ALUMINUM ELECTROLYTIC CAPACITORS

Suntan®

CHIP TYPE SERIES

TS13C5

FEATURES

- Extra Low impedance with temperature range -55℃ to +105℃ and load life of 1000-3000 hours.
- Impedance 40~60% less than TS13C4 series.
- Lead-free reflow soldering is available subject to customer's request.

Extra Lower Impedance Series

◆ Specifications

ITEMS	PERFORMANCE CHARACTERISTICS
Operating Temperature Range	-55℃ ~ +105℃
Voltage Range	6.3~50V
Capacitance Range	4.7~6800 μF
Capacitance Tolerance	±20% at 120Hz, 20℃
Leakage Current	For Ø4~Ø10, After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 μA, whichever is greater. For Ø12.5~Ø16, After 1 minutes' application of rated voltage, leakage current is not more than 0.01CV or 4 μA, whichever is greater.

Tan δ

Measurement frequency : 120Hz, Temperature : 20℃

Rated voltage (V)		6.3	10	16	25	35	50
Tan δ (MAX)	Ø4~Ø10	0.22	0.19	0.16	0.14	0.12	0.12
	Ø12.5~Ø16	0.26	0.22	0.18	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)	Ø4~Ø10	Z-25℃ / Z+20℃	3	2	2	2	2	2
		Z-40℃ / Z+20℃	5	4	4	3	3	3
	Ø12.5~Ø16	Z-25℃ / Z+20℃	3	2	2	2	2	2
		Z-40℃ / Z+20℃	10	8	6	4	3	3

Load Life

After 3000 hours'(1000 hours for Ø4~Ø6.3*5.4, 2000 hours' Ø 6.3*7.7 and Ø 8)for)application of rated voltage at 105℃ capacitors meet the characteristics requirements listed at right

Capacitance Change	Within ± 25% of initial value
Leakage Current	Initial specified value or less
Tan δ	200% or less of initial specified value

Self Life	After leaving capacitors under no load at 105℃ for 1000 hours, they meet the specified value for load life characteristics listed above.

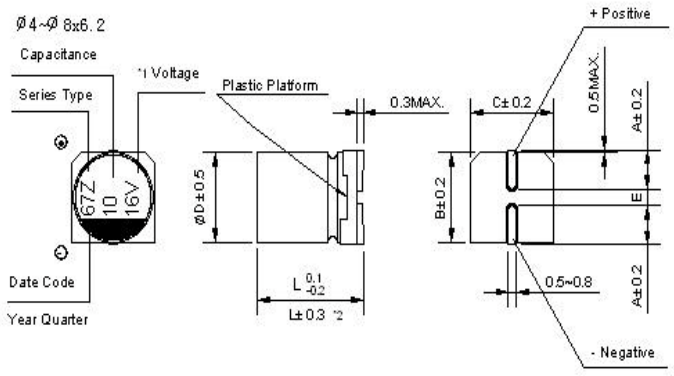
Resistance to Soldering Heat

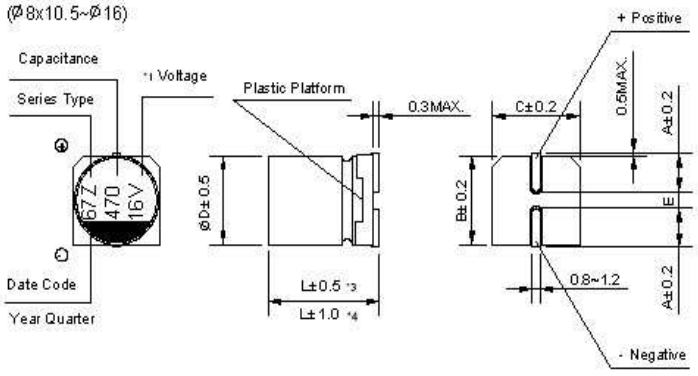
After reflow soldering according and restored at room temperature,they meet the characteristics requirements listed at right.

Capacitance Change	Within ± 10% of initial value
Tan δ	Initial specified value or less
Leakage Current	Initial specified value or less

Applicable Standards	JIS C-5141 and JIS C-5102

◆ Chip type





*1 Voltage mark [6V] represents 6.3V for Φ4～Φ10; *2 [L±0.3] is applicable to Φ6.3×7.7 and Φ8×6.2;
*3 [L±0.5] is applicable to Φ8×10.5～Φ10; *4 [L±1.0] is applicable to Φ12.5～Φ16.
Re: Date code and series type — 1st digit for Year; 2nd digit for Quarter, 4 quarter codes in one year are 1, 4, 7, O;
3rd character for Series; KZ Series = Z.

