ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZD 3.0mmL Chip Type series

For SMD | Smaller | Anti-Solvent Feature

- Chip type with 3.0mmL height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

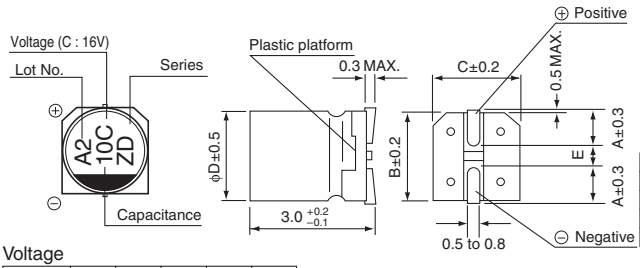
Products which are scheduled to be discontinued.
Not recommended for new designs

ZR
Smaller
ZD

■Specifications

Item	Performance Characteristics						
Category Temperature Range	−40 to +85°C						
Rated Voltage Range	4 to 25V						
Rated Capacitance Range	2.2 to 100μF						
Capacitance Tolerance	±20% at 120Hz, 20°C						
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.						
Tangent of loss angle (tan δ)	Rated voltage (V)	4	6.3	10	16	25	120Hz 20°C
	tan δ (MAX.)	0.50	0.40	0.30	0.24	0.19	
Stability at Low Temperature	Rated voltage (V)	4	6.3	10	16	25	120Hz
	Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C	7	4	3	2	2	
	Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C	15	8	8	4	4	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C.	Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value					
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.						
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.	Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value					
Marking	Black print on the case top.						

■Chip Type



(mm)

ϕD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Voltage

V	4	6.3	10	16	25
Code	g	j	A	C	E

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	D	1	C	1	0	0	M	C	L	1	G	B

14: Taping code
13: Configuration
9: Capacitance tolerance (±20%)
6 7 8: Rated capacitance (10μF)
4 5: Rated voltage (16V)
2 3: Series name
1: Type

■Dimensions

Cap. (μF) \ V / Code	4		6.3		10		16		25	
	0G		0J		1A		1C		1E	
2.2	2R2								4	7
3.3	3R3								4	11
4.7	4R7								4	16
5.6	5R6								5	18
6.8	6R8								5	20
10	100						5	23	6.3	27
22	220	4	20	5	28	5	33	6.3	37	
33	330	5	28	5	37	6.3	41			
47	470	5	33	6.3	45					Case size ϕD (mm) / Rated ripple
100	101	6.3	56	6.3	70					

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size soldering by reflow are given in page 18,19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZR series

3.95mmL MAX. Chip Type

For SMD | Smaller | Anti-Solvent Feature

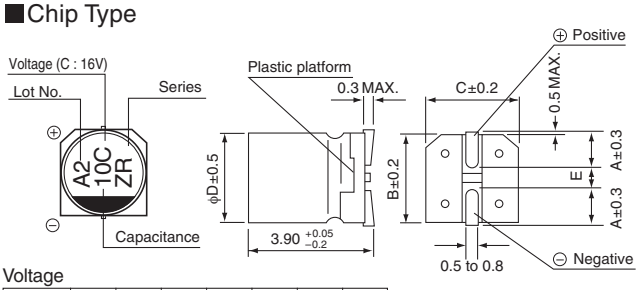
- Chip type with 3.95mmLMAX height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

ZS
Smaller
ZR
Smaller
ZD

■Specifications

Item	Performance Characteristics								
Category Temperature Range	−40 to +85°C								
Rated Voltage Range	4 to 50V								
Rated Capacitance Range	0.1 to 220μF								
Capacitance Tolerance	±20% at 120Hz, 20°C								
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.								
Tangent of loss angle (tan δ)	Rated voltage (V)		4	6.3	10	16	25	35	50	120Hz 20°C
	tan δ (MAX.)		0.50	0.30	0.24	0.19	0.16	0.14	0.14	
Stability at Low Temperature	Rated voltage (V)		4	6.3	10	16	25	35	50	120Hz
	Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	7	4	3	2	2	2	2	
		Z−40°C / Z+20°C	15	8	8	4	4	3	3	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C.									
	Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value									
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.									
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.									
	Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value									
Marking	Black print on the case top.									

■Chip Type



(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Voltage

V	4	6.3	10	16	25	35	50
Code	g	j	A	C	E	V	H

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	R	1	C	1	0	0	M	C	L	1	G	B

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (10μF)
Rated voltage (16V)
Series name
Type

■Dimensions

Cap. (μF) \ V	4		6.3		10		16		25		35		50	
Code	0G		0J		1A		1C		1E		1V		1H	
0.1	0R1												4	1.0
0.22	R22												4	2.0
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												4	17
4.7	4R7								4	16	4	18	5	20
10	100						4	23	5	27	5	29	6.3	33
22	220			4	28	5	33	5	37	6.3	42	6.3	46		
33	330	4	28	5	37	5	41	6.3	49	6.3	52				
47	470	4	33	5	45	6.3	52	6.3	58						
100	101	5	56	6.3	70									
220	221	6.3	96										Case size φD (mm)	Rated ripple

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size soldering by reflow are given in page 18,19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZE series

3.95mmL MAX. Chip Type, Bi-polarized

For SMD | Smaller | Bi-polarized | Anti-Solvent Feature

- Chip type with 3.95mmL MAX, height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

Products which are scheduled to be discontinued.
Not recommended for new designs

ZP
Smaller
ZE

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 47μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.05 CV or 10 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.30	0.24	0.20	0.18	0.16	0.16

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	8	4	4	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C with the polarity inverted every 250 hours.

Capacitance change	Within ±30% of the initial capacitance value
tan δ	300% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

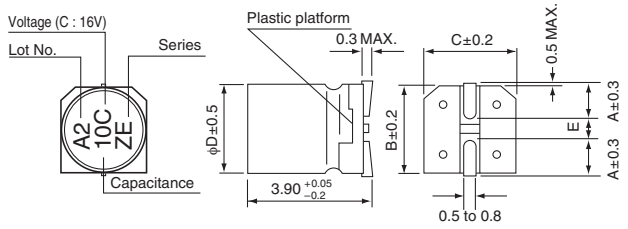
Shelf Life — After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type



(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	E	1	C	1	0	0	M	C	L	1	G	B

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (10μF)
Rated voltage (16V)
Series name
Type

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4	1.0
0.22	R22											4	2.0
0.33	R33											4	2.8
0.47	R47											4	4.0
1	010											4	8.4
2.2	2R2									4	8.4	5	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									Case size φD (mm)	Rated ripple

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size soldering by reflow are given in page 18,19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZG 3.95mmL MAX. Chip Type, Wide Temperature Range series

For SMD | Smaller | Anti-Solvent Feature

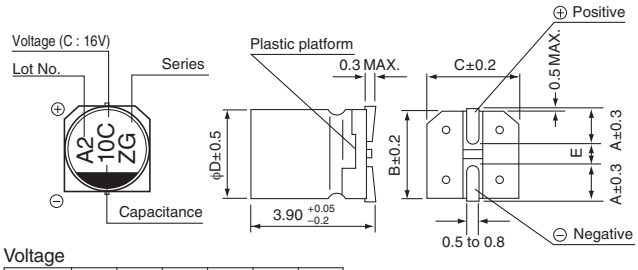
- Chip type with 3.95mmLMAX height. Operating over wide temperature range of −40 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

ZT → Smaller → ZG

■Specifications

Item	Performance Characteristics							
Category Temperature Range	−40 to +105°C							
Rated Voltage Range	6.3 to 50V							
Rated Capacitance Range	0.1 to 100μF							
Capacitance Tolerance	±20% at 120Hz, 20°C							
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.							
Tangent of loss angle (tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	120Hz 20°C
	tan δ (MAX.)	0.38	0.32	0.20	0.16	0.14	0.14	
Stability at Low Temperature	Rated voltage (V)	6.3	10	16	25	35	50	120Hz
	Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C	6	5	3	3	3	3	
	Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C	10	10	6	6	4	4	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.	Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value						
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.							
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.	Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value						
Marking	Black print on the case top.							

■Chip Type



(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	G	1	C	1	0	0	M	C	L	1	G	B

- 1 2 3: Type
- 4: Series name
- 5: Rated voltage (16V)
- 6 7 8: Rated capacitance (10μF)
- 9: Capacitance tolerance (±20%)
- 10 11: Configuration
- 12 13 14: Taping code

■Dimensions

Cap. (μF)	Code	6.3 0J		10 1A		16 1C		25 1E		35 1V		50 1H	
0.1	0R1											4	0.9
0.22	R22											4	2.2
0.33	R33											4	2.8
0.47	R47											4	3.3
1	010											4	5.4
2.2	2R2											4	9.6
3.3	3R3											4	12
4.7	4R7							4	11	4	13	5	16
10	100					4	16	5	20	5	22	6.3	26
22	220	4	19	5	24	5	26	6.3	33	6.3	36		
33	330	5	26	5	30	6.3	35	6.3	42				
47	470	5	32	6.3	40	6.3	44						
100	101	6.3	52									Case size φD (mm)	Rated ripple

Rated ripple current (mArms) at 105°C 120Hz

●Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size soldering by reflow are given in page 18,19.
- Please refer to page 3 for the minimum order quantity.

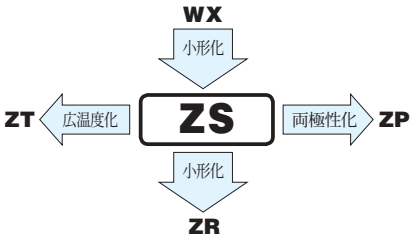
CAT.8100D

アルミニウム電解コンデンサ ALUMINUM ELECTROLYTIC CAPACITORS

ZS チップ4.5mmL 超小形化品 シリーズ

面実装品　小形薄形品　耐洗浄品

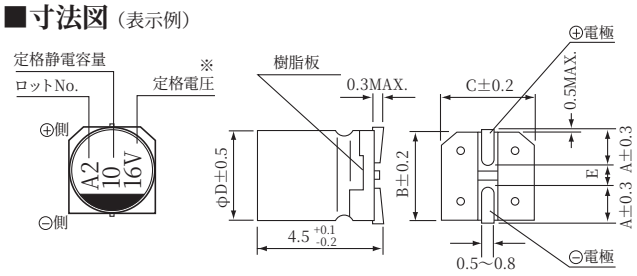
- 面実装タイプ製品高さ 4.5mmL 品。
- キャリアテーピング包装により自動装着が可能。
- RoHS 指令（2011/65/EU）対応済。



■仕様

項　　目	性　　能								
カテゴリ温度範囲	－40～＋85℃								
定格電圧範囲	4～50V								
定格静電容量範囲	0.1～220μF								
定格静電容量許容差	±20%（120Hz，20℃）								
漏れ電流	I＝0.01CV または 3（μA）いずれか大きい値以下（2分値）								
損失角の正接 (tan δ)	定格電圧（V）		4	6.3	10	16	25	35	50	120Hz 20℃
	tan δ（MAX.）		0.50	0.30	0.24	0.19	0.16	0.14	0.14	
温度特性	定格電圧（V）		4	6.3	10	16	25	35	50	120Hz
	インピーダンス比（MAX.）	Z－25℃/Z＋20℃	7	4	3	2	2	2	2	
		Z－40℃/Z＋20℃	15	8	8	4	4	3	3	
耐久性	85℃中において 2000 時間定格電圧連続印加後、20℃に戻し測定を行ったとき、下記項目を満足する									
	静電容量変化率	初期値の ±20%以内								
	tan δ	初期規格値の 200%以下								
	漏れ電流	初期規格値以下								
高温無負荷特性	85℃　1000 時間　無負荷放置後、20℃にて JIS C 5101-4　4.1 項による電圧処理を行った後、上記耐久性の規格値を満足する									
はんだ耐熱性	電極端子面を 250℃の熱板上に 30 秒間放置後、20℃に戻し測定を行ったとき、下記項目を満足する									
	静電容量変化率	初期値の ±10%以内								
	tan δ	初期規格値以下								
	漏れ電流	初期規格値以下								
表示	ケース底に黒色表示									

■寸法図（表示例）



※ 6.3V は「6V」の表示

（単位：mm）

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

品番コード体系（例：16V 10μF）

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	S	1	C	1	0	0	M	C	L	1	G	B

- 14：テーピング仕様
- 13：形状
- 10～11：容量許容差（±20%）
- 6～8：定格静電容量（10μF）
- 4～5：定格電圧（16V）
- 2～3：シリーズ名
- 1：品種

■寸法表

定格静電容量(μF) ＼ V	4		6.3		10		16		25		35		50	
品番コード	0G		0J		1A		1C		1E		1V		1H	
0.1	0R1												4	1.0
0.22	R22												4	2.0
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												4	17
4.7	4R7									4	16	4	18	5	20
10	100							4	23	5	27	5	29	6.3	33
22	220			4	28	5	33	5	37	6.3	42	6.3	46		
33	330	4	28	5	37	5	41	6.3	49	6.3	52				
47	470	4	33	5	45	6.3	52	6.3	58						
100	101	5	56	6.3	70										
220	221	6.3	96											ケース φD	定格リプル

定格リプル電流（mArms）at 85℃ 120Hz

●定格リプル電流の周波数補正係数

周 波 数	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz～
補正係数	0.70	1.00	1.17	1.36	1.50

- テーピング仕様は21頁に掲載しております。
- はんだ付け推奨ランド寸法・推奨リフロー条件は17、18頁に掲載しております。
- 高CV品についてはUR（148頁），UG（155頁）シリーズよりお選びください。
- ご発注単位は3頁を参照ください。

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZP series — 4.5mmL Chip Type, Bi-Polarized

For SMD | Smaller | Bi-polarized | Anti-Solvent Feature

- Chip type with 4.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

Products which are scheduled to be discontinued.
Not recommended for new designs

WP
Smaller
ZP
Smaller
ZE

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 47μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.05 CV or 10 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.30	0.24	0.20	0.18	0.16	0.16

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	8	4	4	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C with the polarity inverted every 250 hours.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	300% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

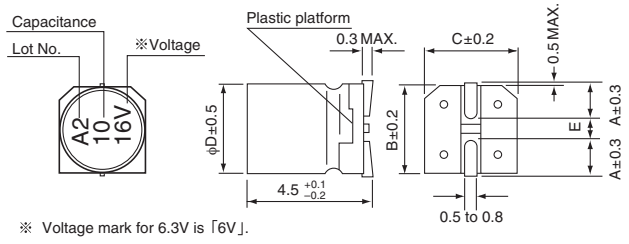
Shelf Life — After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type



※ Voltage mark for 6.3V is「6V」.

(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	P	1	C	1	0	0	M	C	L	1	G	B

14: Taping code
13: Configuration
9: Capacitance tolerance (±20%)
6 7 8: Rated capacitance (10μF)
4 5: Rated voltage (16V)
2 3: Series name
1: Type

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4	1.0
0.22	R22											4	2.0
0.33	R33											4	2.8
0.47	R47											4	4.0
1	010											4	8.4
2.2	2R2									4	8.4	5	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										

Case size φD (mm) | Rated ripple

Rated ripple current (mArms) at 85°C 120Hz

●Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

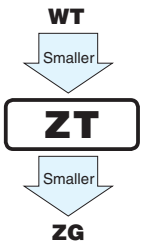
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select WP(p.116), UN(p.162) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

ZT 4.5mmL Chip Type, Wide Temperature Range series



- Chip type with 4.5mm height, operating over wide temperature range of −40 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 100μF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.38	0.32	0.20	0.16	0.14	0.14

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	6	5	3	3	3	3
	Z−40°C / Z+20°C	10	10	6	6	4	4

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±25% of the initial capacitance value (16V or less) Within ±20% of the initial capacitance value (25V or more)
tan δ	300% or less than initial specified value
Leakage current	Less than or equal to the initial specified value

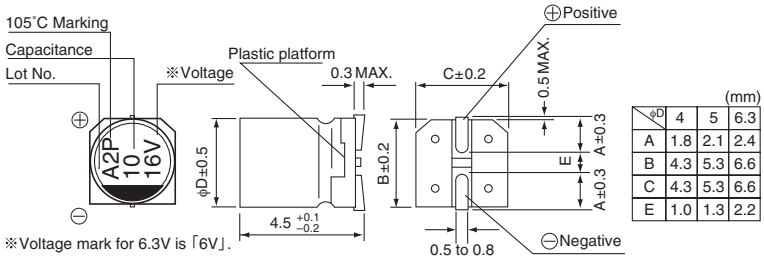
Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type



※Voltage mark for 6.3V is「6V」.

(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	Z	T	1	C	1	0	0	M	C	L	1	G	B

- 14: Taping code
- 12 13: Configuration
- 9: Capacitance tolerance (±20%)
- 6 7 8: Rated capacitance (10μF)
- 4 5: Rated voltage (16V)
- 10 11: Series name
- 1 2 3: Type

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4	0.9
0.22	R22											4	2.2
0.33	R33											4	2.8
0.47	R47											4	3.3
1	010											4	5.4
2.2	2R2											4	9.6
3.3	3R3											4	12
4.7	4R7							4	11	4	13	5	16
10	100					4	16	5	20	5	22	6.3	26
22	220	4	19	5	24	5	26	6.3	33	6.3	36		
33	330	5	26	5	30	6.3	35	6.3	42				
47	470	5	32	6.3	40	6.3	44						
100	101	6.3	52										
												Case size φD (mm)	Rated ripple

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UX(p.154), UJ(p.160) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

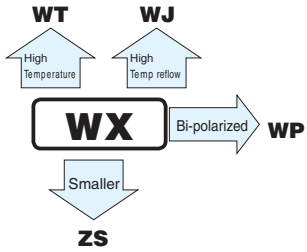
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WX series — 5.5mmL Chip Type

For SMD | Anti-Solvent Feature

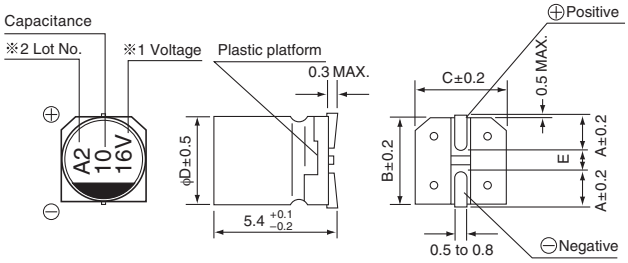
- Chip type with 5.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Load life of 2000 hours at 85°C.
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	4 to 50V
Rated Capacitance Range	0.1 to 330μF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 4 / 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.35 (0.40) / 0.26 (0.30) / 0.20 (0.24) / 0.16 (0.19) / 0.14 (0.16) / 0.12 (0.14) / 0.12 (0.14) Values in ( ) applicable to WR, φ3 case size.
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 4 / 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 7 / 4 / 3 / 2 / 2 / 2 / 2 Z−40°C / Z+20°C: 15 / 8 / 8 / 4 / 4 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C. Capacitance change: Within ±20% of the initial capacitance value (Within ±25% for 4 V and φ3,WR series units) tan δ: 200% or less than the initial specified value Leakage Current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

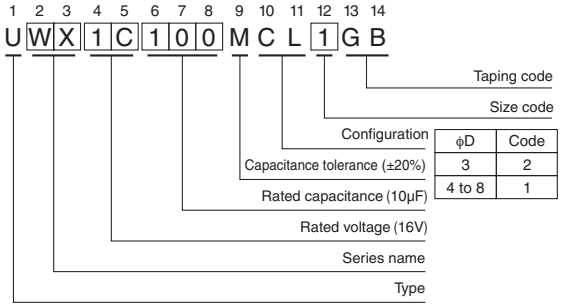


(mm)

φD	3	4	5	6.3	8
A	1.5	1.8	2.1	2.4	3.3
B	3.3	4.3	5.3	6.6	8.3
C	3.3	4.3	5.3	6.6	8.3
E	0.8	1.0	1.3	2.2	2.3

※1. Voltage mark for 6.3V is「6V」.
In case of marking for φ3 units, "V" for rated voltage is omitted.
※2. In case of marking for φ3 units, Lot No.is expressed by a digit (month code).

Type numbering system (Example : 16V 10μF)



φD	Code
3	2
4 to 8	1

- In the case of size φ3 in ( ),parentheses, use WX in the 2nd and 3rd digit and put a 2 in the 12th digit of type numbering system.

● Dimension table in next page.

WX series

■Dimensions

Cap. (μF) \ V	Code	4		6.3		10		16		25		35		50	
		0G		0J		1A		1C		1E		1V		1H	
0.1	0R1													4 (3)	1.0
0.22	R22													4 (3)	2.0
0.33	R33													4 (3)	2.8
0.47	R47													4 (3)	4.0
1	010													4 (3)	8.4(8.0)
2.2	2R2											3	8.4	4 (3)	13 (10)
3.3	3R3											3	10	4	17
4.7	4R7									4 (3)	16 (12)	4	18	● 5	20 (18)
10	100							4 (3)	23 (18)	● 5	27 (24)	● 5	29 (24)	○ 6.3	33 (30)
22	220	3	19	4 (3)	28 (21)	● 5	33 (30)	● 5	37 (30)	○ 6.3	42 (38)	○ 6.3	46 (39)	□ 8	52 (43)
33	330	4	28	● 5	37 (34)	● 5	41 (34)	○ 6.3	49 (44)	○ 6.3	52 (46)	□ 8	62 (53)	8	71
47	470	4	33	● 5	45 (40)	○ 6.3	52 (47)	○ 6.3	58 (52)	□ 8	70 (60)	8	80		
56	560	5	42	○ 6.3	52 (46)	○ 6.3	57 (50)	○ 6.3	63 (57)	□ 8	76 (65)				
100	101	5	56	○ 6.3	70 (47)	○ 6.3	76 (54)	6.3	86	8	110				
150	151	6.3	79	6.3	71	□ 8	111 (76)								
220	221	6.3	96	□ 8	110 (74)	8	135							Case size φD (mm)	Rated ripple
330	331	8	145	8	170										

( ) is also available with φ3mm upon request.

Rated ripple current (mArms) at 85°C 120Hz

• In the case of size φ3 in ( ),parentheses, use WX at 2nd and 3rd digit and put 2 at the 12th digit of type numbering system.

( ) = φ3 units and WR Series

Size φ4 is available for capacitors marked. " ●"
Size φ5 is available for capacitors marked. " ○"
Size φ6.3 is available for capacitors marked. " □"

} In such a case, WR will be put at 2nd and 3rd digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UR(p.150), UG(p.158) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

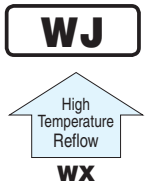
nichicon

WJ 5.5mmL Chip Type
High Temperature (260°C) Reflow
series


For SMD


Anti-Solvent Feature

- Corresponding with 260°C peak reflow soldering
  Recomended reflow condition : 260°C peak 5 sec. 230°C over 60 sec. 2 times
- Chip type with 5.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Load life of 2000 hours at 85°C
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 150µF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.26	0.20	0.16	0.14	0.12	0.12

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	8	4	4	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage Current	Less than or equal to the initial specified value

Shelf Life	After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

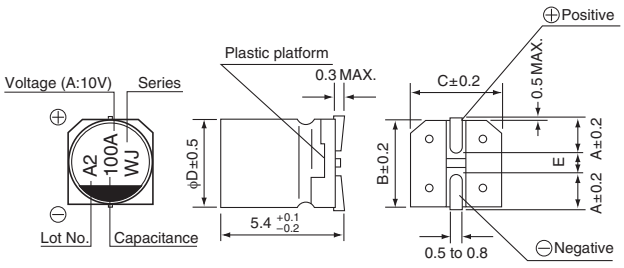
Resistance to soldering heat

The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

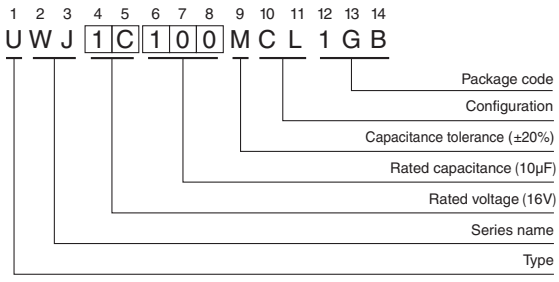
Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking	Black print on the case top.

