

CHIP ALUMINUM ELECTROLYTIC CAPACITORS



ELECTRO-MECHANICS

ISO 9001

International Organization for
Standardization

Registered by UL to ISO 9001 under UL's accreditation
by Raad voor de Certificate(RvC), the Dutch Council
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Registration NO:A1901(1994. 6. 17)

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UL

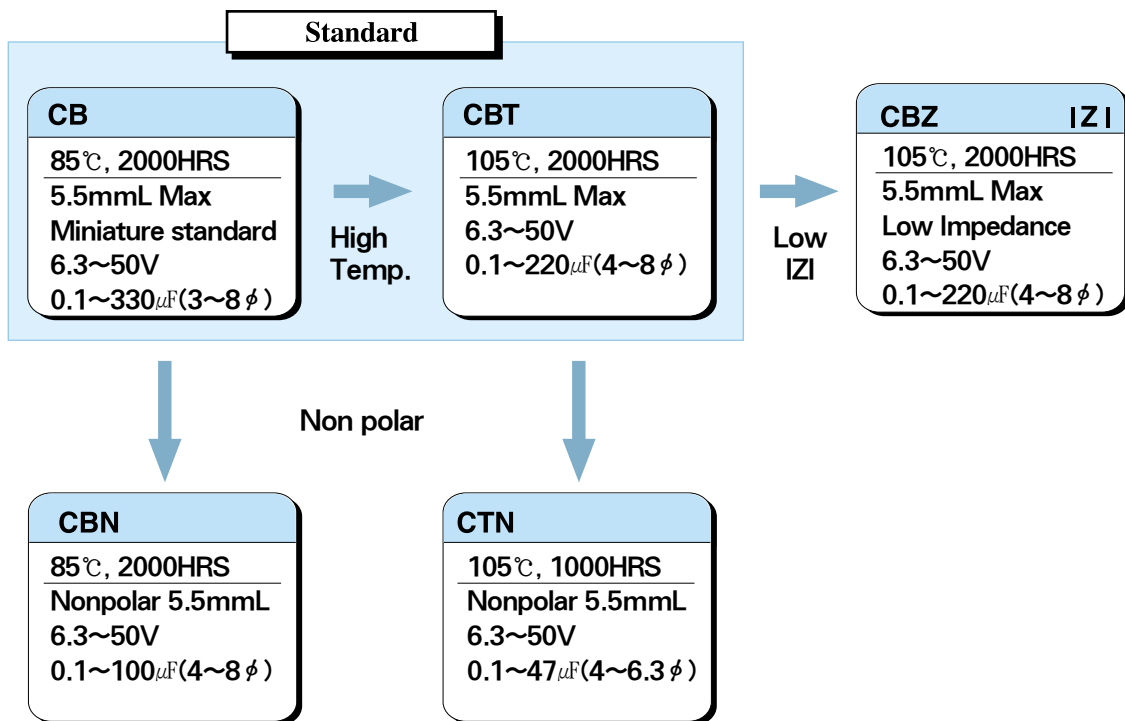


RvC

CHIP ALUMINUM ELECTROLYTIC CAPACITORS



CHIP (SMD TYPE) SERIES CHART



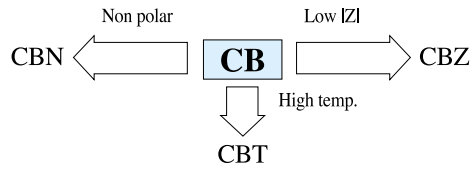
Chip type aluminum electrolytic capacitor

CB Height 5.5mmL Standard Series



Features

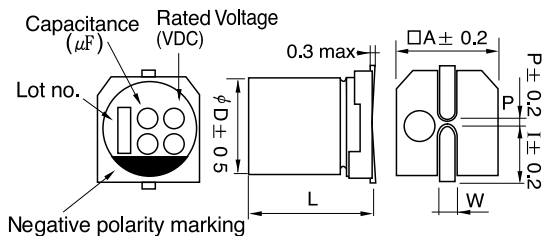
- Designed for surface mounting (Carrier tape)
- For reflow soldering
- Miniature standard
- Height 5.5mm max (ϕ D=8 : 6.5mm Max)



