

## Surface Mount Type

Series : Medium-size **HD** Type : **V**  
**High temperature**  
**Lead-Free reflow (suffix : A\*)**



### Features

- Endurance : 105 °C 5000 h
- Vibration-proof product is available upon request.
- RoHS compliant

### Specifications

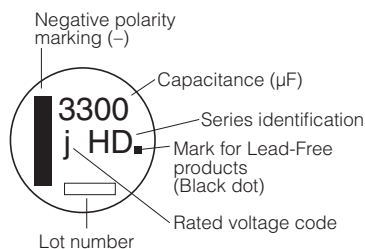
Category temperature range	-55 °C to +105 °C	
Rated voltage range	6.3 V.DC to 35 V.DC	
Capacitance range	680 μF to 7500 μF	
Capacitance tolerance	±20 % (120 Hz/+20 °C)	
Leakage current	I ≤ 0.01 CV (μA) After 2 minutes	
Dissipation factor (tan δ)	Please see the attached characteristics list	
Endurance	After applying rated working voltage for 5000 hours at +105 °C±2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits.	
	Capacitance change	Within ±30 % of the initial value
	tan δ	≤200 % of the initial limit
Shelf life	After storage for 1000 hours at +105 °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)	
	After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.	
Resistance to soldering heat	Capacitance change	
	tan δ	Within the initial limit
	DC leakage current	Within the initial limit
AEC-Q200	AEC-Q200 compliant	

### Frequency correction factor for ripple current

Capacitance (μF)	Frequency (Hz)					
	60	120	1 k	10 k	100 k to	
680 to 1000	0.93	1.00	1.20	1.27	1.33	
1200 to 2200	0.94	1.00	1.13	1.19	1.25	
2700 to 7500	0.94	1.00	1.12	1.18	1.18	

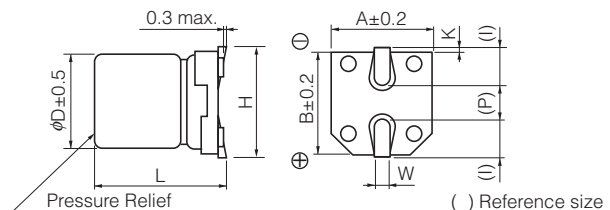
### Marking

Example : 6.3 V.DC 3300 μF  
 Marking color : BLACK



R. Voltage (V.DC)	6.3	10	16	25	35
Code	j	A	C	E	V

### Dimensions



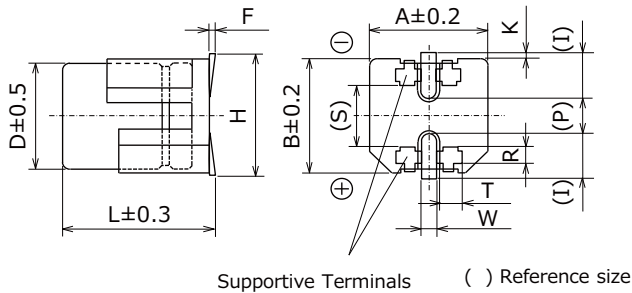
(Unit : mm)

Size code	φD	L	A,B	H	I	W	P	K
H13	12.5	13.5±0.5	13.5	15.0 max.	4.7	0.90±0.3	4.4	0.70±0.3
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

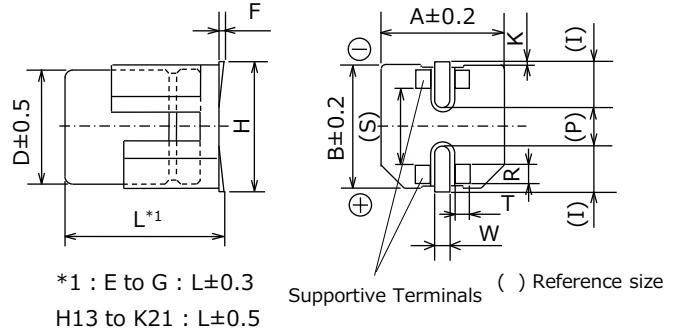
### Dimensions (Vibration-proof products)