■Chip Type



Type numbering system (Example : 16V 10µF)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

● Dimension table in next page.

nichicon

WJ series

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4	1.0
0.22	R22											4	2.0
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											4	17
4.7	4R7							4	16	4	18	5	20
10	100					4	23	5	27	5	29	6.3	33
22	220	4	28	5	33	5	37	6.3	42	6.3	45		
33	330	5	37	5	41	6.3	49	6.3	52				
47	470	5	45	6.3	52	6.3	58						
100	101	6.3	70	6.3	76	6.3	86					Case size φD (mm)	Rated ripple
150	151	6.3	71										

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WP series — 5.5mmL Chip Type, Bi-Polarized

For SMD | Bi-polarized | Anti-Solvent Feature

- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

WP → Smaller → ZP

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 100μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.05CV or 10 (μA) ,whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.24	0.20	0.17	0.17	0.15	0.15

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	6	4	4	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 85°C with the polarity inverted every 250 hours.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

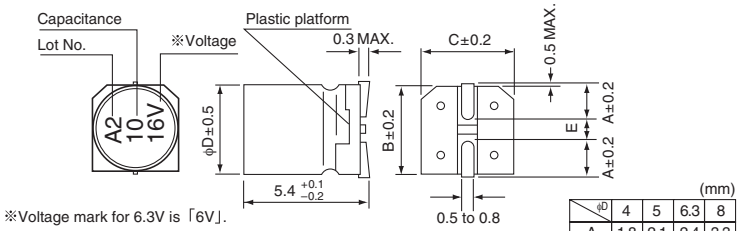
The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

■Chip Type



※Voltage mark for 6.3V is 「6V」.

(mm)

φD	4	5	6.3	8
A	1.8	2.1	2.4	3.3
B	4.3	5.3	6.6	8.3
C	4.3	5.3	6.6	8.3
E	1.0	1.3	2.2	2.3

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	P	1	C	1	0	0	M	C	L	1	G	B

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (10μF)
Rated voltage (16V)
Series name
Type

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4	1.0
0.22	R22											4	2.0
0.33	R33											4	2.8
0.47	R47											4	4.0
1	010											4	8.4
2.2	2R2									4	8.4	5	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	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	45	8	61	8	75						Rated ripple
100	101	8	82									Case size φD (mm)	

Rated ripple current (mArms) at 85°C 120Hz

●Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UN(p.162) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

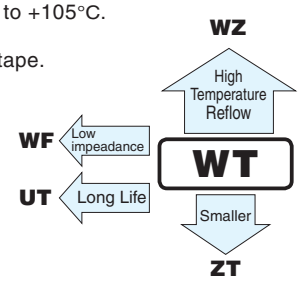
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WT Chip Type, Wide Temperature Range series

For SMD | Smaller | Anti-Solvent Feature

- Chip type operating over wide temperature range of to −55 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	4 to 50V
Rated Capacitance Range	0.1 to 1500μF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	4	6.3	10	16	25	35	50
tan δ (MAX.)	0.40	0.30	0.24	0.20	0.16	0.14	0.14

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		4	6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	7	4	3	2	2	2	2
	Z−40°C / Z+20°C	15	8	8	4	4	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±25% of the initial capacitance value for capacitors of φ3mm unit, and 16V or less. Within ±20% of the initial capacitance value for capacitors of 25V or more.
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

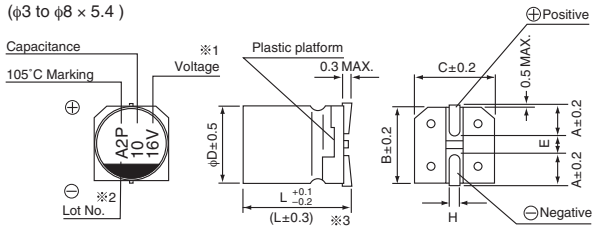
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

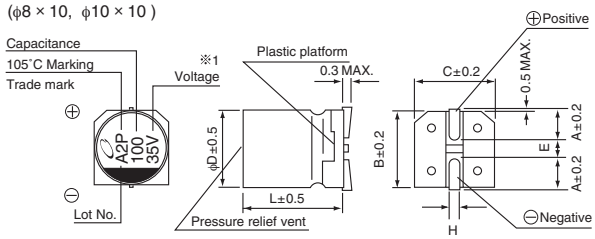
■Chip Type

(φ3 to φ8 × 5.4)



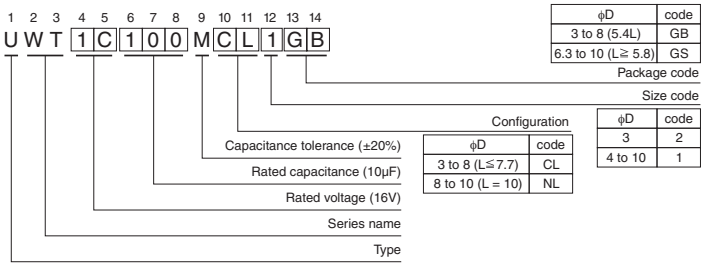
※3 Apply to φ6.3 × 5.8, φ6.3 × 7.7

(φ8 × 10, φ10 × 10)



※1. Voltage mark for 6.3V is 「6V」. In case of marking for φ3 units, "V" for rated voltage is omitted.
※2. In case of marking for φ3 units. Lot No is expressed by a digit (month code).

Type numbering system (Example : 16V 10μF)



(mm)

φD × L	3 × 5.4	4 × 5.4	5 × 5.4	6.3 × 5.4	6.3 × 5.8	6.3 × 7.7	8 × 5.4	8 × 10	10 × 10
A	1.5	1.8	2.1	2.4	2.4	2.4	3.3	2.9	3.2
B	3.3	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
C	3.3	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
E	0.8	1.0	1.3	2.2	2.2	2.2	2.3	3.1	4.5
L	5.4	5.4	5.4	5.4	5.8	7.7	5.4	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

●Dimension table in next page.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WT series

■Dimensions

Cap. (μF) \ V	Code	4		6.3		10		16		25		35		50	
		0G		0J		1A		1C		1E		1V		1H	
0.1	0R1													4 × 5.4 (3)	1.0
0.22	R22													4 × 5.4 (3)	2.6
0.33	R33													4 × 5.4 (3)	3.2
0.47	R47													4 × 5.4 (3)	3.8
1	010													4 × 5.4 (3)	6.3 (5.9)
2.2	2R2											3 × 5.4	7.5	4 × 5.4 (3)	11 (9)
3.3	3R3											3 × 5.4	9	4 × 5.4	14
4.7	4R7									4 × 5.4 (3)	13 (10)	4 × 5.4	15	5 × 5.4	19
10	100							4 × 5.4 (3)	18 (14)	5 × 5.4	23	5 × 5.4	25	6.3 × 5.4	30
22	220	4 × 5.4	22	4 × 5.4	22	5 × 5.4	27	5 × 5.4	30	6.3 × 5.4	38	6.3 × 5.4	42	• 8 × 5.4	51 (45)
33	330	5 × 5.4	30	5 × 5.4	30	5 × 5.4	35	6.3 × 5.4	40	6.3 × 5.4	48	• 8 × 5.4	59 (52)	6.3 × 7.7	60
47	470	5 × 5.4	36	5 × 5.4	36	6.3 × 5.4	46	6.3 × 5.4	50	• 8 × 5.4	66 (59)	6.3 × 5.8	63	6.3 × 7.7	63
100	101	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 7.7	91	6.3 × 7.7	84	8 × 10	140
150	151	6.3 × 5.8	86	6.3 × 5.8	86	6.3 × 5.8	86	6.3 × 7.7	95	8 × 10	140	8 × 10	155	10 × 10	180
220	221	• 8 × 5.4	102 (91)	• 8 × 5.4	102 (91)	6.3 × 7.7	105	6.3 × 7.7	105	8 × 10	155	8 × 10	190	10 × 10	220
330	331	6.3 × 7.7	105	6.3 × 7.7	105	8 × 10	195	8 × 10	195	8 × 10	190	10 × 10	300		
470	471	8 × 10	210	8 × 10	210	8 × 10	210	8 × 10	230	10 × 10	300				
680	681	8 × 10	210	8 × 10	210	10 × 10	310	10 × 10	310						
1000	102	8 × 10	230	8 × 10	230	10 × 10	310							Case size φD × L (mm)	Rated ripple
1500	152	10 × 10	310	10 × 10	310										

Rated ripple current (mArms) at 105°C 120Hz

( ) is also available with φ3mm upon request. In such a case, 2 will be put at 12th digit of type numbering system.
Size φ6.3 × 5.8 is available for capacitors marked. " •" In such a case, 6 will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UX(p.154), UJ(p.160) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WZ Chip Type, Wide Temperature Range
High Temperature (260°C) Reflow
series

For SMD | Anti-Solvent Feature

- Corresponding with 260°C peak reflow soldering
  Recomended reflow condition : 260°C peak 5 sec 230°C over 60 sec 2 times
  (φ8 × 6.2, φ10 × 10 : 1 time)
- Chip type operating over wide temperature range of to −55 to +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

WZ
High Temperature Reflow
WT

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 1500μF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.30	0.24	0.20	0.16	0.14	0.14

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	8	4	4	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±25% of the initial capacitance value for capacitors of 16V or less. Within ±20% of the initial capacitance value for capacitors of 25V or more.
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

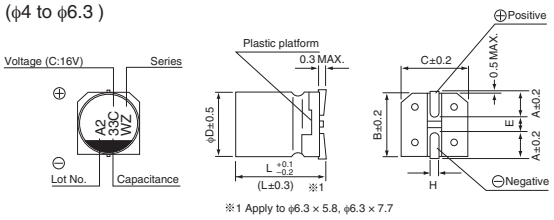
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

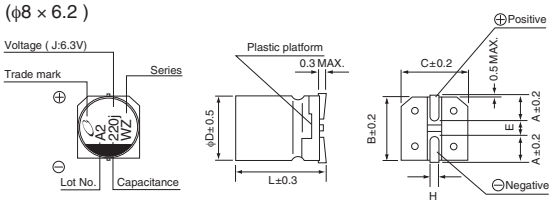
■Chip Type

(φ4 to φ6.3)

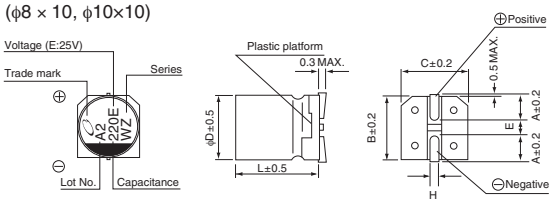


※1 Apply to φ6.3 × 5.8, φ6.3 × 7.7

(φ8 × 6.2)



(φ8 × 10, φ10×10)



●Dimension table in next page.

Type numbering system (Example : 6.3V 33μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	Z	0	J	3	3	0	M	C	L	1	G	B

φD	code
4 to 6.3 (5.4L)	GB
6.3 to 10 (L≧5.8L)	GS

Package code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (33μF)
Rated voltage (6.3V)
Series name
Type

(mm)

φD × L	4 × 5.4	5 × 5.4	6.3 × 5.4	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.4	3.3	2.9	3.2
B	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
C	4.3	5.3	6.6	6.6	6.6	8.3	8.3	10.3
E	1.0	1.3	2.2	2.2	2.2	2.3	3.1	4.5
L	5.4	5.4	5.4	5.4	7.7	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

CAT.8100D

WZ series

■Dimensions

V	6.3		10		16		25		35		50	
Cap. (μF) \ Code	0J		1A		1C		1E		1V		1H	
0.1	0R1										4 × 5.4	1.0
0.22	R22										4 × 5.4	2.6
0.33	R33										4 × 5.4	3.2
0.47	R47										4 × 5.4	3.8
1	010										4 × 5.4	6.3
2.2	2R2										4 × 5.4	11
3.3	3R3										4 × 5.4	14
4.7	4R7						4 × 5.4	13	4 × 5.4	15	5 × 5.4	19
10	100				4 × 5.4	18	5 × 5.4	23	5 × 5.4	25	6.3 × 5.4	30
22	220	4 × 5.4	22	5 × 5.4	27	5 × 5.4	30	6.3 × 5.4	38	6.3 × 5.4	42	8 × 6.2	51
33	330	5 × 5.4	30	5 × 5.4	35	6.3 × 5.4	40	6.3 × 5.4	48	8 × 6.2	59	6.3 × 7.7	60
47	470	5 × 5.4	36	6.3 × 5.4	46	6.3 × 5.4	50	8 × 6.2	66	6.3 × 5.8	63	6.3 × 7.7	63
100	101	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 5.4	60	6.3 × 7.7	91	6.3 × 7.7	84	8 × 10	140
150	151	6.3 × 5.8	86	6.3 × 5.8	86	6.3 × 7.7	95	8 × 10	140	8 × 10	155	10 × 10	180
220	221	8 × 6.2	102	6.3 × 7.7	105	6.3 × 7.7	105	8 × 10	155	10 × 10	190	10 × 10	220
330	331	6.3 × 7.7	105	8 × 10	195	8 × 10	195	10 × 10	190	10 × 10	300		
470	471	8 × 10	210	8 × 10	210	8 × 10	210	10 × 10	300				
680	681	8 × 10	210	10 × 10	310	10 × 10	310						
1000	102	10 × 10	230	10 × 10	310							Case size φD × L (mm)	Rated ripple
1500	152	10 × 10	310										

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

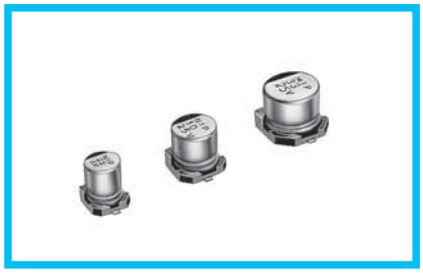
- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WF Chip Type, Low Impedance series

For SMD | Low Impedance | Anti-Solvent Feature



- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

WG (Low Impedance) **WF** (Low Impedance) WT

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 35V
Rated Capacitance Range	1 to 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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35
tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12

Stability at Low Temperature		Measurement frequency : 120Hz				
Rated voltage (V)		6.3	10	16	25	35
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	2	2	2	2	2
	Z−55°C / Z+20°C	4	4	3	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

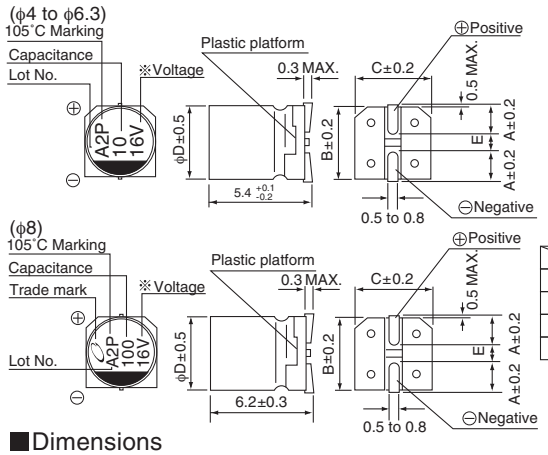
The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

■Chip Type



(mm)

φD	4	5	6.3	8
A	1.8	2.1	2.4	3.3
B	4.3	5.3	6.6	8.3
C	4.3	5.3	6.6	8.3
E	1.0	1.3	2.2	2.3

※ Voltage mark for 6.3V is 6V.

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	F	1	C	1	0	0	M	C	L	1	G	B

φD	Code
4 to 6.3	GB
8	GS

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (10μF)
Rated voltage (16V)
Series name
Type

■Dimensions

Cap. (μF) \ V	Code	6.3			10			16			25			35		
		0J			1A			1C			1E			1V		
1	010													4	5.0	50
1.5	1R5													4	5.0	50
2.2	2R2													4	5.0	50
3.3	3R3													4	5.0	50
4.7	4R7										4	5.0	50	4	5.0	50
6.8	6R8										4	5.0	50	5	2.6	80
10	100							4	5.0	50	5	2.6	80	5	2.6	80
15	150							5	2.6	80	6.3	1.3	115	6.3	1.3	115
22	220	4	5.0	50	5	2.6	80	5	2.6	80	6.3	1.3	115	6.3	1.3	115
33	330	5	2.6	80	5	2.6	80	6.3	1.3	115	6.3	1.3	115	8	0.8	150
47	470	5	2.6	80	6.3	1.3	115	6.3	1.3	115	8	0.8	150	8	0.8	150
68	680	6.3	1.3	115	6.3	1.3	115	8	0.8	150	8	0.8	150			
100	101	6.3	1.3	115	8	0.8	150	8	0.8	150						
150	151	8	0.8	150	8	0.8	150							Case size φD (mm)	Impedance	Rated ripple
220	221	8	0.8	150												

Max. Impedance (Ω) at 20°C 100kHz
Rated ripple current (mArms) at 105°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UJ(p.160) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

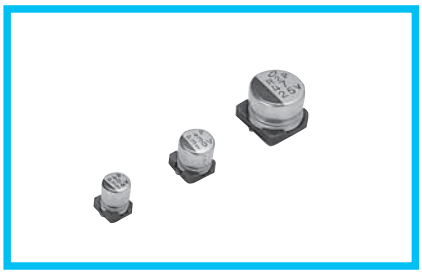
nichicon

WG series

Chip Type, Low Impedance

For SMD | Low Impedance | Anti-Solvent Feature

- Chip type, operating over wide temperature range of to −55 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



UD ← Low Impedance | WG | Low Impedance → WF

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	1 to 1500μF
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.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.26	0.19	0.16	0.14	0.12	0.12

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	2	2	2	2	2	2
	Z−55°C / Z+20°C	4	4	3	3	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

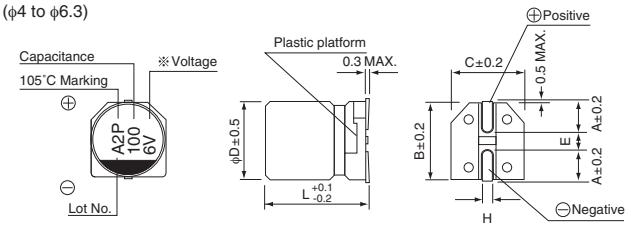
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

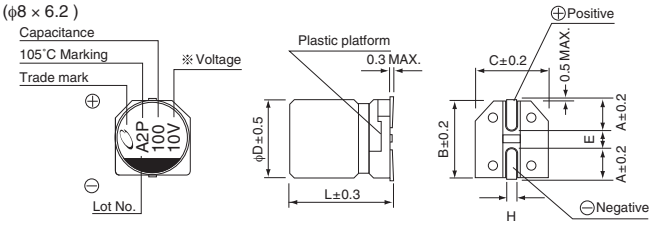
Marking — Black print on the case top.

■Chip Type

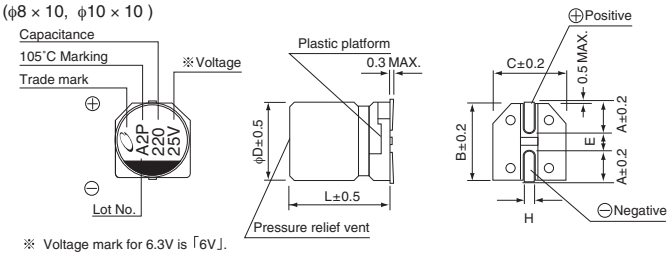
(φ4 to φ6.3)



(φ8 × 6.2)

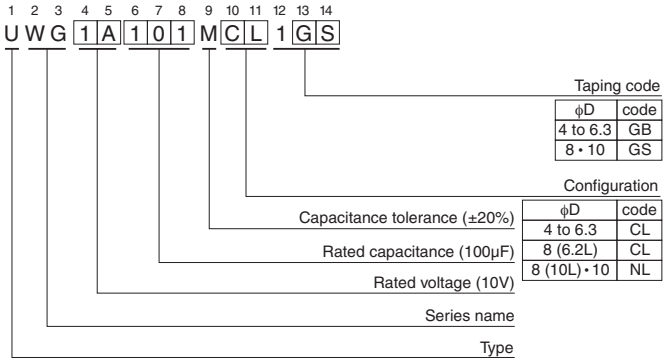


(φ8 × 10, φ10 × 10)



※ Voltage mark for 6.3V is「6V」.

Type numbering system (Example : 10V 100μF)



(mm)

φD × L	4 × 5.4	5 × 5.4	6.3 × 5.4	8 × 6.2	8 × 10	10 × 10
A	1.8	2.1	2.4	3.3	2.9	3.2
B	4.3	5.3	6.6	8.3	8.3	10.3
C	4.3	5.3	6.6	8.3	8.3	10.3
E	1.0	1.3	2.2	2.3	3.1	4.5
L	5.4	5.4	5.4	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

●Dimension table in next page.