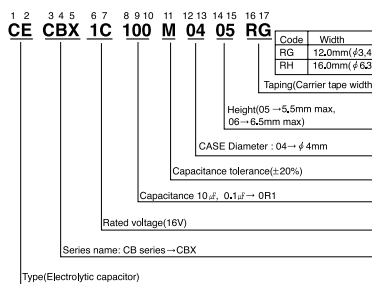
Specifications

Item	Performance characteristics						
Operating temperature	-40 ~ +85°C						
Rated voltage range	6.3 ~ 50Vdc						
Capacitance range	0.1 ~ 330 μ F						
Capacitance tolerance	\pm 20% at 120Hz, 20°C						
Leakage current	After 2 minutes application of rated voltage. Leakage current is not more than 0.01CV or 3(μ A) whichever is greater.						
Dissipation factor (tan δ)	Rated voltage(V)	6.3	10	16	25	35	50
	tan δ (max)	T ϕ 3	0.30	0.24	0.20	0.16	0.14
Stability at low temperature (Impedance ratio : max)	Rated voltage(V)	6.3	10	16	25	35	50
	Z (-25°C)/ Z (+20°C)	4	3	2	2	2	2
Load life	Rated voltage(V)	6.3	10	16	25	35	50
	Z (-40°C)/ Z (+20°C)	8	6	4	4	3	3
Shelf life	Leakage current	Initial specified value or less					
	Capacitance change	Within \pm 20% of the initial measured value					
	tan δ	Within 200% of the initial specified value					
Applicable standards	JIS C 5141, JIS C 5102						

Dimensions



Part number system



(unit : mm)

ϕ D	L (+0.1 -0.3)	A	I	W	P
3	5.4	3.3	1.5	0.45~0.75	0.6
4	5.4	4.3	1.8	0.5~0.8	1.0
5	5.4	5.3	2.2	0.5~0.8	1.5
6.3	5.4	6.6	2.4	0.5~0.8	2.2
8	6.2 \pm 0.3	8.3	3.4	0.5~0.8	2.3

Note. 'L' = 5.7 \pm 0.3(diameter 6.3 ϕ 'W')

Case size & Ripple current

ϕ D: Case diameter(mm)

R.C: Maximum ripple current(at 85°C, 120Hz:mArms)

CAP(μ F)	WV PART NO.	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)	
		ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.
0.1	0R1											4	1.3
0.22	R22											4	2.9
0.33	R33											4	3.5
0.47	R47											4	5
1	010										4	7	10
1.5	1R5										4	8	12
2.2	2R2										4	9	16
3.3	3R3										4	11	18
4.7	4R7							4	22		4	22	5(4) 23
6.8	6R7							4	24		4	25	5 28
10	100			4	15	4	28	5(4)	28	5(4)	30	6.3(5) 35	
15	150			4	20	4	34	5(4)	40	5	40	6.3 42	
22	220	4	29	5(4)	34	5(4)	39	6.3(5)	55	6.3	60	☆6.3 59	
33	330	5(4)	38	5(4)	43	6.3(5)	58	6.3(5)	65	☆6.3	68	8 95	
47	470	5(4)	46	6.3(5)	52	6.3(5)	70	☆6.3	75	8	115		
68	680	5	54	6.3	60	6.3	76	8	115	8	150		
100	101	6.3	71	☆6.3	76	☆6.3	86	8	160				
150	151	6.3	83	8	130	8	185						
220	221	8	175	8	175								
330	331	8	210										

☆ available case diameter ' ϕ 8'

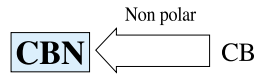
Chip type aluminum electrolytic capacitor

CBN Series Height 5.5mmL Nonpolar



■ Features

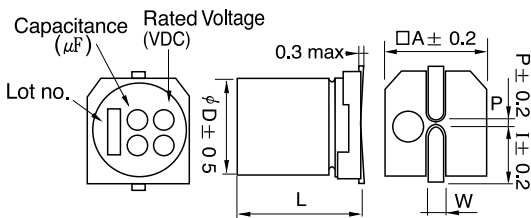
- Designed for surface mounting (Carrier tape)
- For reflow soldering
- Non polar
- Height 5.5mm max (ϕ D=8 : 6.5mm Max)



