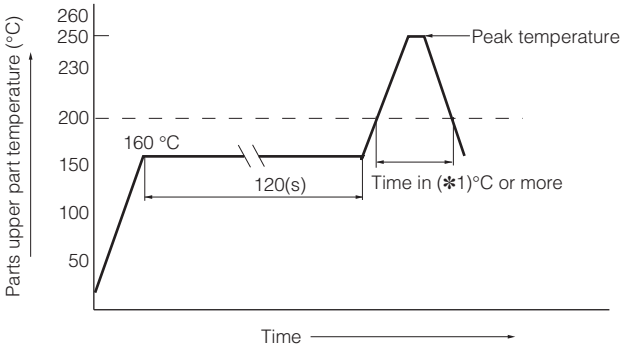
■ Reflow guaranteed condition

● RoHS compliant



■ Lead-Free reflow

Reflow No.	Fig. (1)	Fig. (2)	Fig. (3)	Fig. (4)
Category	ϕ3 to ϕ6.3	ϕ8 to ϕ10	ϕ12.5 to ϕ18	EB series (ϕ10 to ϕ18)
Peak temperature	250 °C	235 °C	230 °C (220 °C)	230 °C
Time in peak temperature	5 s	5 s	5 s (5 s)	5 s
Time in (✻1) °C or more	≧200 °C 60 s	≧200 °C 60 s	≧200 °C 20 s (30 s)	≧200 °C 20 s
Time of reflow	1 time	1 time	1 time	1 time

■ High temperature Lead-Free reflow

Reflow No.	Fig. (5)	Fig. (6)		Fig. (7)		Fig. (8)	
Category	ϕ4 to ϕ6.3	ϕ8 to ϕ10		ϕ8 to ϕ10		ϕ6.3 to ϕ10 (TK・TP series)	
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 in (✻1) °C or more	≧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
Time of reflow	2 times	2 times	1 time	2 times	1 time	2 times	2 times

Reflow No.	Fig. (9)	Fig. (10)	Fig. (11)
Category	ϕ12.5 to ϕ18 (FK, TK, HD series) 6.3 V to 35 V	ϕ12.5 to ϕ18 (FK series) 50 V to 63 V (TK series) 50 V	ϕ12.5 to ϕ18 (FK series) 80 V to 100 V (TK series) 63 V to 100 V
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 in (✻1) °C or more	≧217 °C 90 s	≧217 °C 30 s	≧217 °C 30 s
Time of reflow	2 times	2 times	1 time

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

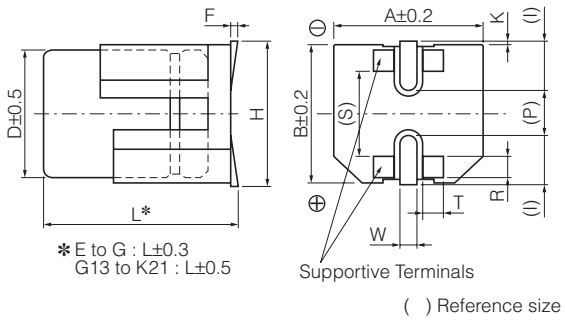
✻ Vapor heat transfer systems (VPS) are not recommended.

✻ Panasonic have several series available for pure Tin terminal and ZVEI reflow based on J-STD-020D (JEDEC). (Please contact sales for details.)

■ Dimensions (Vibration-proof products)

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

(mm)

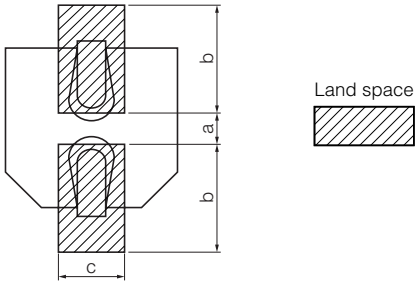


Size Code	φD	L	A, B	H max.	F	I	W	P	K	R	S	T
E	8.0	6.5	8.3	9.5	−0.1~+0.15	3.4	0.7±0.1	2.2	$0.35^{+0.15}_{-0.20}$	0.70±0.2	5.3±0.2	1.7±0.2
F	8.0	10.5	8.3	10.0	−0.1~+0.15	3.4	1.2±0.2	3.1	0.70±0.2	0.70±0.2	5.3±0.2	1.3±0.2
G	10.0	10.5	10.3	12.0	−0.1~+0.15	3.5	1.2±0.2	4.6	0.70±0.2	0.70±0.2	6.9±0.2	1.3±0.2
G13	10.0	13.8	10.3	12.0	−0.1~+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~+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
H16	12.5	16.8	13.5	15.0	−0.1~+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~+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
J21	16.0	21.8	17.0	19.0	−0.1~+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~+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~+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