WG series

■Dimensions

Cap. (μF) \ V	Code	6.3			10			16		
		0J			1A			1C		
10	100							4×5.4	3.0	60
22	220	4×5.4	3.0	60				5×5.4	1.8	95
33	330				5×5.4	1.8	95			
47	470	5×5.4	1.8	95				6.3×5.4	1.0	140
68	680	6.3×5.4	1.0	140				8×6.2	0.4	230
100	101	6.3×5.4	1.0	140	8×6.2	0.4	230	8×6.2	0.4	230
150	151				8×6.2	0.4	230			
220	221	8×6.2	0.4	230	8×10	0.3	450	10×10	0.15	670
330	331	8×10	0.3	450				10×10	0.15	670
470	471				10×10	0.15	670	10×10	0.15	670
680	681							10×10	0.15	670
1000	102	10×10	0.15	670	10×10	0.15	670			
1500	152	10×10	0.15	670						

Cap. (μF) \ V	Code	25			35			50		
		1E			1V			1H		
1	010				4×5.4	3.0	60	4×5.4	5.0	30
2.2	2R2				4×5.4	3.0	60	4×5.4	5.0	30
3.3	3R3				4×5.4	3.0	60	4×5.4	5.0	30
4.7	4R7				4×5.4	3.0	60	5×5.4	3.0	50
6.8	6R8	4×5.4	3.0	60	5×5.4	1.8	95			
10	100				5×5.4	1.8	95	6.3×5.4	2.0	70
22	220	6.3×5.4	1.0	140	6.3×5.4	1.0	140	8×6.2	0.7	120
33	330	6.3×5.4	1.0	140	8×6.2	0.4	230	8×10	0.6	300
47	470	8×6.2	0.4	230	8×6.2	0.4	230	10×10	0.3	500
68	680	8×10	0.3	450						
100	101	8×10	0.3	450	10×10	0.15	670	10×10	0.3	500
220	221	10×10	0.15	670	10×10	0.15	670	10×10	0.3	500
330	331	10×10	0.15	670	10×10	0.15	670	Case size φD×L (mm)	Impedance	Rated ripple
470	471	10×10	0.15	670						

Max. Impedance (Ω) at 20°C 100kHz
Rated ripple current (mArms) at 105°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UJ(p.160) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UP series

6mmL Chip Type, Bi-Polarized

For SMD | Bi-polarized | Anti-Solvent Feature

- Chip type, bi-polarized withstanding high temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

UN (Extended range) — UP — WP (High Temperature)

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 47μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.05 CV or 10 (μA), whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.24	0.20	0.17	0.17	0.15	0.15

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	6	4	4	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C with the polarity every 250 hours.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

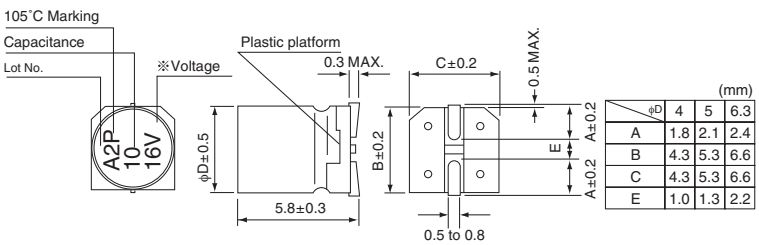
Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type

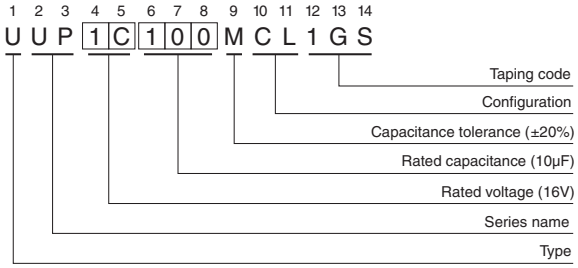


(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

※Voltage mark for 6.3V is「6V」

Type numbering system (Example : 16V 10μF)



■Dimensions

Cap.(μF) \ V	6.3		10		16		25		35		50	
Code	0J		1A		1C		1E		1V		1H	
0.1	0R1										4	1.0
0.22	R22										4	2.0
0.33	R33										4	2.8
0.47	R47										4	4.0
1	010										4	8.4
2.2	2R2								4	8.4	5	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					Rated ripple	
47	470	6.3	45								Case size φD (mm)	

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UN(p.162) series if high CV products are required.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UT series

6mmL Chip Type, Wide Temperature Range

For SMD | Anti-Solvent Feature

- Chip type with load life 2000 hours at +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

UA Long Life
UX Higher C/V
UT
Long Life WT

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	4 to 50V
Rated Capacitance Range	0.1 to 100μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency :120Hz at 20°C

Rated voltage (V)	4	6.3	10	16	25	35	50
tan δ (MAX.)	0.37	0.28	0.24	0.20	0.16	0.13	0.12

Stability at Low Temperature — Measurement frequency :120Hz

Rated voltage (V)		4	6.3	10	16	25	35	50
Impedance ratio	Z−25°C / Z+20°C	6	3	3	2	2	2	2
ZT / Z20 (MAX.)	Z−40°C / Z+20°C	12	8	5	4	3	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C.

Capacitance change	Within ±25% of the initial capacitance value (16V or less) Within ±20% of the initial capacitance value (25V or more)
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

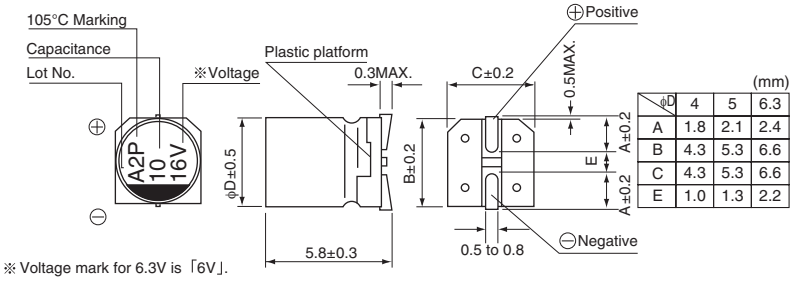
The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

■Chip Type



(mm)

φD	4	5	6.3
A	1.8	2.1	2.4
B	4.3	5.3	6.6
C	4.3	5.3	6.6
E	1.0	1.3	2.2

※Voltage mark for 6.3V is「6V」.

Type numbering system (Example : 16V 10μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	T	1	C	1	0	0	M	C	L	1	G	S

14: Taping code
13: Configuration
9: Capacitance tolerance (±20%)
6 7 8: Rated capacitance (10μF)
4 5: Rated voltage (16V)
3: Series name
1 2: Type

■Dimensions

Cap.(μF) \ V	Code	4		6.3		10		16		25		35		50	
		0G		0J		1A		1C		1E		1V		1H	
0.1	0R1													4	1.0
0.22	R22													4	2.6
0.33	R33													4	3.2
0.47	R47													4	3.8
1	010													4	6.2
2.2	2R2													4	11
3.3	3R3													4	14
4.7	4R7									4	13	4	15	5	19
10	100							4	18	5	23	5	25	6.3	30
22	220	4	22	4	22	5	27	5	30	6.3	38	6.3	42		
33	330	5	30	5	30	5	35	6.3	40	6.3	48				
47	470	5	36	5	36	6.3	46	6.3	50						Rated ripple
100	101	6.3	60	6.3	60	6.3	60							Case size φD (mm)	

Rated ripple current (mArms) at 105°C 120Hz

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UX(p.154), UJ(p.160) series if high C/V products are required.
- Please refer to page 3 for the minimum order quantity.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

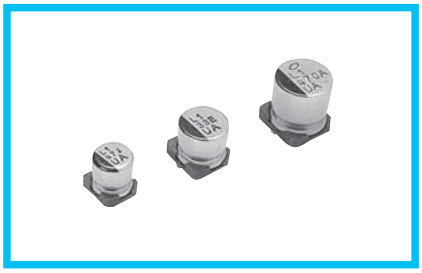
UA series

6mmL Chip Type, Long Life Assurance

For SMD | Long Life | Anti-Solvent Feature

- Chip type with load life of 3000 to 5000 hours at +105°C.
- Designed for surface mounting on high density PC board.
- Compliant to the RoHS directive (2011/65/EU).

UL ← Long Life ← **UA** → Long Life → UT

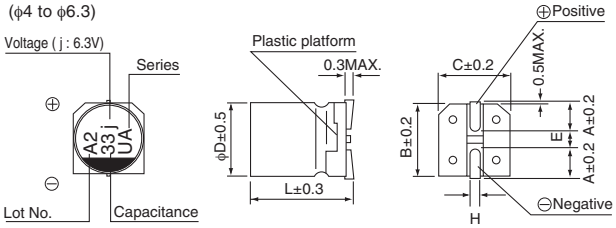


■Specifications

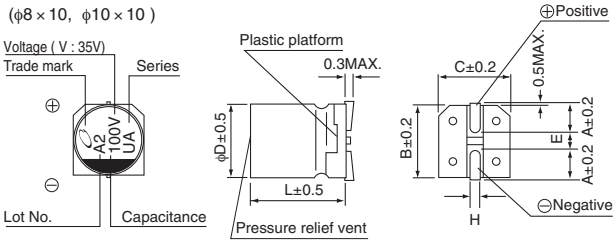
Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 1000μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.28 / 0.24 / 0.20 / 0.16 / 0.13 / 0.12
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 4 / 3 / 2 / 2 / 2 / 2 Impedance ratio ZT / Z20 (MAX.) Z−55°C / Z+20°C: 10 / 7 / 5 / 3 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (3000 hours for φD = 4, 5 and 6.3) at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ4 to φ6.3)



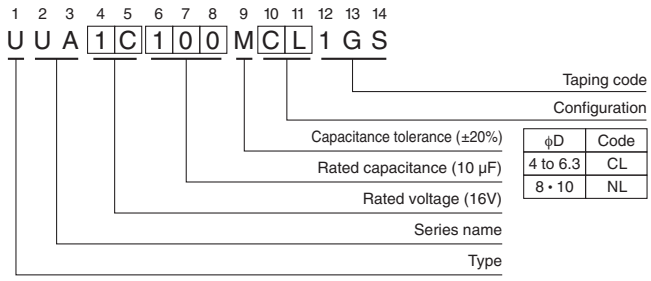
(φ8 × 10, φ10 × 10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 16V 10μF)



φD	Code
4 to 6.3	CL
8 • 10	NL

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

nichicon

UA series

■Dimensions

Cap.(μF) \ V	6.3		10		16		25		35		50	
Code	0J		1A		1C		1E		1V		1H	
0.1	0R1										4×5.8	1
0.22	R22										4×5.8	2.6
0.33	R33										4×5.8	3.2
0.47	R47										4×5.8	5
1	010										4×5.8	8
2.2	2R2										4×5.8	12
3.3	3R3										4×5.8	17
4.7	4R7								4×5.8	16	5×5.8	22
10	100				4×5.8	18	5×5.8	27	5×5.8	27	6.3×5.8	32
22	220	4×5.8	22	5×5.8	30	5×5.8	30	6.3×5.8	44	6.3×5.8	44	6.3×7.7	58
33	330	5×5.8	35	5×5.8	35	6.3×5.8	48	6.3×5.8	50	6.3×7.7	57	8×10	140
47	470	5×5.8	38	6.3×5.8	50	6.3×5.8	50	6.3×7.7	63	8×10	92	8×10	170
100	101	6.3×5.8	69	6.3×7.7	81	6.3×7.7	81	8×10	116	10×10	151	10×10	310
220	221	6.3×7.7	120	8×10	141	10×10	216	10×10	320	10×10	375		
330	331	8×10	290	10×10	290	10×10	290	10×10	450				
470	471	10×10	320	10×10	320	10×10	320						Rated ripple
1000	102	10×10	410									Case size φD×L (mm)	

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UL series — Chip Type, Long Life Assurance

For SMD | Long Life | Anti-Solvent Feature

- Chip type with load life of 5000 hours at +105°C.
- Designed for surface mounting on high density PC board.
- Compliant to the RoHS directive (2011/65/EU).

CB ← Long Life | **UL** | Long Life → UA

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 1000μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), Max
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.32	0.24	0.20	0.16	0.13	0.12

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	10	7	5	3	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours at 105°C.

Capacitance change	Within ±30% of the initial capacitance value
tan δ	300% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

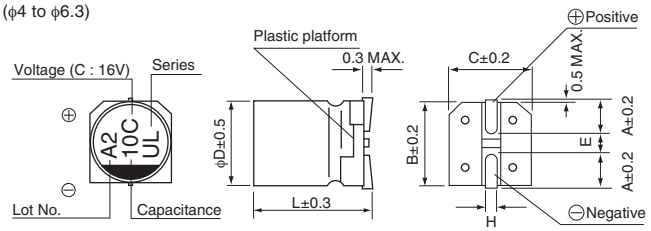
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

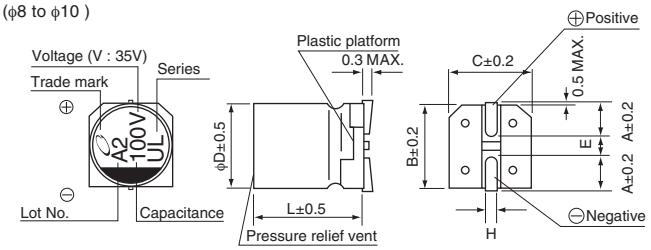
Marking — Black print on the case top.

■Chip Type

(φ4 to φ6.3)



(φ8 to φ10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 16V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	L	1	C	1	0	1	M	C	L	1	G	S

- 1 2 3 : Type
- 4 5 : Series name
- 6 7 8 : Rated voltage (16V)
- 9 : Rated capacitance (100 μF)
- 10 11 : Capacitance tolerance (±20%)
- 12 13 14 : Configuration
- Package code

φ D	Code
4 to 6.3	CL
8・10	NL

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

UL series

■Dimensions

Cap. (μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4×5.8	1.0
0.22	R22											4×5.8	2.6
0.33	R33											4×5.8	3.2
0.47	R47											4×5.8	3.8
1	010											4×5.8	6.2
2.2	2R2											4×5.8	11
3.3	3R3											4×5.8	14
4.7	4R7									4×5.8	15	5×5.8	19
10	100					4×5.8	18	5×5.8	25	5×5.8	25	6.3×5.8	30
22	220			5×5.8	30	5×5.8	30	6.3×5.8	42	6.3×5.8	42	6.3×7.7	49
33	330	5×5.8	35	5×5.8	35	6.3×5.8	48	6.3×5.8	48	6.3×7.7	57	8×10	77
47	470	5×5.8	36	6.3×5.8	50	6.3×5.8	50	6.3×7.7	63	8×10	92	8×10	92
100	101	6.3×5.8	60	6.3×7.7	81	6.3×7.7	81	8×10	116	10×10	151	10×10	151
220	221	6.3×7.7	101	8×10	141	10×10	216	10×10	216	10×10	216		
330	331	8×10	160	10×10	238	10×10	238	10×10	238				
470	471	10×10	254	10×10	254	10×10	254						
1000	102	10×10	313									Case size φD×L (mm)	Rated ripple

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

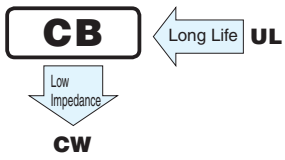
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

CB series

Chip Type, Long Life Assurance

- Chip type with load life of 7000 hours at +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

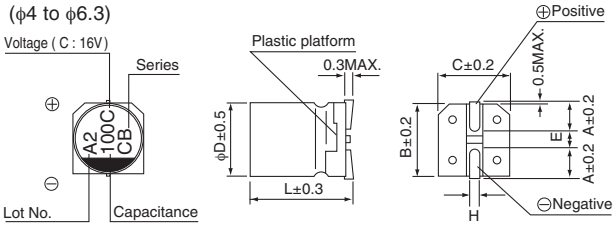


■Specifications

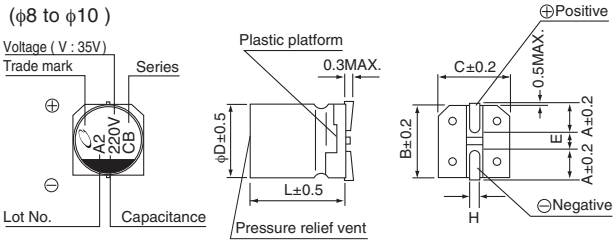
Item	Performance Characteristics
Category Temperature Range	−25 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 1000μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.03 CV or 4 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.32 / 0.28 / 0.26 / 0.16 / 0.14 / 0.14
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 4 / 3 / 2 / 2 / 2 / 2
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 7000 hours at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

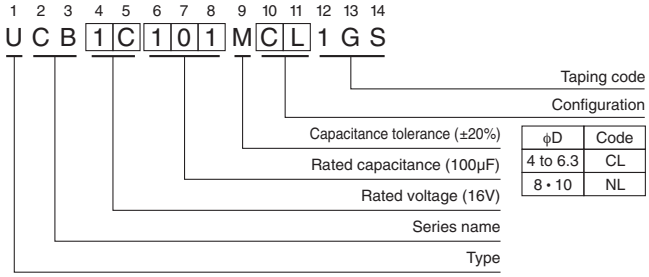
(φ4 to φ6.3)



(φ8 to φ10)



Type numbering system (Example : 16V 100μF)



(mm)

φD × L	4 × 7	5 × 7	6.3 × 7	6.3 × 8.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	7.0	7.0	7.0	8.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

● Dimension table in next page.

CB series

■Dimensions

Cap.(μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1									4×7	1.0		
0.22	R22									4×7	2.6		
0.33	R33									4×7	3.2		
0.47	R47									4×7	3.8		
1	010									4×7	6.2		
2.2	2R2									4×7	11		
3.3	3R3									4×7	14		
4.7	4R7									4×7	15		
10	100					4×7	18			5×7	25		
22	220	4×7	22			5×7	30			6.3×7	42		
33	330			5×7	35			6.3×7	48	6.3×8.7	57	8×10	77
47	470	5×7	36			6.3×7	50	6.3×8.7	63			8×10	92
100	101	6.3×7	60			6.3×8.7	81	8×10	116			10×10	151
220	221	6.3×8.7	101	8×10	141					10×10	216		
330	331	8×10	160										
470	471					10×10	254					Case size φD×L (mm)	Rated ripple
1000	102	10×10	313										

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

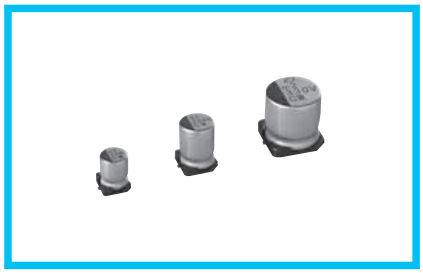
CW

Chip Type, Low Impedance, Long Life Assurance series

For SMD | Low Impedance | Long Life | Anti-Solvent Feature

- Chip type with load life of 7000 hours at +105°C. Low impedance temperature range up to +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

CW ← Low Impedance CB

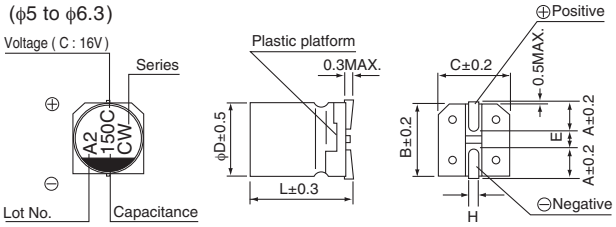


■Specifications

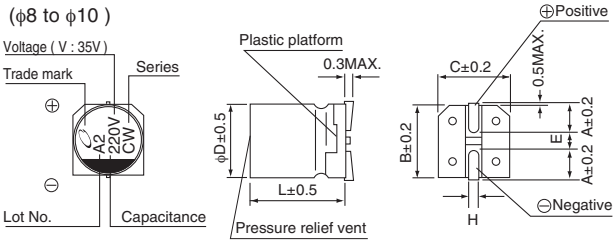
Item	Performance Characteristics
Category Temperature Range	−25 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	10 to 470μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.32 / 0.28 / 0.26 / 0.16 / 0.14 / 0.14
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 4 / 3 / 2 / 2 / 2 / 2
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 7000 hours at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ5 to φ6.3)



(φ8 to φ10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 10V 150μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	W	1	A	1	5	1	M	C	L	1	G	S

- 1 2 3: Type
- 4 5: Series name
- 6 7 8: Rated voltage (10V)
- 9: Rated capacitance (150μF)
- 10: Capacitance tolerance (±20%)
- 11: Configuration
- 12 13 14: Taping code

φD	Code
5 • 6.3	CL
8 • 10	NL

(mm)

φD × L	5 × 7	6.3 × 7	6.3 × 8.7	8 × 10	10 × 10
A	2.1	2.4	2.4	2.9	3.2
B	5.3	6.6	6.6	8.3	10.3
C	5.3	6.6	6.6	8.3	10.3
E	1.3	2.2	2.2	3.1	4.5
L	7.0	7.0	8.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

CW series

■Dimensions

Cap. (μF) \ V	Code	6.3			10			16			25			35			50		
		0J			1A			1C			1E			1V			1H		
10	100													5×7	2.2	95			
22	220							5×7	2.2	95	5×7	2.2	95	5×7	2.2	95			
33	330				5×7	2.2	95				6.3×7	1.1	140	6.3×8.7	1.0	230			
47	470	5×7	2.2	95				6.3×7	1.1	140	6.3×7	1.1	140	6.3×8.7	1.0	230	8×10	0.53	350
100	101	6.3×7	1.1	140				6.3×7	1.1	140	6.3×8.7	1.0	230				8×10	0.53	350
150	151				6.3×7	1.1	140	6.3×8.7	1.0	230									
220	221	6.3×8.7	1.0	230				6.3×8.7	1.0	230	8×10	0.22	600	8×10	0.22	600	10×10	0.35	670
330	331	6.3×8.7	1.0	230				8×10	0.22	600	8×10	0.22	600	10×10	0.16	850	Case size φD×L (mm)	Impedance	Rated ripple
470	471	8×10	0.22	600				8×10	0.22	600	10×10	0.16	850						

Max. impedance (Ω) at 20°C 100kHz,
Rated ripple current (mArms) at 105°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

CD Chip Type, Low Impedance series

For SMD | Low Impedance | Anti-Solvent Feature

- Chip type, low impedance temperature range up to +105C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

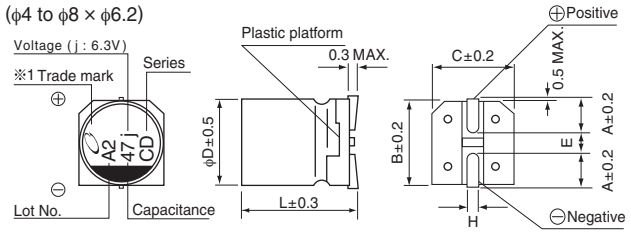
CL Low Impedance **CD** Low Impedance UD

Specifications

Item	Performance Characteristics
Category Temperature Range	– 55 to +105°C
Rated Voltage Range	6.3 to 100V
Rated Capacitance Range	1 to 3300F
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 tan δ (MAX.): 0.26 / 0.19 / 0.16 / 0.14 / 0.12 / 0.10 / 0.08 / 0.08 / 0.07 For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Impecance ratio ZT / Z20 (MAX.) Z—25°C / Z+20°C: 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 Z—40°C / Z+20°C: 3 / 3 / 3 / 3 / 3 / 3 / 3 / 3 / 3 Z—55°C / Z+20°C: 4 / 4 / 4 / 3 / 3 / 3 / 3 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for L < 10 mm: 50V or less, and for L ≦ 10mm: 63V or more) at 105°C. Capacitance Change: Within ± 30% of the initial capacitance value tan δ: 200% or less than the initial specified value; 300% or less than the initial specified value for 63V or more Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance Change: Within ± 10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

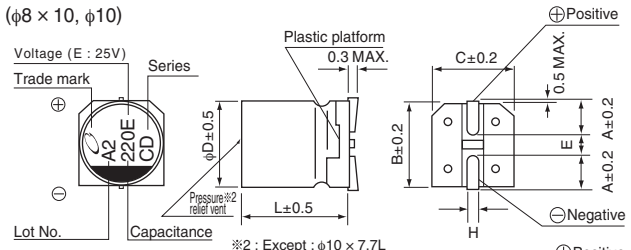
Chip Type

(φ4 to φ8 × φ6.2)



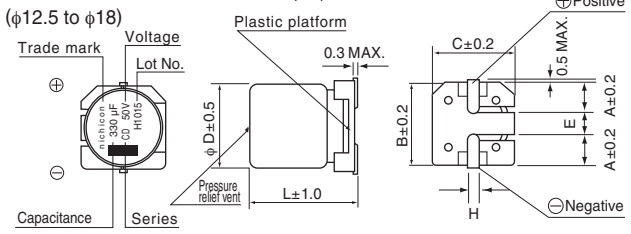
※1: Size φ8 × 6.2 only

(φ8 × 10, φ10)



※2 : Except : φ10 × 7.7L

(φ12.5 to φ18)



※φ8 × 10L, φ10 × 10L, φ12.5 × 13.5L, φ16 × 16.5L, φ18 × 16.5L :
The vibration structure-resistant product is also available upon request, please ask for details.