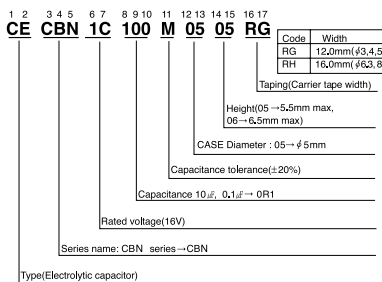
■ Specifications

Item	Performance characteristics						
Operating temperature	-40 ~ +85°C						
Rated voltage range	6.3 ~ 50Vdc						
Capacitance range	0.1 ~ 100 μ F						
Capacitance tolerance	\pm 20% at 120Hz, 20°C						
Leakage current	After 2 minutes application of rated voltage. Leakage current is not more than 0.01CV or 3(μ A) whichever is greater.						
Dissipation factor ($\tan\delta$)	Rated voltage(V)	6.3	10	16	25	35	50
	$\tan\delta$ (max)	0.32	0.26	0.24	0.22	0.18	0.18
Stability at low temperature (Impedance ratio : max)	Rated voltage(V)	6.3	10	16	25	35	50
	Z (-25°C)/ Z (+20°C)	4	3	2	2	2	2
	Z (-40°C)/ Z (+20°C)	8	6	4	4	3	3
Load life	After 2000 hours application of DC rated working voltage at 85°C the measurement shall meet following limits. (Every 250 hours, reverse polarity) Measurements shall be performed after 2 hours exposure at room						
	Leakage current	Initial specified value or less					
	Capacitance change	Within \pm 20% of the initial measured value					
	$\tan\delta$	Within 200% of the initial specified value					
Shelf life	After 1000 hours at 85°C without voltage application measurement shall meet the following limits. Measurements shall be performed after exposure for 24 hours at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within \pm 20% of the initial measured value					
	$\tan\delta$	Within 200% of the initial specified value					
Applicable standards	JIS C 5141, JIS C 5102						

■ Dimensions



■ Part number system



(unit : mm)

ϕ D	L (+0.1 / -0.3)	A	I	W	P
3	5.4	3.3	1.5	0.45~0.75	0.6
4	5.4	4.3	1.8	0.5~0.8	1.0
5	5.4	5.3	2.2	0.5~0.8	1.5
6.3	5.4	6.6	2.4	0.5~0.8	2.2
8	6.2 \pm 0.3	8.3	3.4	0.5~0.8	2.3

■ Case size & Ripple current

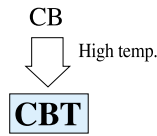
ϕ D: Case diameter(mm)

R.C: Maximum ripple current(at 85°C, 120Hz:mArms)

CAP(μ F)	WV PART NO.	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)	
		ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.	ϕ D	R.C.
0.1	0R1											4	1.3
0.22	R22											4	2.3
0.33	R33											4	2.8
0.47	R47											4	4.0
0.68	R68											4	4.5
1	010											4	8.4
2.2	2R2									4	8.4	5	13
3.3	3R3							4	12	5	16	5	17
4.7	4R7					4	12	5	16	5	18	6.3	20
6.8	6R8			4	12	5	16	5	18	6.3	20	8	30
10	100	4	13	4	17	5	23	6.3	27	6.3	29	8	36
22	220	5	28	6.3	33	6.3	37	8	50	8	54		
33	330	6.3	37	6.3	41	6.3	49	8	61				
47	470	6.3	46	8	61	8	75						
68	680	6.3	65										
100	101	8	82										

Chip type aluminum electrolytic capacitor

CBT Height 5.5mmL 105°C Standard Series



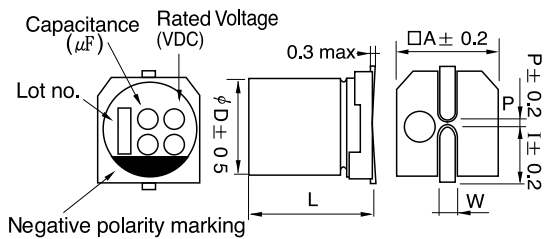
■ Features

- Designed for surface mounting (Carrier tape)
- For reflow soldering
- High reliability (105°C, 2000 hours)
- Height 5.5mm max (φ D=8 : 6.5mm Max)

