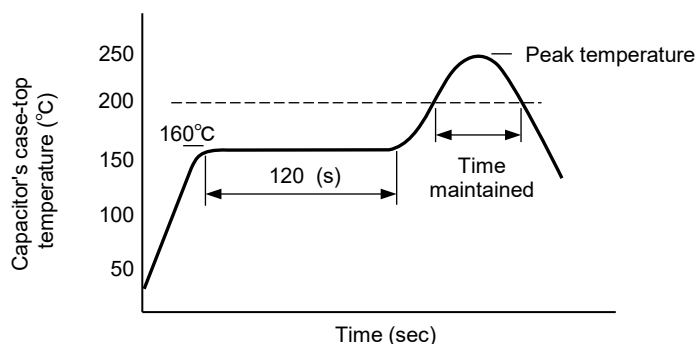


**Recommendable reflow soldering**



**Lead-Free reflow**

Reflow No.	(1)	(2)	(3)	(4)
Category	ø4 to ø6.3	ø8 to ø10	ø12.5 to ø18	N/A
Peak temperature	250 °C	235 °C	230 °C (220 °C)	
Time in peak temperature	5 s	5 s	5 s (5 s)	
Time maintained	≥200 °C 60 s	≥200 °C 60 s	≥200 °C 20 s (30 s)	
Reflow cycles	1 time	1 time	1 time	

**High temperature Lead-Free reflow**

Reflow No.	(5)	(6)		(7)		(8)	
Category	ø4 to ø6.3	ø8 to ø10		ø8 to ø10		ø6.3 to ø10	
Peak temperature	260 °C (255 °C)	245 °C	260 °C	250 °C	260 °C	255 °C	260 °C
Time in peak temperature	≥250 °C 5 s (10 s)	≥240 °C 10 s	≥250 °C 5 s	≥240 °C 10 s	≥250 °C 5 s	≥250 °C 30 s	≥250 °C 20 s
Time maintained	≥230 °C 30 s	≥230 °C 30 s	≥230 °C 30 s	≥230 °C 30 s	≥230 °C 30 s	≥230 °C 40 s	≥230 °C 30 s
	≥217 °C 40 s	≥217 °C 40 s	≥217 °C 40 s	≥217 °C 40 s	≥217 °C 40 s	≥217 °C 65 s	≥217 °C 65 s
	≥200 °C 70 s	≥200 °C 70 s	≥200 °C 70 s	≥200 °C 70 s	≥200 °C 70 s	≥200 °C 90 s	≥200 °C 70 s
Reflow cycles	2 times	2 times	1 time	2 times	1 time	2 times	2 times

Reflow No.	(9)	(10)	(11)
Category	ø12.5 to ø18	ø12.5 to ø18	ø12.5 to ø18
Peak temperature	245 °C	245 °C	245 °C
Time in peak temperature	≥240 °C 30 s	≥240 °C 5 s	≥240 °C 5 s
Time maintained	≥217 °C 90 s	≥217 °C 30 s	≥217 °C 30 s
Reflow cycles	2 times	2 times	1 time

\* For reflow, use a thermal condition system such as infrared radiation (IR) or hot blast.

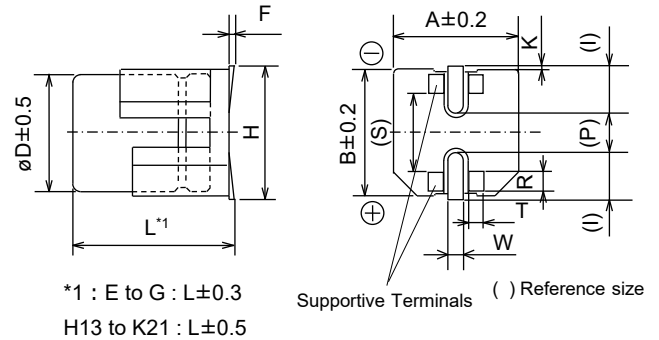
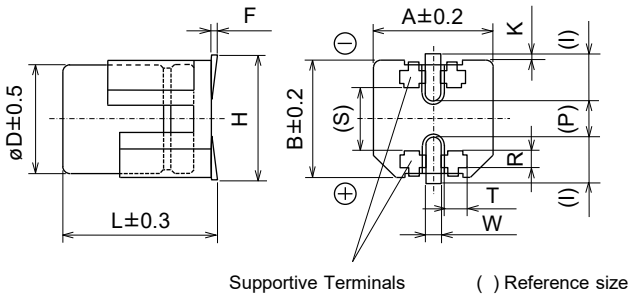
\* Reflow temperature is measured on capacitor's case top.