●Dimension table in next page.

Type numbering system (Example : 16V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	D	1	C	1	0	1	M	C	L	1	G	S

Package code

Size	Package	Code
φ4 to 10	Taping	GS
φ12.5 to 18	Taping	MS
φ12.5 to 18	Tray	ZD

Size code

Configuration

φ D	Code
4 to 6.3	CL
8 (6.2L)	CL
10(7.7L)	CL
8(10L) • 10(10L,13.5L)	NL
12.5 to 18	NQ

Capacitance tolerance (±20%)

Rated capacitance (100μF)

Rated voltage (16V)

Series name

Type

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 7.7	10 × 10
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3
E	1.0	1.3	2.2	2.2	2.3	3.1	4.5	4.5
L	5.8	5.8	5.8	7.7	6.2	10	7.7	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

(mm)

φD × L	10 × 13.5	12.5 × 13.5	16 × 16.5	18 × 16.5
A	3.2	4.8	5.4	6.4
B	10.3	13.6	17.1	19.1
C	10.3	13.6	17.1	19.1
E	4.5	4.0	6.3	6.3
L	13.5	13.5	16.5	16.5
H	0.8 to 1.1	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4

Voltage

V	6.3	10	16	25	35	50	63	80	100
Code	j	A	C	E	V	H	J	K	2A

CAT.8100D

CD series

Dimensions

Cap. (μF) \ V	Code	6.3			10			16			25			35			50		
		0J			1A			1C			1E			1V			1H		
1	010																4 × 5.8	2.70	60
2.2	2R2																4 × 5.8	2.70	60
3.3	3R3																4 × 5.8	2.70	60
4.7	4R7													4 × 5.8	1.35	90	4 × 5.8	2.70	60
10	100							4 × 5.8	1.35	90	4 × 5.8	1.35	90	●4 × 5.8	1.35	90	●5 × 5.8	1.50	90
														5 × 5.8	0.70	160	6.3 × 5.8	0.86	170
15	150							4 × 5.8	1.35	90	5 × 5.8	0.70	160						
22	220	4 × 5.8	1.35	90	4 × 5.8	1.35	90	●4 × 5.8	1.35	90	5 × 5.8	0.70	160	5 × 5.8	0.70	160	6.3 × 5.8	0.86	170
								5 × 5.8	0.70	160								
27	270	4 × 5.8	1.35	90	5 × 5.8	0.70	160	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240						
33	330	5 × 5.8	0.70	160	●4 × 5.8	1.35	90	6.3 × 5.8	0.36	240	●5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 7.7	0.66	195
					5 × 5.8	0.70	160				6.3 × 5.8	0.36	240				●8 × 6.2	0.63	200
47	470	●4 × 5.8	1.35	90	6.3 × 5.8	0.36	240	●5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.66	195
		5 × 5.8	0.70	160				6.3 × 5.8	0.36	240							●8 × 6.2	0.63	200
56	560	5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240						
68	680	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290			
100	101	●5 × 5.8	0.70	160	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	●6.3 × 7.7	0.32	290	8 × 10	0.32	350
		6.3 × 5.8	0.36	240							●8 × 6.2	0.26	300	8 × 10	0.16	600	●10 × 7.7	0.36	330
150	151	6.3 × 5.8	0.36	240	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.16	700
											●10 × 7.7	0.18	600	●10 × 7.7	0.18	600			
220	221	6.3 × 5.8	0.36	240	6.3 × 7.7	0.32	290	6.3 × 7.7	0.32	290	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.16	700
					●8 × 6.2	0.26	300	●8 × 6.2	0.26	300	●10 × 7.7	0.18	600	●10 × 7.7	0.18	600			
330	331	6.3 × 7.7	0.32	290	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.08	850	●10 × 13.5	0.14	800
		●8 × 6.2	0.26	300	●10 × 7.7	0.18	600	●10 × 7.7	0.18	600							12.5 × 13.5	0.12	900
390	391																12.5 × 13.5	0.12	900
470	471	8 × 10	0.16	600	8 × 10	0.16	600	8 × 10	0.16	600	10 × 10	0.08	850	●10 × 13.5	0.08	950	16 × 16.5	0.073	1610
		●10 × 7.7	0.18	600	●10 × 7.7	0.18	600	●10 × 7.7	0.18	600				12.5 × 13.5	0.08	1100			
680	681	8 × 10	0.16	600	10 × 10	0.08	850	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100	16 × 16.5	0.073	1610
		●10 × 7.7	0.18	600															
1000	102	8 × 10	0.16	600	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100	16 × 16.5	0.035	1800			
1500	152	10 × 10	0.08	850	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100									
2200	222	10 × 13.5	0.08	950	12.5 × 13.5	0.08	1100				16 × 16.5	0.035	1800				Case size φD × L (mm)	Impedance	Rated ripple
3300	332	12.5 × 13.5	0.08	1100															

Cap. (μF) \ V	Code	63			80			100		
		1J			1K			2A		
3.3	3R3				5 × 5.8	5.00	25			
4.7	4R7	5 × 5.8	3.00	50	6.3 × 5.8	3.00	40			
10	100	6.3 × 5.8	1.50	80	6.3 × 7.7	2.40	60			
					●8 × 6.2	2.40	60			
22	220	6.3 × 7.7	1.20	120	8 × 10	1.30	130	8 × 10	1.30	130
		●8 × 6.2	1.20	120						
33	330	8 × 10	0.65	250	8 × 10	1.30	130	10 × 10	0.70	200
47	470	8 × 10	0.65	250	10 × 10	0.70	200	12.5 × 13.5	0.32	500
68	680	10 × 10	0.35	400	12.5 × 13.5	0.32	500	12.5 × 13.5	0.32	500
100	101	10 × 10	0.35	400	12.5 × 13.5	0.32	500	16 × 16.5	0.17	793
150	151	12.5 × 13.5	0.16	800	12.5 × 13.5	0.32	500	16 × 16.5	0.17	793
220	221	12.5 × 13.5	0.16	800				18 × 16.5	0.15	917
330	331				16 × 16.5	0.17	793	18 × 16.5	0.15	917
470	471	16 × 16.5	0.082	1410	18 × 16.5	0.15	917	Case size φD × L (mm)	Impedance	Rated ripple
680	681	18 × 16.5	0.08	1690						

Max. Impedance (Ω) at 20°C 100kHz, Rated ripple current (mArms) at 105°C 100kHz

●: In this case, [6] will be put at 12th digit of type numbering system.

- Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by refrow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

CL Chip Type, Low Impedance series

For SMD | Low Impedance | Anti-Solvent Feature

- Chip type, low impedance, temperature range up to +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

CL — Low Impedance — CD

Smaller (Higher capacitance)

CM

Specifications

Item	Performance Characteristics
Category Temperature Range	– 55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	10 to 2200μF
Capacitance Tolerance	± 20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.

Tangent of loss angle (tan δ)

Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.26	0.19	0.16	0.14	0.12	0.10

Stability at Low Temperature

Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z—25°C / Z+20°C	2	2	2	2	2	2
	Z—40°C / Z+20°C	3	3	3	3	3	3
	Z—55°C / Z+20°C	4	4	4	3	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C.

Capacitance Change	Within ± 30% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C .

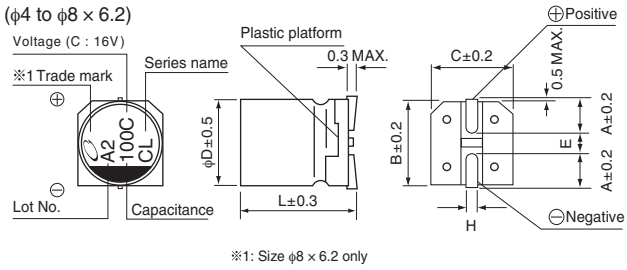
Capacitance Change	Within ± 10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

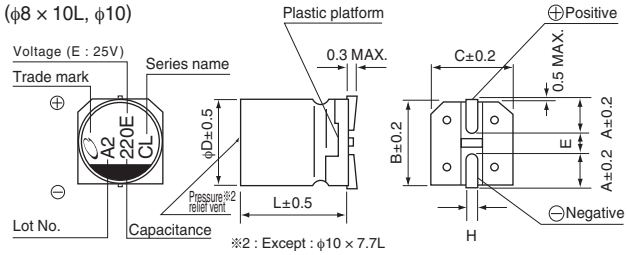
Chip Type

(φ4 to φ8 × 6.2)



※1: Size φ8 × 6.2 only

(φ8 × 10L, φ10)



※2 : Except : φ10 × 7.7L

Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

●Dimension table in next page.

Type numbering system (Example : 16V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	L	1	C	1	0	1	M	C	L	1	G	S

- 13 14: Taping code
- 12: Size code
- 10 11: Configuration
- 9: Capacitance tolerance (±20%)
- 6 7 8: Rated capacitance (100μF)
- 4 5: Rated voltage (16V)
- 3: Series name
- 1 2: Type

φD	Code
4 to 6.3	CL
8 (6.2L)	CL
10(7.7L)	CL
8(10L)• 10(10L,13.5L)	NL

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 7.7	10 × 10	10 × 13.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	3.2
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
E	1.0	1.3	2.2	2.2	2.3	3.1	4.5	4.5	4.5
L	5.8	5.8	5.8	7.7	6.2	10	7.7	10	13.5
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

CL series

Specifications

Cap. (μF) \ V	Code	6.3			10			16			25			35			50		
		0J			1A			1C			1E			1V			1H		
10	100							4 x 5.8	0.85	160	4 x 5.8	0.85	160	●4 x 5.8	0.85	160			
														5 x 5.8	0.36	240			
22	220	4 x 5.8	0.85	160	4 x 5.8	0.85	160	●4 x 5.8	0.85	160	5 x 5.8	0.36	240	5 x 5.8	0.36	240			
								5 x 5.8	0.36	240									
33	330				●4 x 5.8	0.85	160				●5 x 5.8	0.36	240	6.3 x 5.8	0.26	300			
					5 x 5.8	0.36	240				6.3 x 5.8	0.26	300						
47	470	●4 x 5.8	0.85	160	6.3 x 5.8	0.26	300	●5 x 5.8	0.36	240	6.3 x 5.8	0.26	300	6.3 x 5.8	0.26	300			
		5 x 5.8	0.36	240				6.3 x 5.8	0.26	300									
68	680							6.3 x 5.8	0.26	300	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600			
100	101	●5 x 5.8	0.36	240	6.3 x 5.8	0.26	300	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600	●6.3 x 7.7	0.16	600	8 x 10	0.18	670
		6.3 x 5.8	0.26	300				●6.3 x 7.7	0.16	600	●8 x 6.2	0.18	500	8 x 10	0.08	850			
150	151				6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600	8 x 10	0.08	850	8 x 10	0.08	850			
											●10 x 7.7	0.10	850	●10 x 7.7	0.10	850			
220	221	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600	6.3 x 7.7	0.16	600	8 x 10	0.08	850	8 x 10	0.08	850	10 x 10	0.12	900
					●8 x 6.2	0.18	500	●8 x 6.2	0.18	500	●10 x 7.7	0.10	850	●10 x 7.7	0.10	850			
330	331	6.3 x 7.7	0.16	600	8 x 10	0.08	850	8 x 10	0.08	850	8 x 10	0.08	850	10 x 10	0.06	1190			
		●8 x 6.2	0.18	500	●10 x 7.7	0.10	850	●10 x 7.7	0.10	850									
390	391													10 x 10	0.08	850			
470	471	8 x 10	0.08	850	8 x 10	0.08	850	8 x 10	0.08	850	10 x 10	0.06	1190	10 x 13.5	0.06	1190			
		●10 x 7.7	0.10	850	●10 x 7.7	0.10	850	●10 x 7.7	0.10	850									
560	561										10 x 10	0.08	850						
680	681				8 x 10	0.08	850	10 x 10	0.06	1190	10 x 13.5	0.06	1190						
820	821							10 x 10	0.08	850									
1000	102	8 x 10	0.08	850	10 x 10	0.06	1190	10 x 13.5	0.06	1190									
1200	122				10 x 10	0.08	850												
1500	152	10 x 10	0.06	1190	10 x 13.5	0.06	1190												
1800	182	10 x 10	0.08	850													Case size φD x L (mm)	Impedance	Rated ripple
2200	222	10 x 13.5	0.06	1190															

Max. Impedance (Ω) at 20C 100kHz, Rated ripple current (mArms) at 105°C 100kHz

●: In this case, 6 will be put at 12th digit of type numbering system.

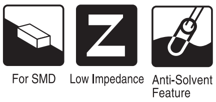
• Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by refrow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CM Chip Type, Low Impedance

series



- Chip type, low impedance temperature range up to +105°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

CL → Smaller, Higher capacitance → CM

Specifications

Item	Performance Characteristics
Category Temperature Range	–55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	10 to 2200μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV
Tangent of loss angle (tan δ)	see table below (Measurement frequency : 120Hz at 20°C)
Stability at Low Temperature	see table below (Measurement frequency : 120Hz)
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C. Capacitance change: Within ±30% of the initial capacitance value; tan δ: 200% or less than the initial specified value; Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value; tan δ: Less than or equal to the initial specified value; Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

Tangent of loss angle (tan δ) — Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.26	0.19	0.16	0.14	0.12	0.10

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z–25°C / Z+20°C	2	2	2	2	2	2
	Z–40°C / Z+20°C	3	3	3	3	3	3
	Z–55°C / Z+20°C	4	4	4	3	3	3

Endurance

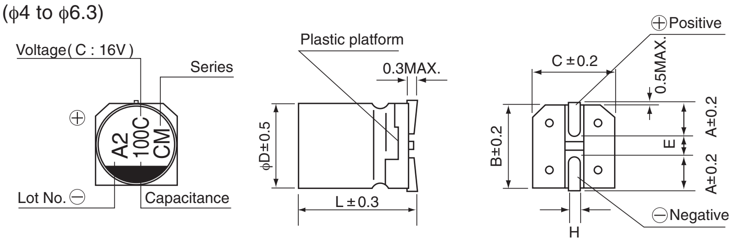
Capacitance change	Within ±30% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Resistance to soldering heat

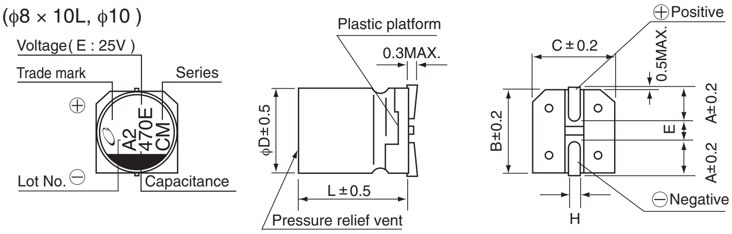
Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Chip Type

(φ4 to φ6.3)



(φ8 × 10L, φ10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

Type numbering system (Example : 16V 100μF)

1 2 3 4 5 6 7 8 9 10 11 12 13 14

U C M 1 C 1 0 1 M C L 1 G S

- Taping code (13–14)
- Size code (12)
- Configuration (10–11)
- Capacitance tolerance (±20%) (9)
- Rated capacitance (100μF) (6–8)
- Rated voltage (16V) (4–5)
- Series name (2–3)
- Type (1)

φ D	Code
4 to 6.3	CL
8 · 10	NL

(mm)

φDxL	4×5.8	5×5.8	6.3×5.8	6.3×7.7	8×10	10×10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

CM series

■Dimensions

Cap. (μF) \ V		6.3			10			16			25			35			50		
	Code	0J			1A			1C			1E			1V			1H		
10	100																● 4 x 5.8	2.30	85
																	5 x 5.8	0.88	165
22	220										4 x 5.8	1.00	160	4 x 5.8	1.00	160	5 x 5.8	0.88	165
33	330										4 x 5.8	1.00	160	5 x 5.8	0.36	240			
47	470							4 x 5.8	1.00	160	5 x 5.8	0.36	240	5 x 5.8	0.36	240	6.3 x 5.8	0.68	195
68	680				4 x 5.8	1.00	160	5 x 5.8	0.36	240	5 x 5.8	0.36	240	6.3 x 5.8	0.26	300			
100	101	4 x 5.8	1.00	160				5 x 5.8	0.36	240	6.3 x 5.8	0.26	300	6.3 x 5.8	0.26	300	6.3 x 7.7	0.34	350
150	151				5 x 5.8	0.36	240	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600	6.3 x 7.7	0.16	600			
220	221	5 x 5.8	0.36	240	6.3 x 5.8	0.26	300	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600				8 x 10	0.18	670
330	331	6.3 x 5.8	0.26	300	6.3 x 7.7	0.16	600	6.3 x 7.7	0.16	600				8 x 10	0.08	850	10 x 10	0.12	900
470	471	6.3 x 7.7	0.16	600	6.3 x 7.7	0.16	600				8 x 10	0.08	850						
560	561													10 x 10	0.06	1190			
680	681	6.3 x 7.7	0.16	600				8 x 10	0.08	850									
820	821										10 x 10	0.06	1190						
1000	102				8 x 10	0.08	850	10 x 10	0.06	1190									
1500	152	8 x 10	0.08	850	10 x 10	0.06	1190										Case size ΦD x L (mm)	Impedance	Rated ripple
2200	222	10 x 10	0.06	1190															

MAX. Impedance (Ω) at 20°C 100kHz, Rated ripple current(mArms) at 105°C 100kHz
●In this case, 6 will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

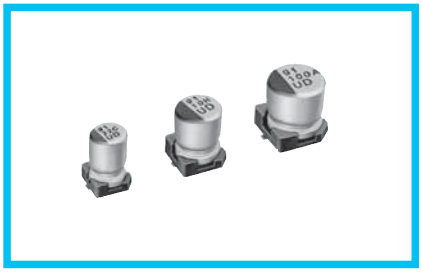
- Taping specifications are given in page 23.
- Recommended land size, soldering by refrow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

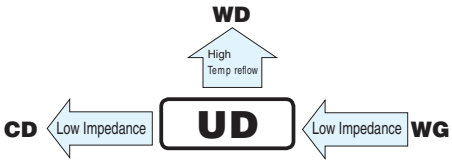
nichicon

UD Chip Type, Low Impedance series

For SMD | Low Impedance | Anti-Solvent Feature



- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

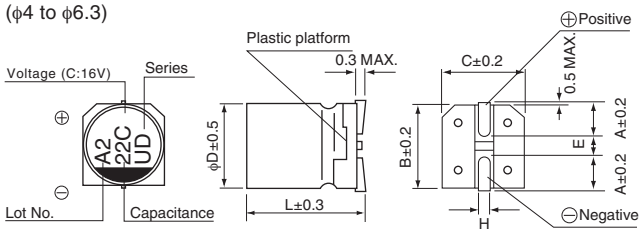


■Specifications

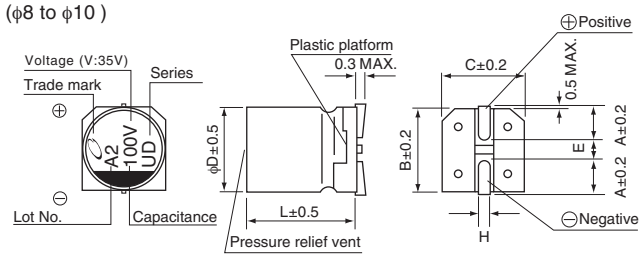
Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	1 to 1500μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.26 (0.28) / 0.20 (0.24) / 0.16 (0.20) / 0.14 (0.16) / 0.12 (0.14) / 0.12 (0.14) ( ) is φ8 over
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 3 / 2 / 2 / 2 / 2 / 2 Z−55°C / Z+20°C: 5 / 4 / 4 / 3 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for φD = 4, 5 and 6.3) at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 200% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ4 to φ6.3)



(φ8 to φ10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

●Dimension table in next page.

Type numbering system (Example : 16V 22μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	D	1	C	2	2	0	M	C	L	1	G	S

Package code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (22μF)
Rated voltage (16V)
Series name
Type

φD	Code
4 to 6.3	CL
8・10	NL

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

UD series

■Dimensions

Cap. (μF) \ V	6.3			10			16			25			35			50		
Code	0J			1A			1C			1E			1V			1H		
1	010															4×5.8	5.00	30
2.2	2R2															4×5.8	5.00	30
3.3	3R3															4×5.8	5.00	30
4.7	4R7												4×5.8	1.80	80	5×5.8	1.52	85
10	100									4×5.8	1.80	80	5×5.8	0.76	150	6.3×5.8	0.88	165
15	150						4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
22	220			4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
27	270	4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
33	330	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
47	470	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
56	560	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
68	680	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
100	101	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.34	300
150	151	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.18	670
220	221	6.3×5.8	0.44	230	6.3×7.7	0.34	280	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.18	670
330	331	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670			
470	471	8×10	0.17	450	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670						
680	681	8×10	0.17	450	10×10	0.09	670	10×10	0.09	670									
1000	102	8×10	0.17	450	10×10	0.09	670									Case size φD×L (mm)	Impedance	Rated ripple
1500	152	10×10	0.09	670														

Max. Impedance (Ω) at 20°C 100kHz,
Rated ripple current (mArms) at 105°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WD Chip Type, Low Impedance
High Temperature (260°C) Reflow
series

For SMD | Low Impedance | Anti-Solvent Feature

- Corresponding with 260°C peak reflow soldering
  Recomended reflow condition : 260°C peak 5 sec. 230°C over 60 sec.
  2 times (φ10 × 10 : 1 time)
- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

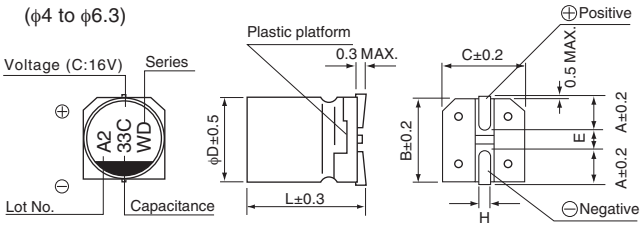
WD
High Temperature Reflow
UD

■Specifications

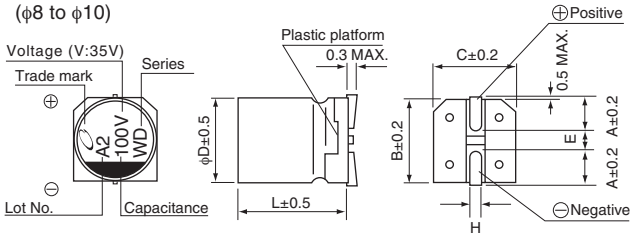
Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	1 to 1500μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μA), whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V) 6.3 / 10 / 16 / 25 / 35 / 50 tan δ (MAX.) 0.26 (0.28) / 0.20 (0.24) / 0.16 (0.20) / 0.14 (0.16) / 0.12 (0.14) / 0.12 (0.14) ( ) is φ8 over
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 3 / 2 / 2 / 2 / 2 / 2 Z−55°C / Z+20°C: 5 / 4 / 4 / 3 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for φD = 4, 5 and 6.3) at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 200% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ4 to φ6.3)



(φ8 to φ10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

●Dimension table in next page.