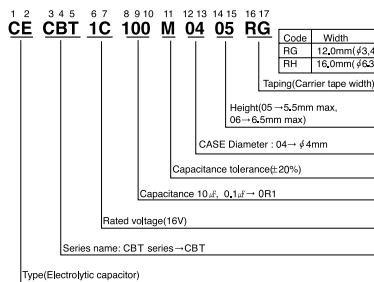
■ Specifications

Item	Performance characteristics						
Operating temperature	-55 ~ +105°C						
Rated voltage range	6.3 ~ 50Vdc						
Capacitance range	0.1 ~ 220μF						
Capacitance tolerance	±20% at 120Hz, 20°C						
Leakage current	After 2 minutes application of rated voltage. Leakage current is not more than 0.01CV or 3(μA) whichever is greater.						
Dissipation factor (tanδ)	Rated voltage(V)	6.3	10	16	25	35	50
	tanδ (max)	0.30	0.22	0.16	0.14	0.12	0.12
Stability at low temperature (Impedance ratio : max)	Rated voltage(V)	6.3	10	16	25	35	50
	Z (-25°C)/ Z (+20°C)	4	3	2	2	2	2
	Z (-40°C)/ Z (+20°C)	8	6	4	4	3	3
Load life	After 2000 hours (φ D≤ 6.3:1000) application of DC rated working voltage at 105°C the measurement shall meet following limits. Measurements shall be performed after 2 hours exposure at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Shelf life	After 1000 hours at 105°C without voltage application measurement shall meet the following limits. Measurements shall be performed after exposure for 24 hours at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Applicable standards	JIS C 5141, JIS C 5102						

■ Dimensions



■ Part number system



(unit : mm)

φ D	L (+0.1 / -0.3)	A	I	W	P
3	5.4	3.3	1.5	0.45~0.75	0.6
4	5.4	4.3	1.8	0.5~0.8	1.0
5	5.4	5.3	2.2	0.5~0.8	1.5
6.3	5.4	6.6	2.4	0.5~0.8	2.2
8	6.2±0.3	8.3	3.4	0.5~0.8	2.3

■ Case size & Ripple current

φ D: Case diameter (mm)

R.C: Maximum ripple current at 85°C, 120Hz: mArms

CAP (μF)	WV	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)	
		PART NO.	φ D	R.C.	φ D	R.C.	φ D	R.C.	φ D	R.C.	φ D	R.C.	
0.1	0R1											4	1.3
0.22	R22											4	2.6
0.33	R33											4	3.2
0.47	R47											4	5
0.68	R68											4	6
1	010									4	10	4	10
2.2	2R2									4	16	4	16
3.3	3R3									4	16	4	16
4.7	4R7							4	22	4	22	5	23
6.8	6R8							4	23	5	26	5	27
10	100			4	28	4	28	5	29	5	30	6.3	35
22	220	4	29	5	30	5	39	6.3	55	6.3	60	8	70
33	330	5	34	5	43	6.3	45	6.3	65	8	84		
47	470	5	46	6.3	48	6.3	70	8	91				
68	680	6.3	65	6.3	65	6.3	70						
100	101	6.3	71	6.3, 8	90, 110	6.3, 8	90, 110						
220	221	8	102										

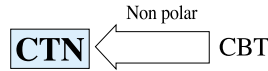
Chip type aluminum electrolytic capacitor

CTN Height 5.5mmL 105°C Nonpolar Series



■ Features

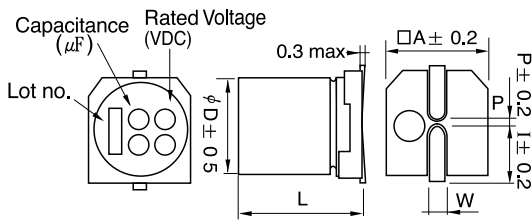
- Designed for surface mounting (Carrier tape)
- For reflow soldering
- Non polar, High temperature (105°C)
- Height 5.5mm max