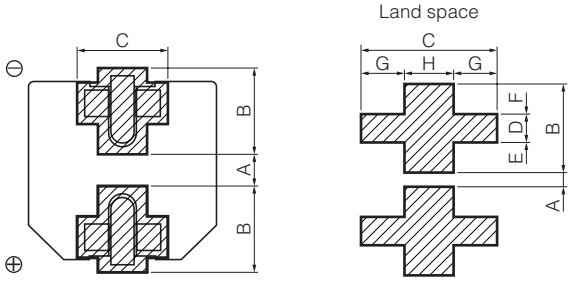


[Table of Board Land Size vs. Capacitor Size] (mm)

Size/Dimension	a	b	c
A (φ3)	0.6	2.2	1.5
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
E (φ8 × 6.2L)	2.2	4.0	1.6
F (φ8 × 10.2L)	3.1	4.0	2.0
G (φ10 × 10.2L)	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 strenght.

● Vibration-proof products



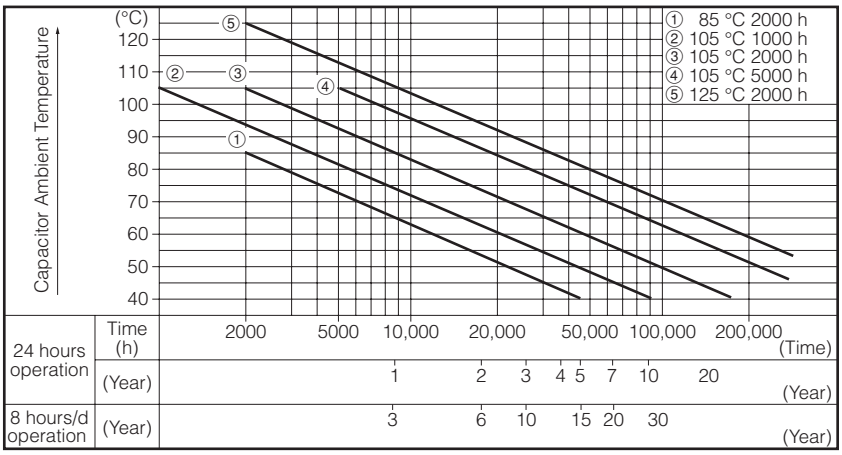
[Table of Board Land Size vs. Capacitor Size] (mm)

Size/Dimension	A	B	C	D	E	F	G	H
E (φ8 × 6.5L)	1.8	4.2	5.0	1.3	1.5	1.4	1.5	2.0
F (φ8 × 10.5L)	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 strenght.

✻ Take mounting conditions, solderability and fitting strenght into consideration when selecting parts for your company’s design.

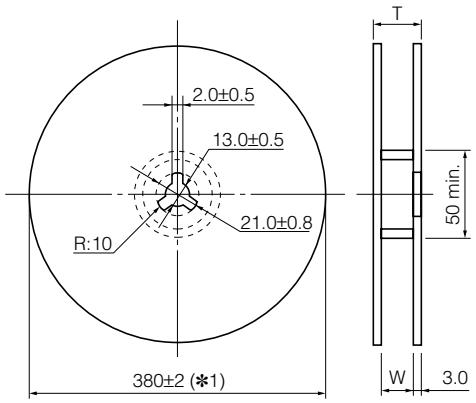
■ Expected Life Estimate Quick Reference Guide



Surface Mount Type

■ Packaging Specifications.

● Reel Dimensions in mm (not to scale)



(mm)

