	EEETP1K391V	(11)	125
	510	18	16.5	16.8	K16	2000	0.095	0.12	EEETP1K511M	EEETP1K511V	(11)	125
	680	18	21.5	21.8	K21	2600	0.068	0.12	EEETP1K681M	EEETP1K681V	(11)	75

*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".

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