\* 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

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

Supportive Terminals ( ) Reference size

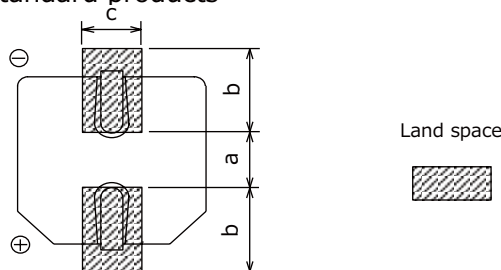
Unit : mm

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 <sup>+0.15</sup> <sub>-0.20</sub>	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 <sup>+0.15</sup> <sub>-0.20</sub>	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 <sup>+0.15</sup> <sub>-0.20</sub>	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

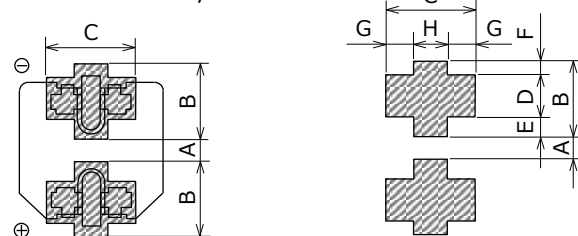
The circuit board land/pad pattern size for chip capacitors is specified in the following table. The land pitch influences installation strength and consider it.

#### ● Standard products

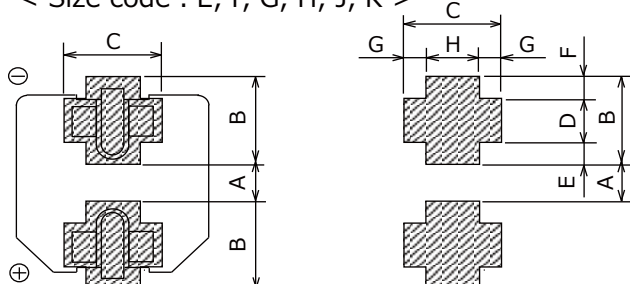


#### ● Vibration-proof products

< Size code : D, D8 >



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



(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

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

(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

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

\* 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 : 105 °C 5000 h

Rated voltage (V.DC)	Cap. (±20 %) (μF)	Case size (mm)		Size code	Specification		Part No.	Reflow	Min. Packaging Q'ty
		φD	L		Ripple current (120 Hz) (+105 °C) (mA r.m.s.)	tan δ (120 Hz) (+20 °C)			Taping (pcs)
6.3	3300	12.5	13.5	H13	680	0.32	EEEHD0J332AQ	(9)	200
	6800	16	16.5	J16	1280	0.38	EEEHD0J682AM	(9)	125
	7500	18	16.5	K16	1540	0.40	EEEHD0J752AM	(9)	125
10	2200	12.5	13.5	H13	620	0.24	EEEHD1A222AQ	(9)	200
	4700	16	16.5	J16	1280	0.28	EEEHD1A472AM	(9)	125
	6800	18	16.5	K16	1540	0.32	EEEHD1A682AM	(9)	125
16	1500	12.5	13.5	H13	620	0.18	EEEHD1C152AQ	(9)	200
	3300	16	16.5	J16	1280	0.22	EEEHD1C332AM	(9)	125
	4700	18	16.5	K16	1540	0.24	EEEHD1C472AM	(9)	125
25	1000	12.5	13.5	H13	580	0.16	EEEHD1E102AQ	(9)	200
	2200	16	16.5	J16	1200	0.18	EEEHD1E222AM	(9)	125
	3300	18	16.5	K16	1540	0.20	EEEHD1E332AM	(9)	125
35	680	12.5	13.5	H13	580	0.14	EEEHD1V681AQ	(9)	200
	1500	16	16.5	J16	1200	0.16	EEEHD1V152AM	(9)	125
	1800	18	16.5	K16	1450	0.16	EEEHD1V182AM	(9)	125

· 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" or "M"

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