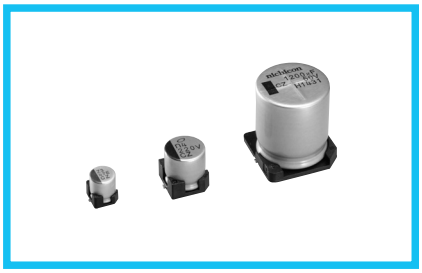
ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

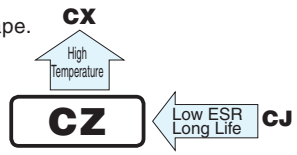
CZ Chip Type, High Reliability.
Low temperature ESR specification.
series

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).

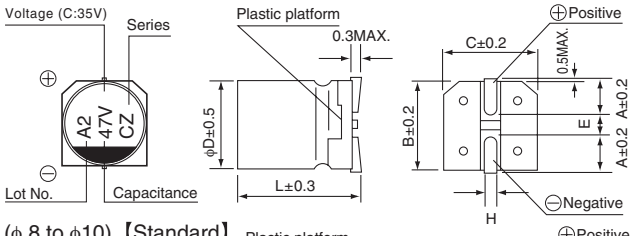


■Specifications

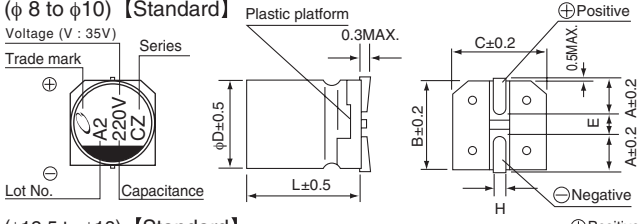
Item	Performance Characteristics
Category Temperature Range	−40 to +125°C
Rated Voltage Range	10 to 100V
Rated Capacitance Range	10 to 3300μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3μA, whichever 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

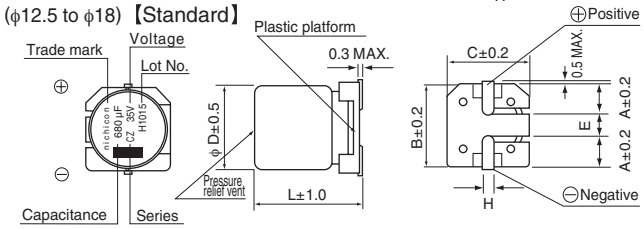
(φ 6.3)【Standard】※φ6.3 × 5.8L : The vibration structure-resistant product can't support.
φ6.3 × 7.7L : The vibration structure-resistant product is available.



(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)

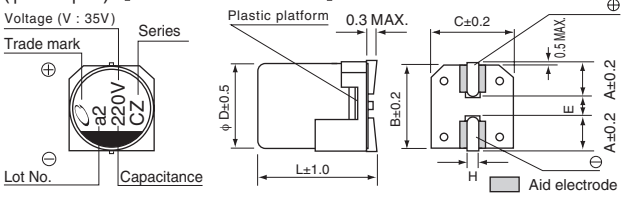
1	2	3	4	5	6	7	8	9	10	11	12	13	14
U	C	Z	1	V	4	7	0	M	C	L	1	G	S

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)

φDXL	6.3X5.8	6.3X7.7	8X10	10X10	12.5X13.5	16X16.5	16X21.5	18X16.5	18X21.5
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)

φDXL	8X10	10X10
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

nichicon

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°C / Initial -40°C / after endurance test -40°C※ / 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°C / Initial -40°C / after endurance test -40°C※ / 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.