**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 >



※The diagram is not drawn to scale.

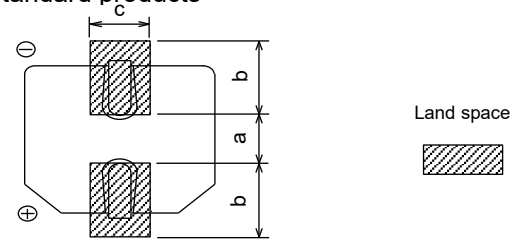
Unit : mm

Size code	øD	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	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	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	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	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	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	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	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	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	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.

● Standard products



(Table of board land size vs. capacitor size)

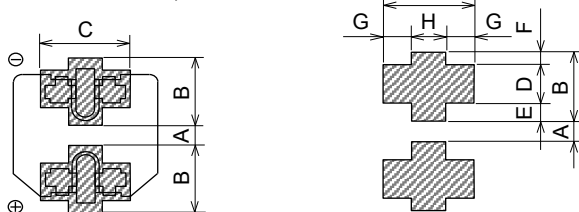
Unit : mm

Size code	a	b	c
B (ø4)	1.0	2.5	1.6
C (ø5)	1.5	2.8	1.6
D (ø6.3)	1.8	3.2	1.6
D8 (ø6.3x7.7L)	1.8	3.2	1.6
E (ø8x6.2L)	2.2	4.0	1.6
F (ø8x10.2L)	3.1	4.0	2.0
G (ø10x10.2L)	4.6	4.1	2.0
H (ø12.5)	4.0	5.7	2.0
J (ø16)	6.0	6.5	2.5
K (ø18)	6.0	7.5	2.5

Larger dimension of "a" may prevent back fillet from being formed adequately to obtain required solder strength.

● Vibration-proof products

< Size code : D, D8 >



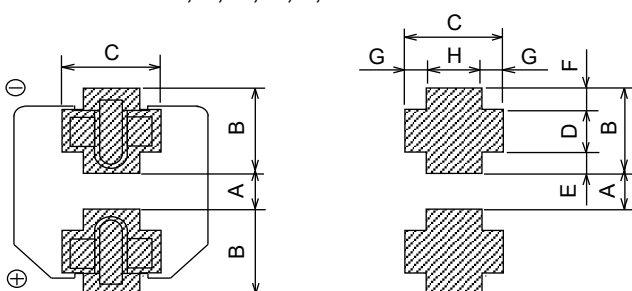
(Table of board land size vs. capacitor size)

Unit : mm

Size code	A	B	C	D	E	F	G	H
D (ø6.3xL6.1)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
D8 (ø6.3xL8.0)	1.2	3.6	3.2	2.0	0.95	0.65	1.0	1.2
E (ø8x6.5L)	1.8	4.2	5.0	1.3	1.5	1.4	1.5	2.0
F (ø8x10.5L)	2.7	4.0	4.7	1.3	1.0	1.7	1.1	2.5
G (ø10)	3.9	4.4	4.7	1.3	1.2	1.9	1.1	2.5
H (ø12.5)	3.9	6.0	6.9	2.8	1.3	1.9	2.2	2.5
J (ø16)	5.8	6.8	6.2	3.6	1.3	1.9	1.7	2.8
K (ø18)	5.8	7.3	6.2	3.6	1.8	1.9	1.7	2.8

Larger dimension of "a" may prevent back fillet from being formed adequately to obtain required solder strength.

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



\* Follow your design rules for mounting conditions, solderability, and fitting strength if some exists in order to determine the land pattern.

\* The vibration-proof capacitors of size ø6.3 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.