Type numbering system (Example : 16V 22μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	D	1	C	2	2	0	M	C	L	1	G	S

Package code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (22 μF)
Rated voltage (16V)
Series name
Type

(mm)

φD × L	4 × 5.8	5 × 5.8	6.3 × 5.8	6.3 × 7.7	8 × 10	10 × 10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.8	5.8	5.8	7.7	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

CAT.8100D

WD series

■Dimensions

Cap. (μF) \ V		6.3			10			16			25			35			50		
	Code	0J			1A			1C			1E			1V			1H		
1	010																4×5.8	5.00	30
2.2	2R2																4×5.8	5.00	30
3.3	3R3																4×5.8	5.00	30
4.7	4R7													4×5.8	1.80	80	5×5.8	1.52	85
10	100										4×5.8	1.80	80	5×5.8	0.76	150	6.3×5.8	0.88	165
15	150							4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
22	220				4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.88	165
27	270	4×5.8	1.80	80	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
33	330	5×5.8	0.76	150	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
47	470	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.68	185
56	560	5×5.8	0.76	150	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
68	680	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.34	300
100	101	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.34	300
150	151	6.3×5.8	0.44	230	6.3×5.8	0.44	230	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.18	670
220	221	6.3×5.8	0.44	230	6.3×7.7	0.34	280	6.3×7.7	0.34	280	8×10	0.17	450	10×10	0.09	670	10×10	0.18	670
330	331	6.3×7.7	0.34	280	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670	10×10	0.09	670			
470	471	8×10	0.17	450	8×10	0.17	450	8×10	0.17	450	10×10	0.09	670						
680	681	8×10	0.17	450	10×10	0.09	670	10×10	0.09	670									
1000	102	10×10	0.09	670	10×10	0.09	670										Case size φD×L (mm)	Impedance	Rated ripple
1500	152	10×10	0.09	670															

Max. Impedance (Ω) at 20°C 100kHz,
Rated ripple current (mArms) at 105°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

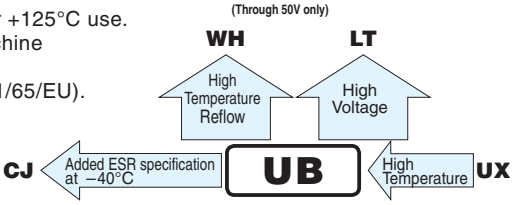
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UB Chip Type, High Reliability series

For SMD | Long Life | Anti-Solvent Feature (Through 50V only)

- Chip type, high temperature range, for +125°C use.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	10 to 400V
Rated Capacitance Range	1 to 330µF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V): 10 to 50 / 160 to 400 Leakage Current: After 1 minute's application of rated voltage, leakage current is not more than 0.03CV (µA). / I = 0.04CV+100 (µA) max.(1 minute's)
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	10	16	25	35	50	160	200	250	400
tan δ (MAX.)	0.32	0.24	0.21	0.18	0.18	0.30	0.30	0.30	0.30

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		10	16	25	35	50	160	200	250	400
Impedance ratio ZT / Z20 (MAX.)	Z−40°C / Z+20°C	12	8	6	4	4	8	8	8	12

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours (1000 hours for φ8 × 6.2) at 125°C.

Capacitance change	Within ±30% of the initial capacitance value
tan δ	300% or less than the intial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

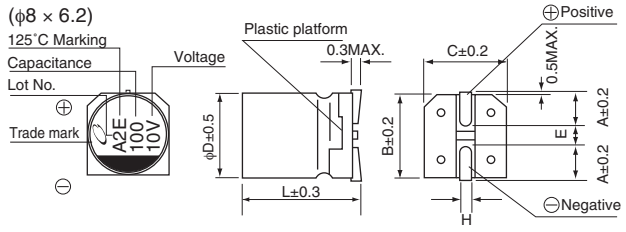
The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

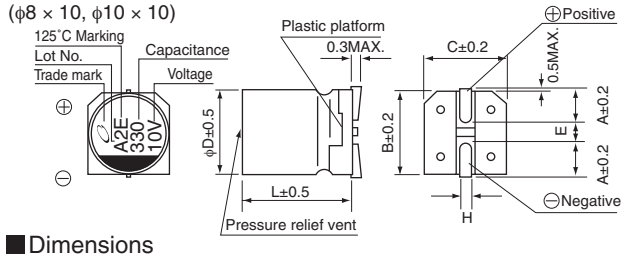
Marking — Black print on the case top.

■Chip Type

(φ8 × 6.2)



(φ8 × 10, φ10 × 10)



(mm)

φD × L	8 × 6.2	8 × 10	10 × 10
A	3.3	2.9	3.2
B	8.3	8.3	10.3
C	8.3	8.3	10.3
E	2.3	3.1	4.5
L	6.2	10	10
H	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

Type numbering system (Example : 10V 100µF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	B	1	A	1	0	1	M	C	L	1	G	S

- 14: Taping code
- 10–11: Configuration

φD × L	Code
8 × 6.2	CL
8 × 10	NL
10 × 10	NL

- 9: Capacitance tolerance (±20%)
- 6–8: Rated capacitance (100µF)
- 4–5: Rated voltage (10V)
- 3: Series name
- 1–2: Type

■Dimensions

Cap.(µF) \ V	Code	10		16		25		35		50	
		1A		1C		1E		1V		1H	
10	100									8 × 6.2	24
22	220									8 × 6.2	38
33	330							8 × 6.2	44	8 × 10	46
47	470					8 × 6.2	48	8 × 10	52	10 × 10	58
100	101	8 × 6.2	58	8 × 10	66	8 × 10	74	10 × 10	80		
220	221	8 × 10	90	10 × 10	102	10 × 10	116			Case size φD × L (mm)	Rated ripple
330	331	10 × 10	112								

Cap.(µF) \ V	Code	160		200		250		400	
		2C		2D		2E		2G	
1	010							8 × 10	26
1.8	1R8							8 × 10	27
2.2	2R2							10 × 10	36
3.3	3R3					8 × 10	28	10 × 10	38
4.7	4R7			8 × 10	36	10 × 10	59		
6.8	6R8	8 × 10	42	10 × 10	59			Case size φD × L (mm)	Rated ripple
10	100	10 × 10	59	10 × 10	59				

Rated ripple current (mArms) at 125°C 120Hz

●Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

WH

Chip Type, High Reliability
High Temperature (260°C) Reflow
series

For SMD | Long Life | Anti-Solvent Feature

- Corresponding with 260°C peak reflow soldering
  Recomended reflow condition : 260°C peak 5 sec. 230°C over 60 sec. 2 times
  (φ8 × 6.2, φ10 × 10 : 1 time)
- Chip type high temperature range, for +125°C use.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

WH

High Temperature Reflow

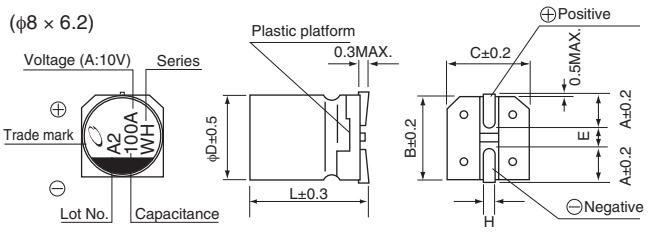
UB

■Specifications

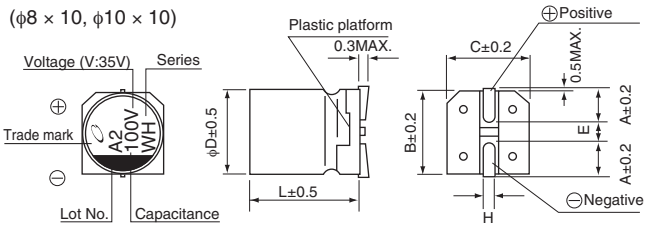
Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	10 to 50V
Rated Capacitance Range	10 to 330μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4(μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.32 / 0.24 / 0.21 / 0.18 / 0.18
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C: 12 / 8 / 6 / 4 / 4
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 125°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the intial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ8 × 6.2)



(φ8 × 10, φ10 × 10)



Voltage

V	10	16	25	35	50
Code	A	C	E	V	H

Type numbering system (Example : 10V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	H	1	A	1	0	1	M	C	L	1	G	S

- 14: Package code
- 13: Configuration
- 9: Capacitance tolerance (±20%)
- 6–8: Rated capacitance (100μF)
- 4–5: Rated voltage (10V)
- 3: Series name
- 1–2: Type

(mm)

φD × L	8 × 6.2	8 × 10	10 × 10
A	3.3	2.9	3.2
B	8.3	8.3	10.3
C	8.3	8.3	10.3
E	2.3	3.1	4.5
L	6.2	10	10
H	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

nichicon

WH series

■Dimensions

Cap.(μF) \ V	Code	10		16		25		35		50	
		1A		1C		1E		1V		1H	
10	100									8×6.2	24
22	220									8×6.2	38
33	330							8×6.2	44	8×10	46
47	470					8×6.2	48	8×10	52	10×10	58
100	101	8×6.2	58	8×10	66	8×10	74	10×10	80		
220	221	8×10	90	10×10	102	10×10	116			Case size φD×L (mm)	Rated ripple
330	331	10×10	112								

Rated ripple current (mArms) at 125°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

Expanded

LT Chip Type, High Voltage. High Temperature Range. series

For SMD | Long Life

- Chip type, high voltage and high temperature range.
- Load life of 2000 hours at +125°C.
- Applicable to automatic mounting machine using carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

LH Long Life | LT | High Voltage | UB

■Specifications

Item	Performance Characteristics
Category Temperature Range	–40 to +125°C
Rated Voltage Range	160 to 500V
Rated Capacitance Range	1.8 to 33μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V): 160~450 / 500 — 0.04CV+100(μA)max.(1 minute's) / 0.04CV+200(μA)max.(1 minute's)
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	160	200	250	400	450	500
tan δ (MAX.)	0.20	0.20	0.25	0.25	0.30	0.30

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		160	200	250	400	450	500
Impedance ratio ZT / Z20 (MAX.)	Z–40°C / Z+20°C	6	6	10	10	15	15

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 125°C.

Capacitance change	Within ±30% of the initial capacitance value
tan δ	300% or less than the intial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

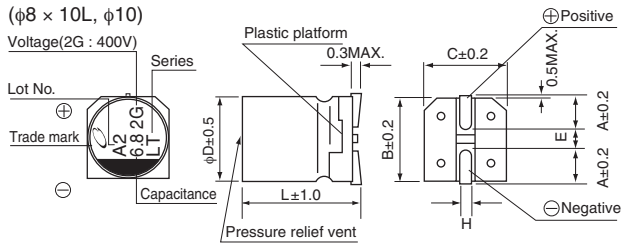
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the characteristic requirements listed at right when they are removed from the plate.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type

(φ8 × 10L, φ10)



(mm)

φD × L	8 × 10	10 × 10	10 × 13.5
A	2.9	3.2	3.2
B	8.3	10.3	10.3
C	8.3	10.3	10.3
E	3.1	4.5	4.5
L	10	10	13.5
H	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

Voltage

V	160	200	250	400	450	500
Code	2C	2D	2E	2G	2W	2H

Type numbering system (Example : 400V 6.8μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	L	T	2	G	6	R	8	M	N	L	1	G	S

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (6.8μF)
Rated voltage (400V)
Series name
Type

■Dimensions

Cap.(μF) \ V	160		200		250		400		450		500	
Code	2C		2D		2E		2G		2W		2H	
1.8	1R8										8 × 10	20
3.3	3R3								8 × 10	20	10 × 10	35
3.9	3R9						8 × 10	30				
4.7	4R7										10 × 13.5	40
5.6	5R6								10 × 10	35		
6.8	6R8						10 × 10	45				
7.5	7R5								10 × 13.5	40		
8.2	8R2				8 × 10	30						
10	100						10 × 13.5	50				
12	120		8 × 10	45								
15	150	8 × 10	45		10 × 10	45						
18	180		10 × 10	60	10 × 13.5	50						
22	220	10 × 10	60									
27	270		10 × 13.5	65							Case size φD × L (mm)	Rated ripple
33	330	10 × 13.5	65									

Rated ripple current (mArms) at 125°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

LH Chip Type, High Voltage. High Reliability. series

For SMD | Long Life

- Chip type, High voltage and High Reliability.
- Load life of 4000 hours at +125°C.
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2011/65/EU).

LH → Long Life LT

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	160 to 450V
Rated Capacitance Range	2.2 to 27μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.04CV+100 (μA).
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

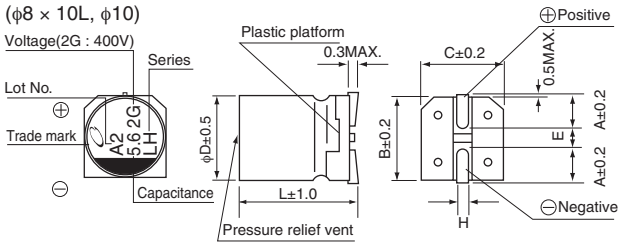
Rated voltage (V)	160	200	250	400	450
tan δ (MAX.)	0.20	0.20	0.25	0.25	0.30

Stability at Low Temperature	Measurement frequency : 120Hz					
Rated voltage (V)		160	200	250	400	450
Impedance ratio ZT / Z20 (MAX.)	Z−40°C / Z+20°C	6	6	10	10	15

Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 4000 hours at 125°C.	Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the intial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.	
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the characteristic requirements listed at right when they are removed from the plate.	Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.	

■Chip Type

(φ8 × 10L, φ10)



(mm)

φD×L	8×10	10×10	10×13.5
A	2.9	3.2	3.2
B	8.3	10.3	10.3
C	8.3	10.3	10.3
E	3.1	4.5	4.5
L	10	10	13.5
H	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

Voltage

V	160	200	250	400	450
Code	2C	2D	2E	2G	2W

Type numbering system (Example : 400V 5.6μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	L	H	2	G	5	R	6	M	N	L	1	G	S

- 14: Taping code
- 12–13: Configuration
- 9: Capacitance tolerance (±20%)
- 6–8: Rated capacitance (5.6μF)
- 4–5: Rated voltage (400V)
- 3: Series name
- 1–2: Type

■Dimensions

Cap.(μF) \ V	Code	160 2C		200 2D		250 2E		400 2G		450 2W	
2.2	2R2									8×10	20
3.3	3R3							8×10	30		
3.9	3R9									10×10	35
5.6	5R6							10×10	45	10×13.5	40
7.5	7R5					8×10	30	10×13.5	50		
10	100			8×10	45						
12	120	8×10	45			10×10	45				
15	150			10×10	60	10×13.5	50				
18	180	10×10	60								
22	220			10×13.5	65					Case size φD×L (mm)	Rated ripple
27	270	10×13.5	65								

Rated ripple current (mArms) at 125°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

CJ Chip Type, High Reliability.
Low temperature ESR specification.
series

For SMD | Long Life | Anti-Solvent Feature

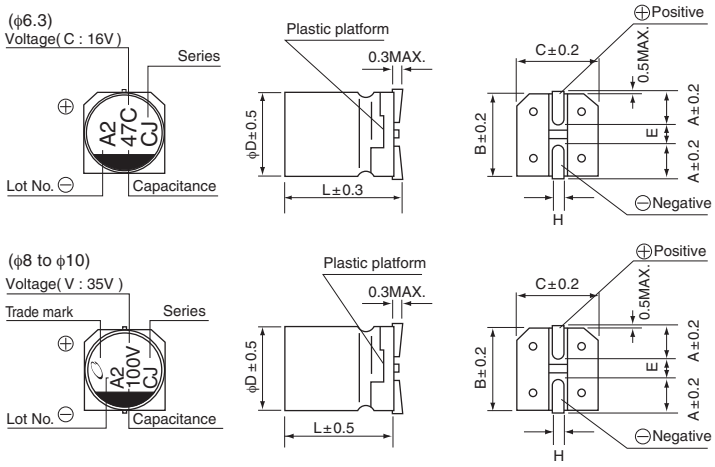
- Chip type, high temperature range, for +125°C use.
- Added ESR specification after the test at −40°C (φ6.3 sizes provide only for the first stage.)
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

CZ (Low ESR, Long Life) ← **CJ** → UB (Added ESR specification at −40°C)

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	10 to 50V
Rated Capacitance Range	10 to 470μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4(μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 10 / 16 / 25 / 35 / 50 tan δ (MAX.): 0.32 / 0.24 / 0.21 / 0.18 / 0.18
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V): 10 / 16 / 25 / 35 / 50 Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C: 12 / 8 / 6 / 4 / 4
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 125°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the intial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type



Type numbering system (Example : 10V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	J	1	A	1	0	1	M	C	L	1	G	S

Taping code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (100μF)
Rated voltage (10V)
Series name
Type

(mm)

φD×L	6.3×8.7	8×10	10×10
A	2.4	2.9	3.2
B	6.6	8.3	10.3
C	6.6	8.3	10.3
E	2.2	3.1	4.5
L	8.7	10	10
H	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

Rated Voltage

V	10	16	25	35	50
Code	A	C	E	V	H

■Dimensions

Cap.(μF) \ V	Code	10 (1A)				16 (1C)				25 (1E)				35 (1V)				50 (1H)			
10	100													6.3×8.7	14	–	95	6.3×8.7	14	–	95
22	220									6.3×8.7	14	–	95	6.3×8.7	14	–	95	6.3×8.7	14	–	95
33	330									6.3×8.7	14	–	95	6.3×8.7	14	–	95	8×10	2.0	6.0	200
47	470					6.3×8.7	14	–	95	6.3×8.7	14	–	95	6.3×8.7	14	–	95	10×10	1.5	4.5	330
100	101	6.3×8.7	14	–	95	8×10	2.0	6.0	250	8×10	2.0	6.0	250	10×10	1.5	4.5	400	10×10	1.5	4.5	330
220	221	8×10	2.0	6.0	250	10×10	1.5	4.5	400	10×10	1.5	4.5	400	10×10	1.5	4.5	400	Case size φD×L (mm)	Initial	after endurance test	Rated ripple
330	331	10×10	1.5	4.5	400	10×10	1.5	4.5	400	10×10	1.5	4.5	400						ESR		
470	471	10×10	1.5	4.5	400																

Max. ESR (Ω) at -40°C 100kHz, Rated ripple current (mArms) at 125°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

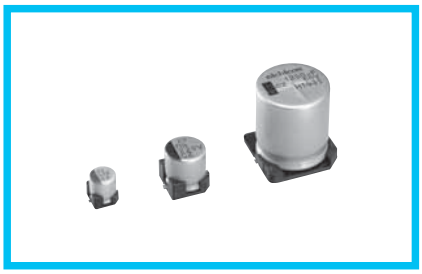
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

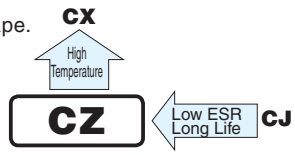
CZ Chip Type, High Reliability.
Low temperature ESR specification.
series

For SMD | Long Life | Anti-Solvent Feature

Expanded



- Chip type, high temperature range, for +125°C use.
- Added ESR specification after the test at -40°C.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

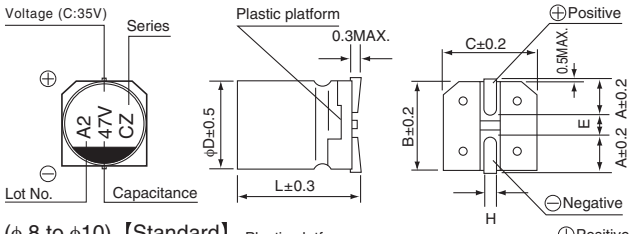


■Specifications

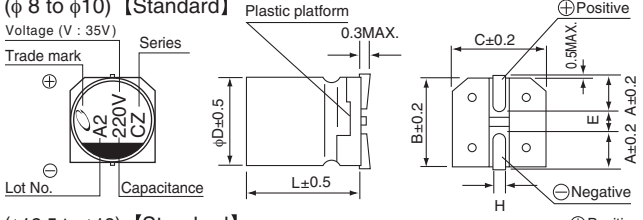
Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	10 to 100V
Rated Capacitance Range	10 to 3300μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3μA, whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 tan δ (MAX.): 0.30 / 0.23 / 0.18 / 0.16 / 0.16 / 0.12 / 0.12 / 0.10 For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.
Stability at Low Temperature	Rated voltage (V): 10 / 16 / 25 / 35 / 50 / 63 / 80 / 100 Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C: 12 / 8 / 6 / 4 / 4 / 3 / 3 / 3 Measurement frequency : 120Hz After continuous application of rated voltage at 125°C and then restoring down to 20°C, the readings of measurements shall meet below.
Endurance	Case size / Endurance time: φ6.3 × 5.8L 1000hrs. / φ6.3 × 7.7L 2000hrs. / φ8 to φ12.5 3000hrs. / φ16,18 × 16.5L 3500hrs. / φ16,18 × 21.5L 4000hrs. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

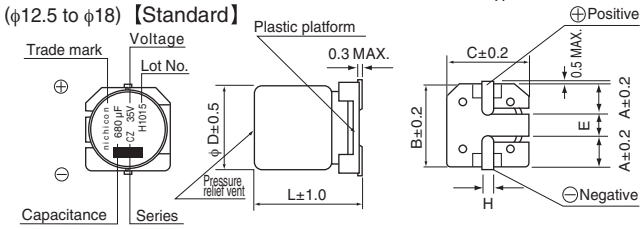
(φ 6.3)【Standard】※ φ6.3 × 5.8L : The vibration structure-resistant product can't support.
φ6.3 × 7.7L : The vibration structure-resistant product is available.



(φ 8 to φ10)【Standard】



(φ12.5 to φ18)【Standard】



※φ12.5 to φ18 :
The vibration structure-resistant product is also available upon request, please ask for details.