Size	W
A,B,C	14±1
D, E,D8	18±1
F, G	26±1

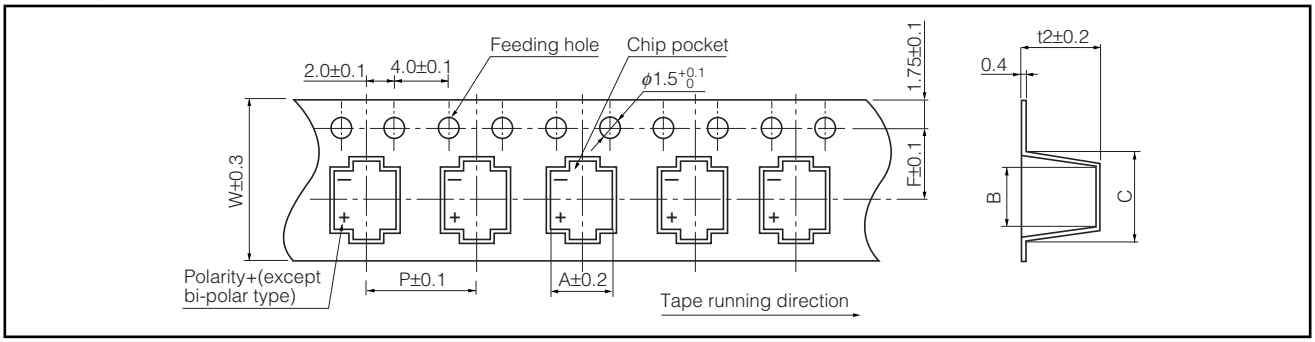
Size	W
G13 to G21	34±1
H13 to H21	
J16 to J21	46±1
K16 to K21	

(✻1) 330 mm (13 inch) reel is available on request. (code : A)

Size code	Height	Min.Packing Quantity pcs.	
		380 mm reel	330 mm reel
A, B	L=5.4 mm	2000	1500
	L=5.8 mm	2000	1200
C, D	L=5.4 mm	1000	1000
	L=5.8 mm	1000	800
E	–	1000	800
D8	–	900	500
F, G	–	500	300

Size code	Min.Packing Quantity pcs.
	330 mm reel
G13	250
G17, H13	200
G21, H16	150
H21, J16, K16	125
J21, K21	75

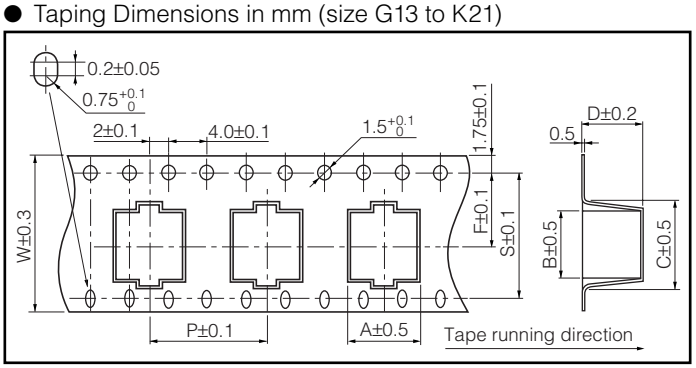
● Taping Dimensions in mm (size A to G)



Ask factory for technical specifications.

Size code	W	A	B	C	P	F	t2	
							Height	
							L=5.4 mm	L=5.8 mm
A	12.0	3.4	3.5±0.2	6.0±0.3	8.0	5.5	5.8	–
B	12.0	4.7	4.6±0.2	6.5±0.3	8.0	5.5	5.8	6.2
C	12.0	5.7	5.7±0.3	8.0±0.5	12.0	5.5	5.8	6.4
D	16.0	7.0	7.0±0.3	9.0±0.5	12.0	7.5	5.8	6.4
D8	16.0	7.0	7.0±0.3	9.0±0.5	12.0	7.5	8.4	
E	16.0	8.7	8.7±0.3	11.4±0.5	12.0	7.5	6.8	
F	24.0	8.7	8.7±0.3	12.5±0.5	16.0	11.5	11.0	
G	24.0	10.7	10.7±0.3	14.5±0.5	16.0	11.5	11.0	

● Taping Dimensions in mm (size G13 to K21)



Ask factory for technical specifications.

Size	Taping Size							
	A	B	C	D	F	P	S	W
G13	10.7	10.7	14.5	14.5	14.2	20.0	28.4	32.0
G17	10.7	10.7	14.5	17.5	14.2	20.0	28.4	32.0
H13	14.0	14.0	18.0	14.5	14.2	24.0	28.4	32.0
H16	14.0	14.0	18.0	17.5	14.2	24.0	28.4	32.0
J16	17.5	17.5	23.0	17.5	20.2	28.0	40.4	44.0
J21	17.5	17.5	23.0	22.5	20.2	28.0	40.4	44.0
K16	19.5	19.5	26.0	17.5	20.2	32.0	40.4	44.0
K21	19.5	19.5	26.0	22.5	20.2	32.0	40.4	44.0

00 Sep. 2010