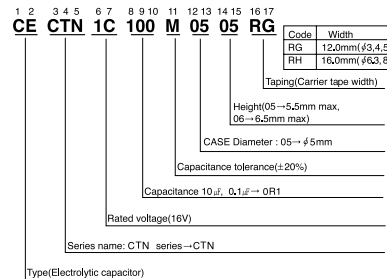
■ Specifications

Item	Performance characteristics						
Operating temperature	-40 ~ +105°C						
Rated voltage range	6.3 ~ 50Vdc						
Capacitance range	0.1 ~ 47μF						
Capacitance tolerance	±20% at 120Hz, 20°C						
Leakage current	After 2 minutes application of rated voltage. Leakage current is not more than 0.01CV or 3(μA) whichever is greater.						
Dissipation factor (tanδ)	Rated voltage(V)	6.3	10	16	25	35	50
	tanδ (max)	0.32	0.26	0.24	0.20	0.18	0.18
Stability at low temperature (Impedance ratio : max)	Rated voltage(V)	6.3	10	16	25	35	50
	Z (-25°C)/ Z (+20°C)	4	3	2	2	2	2
	Z (-40°C)/ Z (+20°C)	8	6	4	4	3	3
Load life	After 1000 hours application of DC rated working voltage at 85°C the measurement shall meet following limits. (Every 250 hours, reverse polarity) Measurements shall be performed after 2 hours exposure at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Shelf life	After 1000 hours at 85°C without voltage application measurement shall meet the following limits. Measurements shall be performed after exposure for 24 hours at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Applicable standards	JIS C 5141, JIS C 5102						

■ Dimensions



■ Part number system



(unit : mm)

φ D	L (+0.1 / -0.3)	A	I	W	P
3	5.4	3.3	1.5	0.45~0.75	0.6
4	5.4	4.3	1.8	0.5~0.8	1.0
5	5.4	5.3	2.2	0.5~0.8	1.5
6.3	5.4	6.6	2.4	0.5~0.8	2.2
8	6.2±0.3	8.3	3.4	0.5~0.8	2.3

■ Case size & Ripple current

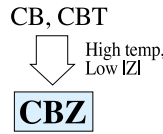
φ D: Case diameter(mm)

R.C: Maximum ripple current(at 85°C, 120Hz:mArms)

CAP(μF)	WV PART NO.	6.3(0J)		10(1A)		16(1C)		25(1E)		35(1V)		50(1H)	
		φ D	R.C.	φ D	R.C.	φ D	R.C.	φ D	R.C.	φ D	R.C.	φ D	R.C.
0.1	0R1											4	1.3
0.22	R22											4	2.3
0.33	R33											4	2.8
0.47	R47											4	4.0
1	010											4	8.4
2.2	2R2											4	13
3.3	3R3							5	12	5	16	5	17
4.7	4R7					4	12	5	16	5	18	6.3	20
10	100			4	17	5	23	6.3	27	6.3	29		
22	220	5	28	6.3	33	6.3	37						
33	330	6.3	37	6.3	41	6.3	49						
47	470	6.3	45										

Chip type aluminum electrolytic capacitor

CBZ Height 5.5mmL Low Impedance Series



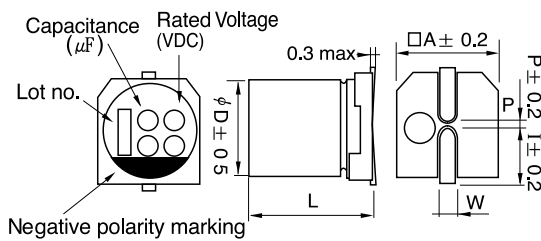
■ Features

- Designed for surface mounting (Carrier tape)
- For reflow soldering
- Height 5.5mm max (φ D=8 : 6.5mm Max)
- Low impedance at high frequency & Wide temperature range