Type numbering system (Example : 35V 47μF)

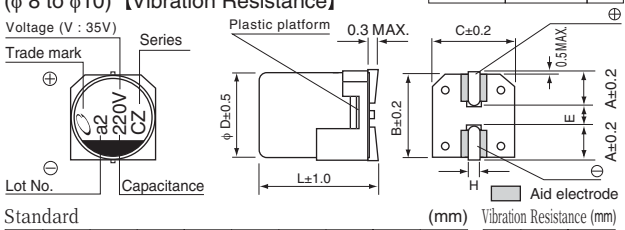
1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	Z	1	V	4	7	0	M	C	L	1	G	S

Package code
Size code
Configuration
Capacitance tolerance (±20%)
Rated capacitance (47μF)
Rated voltage (35V)
Series name
Type

Size	Package	Code
φ4 to10	Taping	GS
φ12.5 to18	Taping	MS
φ12.5 to18	Tray	ZD

φd	Configuration	Code
6.3 to 10	Standard	CL
	Vibration Resistance	CS
12.5 or more	Standard	NQ

(φ 8 to φ10)【Vibration Resistance】



Standard (mm)

φD×L	6.3×5.8	6.3×7.7	8×10	10×10	12.5×13.5	16×16.5	16×21.5	18×16.5	18×21.5
A	2.4	2.4	2.9	3.2	4.8	5.4	5.4	6.4	6.4
B	6.6	6.6	8.3	10.3	13.6	17.1	17.1	19.1	19.1
C	6.6	6.6	8.3	10.3	13.6	17.1	17.1	19.1	19.1
E	2.2	2.2	3.1	4.5	4	6.3	6.3	6.3	6.3
L	5.8	7.7	10	10	13.5	16.5	21.5	16.5	21.5
H	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4

Vibration Resistance (mm)

φD×L	8×10	10×10
A	2.9	3.2
B	8.3	10.3
C	8.3	10.3
E	3.1	4.5
L	10	10
H	1.1 to 1.5	1.1 to 1.5

Rated Voltage

V	10	16	25	35	50	63	80	100
Code	A	C	E	V	H	J	K	2A

CAT.8100D

CZ series

■Dimensions

Cap. (μF) \ V	Code	10	16	25	35	50
		1A	1C	1E	1V	1H
10	100				6.3 x 5.8 1.60 24 – 69	6.3 x 5.8 2.80 42 – 51
22	220				6.3 x 5.8 1.60 24 – 69	6.3 x 7.7 0.50 5 40 197
33	330			6.3 x 5.8 1.60 24 – 69	6.3 x 7.7 0.45 5 40 197	●6.3 x 7.7 0.50 5 40 197 8 x 10 0.25 3.5 6 270
47	470		6.3 x 5.8 1.60 24 – 69	Recommend 35V ⇨	●6.3 x 7.7 0.45 5 40 197 8 x 10 0.20 3 4.5 270	●6.3 x 7.7 0.50 5 40 197 8 x 10 0.25 3.5 6 270
68	680				8 x 10 0.20 3 4.5 270	
100	101	Recommend 16V ⇨	●6.3 x 7.7 0.45 5 40 197 8 x 10 0.20 3 4.5 270	●6.3 x 7.7 0.45 5 40 197 8 x 10 0.20 3 4.5 270	8 x 10 0.20 3 4.5 270	10 x 10 0.20 2.5 4.5 500
220	221	8 x 10 0.20 3 4.5 270	8 x 10 0.20 3 4.5 270	●8 x 10 0.20 3 4.5 270 10 x 10 0.15 2 3.5 500	10 x 10 0.15 2 3.5 500	
330	331	●8 x 10 0.20 3 4.5 270 10 x 10 0.15 2 3.5 500	10 x 10 0.15 2 3.5 500	10 x 10 0.15 2 3.5 500		
390	391					12.5 x 13.5 0.100 0.44 4.0 1300
470	471	10 x 10 0.15 2 3.5 500	10 x 10 0.15 2 3.5 500		12.5 x 13.5 0.060 0.40 3.0 1700	16 x 16.5 0.080 0.34 2.6 2000
560	561				12.5 x 13.5 0.060 0.40 3.0 1700	16 x 16.5 0.080 0.34 2.6 2000
680	681				12.5 x 13.5 0.060 0.40 3.0 1700	18 x 16.5 0.078 0.32 2.6 2100
820	821			12.5 x 13.5 0.060 0.40 3.0 1700	16 x 16.5 0.047 0.28 1.4 2400	18 x 16.5 0.078 0.32 2.6 2100
1000	102			12.5 x 13.5 0.060 0.40 3.0 1700	16 x 16.5 0.047 0.28 1.4 2400	16 x 21.5 0.040 0.22 1.5 2800
1200	122			16 x 16.5 0.047 0.28 1.4 1700	18 x 16.5 0.045 0.28 1.4 2600	18 x 21.5 0.038 0.20 1.5 2900
1400	142				18 x 16.5 0.045 0.28 1.4 2600	
1600	162			16 x 16.5 0.047 0.28 1.4 2400	16 x 21.5 0.034 0.20 0.6 3000	
2200	222			18 x 16.5 0.045 0.23 1.3 2600	18 x 21.5 0.032 0.16 0.5 3250	Case size φD x L (mm) / Initial 20 ℃ / Initial -40 ℃ / after endurance test -40 ℃※ / Rated ripple ESR
2700	272			16 x 21.5 0.034 0.20 0.6 3000		
3300	332			18 x 21.5 0.032 0.16 0.5 3250		

Cap. (μF) \ V	Code	63	80	100
		1J	1K	2A
10	100	6.3 x 7.7 2.00 100 – 60	8 x 10 0.75 50 – 70	8 x 10 0.75 50 – 70
22	220	8 x 10 0.70 35 – 100	●8 x 10 0.75 50 – 70 10 x 10 0.55 35 – 115	●8 x 10 0.75 50 – 70 10 x 10 0.55 35 – 115
33	330	●8 x 10 0.70 35 – 100 10 x 10 0.50 25 – 170	●8 x 10 0.75 50 – 70 10 x 10 0.55 35 – 115	10 x 10 0.55 35 – 115
47	470	●8 x 10 0.70 35 – 100 10 x 10 0.50 25 – 170	10 x 10 0.55 35 – 115	
82	820			12.5x13.5 0.28 1.9 22 700
150	151	12.5 x 13.5 0.20 1.3 14 1000	12.5 x 13.5 0.28 1.9 14 700	16x16.5 0.19 1.4 4.8 1000
180	181	12.5 x 13.5 0.20 1.3 14 1000		18x16.5 0.17 1.1 3.9 1100
220	221	12.5 x 13.5 0.20 1.3 14 1000		16x21.5 0.12 0.8 2.6 1600
270	271		16 x 16.5 0.19 1.4 4.8 1000	
300	301			18x21.5 0.11 0.7 2.4 1700
330	331		18 x 16.5 0.17 1.1 3.9 1100	
390	391	16 x 16.5 0.13 0.9 4.8 1900	16 x 21.5 0.12 0.8 2.6 1600	
470	471	18 x 16.5 0.11 0.82 3.9 2000		
520	521		18 x 21.5 0.11 0.7 2.4 1700	Case size φD x L (mm) / Initial 20 ℃ / Initial -40 ℃ / after endurance test -40 ℃※ / Rated ripple ESR
560	561	16 x 21.5 0.07 0.46 2.0 2500		
750	751	18 x 21.5 0.068 0.44 1.8 2600		

※Guaranteed time of ESR after endurance test

Size	Guaranteed time	
φ6.3 x 5.8L	–	
φ6.3 x 7.7L, φ8 x 10L φ10 x 10L	10 to 50V	2000hrs.
	63 to 100V	–
φ16,18 x 16.5L	2000hrs.	
φ16,18 x 21.5L	3000hrs.	

Max. ESR (Ω) at 20°C / -40°C 100kHz, Rated ripple Current (mArms) at 125°C 100kHz

● : In this case, 6 will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
Coefficient	0.35	0.50	0.64	0.83	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

アルミニウム電解コンデンサ ALUMINUM ELECTROLYTIC CAPACITORS

CX チップ 高信頼性 低温ESR規定品 シリーズ

面実装品　長寿命品　耐洗浄品

●低温ESR／耐久性試験後低温ESR規定品。
●面実装タイプ製品温度135℃品。
●キャリアテーピング包装により自動装着が可能。
●RoHS指令（2011/65/EU）対応済。

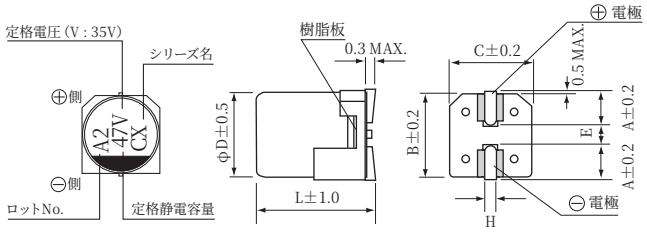
CX
高温度化
CZ

■仕様

項　　目		性　　能					
カテゴリ温度範囲		－40～＋135℃					
定格電圧範囲		10～50V					
定格静電容量範囲		47～3300μF					
定格静電容量許容差		±20%（120Hz、20℃）					
漏れ電流		Ⅰ＝0.01CV または3（μA） いずれか大きい値以下（2分値）					
損失角の正接（tan δ）	定格電圧（V）	10	16	25	35	50	120Hz 20℃
	tan δ （MAX.）	0.30	0.23	0.18	0.16	0.16	
温度特性	定格電圧（V）	10	16	25	35	50	120Hz
	インピーダンス比（MAX.） Z－40℃/Z＋20℃	12	8	6	4	4	
耐久性	135℃ 2000時間　定格電圧連続印加後、20℃に戻し測定を行なったとき、下記項目を満足する						
	静電容量変化率	初期値の±30%以内					
	tan δ	初期規格値の300%以下					
	漏れ電流	初期規格値以下					
高温無負荷特性	135℃ 1000時間 無負荷放置後、20℃にてJIS C 5101-4 4.1項による電圧処理を行った後、上記耐久性の規格値を満足する						
はんだ耐熱性	電極端子面を250℃の熱板上に30秒間放置後、20℃に戻し測定を行った後、下記項目を満足する						
	静電容量変化率	初期値の±10%以内					
	tan δ	初期規格値以下					
	漏れ電流	初期規格値以下					
表示	ケース底に黒色表示						

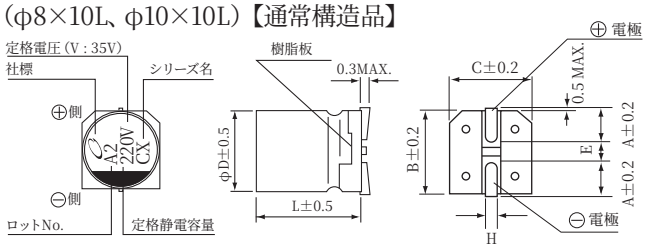
■寸法図（表示例）

（φ6.3）【耐振動構造品のみ】

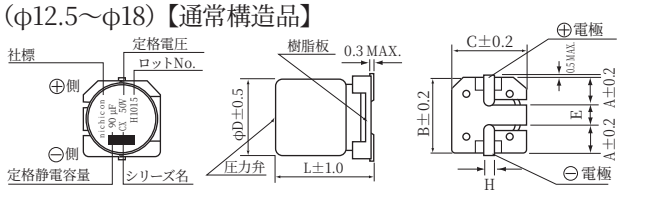


※φ6.3×10Lについては、耐振動構造品のみ対応しております。

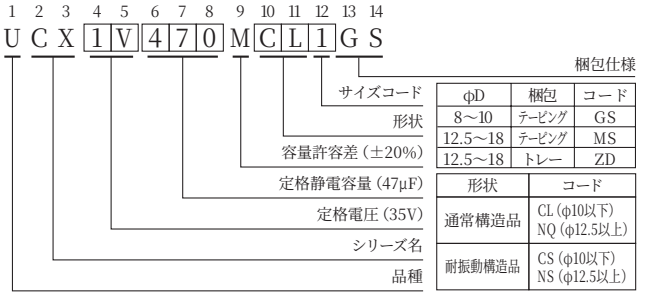
（φ8×10L、φ10×10L）【通常構造品】



（φ12.5～φ18）【通常構造品】



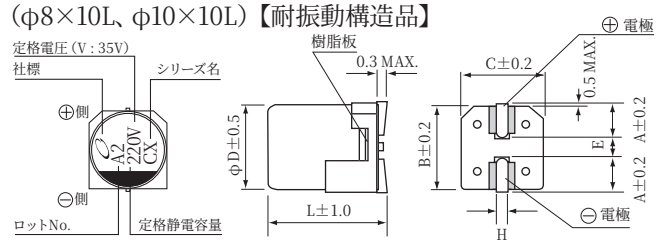
品番コード体系（例：35V 47μF）



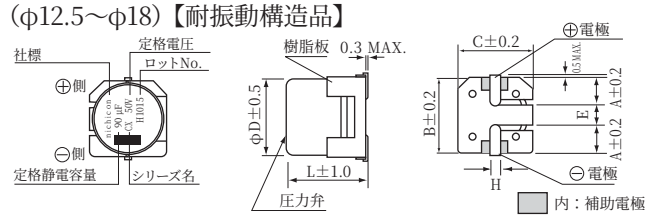
φD	梱包	コード
8～10	テーピング	GS
12.5～18	テーピング	MS
12.5～18	トレー	ZD

形状	コード
通常構造品	CL（φ10以下） NQ（φ12.5以上）
耐振動構造品	CS（φ10以下） NS（φ12.5以上）

（φ8×10L、φ10×10L）【耐振動構造品】



（φ12.5～φ18）【耐振動構造品】



通常構造品　（単位：mm）

φD×L	8×10	10×10	12.5×13.5	16×16.5、21.5	18×16.5、21.5
A	2.9	3.2	4.8	5.4	6.4
B	8.3	10.3	13.6	17.1	19.1
C	8.3	10.3	13.6	17.1	19.1
E	3.1	4.5	4	6.3	6.3
L	10	10	13.5	16.5、21.5	16.5、21.5
H	0.8～1.1	0.8～1.1	1.0～1.4	1.0～1.4	1.0～1.4

耐振動構造品　（単位：mm）

φD×L	6.3×10	8×10	10×10	12.5×13.5	16×16.5、21.5	18×16.5、21.5
A	2.4	2.9	3.2	4.8	5.4	6.4
B	6.6	8.3	10.3	13.6	17.1	19.1
C	6.6	8.3	10.3	13.6	17.1	19.1
E	2.2	3.1	4.5	4	6.3	6.3
L	10	10	10	13.5	16.5、21.5	16.5、21.5
H	0.5～0.8	1.1～1.5	1.1～1.5	1.0～1.4	1.0～1.4	1.0～1.4

定格電圧

V	10	16	25	35	50
コード	A	C	E	V	H

●寸法表は次頁に掲載しております。

CX シリーズ

■寸法表

定格静電容量 (μF)	品番コード	10 V (1A)					16 V (1C)					25 V (1E)					35 V (1V)					50 V (1H)				
47	470																●6.3 × 10	0.25	4	15	197	8 × 10	0.25	3.5	15	270
																	8 × 10	0.20	3	12	270					
68	680																8 × 10	0.20	3	12	270					
100	101						●6.3 × 10	0.25	4	15	197	8 × 10	0.20	3	12	270	●6.3 × 10	0.25	4	15	197	10 × 10	0.2	2.5	12	500
							8 × 10	0.20	3	12	270						8 × 10	0.20	3	12	270					
220	221	8 × 10	0.20	3	12	270	8 × 10	0.20	3	12	270	10 × 10	0.15	2	12	500	10 × 10	0.15	2	10	500					
330	331	●8 × 10	0.20	3	12	270	10 × 10	0.15	2	10	500	10 × 10	0.15	2	10	500										
		10 × 10	0.15	2	10	500																				
390	391																					12.5 × 13.5	0.09	1.3	6.5	750
470	471	10 × 10	0.15	2	10	500	10 × 10	0.15	2	10	500						12.5 × 13.5	0.07	1.0	5.0	750	16 × 16.5	0.07	0.70	3.5	1000
560	561																12.5 × 13.5	0.07	1.0	5.0	750	16 × 16.5	0.07	0.70	3.5	1000
680	681																12.5 × 13.5	0.07	1.0	5.0	750	18 × 16.5	0.07	0.70	3.5	1200
820	821											12.5 × 13.5	0.07	1.0	5.0	750	16 × 16.5	0.05	0.50	2.5	1200	18 × 16.5	0.07	0.70	3.5	1200
1000	102											12.5 × 13.5	0.07	1.0	5.0	750	16 × 16.5	0.05	0.50	2.5	1200	16 × 21.5	0.05	0.40	2.0	1600
1200	122											16 × 16.5	0.05	0.50	2.5	1200	18 × 16.5	0.05	0.50	2.5	1400	18 × 21.5	0.04	0.32	1.6	1900
1500	152											16 × 16.5	0.05	0.50	2.5	1200	●16 × 21.5	0.04	0.32	1.6	1900					
																	18 × 16.5	0.05	0.50	2.5	1400					
1800	182											16 × 16.5	0.05	0.50	2.5	1200	18 × 21.5	0.035	0.28	1.4	2200					
2200	222											18 × 16.5	0.05	0.50	2.5	1400	18 × 21.5	0.035	0.28	1.4	2200					
2700	272											16 × 21.5	0.04	0.32	1.6	1900										
3300	332											18 × 21.5	0.035	0.28	1.4	2200										

ケースサイズ φD×L (mm)	ESR(100kHz) 20°C	ESR(100kHz) −40°C	ESR(100kHz) 耐久性試験1000h後 −40°C	定格リプル

ESR (Ω) MAX. at 20°C／−40°C 100kHz、定格リプル (mArms) at 135°C 100kHz

●印：この場合は品番コード (12桁目) のサイズコードが6となります。

●定格リプル電流の周波数補正係数

周 波 数	50Hz	120Hz	300Hz	1kHz	10kHz～
補正係数	0.35	0.50	0.64	0.83	1.00

・テーピング仕様は21頁に掲載しております。
・はんだ付け推奨ランド寸法・推奨リフロー条件は17、18頁に掲載しております。
・ご発注単位は3頁を参照ください。

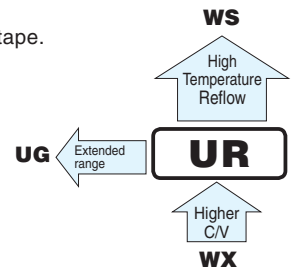
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UR series — Chip Type, High CV

For SMD | Smaller | Anti-Solvent Feature

- Chip type, higher capacitance in larger case sizes.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	4 to 100V
Rated Capacitance Range	3.3 to 1500μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV (μA) .
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	4	6.3	10	16	25	35	50	63	100
tan δ (MAX.)	0.35	0.28	0.24	0.20	0.16	0.14	0.12	0.12	0.12

Stability at Low Temperature — Measurement frequency: 120Hz

Rated voltage (V)		4	6.3	10	16	25	35	50	63	100
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	7	5	4	3	2	2	2	2	2
	Z−40°C / Z+20°C	15	10	8	6	4	3	3	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

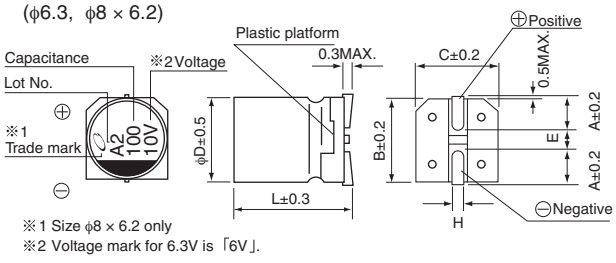
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

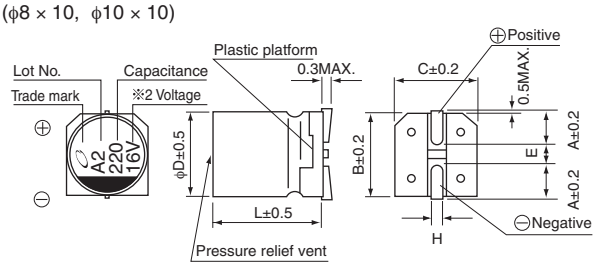
■Chip Type

(φ6.3, φ8 × 6.2)

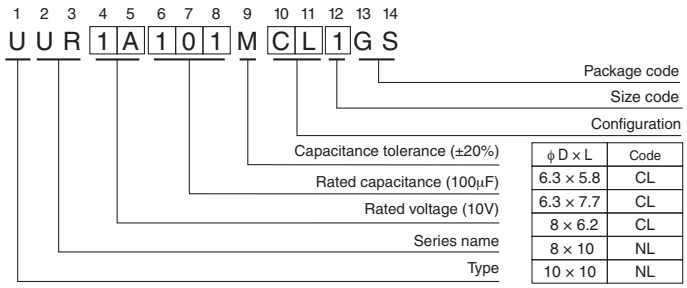


※1 Size φ8 × 6.2 only
※2 Voltage mark for 6.3V is「6V」.

(φ8 × 10, φ10 × 10)



Type numbering system (Example : 10V 100μF)



φD × L	Code
6.3 × 5.8	CL
6.3 × 7.7	CL
8 × 6.2	CL
8 × 10	NL
10 × 10	NL

(mm)

φD × L	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 10
A	2.4	2.4	3.3	2.9	3.2
B	6.6	6.6	8.3	8.3	10.3
C	6.6	6.6	8.3	8.3	10.3
E	2.2	2.2	2.3	3.1	4.5
L	5.8	7.7	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

nichicon

UR series

■Dimensions

Cap.(μF) \ V / Code	4		6.3		10		16		25		35		50		63		100	
	0G		0J		1A		1C		1E		1V		1H		1J		2A	
3.3	3R3																6.3x5.8	29
4.7	4R7														6.3x5.8	31	● 8x6.2	40 (35)
10	100														8x6.2	46	8x10	77
22	220												6.3x5.8	45	8x10	96	8x10	100
33	330										6.3x5.8	55	○ 8x6.2	95 (94)	8x10	117	10x10	130
47	470								6.3x5.8	65	● 8x6.2	105 (94)	○ 8x10	140 (105)	8x10	140	10x10	155
100	101				6.3x5.8	70	8x6.2	125	○ 8x6.2	145 (143)	○ 8x10	175 (132)	■10x10	195 (181)	10x10	232		
150	151				6.3x5.8	85	6.3x7.7	151	8x10	192	8x10	214	10x10	238				
220	221			● 8x6.2	160 (143)	○ 8x6.2	175 (173)	○ 8x10	215 (162)	■10x10	250 (232)	■10x10	265 (246)	10x10	289				
330	331	6.3x5.8	152	○ 8x6.2	190 (188)	8x10	240	8x10	270	■10x10	305 (284)	10x10	324						
470	471	6.3x7.7	200	8x10	265	8x10	290	■10x10	330 (307)	10x10	393								
680	681	8x10	284	8x10	318	10x10	374	10x10	396										
1000	102	8x10	344	■10x10	400 (372)	10x10	454										Case size φD × L (mm)	Rated ripple
1500	152	10x10	347	10x10	489													

Size φ6.3 × 5.8 is available for capacitors marked. "●"
Size φ6.3 × 7.7 is available for capacitors marked. "○"
Size φ8 × 10 is available for capacitors marked. "■"
※ In this case, 6 will be put at 12th digit of type numbering system.

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Cap.(μF) \ Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Less than 47	0.80	1.00	1.15	1.40	1.67
100 to 1500	0.85	1.00	1.08	1.20	1.30

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UG(p.158) series if high CV products are required.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

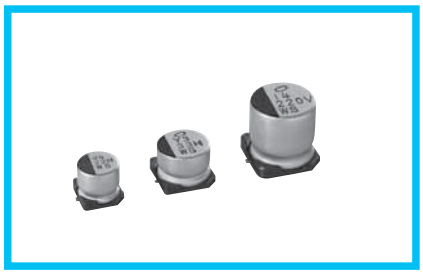
nichicon

WS Chip Type, High CV
High Temperature (260°C) Reflow
series

For SMD | Anti-Solvent Feature

- Corresponding with 260°C peak reflow soldering
  Recomended reflow condition : 260°C peak 5 sec. 230°C over 60 sec. 2 times
  (φ8 × 6.2, φ10 × 10 : 1 time)
- Chip type higher capacitance in large case size.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).