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(mm)

D×L	Φ4×5.4	Φ5×5.4	Φ6.3×5.4/7.7	Φ8×6.2	Φ8×10.5	Φ10×10.5/13.5	Φ12.5×13.5/16	Φ16×16.5/21.5
A	1.8	2.1	2.4	3.3	2.9	3.2	4.7	5.5
B	4.3	5.3	6.6	8.3	8.3	10.3	13.0	17.0
C	4.3	5.3	6.6	8.3	8.3	10.3	13.0	17.0
E ± 0.2	1.0	1.3	2.2	2.2	3.1	4.4	4.4	6.7
L	5.4	5.4	5.4/.7.7	6.2	10.5	10.5/13.5	13.5/16	16.5/21.5

◆ Standard ratings & Maximum permissible ripple current & Impedance

Cap. (μF) \ WV		6.3			10			16		
					1A			1C		
10	100							4×5.4	1.8	80
15	150							4×5.4	1.8	80
22	220	4×5.4	1.8	80	4×5.4	1.8	80	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)
33	330	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 （5×5.4）	0.44 （0.76）	230 (150)
47	470	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)
56	560	5×5.4	0.76	150	6.3×5.4	0.44	230	6.3×5.4	0.44	230
68	680	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4	0.44	230	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)
100	101	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)
150	151	6.3×5.4	0.44	230	6.3×7.7	0.34	280	6.3×7.7	0.34	280
220	221	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (8×6.2)	0.34 (0.34)	280 (280)	8×10.5 (6.3×7.7)	0.17 (0.34)	450 (280)
330	331	6.3×7.7 (8×6.2)	0.34 (0.34)	280 (280)	8×10.5	0.17	450	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)
470	471	8×10.5	0.17	450	8×10.5	0.17	450	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)
680	681	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)
1000	102	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	16×16.5 (12.5×16) (12.5×13.5)	0.055 (0.06) (0.065)	1350 (1050) (900)
1500	152	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)	12.5×13.5	0.065	900	16×16.5	0.055	1350
2200	222	12.5×13.5	0.065	900	12.5×16	0.060	1050	16×16.5	0.055	1350
3300	332	12.5×16	0.060	1050	16×16.5	0.055	1350	16×21.5	0.040	1650
4700	472	16×16.5	0.055	1350	16×21.5	0.040	1650	Case Size	Impedance	Ripple Current
5600	562	16×21.5	0.040	1650						

Maximum Impedance (Ω) at 20℃ 100kHz, Ripple Current (mA rms) at 105℃ 100kHz

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◆ Standard ratings & Maximum permissible ripple current & Impedance

Cap. (μF) \ WV		25			35			50		
		1E			1V			1H		
4.7	4R7				4×5.4	1.8	80	5×5.4 (4×5.4)	1.52 (3.0)	85 (60)
10	100	4×5.4	1.8	80	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 (5×5.4)	0.88 (1.52)	165 (85)
15	150	5×5.4	0.76	150	5×5.4	0.76	150	6.3×5.4	0.88	165
22	220	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×7.7 (6.3×5.4) (8×6.2)	0.68 (0.88) (0.68)	185 (165) (185)
33	330	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (8×6.2)	0.44 (0.34)	230 (280)	6.3×7.7 (8×6.2)	0.68 (0.68)	185 (185)
47	470	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (8×6.2)	0.68 (0.68)	185 (185)
56	560	6.3×7.7 (6.3×5.4)	0.34 (0.44)	280 (230)	6.3×7.7	0.34	280	8×10.5 (6.3x7.7)	0.34 (0.68)	350 (185)
68	680	6.3×7.7	0.34	280	6.3×7.7	0.34	280	8×10.5	0.34	350
100	101	6.3×7.7 (8×6.2)	0.34 (0.34)	280 (280)	8×10.5	0.17	450	10×10.5 (8×10.5)	0.18 (0.34)	670 (350)
150	151	8×10.5 (6.3×7.7)	0.17 (0.34)	450 (280)	10×10.5	0.09	670	10×10.5	0.18	670
220	221	8×10.5	0.17	450	10×10.5	0.09	670	10×13.5 (10×10.5)	0.16 (0.18)	750 (670)
330	331	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	12.5×13.5	0.14	800
470	471	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)	12.5×13.5 (10×13.5)	0.065 (0.075)	900 (800)	16×16.5 (12.5×16)	0.10 (0.12)	1150 (900)
680	681	12.5×13.5	0.065	900	12.5×16 (12.5×13.5)	0.06 (0.065)	1050 (900)	16×21.5	0.08	1350
1000	102	16×16.5 (12.5×16)	0.055 (0.060)	1350 (1050)	16×16.5	0.055	1350	Case Size	Impedance	Ripple Current
1500	152	16×16.5	0.055	1350	16×21.5	0.040	1650			
2200	222	16×21.5	0.040	1650						

Maximum Impedance (Ω) at 20℃ 100kHz, Ripple Current (mA rms) at 105℃ 100kHz

◆ Frequency coefficient of allowable ripple current

Capacitance (μF) \ Frequency		50Hz	120Hz	300Hz	1kHz	10kHz~
Φ4～Φ10	4.7～68	0.35	0.50	0.64	0.83	1.00
	100～1500	0.40	0.55	0.70	0.85	1.00
Φ12.5～Φ16	～680	0.45	0.65	0.80	0.90	1.00
	1000～4700	0.65	0.85	0.95	1.00	1.00

Note: Specification are subject to change without notice. For more detail and update, please visit our website.