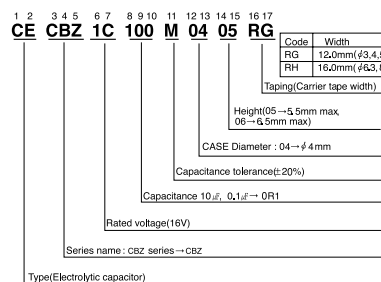
■ Specifications

Item	Performance characteristics						
Operating temperature	-55 ~ +105℃						
Rated voltage range	6.3 ~ 50Vdc						
Capacitance range	1 ~ 220μF						
Capacitance tolerance	±20% at 120Hz, 20℃						
Leakage current	After 2 minutes application of rated voltage. Leakage current is not more than 0.01CV or 3(μA) whichever is greater.						
Dissipation factor (tanδ)	Rated voltage(V)	6.3	10	16	25	35	50
	tanδ (max)	0.26	0.19	0.16	0.14	0.12	0.12
Stability at low temperature (Impedance ratio : max)	Rated voltage(V)	6.3	10	16	25	35	50
	IZI(-25℃)/IZI(+20℃)	2	2	2	2	2	2
	IZI(-40℃)/IZI(+20℃)	3	3	3	3	3	3
Load life	After 2000 hours (φ D≤ 6.3:1000) application of DC rated working voltage at 105℃ the measurement shall meet following limits. Measurements shall be performed after 2 hours exposure at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Shelf life	After 1000 hours at 105℃ without voltage application measurement shall meet the following limits. Measurements shall be performed after exposure for 24 hours at room temperature.						
	Leakage current	Initial specified value or less					
	Capacitance change	Within ±20% of the initial measured value					
	tanδ	Within 200% of the initial specified value					
Applicable standards	JIS C 5141, JIS C 5102						

■ Dimensions



■ Part number system



(unit : mm)

φ D	L (+0.1 / -0.3)	A	I	W	P
3	5.4	3.3	1.5	0.45~0.75	0.6
4	5.4	4.3	1.8	0.5~0.8	1.0
5	5.4	5.3	2.2	0.5~0.8	1.5
6.3	5.4	6.6	2.4	0.5~0.8	2.2
8	6.2±0.3	8.3	3.4	0.5~0.8	2.3

Note. L' = 5.7±0.3(diameter 6.3φ ⚡)

■ Case size & Ripple current

φ D : Case diameter(mm)
 R.C : Maximum ripple current (at 105℃, 100kHz:mArms)
 IZI : I/100kHz, 20℃

CAP(μF)	WV	6.3(0J)			10(1A)			16(1C)			25(1E)			35(1V)			50(1H)		
		PART NO.	φ D	R.C.	IZI	φ D	R.C.	IZI	φ D	R.C.	IZI	φ D	R.C.	IZI	φ D	R.C.	IZI		
1	010													4	60	3.0	4	30	5.0
1.5	1R5													4	60	3.0	4	30	5.0
2.2	2R2													4	60	3.0	4	30	5.0
3.3	3R3													4	60	3.0	4	30	5.0
4.7	4R7													4	60	3.0	5	50	3.0
6.8	6R7													5	95	1.8	6.3	60	2.5
10	100				4	25	3.0	4	60	3.0	5	80	2.6	5	95	1.8	6.3	70	2.0
15	150				4	35	3.0	5	80	2.6	6.3	115	1.3	6.3	115	1.3	8	85	1.0
22	220	4	60	3.0	5	80	2.6	5	95	1.8	6.3	140	1.0	6.3	140	1.0	8	120	0.7
33	330	5	80	2.6	5	95	1.8	6.3	115	1.3	6.3	140	1.0	☆8	230	0.4			
47	470	5	95	1.8	6.3	115	1.3	6.3	140	1.0	☆8	230	0.4	8	230	0.4			
68	680	6.3	140	1.0	6.3	115	1.3	☆8	230	0.4	☆8	450	0.3						
100	101	6.3	140	1.0	☆8	230	0.4	☆8	230	0.4									
150	151	☆8	150	0.8	8	230	0.4												
220	221	8	230	0.8															

☆ available case diameter 'φ 6.3'

■ Soldering

- Resistance to soldering heat

After 30 sec, 250°C (mounting position)