WS
High Temperature Reflow
UR



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	22 to 1500μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV (μA) .
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.28	0.24	0.20	0.16	0.14	0.12

Stability at Low Temperature — Measurement frequency: 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	5	4	3	2	2	2
	Z−40°C / Z+20°C	10	8	6	4	3	3

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

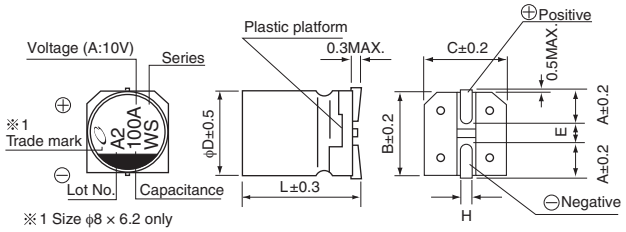
Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

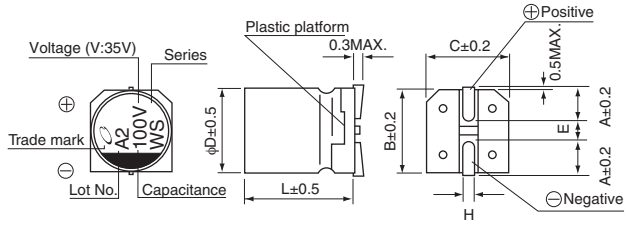
■Chip Type

(φ6.3, φ8 × 6.2)



※1 Size φ8 × 6.2 only

(φ8 × 10, φ10 × 10)



Voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

●Dimension table in next page.

Type numbering system (Example : 10V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	W	S	1	A	1	0	1	M	C	L	1	G	S

- 1 2 3 : Type
- 4 5 : Series name
- 6 7 8 : Rated voltage (10V)
- 9 : Rated capacitance (100μF)
- 10 : Capacitance tolerance (±20%)
- 11 : Configuration
- 12 13 14 : Package code

(mm)

φD×L	6.3 × 5.8	6.3 × 7.7	8 × 6.2	8 × 10	10 × 10
A	2.4	2.4	3.3	2.9	3.2
B	6.6	6.6	8.3	8.3	10.3
C	6.6	6.6	8.3	8.3	10.3
E	2.2	2.2	2.3	3.1	4.5
L	5.8	7.7	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

nichicon

WS series

■Dimensions

Cap. (μF) \ V / Code		6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
22	220											6.3 × 5.8	45
33	330									6.3 × 5.8	55	8 × 6.2	95
47	470							6.3 × 5.8	65	8 × 6.2	105	8 × 10	140
100	101			6.3 × 5.8	70	8 × 6.2	125	8 × 6.2	145	8 × 10	175	10 × 10	195
150	151			6.3 × 5.8	85	6.3 × 7.7	151	8 × 10	192	8 × 10	214	10 × 10	238
220	221	8 × 6.2	160	8 × 6.2	175	8 × 10	215	10 × 10	250	10 × 10	265	10 × 10	289
330	331	8 × 6.2	190	8 × 10	240	8 × 10	270	10 × 10	305	10 × 10	324		
470	471	8 × 10	265	8 × 10	290	10 × 10	330	10 × 10	393				
680	681	8 × 10	318	10 × 10	374	10 × 10	396						
1000	102	10 × 10	400	10 × 10	454							Case size ϕD × L (mm)	Rated ripple
1500	152	10 × 10	489										

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

Cap.(μF) \ Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Less than 47	0.80	1.00	1.15	1.40	1.67
100 to 1500	0.85	1.00	1.08	1.20	1.30

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

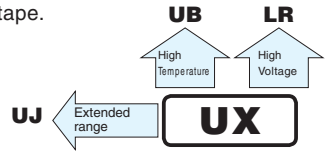
UX series

Chip Type, Wide Temperature Range

For SMD

Anti-Solvent Feature (Through 100V only)

- Chip type, operating over wide temperature range of to -55 to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C (6.3 to 100V), −40 to +105°C (160 to 400V)
Rated Voltage Range	6.3 to 400V
Rated Capacitance Range	1 to 1000μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V) | 6.3 to 100 | 160 to 400 Leakage Current | After 1 minute's application of rated voltage, leakage current is not more than 0.03CV (μA). | I = 0.04CV+100 (μA) max.(1 minute's)
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50	63	100	160	200	250	400
tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.10	0.08	0.20	0.20	0.20	0.25

Stability at Low Temperature — Measurement frequency: 120Hz

Rated voltage (V)		6.3	10	16	25	35	50	63	100	160	200	250	400
Impedance ratio ZT / Z20 (MAX.)	Z−55°C / Z+20°C	4	4	3	3	3	2	3	4	—	—	—	—
	Z−40°C / Z+20°C	—	—	—	—	—	—	—	—	6	6	6	10

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours (160 to 400V : 3000hours) at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the intial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Resistance to soldering heat

The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

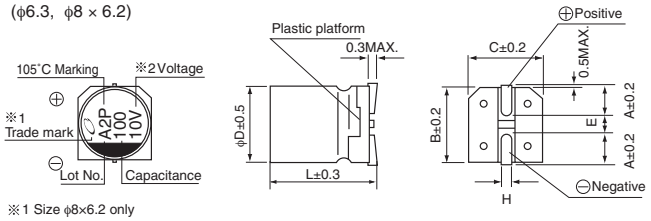
Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking

Black print on the case top.

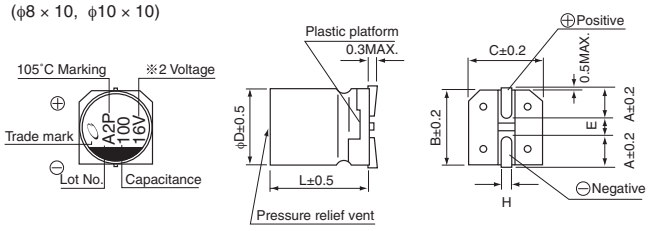
■Chip Type

(φ6.3, φ8 × 6.2)

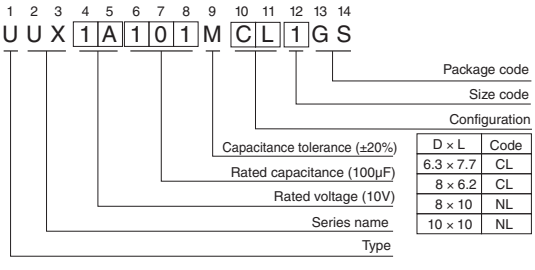


※1 Size φ8×6.2 only
※2 Voltage mark for 6.3V is「6V」.

(φ8 × 10, φ10 × 10)



Type numbering system (Example : 10V 100μF)



D × L	Code
6.3 × 7.7	CL
8 × 6.2	CL
8 × 10	NL
10 × 10	NL

(mm)

φD × L	6.3 × 7.7	8 × 6.2	8 × 10	10 × 10
A	2.4	3.3	2.9	3.2
B	6.6	8.3	8.3	10.3
C	6.6	8.3	8.3	10.3
E	2.2	2.3	3.1	4.5
L	7.7	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

● Dimension table in next page.

UX series

■Dimensions

Cap. (μF) \ V	6.3		10		16		25		35		50		63		100	
Code	0J		1A		1C		1E		1V		1H		1J		2A	
4.7	4R7														8×6.2	42
10	100												8×6.2	51	8×10	75
22	220										○ 8×6.2	67(64)	8×10	108	■10×10	150(121)
33	330								○ 8×6.2	76(75)	8×10	133	■10×10	185(179)	10×10	180
47	470						○ 8×6.2	79(78)	8×10	124	■10×10	180(167)	10×10	220	10×10	230
100	101			8×6.2	90	○ 8×10	148(111)	8×10	181	■ 10×10	304(283)	10×10	310	10×10	320		
220	221	○ 8×10	161(121)	8×10	173	■ 10×10	330(307)	■10×10	351(283)	10×10	450						
330	331	8×10	288	■10×10	318(296)	■ 10×10	441(410)	10×10	372								
470	471	■ 10×10	340(316)	■10×10	351(326)	10×10	489										
680	681	10×10	408	10×10	392										Case size φD × L (mm)	Rated ripple
1000	102	10×10	495													

Cap. (μF) \ V	160		200		250		400	
Code	2C		2D		2E		2G	
1	010						8×10	25
1.8	1R8						8×10	26
2.2	2R2						8×10	27
3.3	3R3		8×10	31	8×10	31	10×10	38
3.9	3R9		8×10	34	8×10	34	10×10	39
4.7	4R7		8×10	37	8×10	37	10×10	40
6.8	6R8		8×10	44	8×10	44		
10	100	8×10	57	10×10	64	10×10	64		
18	180	10×10	64						

Rated ripple current (mArms) at 105°C 120Hz

Size φ6.3 × 7.7 is available for capacitors marked. "○" / Size φ8 × 10 is available for capacitors marked. "■"
※ In this case, 6 will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Cap.(μF) \ Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
1 to 47	0.80	1.00	1.15	1.40	1.67
100 to 1000	0.85	1.00	1.08	1.20	1.30

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please select UJ(p.160) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.

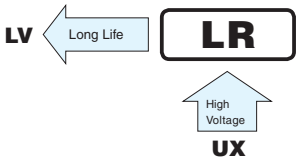
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

LR Chip Type, High Voltage.
series

For SMD

- Chip Type, high Voltage.
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2011/65/EU).



■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	160 to 500V
Rated Capacitance Range	2.7 to 39μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.04CV +100(μA).
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	160	200	250	400	450	500
tan δ (MAX.)	0.20	0.20	0.25	0.25	0.30	0.30

Stability at Low Temperature — Measurement frequency: 120Hz

Rated voltage (V)		160	200	250	400	450	500
Impedance ratio ZT / Z20 (MAX.)	Z−40°C / Z+20°C	6	6	10	10	15	15

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 3000 hours at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the intial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

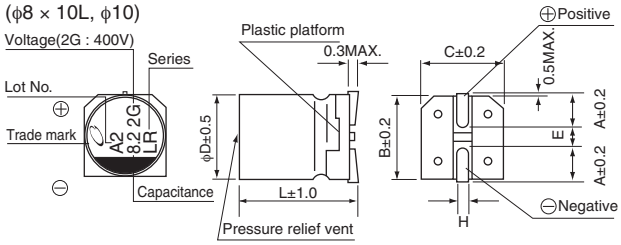
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the characteristic requirements listed at right when they are removed from the plate.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

Marking — Black print on the case top.

■Chip Type

(φ8 × 10L, φ10)



(mm)

φD × L	8 × 10	10 × 10	10 × 13.5
A	2.9	3.2	3.2
B	8.3	10.3	10.3
C	8.3	10.3	10.3
E	3.1	4.5	4.5
L	10	10	13.5
H	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

Voltage

V	160	200	250	400	450	500
Code	2C	2D	2E	2G	2W	2H

Type numbering system (Example : 400V 8.2μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	L	R	2	G	8	R	2	M	N	L	1	G	S

- 14: Taping code
- 9–11: Configuration
- 6–8: Capacitance tolerance (±20%)
- 4–5: Rated capacitance (8.2μF)
- 3: Rated voltage (400V)
- 2: Series name
- 1: Type

■Dimensions

Cap.(μF) \ V	Code	160		200		250		400		450		500	
		2C		2D		2E		2G		2W		2H	
2.7	2R7											8 × 10	20
3.9	3R9									8 × 10	25	10 × 10	35
4.7	4R7							8 × 10	35				
5.6	5R6											10 × 13.5	40
6.8	6R8									10 × 10	40		
8.2	8R2							10 × 10	50				
10	100					8 × 10	35			10 × 13.5	45		
12	120			8 × 10	50			10 × 13.5	55				
15	150	8 × 10	50			10 × 10	50						
22	220			10 × 10	65	10 × 13.5	55						
27	270	10 × 10	65										
33	330			10 × 13.5	70							Case size φD × L (mm)	Rated ripple
39	390	10 × 13.5	70										

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.80	1.00	1.25	1.40	1.60

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

LV Chip Type, High Voltage. Long Life. series

For SMD | Long Life

Expanded

- Chip Type, high voltage and long life.
- Load life of 10000 hours at +105°C
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2011/65/EU).

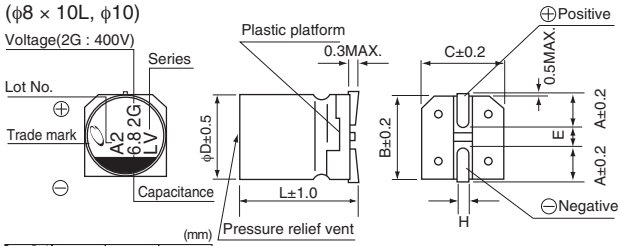
LV ← Long Life **LR**

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	160 to 500V
Rated Capacitance Range	1.8 to 33μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V): 160 to 450 / 500 –: 0.04CV+100(μA)max.(1 minute's) / 0.04CV+200(μA)max.(1 minute's)
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 160 / 200 / 250 / 400 / 450 / 500 tan δ (MAX.): 0.20 / 0.20 / 0.25 / 0.25 / 0.30 / 0.30
Stability at Low Temperature	Measurement frequency: 120Hz Rated voltage (V): 160 / 200 / 250 / 400 / 450 / 500 Impedance ratio ZT / Z20 (MAX.) Z−40°C / Z+20°C: 6 / 6 / 10 / 10 / 15 / 15
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 10000 hours at 105°C. Capacitance change: Within ±30% of the initial capacitance value tan δ: 300% or less than the intial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Resistance to soldering heat	The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the characteristic requirements listed at right when they are removed from the plate. Capacitance change: Within ±10% of the initial capacitance value tan δ: Less than or equal to the initial specified value Leakage current: Less than or equal to the initial specified value
Marking	Black print on the case top.

■Chip Type

(φ8 × 10L, φ10)



φD×L	8×10	10×10	10×13.5
A	2.9	3.2	3.2
B	8.3	10.3	10.3
C	8.3	10.3	10.3
E	3.1	4.5	4.5
L	10	10	13.5
H	0.8 to 1.1	0.8 to 1.1	0.8 to 1.1

Voltage

V	160	200	250	400	450	500
Code	2C	2D	2E	2G	2W	2H

Type numbering system (Example : 400V 6.8μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	L	V	2	G	6	R	8	M	N	L	1	G	S

- 14: Taping code
- 12–13: Configuration
- 9–11: Capacitance tolerance (±20%)
- 5–8: Rated capacitance (6.8μF)
- 4: Rated voltage (400V)
- 3: Series name
- 1–2: Type

■Dimensions

Cap.(μF) \ V	160		200		250		400		450		500	
Code	2C		2D		2E		2G		2W		2H	
1.8	1R8										8×10	25
3.3	3R3								8×10	25	10×10	40
3.9	3R9						8×10	35				
4.7	4R7										10×13.5	45
5.6	5R6								10×10	40		
6.8	6R8						10×10	50				
7.5	7R5								10×13.5	45		
8.2	8R2				8×10	35						
10	100						10×13.5	55				
12	120		8×10	50								
15	150	8×10	50		10×10	50						
18	180		10×10	65	10×13.5	55						
22	220	10×10	65									
27	270		10×13.5	70							Case size φD×L (mm)	Rated ripple
33	330	10×13.5	70									

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.80	1.00	1.25	1.40	1.60

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UQ Chip Type, For Audio Equipment
Wide Temperature Range
series

For SMD | For Audio Use | Anti-Solvent Feature

- Chip type acoustic series within the wide temperature range.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU)

UQ ← Chip type MW

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +105°C
Rated Voltage Range	6.3 to 50V
Rated Capacitance Range	0.1 to 1000μF
Capacitance Tolerance	±20% (120Hz, 20°C)
Leakage Current	After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03 CV or 4 (μA) , whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50
tan δ (MAX.)	0.30	0.26	0.22	0.16	0.13	0.12

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	4	3	2	2	2	2
	Z−40°C / Z+20°C	8	5	4	3	3	3

Endurance — The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

Shelf Life — After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

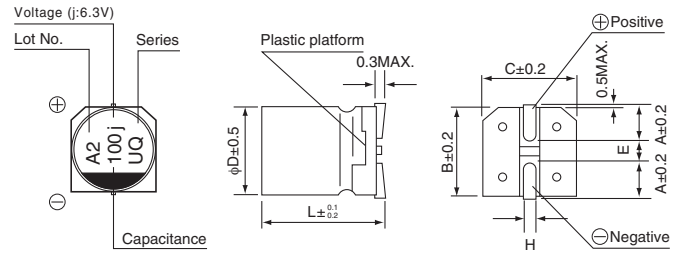
Resistance to soldering heat — The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C.

Capacitance change	Within ±10% of the initial capacitance value
tan δ	Less than or equal to the initial specified value
Leakage current	Less than or equal to the initial specified value

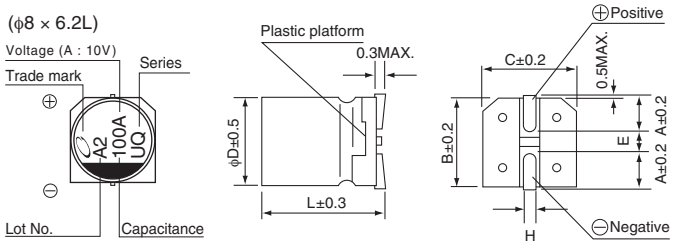
Marking — Black print on the case top.

■Chip Type

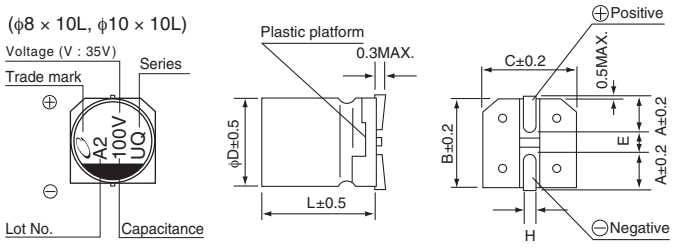
(φ4 to φ6.3)



(φ8 × 6.2L)



(φ8 × 10L, φ10 × 10L)



● Dimension table in next page.

Type numbering system (Example : 6.3V 100μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	Q	0	J	1	0	1	M	C	L	1	G	B

- 14: Taping code
- 12–13: Size code

φD	code
4 to 6.3	GB
8・10	GS

- 11: Configuration
- 9–10: Capacitance tolerance (±20%)
- 6–8: Rated capacitance (100μF)
- 4–5: Rated voltage (6.3V)
- 3: Series name
- 1–2: Type

(mm)

φD × L	4 × 5.4	5 × 5.4	6.3 × 5.4	8 × 6.2	8 × 10	10 × 10
A	1.8	2.1	2.4	3.3	2.9	3.2
B	4.3	5.3	6.6	8.3	8.3	10.3
C	4.3	5.3	6.6	8.3	8.3	10.3
E	1.0	1.3	2.2	2.3	3.1	4.5
L	5.4	5.4	5.4	6.2	10	10
H	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.5 to 0.8	0.8 to 1.1	0.8 to 1.1

Rated voltage

V	6.3	10	16	25	35	50
Code	j	A	C	E	V	H

UQ series

■Dimensions

Cap.(μF) \ V	Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											4 × 5.4	1.0
0.22	R22											4 × 5.4	2.6
0.33	R33											4 × 5.4	3.2
0.47	R47											4 × 5.4	3.8
1	010											4 × 5.4	6.2
2.2	2R2											4 × 5.4	11
3.3	3R3											4 × 5.4	14
4.7	4R7							4 × 5.4	13	4 × 5.4	15	5 × 5.4	19
10	100			4 × 5.4	22	4 × 5.4	18	5 × 5.4	23	5 × 5.4	25	6.3 × 5.4	30
22	220	4 × 5.4	22	5 × 5.4	27	5 × 5.4	30	6.3 × 5.4	38	6.3 × 5.4	42	8 × 6.2	51
33	330	5 × 5.4	30	5 × 5.4	35	6.3 × 5.4	40	6.3 × 5.4	48	8 × 6.2	59	8 × 10	140
47	470	5 × 5.4	36	6.3 × 5.4	46	6.3 × 5.4	50	8 × 6.2	66	8 × 10	155	8 × 10	180
100	101	6.3 × 5.4	60	○6.3 × 5.4	60 (90)	● 8 × 6.2	102 (210)	8 × 10	155	10 × 10	300	10 × 10	220
220	221	● 8 × 6.2	102 (210)	● 8 × 6.2	102 (210)	△8 × 10	210 (310)	10 × 10	300	10 × 10	300		
330	331	● 8 × 6.2	102 (210)	△ 8 × 10	210 (310)	△8 × 10	210 (310)						
470	471	△8 × 10	210 (310)	△ 8 × 10	210 (310)	△8 × 10	210 (310)					Case size ϕD × L (mm)	Rated ripple
1000	102	10 × 10	310										

Rated ripple current (mArms) at 105°C 120Hz

Size ϕ8 × 6.2L is available for capacitors marked. "○"
Size ϕ8 × 10L is available for capacitors marked. "●"
Size ϕ10 × 10L is available for capacitors marked. "△"
※In this case, 6 will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
Coefficient	0.70	1.00	1.17	1.36	1.50

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UG series

Chip Type, Higher Capacitance Range

For SMD

Anti-Solvent Feature (Through 100V only)

- Chip Type, higher capacitance in larger case sizes (φ12.5, φ16, φ18, φ20)
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape and tray.
- Compliant to the RoHS directive (2011/65/EU).

UJ
High Temperature
UG

■Specifications

Item	Performance Characteristics
Category Temperature Range	−40 to +85°C
Rated Voltage Range	6.3 to 450V
Rated Capacitance Range	4.7 to 10000μF
Capacitance Tolerance	±20% at 120Hz, 20°C

Leakage Current

Rated voltage (V)	6.3 to 100	160 to 450
—	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.	I = 0.04CV+100 (μA) max. (1 minute's)

Tangent of loss angle (tan δ)

Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 to 250	400・450
tan δ (MAX.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.25

For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.

Stability at Low Temperature

Measurement frequency: 120Hz

Rated voltage (V)		6.3	10	16	25	35	50	63	100	160 to 250	400・450
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	5	4	3	2	2	2	2	2	3	6
	Z−40°C / Z+20°C	12	10	8	5	4	3	3	3	6	10

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

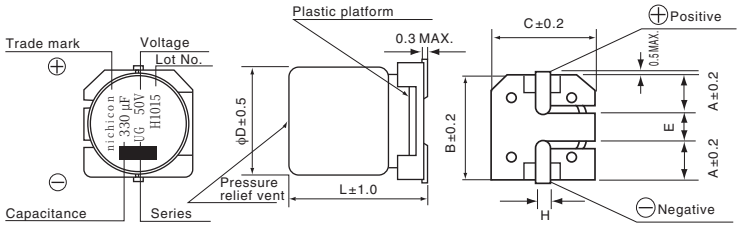
Shelf Life

After storing the capacitors under no load at 85°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Marking

Black print on the case top.

■Chip Type



(mm)

φD	12.5×13.5	12.5×16	12.5×21	16×16.5	16×21.5	18×16.5	18×21.5	20×16.5	20×21.5
A	4.8	4.8	4.8	5.4	5.4	6.4	6.4	6.2	6.2
B	13.6	13.6	13.6	17.1	17.1	19.1	19.1	21.1	21.1
C	13.6	13.6	13.6	17.1	17.1	19.1	19.1	21.1	21.1
E	4.0	4.0	4.0	6.3	6.3	6.3	6.3	8.8	8.8
L	13.5	16.0	21.0	16.5	21.5	16.5	21.5	16.5	21.5
H	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.3 to 1.7	1.3 to 1.7

Type numbering system (Example : 50V 330μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	G	1	H	3	3	1	M	N	Q	1	M	S

Package code

Taping	MS
Tray	ZD

Size code

Configuration

φD	Code
12.5 to 18	NQ
20	RQ

Capacitance Tolerance (±20%)
Rated capacitance (330μF)
Rated voltage (50V)
Series name
Type

※ The vibration structure-resistant product is also available upon request, please ask for details.

● Dimension table in next page.