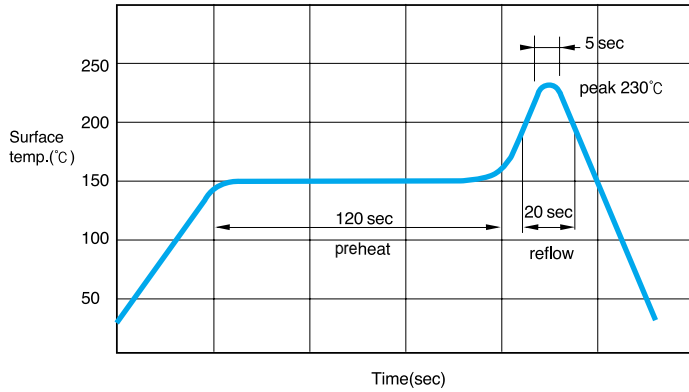
Capacitance change	Within $\pm 10\%$ of initial measured value
Tan δ	Less than initial specified value
Leakage current	Less than initial specified value

- Reflow soldering

After reflow soldering temperature profile

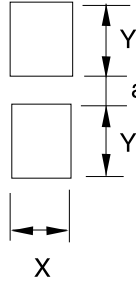
Capacitance change	Within $\pm 10\%$ of initial measured value
Tan δ	Less than initial specified value
Leakage current	Less than initial specified value

■ Maximum permissible reflow soldering temperature profile



■ Solder Land

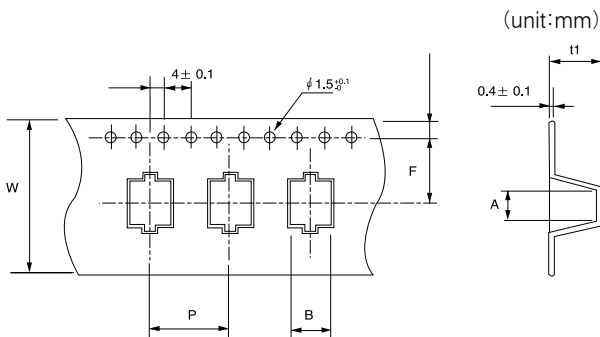
(unit:mm)



Size	X	Y	a
ϕ 3	1.6	2.2	0.8
4	1.6	2.6	1.0
5	1.6	3.0	1.4
6.3	1.6	3.5	2.1
8	1.6	4.0	2.2

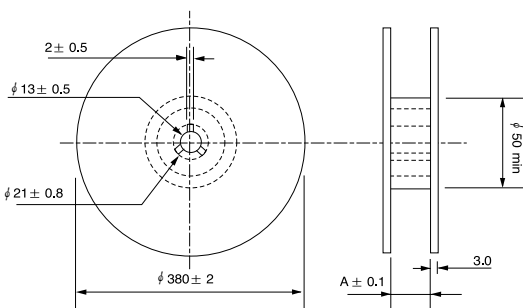
■ Packing specification

- Embossed taping



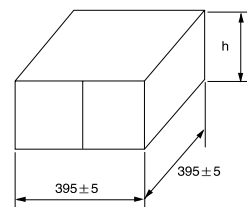
CODE	W	A	B	F	P	t1
ϕ D	± 0.3	± 0.1	± 0.1	± 0.1	± 0.1	± 0.2
3	12.0	3.5	3.4	5.5	8.0	5.8
4	12.0	4.6	4.7	5.5	8.0	5.8
5	12.0	6.0	6.0	5.5	12.0	5.8
6.3	16.0	7.0	7.0	7.5	12.0	5.8
8	16.0	8.7	8.7	7.5	12.0	6.8

■ Taping reel



ϕ D	A	Quantity(pcs)
3	14.0	2,000
4	14.0	2,000
5	14.0	1,000
6.3	18.0	1,000
8	18.0	1,000

■ Packing quantity



(unit:pcs)

Case(ϕ D)	h(mm)	Inner 1REEL	Outer BOX
3	220	2,000	20,000
4	220	2,000	20,000
5	220	1,000	10,000
6.3	250	1,000	10,000
8	250	1,000	10,000

MEMO



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