UG series

■Dimensions

(μF) Cap. \ V / Code	6.3		10		16		25		35		50	
	0J		1A		1C		1E		1V		1H	
220 221											12.5 × 13.5	450
330 331											12.5 × 13.5	520
470 471							12.5 × 13.5	550	12.5 × 13.5	580	● 16 × 16.5	740
1000 102			12.5 × 13.5	620	12.5 × 13.5	710	12.5 × 16	820	● 16 × 16.5	1000	18 × 21.5	1150
2200 222	12.5 × 16	890	12.5 × 16	960	● 16 × 16.5	1150	△18 × 16.5	1350	18 × 21.5	1550		
3300 332	● 16 × 16.5	1200	16 × 16.5	1300	△18 × 16.5	1450	18 × 21.5	1700				
4700 472	16 × 16.5	1400	△18 × 16.5	1500	18 × 21.5	1750						
6800 682	△18 × 16.5	1650	18 × 21.5	1850								
10000 103	18 × 21.5	2000	□ 20 × 21.5	2200								

(μF) Cap. \ V / Code	63		100		160		200		250		400		450	
	1J		2A		2C		2D		2E		2G		2W	
4.7 4R7											12.5 × 13.5	115	12.5 × 13.5	115
10 100									12.5 × 13.5	150	● 16 × 16.5	140	● 16 × 16.5	140
22 220							12.5 × 13.5	235	12.5 × 16	240	△18 × 16.5	280	16 × 21.5	275
33 330							12.5 × 16	310	● 16 × 16.5	340	18 × 21.5	350	18 × 21.5	345
47 470					12.5 × 16	370	● 16 × 16.5	415	△ 18 × 16.5	415	□ 20 × 21.5	430		
68 680			12.5 × 13.5	350	● 16 × 16.5	500	△18 × 16.5	505	★ 18 × 21.5	490				
100 101	12.5 × 13.5	370	12.5 × 16	440	△18 × 16.5	590	18 × 21.5	590						
220 221	12.5 × 16	580	△18 × 16.5	665										
330 331	● 16 × 16.5	680	18 × 21.5	825									Case size φD × L (mm)	Rated ripple
470 471	△18 × 16.5	850												

Size φ12.5×21 is available for capacitors marked," ●".
Size φ16×21.5L is available for capacitors marked,"△".
Size φ18×21.5L is available for capacitors marks,"□".
Size φ20×16.5L is available for capacitors marks,"★".
※ In this case, 6 will be put at 12th digit of type numbering system.

Rated ripple current (mArms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap.(μF) \ Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
6.3 to 100	68	0.75	1.00	1.35	1.57	2.00
	100 to 470	0.80	1.00	1.23	1.34	1.50
	1000 to 10000	0.85	1.00	1.10	1.13	1.15
160 to 450	4.7 to 100	0.80	1.00	1.25	1.40	1.60

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UJ Chip Type, Higher Capacitance Range series

For SMD | Long Life | Anti-Solvent Feature (Through 100V only)

- Chip Type, higher capacitance in larger case sizes (φ12.5, φ16, φ18, φ20)
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape and tray.
- Compliant to the RoHS directive (2011/65/EU).

UJ → Bi-Polarized → UN

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C (6.3 to 100V), −40 to +105°C (160 to 450V)
Rated Voltage Range	6.3 to 450V
Rated Capacitance Range	3.3 to 6800μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V) | 6.3 to 100 | 160 to 450 — | After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater. | I = 0.04CV+100 (μA) max. (1 minute's)
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C

Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 to 250	400・450
tan δ (MAX.)	0.26	0.22	0.18	0.16	0.14	0.12	0.10	0.08	0.15	0.20

For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.

Stability at Low Temperature — Measurement frequency: 120Hz

Rated voltage (V)		6.3	10	16	25	35	50	63	100	160 to 250	400・450
Impedance ratio ZT / Z20 (MAX.)	Z−25°C / Z+20°C	5	4	3	2	2	2	2	2	3	6
	Z−40°C / Z+20°C	10	8	6	4	3	3	3	3	6	10

Endurance

The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours at 105°C.

Capacitance change	Within ±20% of the initial capacitance value
tan δ	200% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

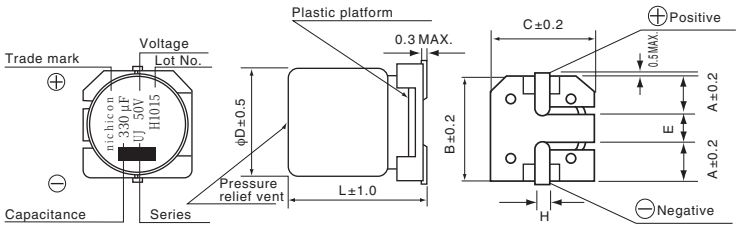
Shelf Life

After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

Marking

Black print on the case top.

■Chip Type



(mm)

φD	12.5×13.5	12.5×16	12.5×21	16×16.5	16×21.5	18×16.5	18×21.5	20×16.5	20×21.5
A	4.8	4.8	4.8	5.4	5.4	6.4	6.4	6.2	6.2
B	13.6	13.6	13.6	17.1	17.1	19.1	19.1	21.1	21.1
C	13.6	13.6	13.6	17.1	17.1	19.1	19.1	21.1	21.1
E	4.0	4.0	4.0	6.3	6.3	6.3	6.3	8.8	8.8
L	13.5	16.0	21.0	16.5	21.5	16.5	21.5	16.5	21.5
H	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.3 to 1.7	1.3 to 1.7

Type numbering system (Example : 50V 330μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	J	1	H	3	3	1	M	N	Q	1	M	S

Package code

Taping	MS
Tray	ZD

Size code

Configuration

φD	Code
12.5 to 18	NQ
20	RQ

Capacitance Tolerance (±20%)

Rated capacitance (330μF)

Rated voltage (50V)

Series name

Type

※ The vibration structure-resistant product is also available upon request, please ask for details.

● Dimension table in next page.

UJ series

■Dimensions

(μF) Cap. \ V / Code	6.3		10		16		25		35		50	
	0J		1A		1C		1E		1V		1H	
220	221								12.5 × 13.5	280	12.5 × 16	320
330	331						12.5 × 13.5	320	12.5 × 16	360	● 16 × 16.5	440
470	471				12.5 × 13.5	360	12.5 × 16	400	● 16 × 16.5	490	△ 18 × 16.5	550
1000	102	12.5 × 13.5	440	12.5 × 16	500	● 16 × 16.5	630	△ 18 × 16.5	700	△ 18 × 16.5	750	18 × 21.5	820
2200	222	● 16 × 16.5	750	● 16 × 16.5	810	△ 18 × 16.5	930	18 × 21.5	1050	□ 20 × 21.5	1150		
3300	332	△ 18 × 16.5	930	△ 18 × 16.5	1000	18 × 21.5	1150						
4700	472	★ 18 × 21.5	1100	18 × 21.5	1200								
6800	682	□ 20 × 21.5	1350	□ 20 × 21.5	1450								

(μF) Cap. \ V / Code	63		100		160		200		250		400		450	
	1J		2A		2C		2D		2E		2G		2W	
3.3	3R3												12.5 × 13.5	40
4.7	4R7								12.5 × 13.5	65	12.5 × 16	50	12.5 × 16	50
10	100						12.5 × 13.5	80	12.5 × 16	105	16 × 16.5	85	16 × 16.5	85
22	220						12.5 × 16	105	● 16 × 16.5	180	18 × 21.5	130	18 × 21.5	130
33	330				12.5 × 13.5	95	● 16 × 16.5	220	△ 18 × 16.5	230	□ 20 × 21.5	160	□ 20 × 21.5	160
47	470		12.5 × 13.5	160	● 16 × 16.5	260	△ 18 × 16.5	270	★ 18 × 21.5	280				
68	680	12.5 × 13.5	175	12.5 × 16	205	△ 18 × 16.5	320	★ 18 × 21.5	330	□ 20 × 21.5	340			
100	101	12.5 × 16	225	● 16 × 16.5	285	★ 16 × 21.5	380	□ 20 × 21.5	410					
220	221	● 16 × 16.5	385	△ 18 × 16.5	440									
330	331	△ 18 × 16.5	490	□ 20 × 21.5	500								Case size φD × L (mm)	Rated ripple
470	471	18 × 21.5	590											

Size φ12.5 × 21 is available for capacitors marked,"●".
Size φ16 × 21.5L is available for capacitors marked,"△".
Size φ18 × 21.5L is available for capacitors marked,"□".
Size φ20 × 16.5L is available for capacitors marks,"★".
※ In this case, 6 will be put at 12th digit of type numbering system.

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap.(μF) \ Frequency	50Hz	120Hz	300Hz	1kHz	10kHz or more
6.3 to 100	47 to 68	0.75	1.00	1.35	1.57	2.00
	100 to 470	0.80	1.00	1.23	1.34	1.50
	1000 to 6800	0.85	1.00	1.10	1.13	1.15
160 to 450	3.3 to 100	0.80	1.00	1.25	1.40	1.60

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UN series

Chip Type, Bi-Polarized, Higher Capacitance Range

For SMD | Bi-polarized | Anti-Solvent Feature

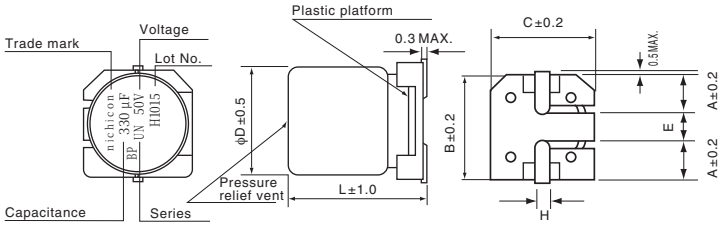
- Chip Type, higher capacitance in larger case sizes (φ12.5, φ16, φ18, φ20)
- Designed for surface mounting on high density PC board.
- Bi-polarized series for operations over wide temperature range of −55 to +105°C.
- Applicable to automatic mounting machine fed with carrier tape and tray.
- Compliant to the RoHS directive (2011/65/EU).

UN ← Bi-polarized **UJ**

■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105°C
Rated Voltage Range	6.3 to 100V
Rated Capacitance Range	22 to 3300μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.
Tangent of loss angle (tan δ)	Measurement frequency : 120Hz at 20°C Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 tan δ (MAX.): 0.26 / 0.22 / 0.18 / 0.16 / 0.14 / 0.12 / 0.10 / 0.09 For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.
Stability at Low Temperature	Measurement frequency: 120Hz Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50 / 63 / 100 Impedance ratio ZT / Z20 (MAX.) Z−25°C / Z+20°C: 5 / 4 / 3 / 2 / 2 / 2 / 2 / 2 Z−40°C / Z+20°C: 10 / 8 / 6 / 4 / 3 / 3 / 3 / 3
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 105°C with the polarity inverted every 250 hours. Capacitance change: Within ±20% of the initial capacitance value tan δ: 200% or less than the initial specified value Leakage current: Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Marking	Black print on the case top.

■Chip Type



(mm)

φD	12.5×13.5	12.5×16	16×16.5	16×21.5	18×16.5	18×21.5	20×21.5
A	4.8	4.8	5.4	5.4	6.4	6.4	6.2
B	13.6	13.6	17.1	17.1	19.1	19.1	21.1
C	13.6	13.6	17.1	17.1	19.1	19.1	21.1
E	4.0	4.0	6.3	6.3	6.3	6.3	8.8
L	13.5	16.0	16.5	21.5	16.5	21.5	21.5
H	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.3 to 1.7

Type numbering system (Example : 50V 330μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	N	1	H	3	3	1	M	N	Q	1	M	S

Package code: Taping MS / Tray ZD

Size code

Configuration: φD 12.5 to 18 → NQ; 20 → RQ

Capacitance Tolerance (±20%)

Rated capacitance (330μF)

Rated voltage (50V)

Series name

Type

※ The vibration structure-resistant product is also available upon request, please ask for details.

● Dimension table in next page.

nichicon

UN series

■Dimensions

(μF) Cap. \ V / Code	6.3		10		16		25		35		50		63		100	
	0J		1A		1C		1E		1V		1H		1J		2A	
22 220															12.5 × 13.5	100
33 330															12.5 × 16	150
47 470											12.5 × 13.5	130	12.5 × 13.5	140	16 × 16.5	180
100 101									12.5 × 13.5	180	12.5 × 16	230	16 × 16.5	270	18 × 21.5	310
220 221							12.5 × 13.5	270	16 × 16.5	330	18 × 16.5	400	18 × 21.5	440		
											▲16 × 21.5	400				
330 331					12.5 × 13.5	310	16 × 16.5	370	18 × 16.5	450	18 × 21.5	540	20 × 21.5	590		
									▲16 × 21.5	450			▲18 × 21.5	590		
470 471	12.5 × 13.5	270	12.5 × 13.5	340	16 × 16.5	420	16 × 16.5	490	18 × 21.5	590	20 × 21.5	640				
											▲18 × 21.5	640				
1000 102	12.5 × 16	500	16 × 16.5	600	18 × 16.5	670	18 × 21.5	780								
					▲16 × 21.5	670										
2200 222	18 × 16.5	740	18 × 21.5	830												
	▲16 × 21.5	740														
3300 332	18 × 21.5	920													Case size φD × L (mm)	Rated ripple

※ In this case, 6 will be put at 12th digit of type numbering system, "▲"

Rated ripple current (mArms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

Cap.(μF) \ Frequency	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
22 to 47	0.75	1.00	1.35	1.57	2.00
100 to 470	0.80	1.00	1.23	1.34	1.50
1000 to 3300	0.85	1.00	1.10	1.13	1.15

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

UE Chip Type, Vibration Resistance series

For SMD | Long Life | Anti-Solvent Feature

- Chip type with load life of 2000 to 5000 hours at 125°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2011/65/EU).

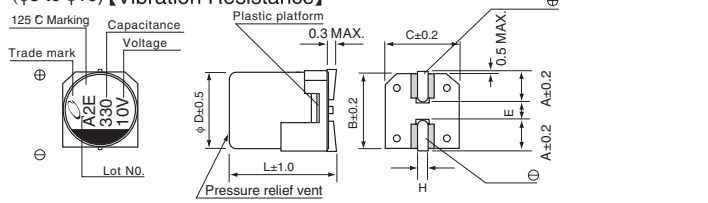
UB → Vibration Resistance → **UE**

■Specifications

Item	Performance Characteristics						
Category Temperature Range	−55 to +125°C (φ12.5 to 20) −40 to +125°C (φ8, φ10)						
Rated Voltage Range	10 to 50V						
Rated Capacitance Range	33 to 4700μF						
Capacitance Tolerance	±20% at 120Hz, 20°C						
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.						
Tangent of loss angle (tan δ)	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.						
	Rated voltage (V)		10	16	25	35	50	120Hz
	tan δ (MAX)	φ8 · φ10	0.26	0.20	0.16	0.14	0.14	20°C
		φ12.5 to φ20	0.22	0.18	0.16	0.14	0.12	
Stability at Low Temperature	Rated voltage (V)		10	16	25	35	50	120Hz
	Impedance ratio Z−40°C / Z+20°C (MAX)	φ8 · φ10	10	8	6	4	4	
		φ12.5 to φ20	8	6	4	3	3	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for φD = 8 and 10) at 125°C.							
	Capacitance change: Within ±30% of the initial capacitance value							
	tan δ: 300% or less than the initial specified value							
	Leakage current: Less than or equal to the initial specified value							
Shelf Life	After storing the capacitors under no load at 125°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.							
Marking	Black print on the case top.							

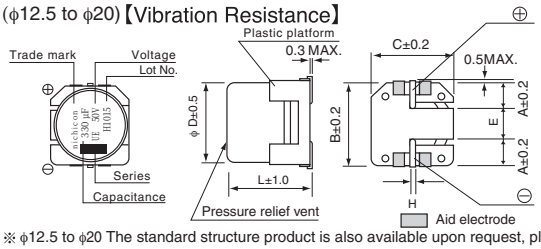
■Chip Type

(φ8 to φ10)【Vibration Resistance】



※ φ8 to φ10 The standard structure product is also available upon request, please refer to page142(UB series).

(φ12.5 to φ20)【Vibration Resistance】



※ φ12.5 to φ20 The standard structure product is also available upon request, please ask for details.

Type numbering system (Example : 50V 330μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	U	E	1	H	3	3	1	M	N	S	1	M	S

Package code

φ8 · 10	Taping	GS
φ12.5 to 20	Taping	MS
φ12.5 to 20	Tray	ZD

Size code

Configuration

φD	Code
8 to 18	NS
20	RS

Capacitance Tolerance (±20%)

Rated capacitance (330μF)

Rated voltage (50V)

Series name

Type

(mm)

φD	8	10	12.5	16	18	20
A	2.9	3.2	4.8	5.4	6.4	6.2
B	8.3	10.3	13.6	17.1	19.1	21.1
C	8.3	10.3	13.6	17.1	19.1	21.1
E	3.1	4.5	4.0	6.3	6.3	8.8
L	10	10	13.5,16	16.5,21.5	16.5,21.5	21.5
H	1.1 to 1.5	1.1 to 1.5	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4	1.3 to 1.7

■Dimensions

Cap.(μF) \ V	Code	10		16		25		35		50	
		1A		1C		1E		1V		1H	
33	330									8×10	90
47	470							8×10	100	10×10	130
100	101			8×10	140	8×10	140	10×10	150	12.5×13.5	500
220	221	8×10	140	10×10	190	10×10	190	12.5×13.5	550	16×16.5	850
330	331	10×10	190	12.5×13.5	750	12.5×13.5	750	16×16.5	1000	16×16.5	850
470	471	12.5×13.5	750	12.5×13.5	750	16×16.5	1000	16×16.5	1000	18×16.5	950
680	681	12.5×16	900	16×16.5	1000	18×16.5	1200	18×16.5	1200		
						▲ 16×21.5	1200				
1000	102	12.5×16	900	18×16.5	1200	18×21.5	1550	20×21.5	1400		
								▲ 18×21.5	1400		
2200	222	▲ 18×16.5	1200	18×16.5	1200						
		16×21.5	1200								
3300	332	18×16.5	1200							Case size φD×L (mm)	Rated ripple
4700	472	18×21.5	1550								

※ In this case, 6 will be put at 12th digit of type numbering system, "▲"

Rated ripple current (mArms) at 125°C 100kHz

● Frequency coefficient of rated ripple current

φD	Frequency / Cap.(μF)	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz or more
φ8 · φ10	33 to 330	0.47	0.67	0.78	0.91	1.00
φ12.5 to φ20	100 to 680	0.53	0.67	0.82	0.89	1.00
	1000 to 4700	0.74	0.87	0.96	0.98	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D

ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

BC Chip Type, High Temperature Range, Vibration Resistance series

For SMD | Long Life | Anti-Solvent Feature

- Highly dependable reliability withstanding load life of 1000 hours at +150°C.
- Suited for automobile electronics where heavy duty services are indispensable.
- Compliant to the RoHS directive (2011/65/EU).

BC

High Temperature

UE

■Specifications

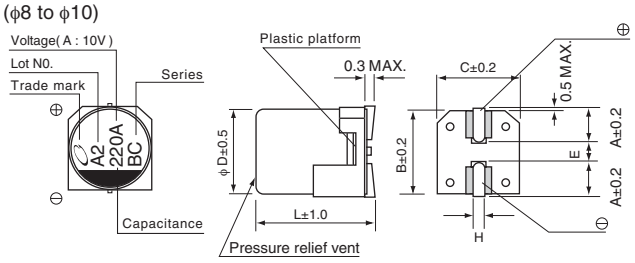
Item	Performance Characteristics							
Category Temperature Range	−40 to +150°C (φ8 to 10), −55 to +150°C (φ12.5 to 18)							
Rated Voltage Range	10 to 50V							
Rated Capacitance Range	33 to 3300μF							
Capacitance Tolerance	±20% at 120Hz, 20°C							
Leakage Current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.							
Tangent of loss angle (tan δ)	Rated voltage (V)		10	16	25	35	50	120Hz 20°C
	tan δ (MAX.)	φ8 · φ10	0.26	0.20	0.16	0.14	0.14	
		φ12.5 to φ18	0.22	0.18	0.16	0.14	0.12	
	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.							
Stability at Low Temperature	Rated voltage (V)		10	16	25	35	50	120Hz
	Impedance ratio Z−40°C / Z+20°C (MAX.)	φ8 · φ10	10	8	6	4	4	
		φ12.5 to φ18	8	6	4	4	4	
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 150°C.							

Capacitance change	Within ±30% of the initial capacitance value
tan δ	300% or less than the initial specified value
Leakage current	Less than or equal to the initial specified value

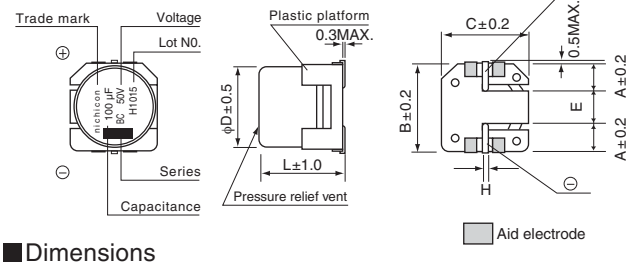
Shelf Life	After storing the capacitors under no load at 150°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.
Marking	Black print on the case top.

■Chip Type

(φ8 to φ10)



(φ12.5 to φ18)



Aid electrode

Type numbering system (Example : 10V 220μF)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	B	C	1	A	2	2	1	M	N	S	1	G	S

Package code

φ8 to 10	Taping	GS
φ12.5 to 18	Taping	MS
φ12.5 to 18	Tray	ZD

Size code

Configuration

φD	Code
8 to 18	NS

Capacitance Tolerance (±20%)

Rated capacitance (220μF)

Rated voltage (10V)

Series name

Type

(mm)

φD	8	10	12.5	16	18
A	2.9	3.2	4.8	5.4	6.4
B	8.3	10.3	13.6	17.1	19.1
C	8.3	10.3	13.6	17.1	19.1
E	3.1	4.5	4.0	6.3	6.3
L	10	10	13.5	16.5,21.5	21.5
H	1.1 to 1.5	1.1 to 1.5	1.0 to 1.4	1.0 to 1.4	1.0 to 1.4

■Dimensions

Cap.(μF) \ V	Code	10		16		25		35		50	
		1A		1C		1E		1V		1H	
33	330									8×10	70
47	470							8×10	80	10×10	100
100	101			8×10	110	8×10	110	10×10	120	12.5×13.5	420
220	221	8×10	110	10×10	150	10×10	150	12.5×13.5	550	16×16.5	550
330	331	10×10	150			12.5×13.5	650	12.5×13.5	650	16×21.5	650
470	471			12.5×13.5	750	12.5×13.5	700	16×16.5	750	16×21.5	850
680	681	12.5×13.5	800	12.5×13.5	800	16×16.5	800	16×21.5	950	18×21.5	1100
1000	102	12.5×13.5	900	16×16.5	850	16×21.5	1000	18×21.5	1150		
2200	222	18×21.5	1350	18×21.5	1350					Case size φD×L (mm)	Rated ripple
3300	332	18×21.5	1400								

Rated ripple current (mArms) at 150°C 100kHz

● Frequency coefficient of rated ripple current

Frequency	120 Hz	300 Hz	1 kHz	10kHz or more
Coefficient	0.67	0.79	0.91	1.00

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

CAT.8100D