

CHIP TYPE SERIES

TS13C0

FEATURES

- Designed for surface mounting on high density circuit board.
- Emboss carrier tape packing system is available for automatic insertion.



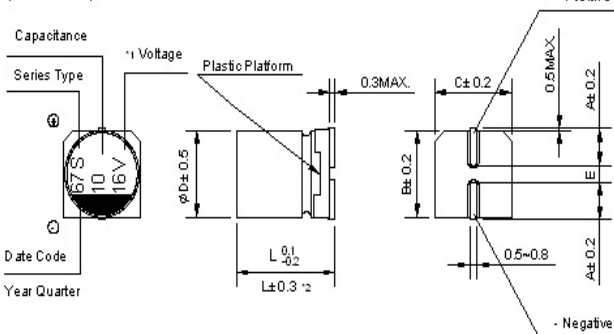
Standard Series

Specifications

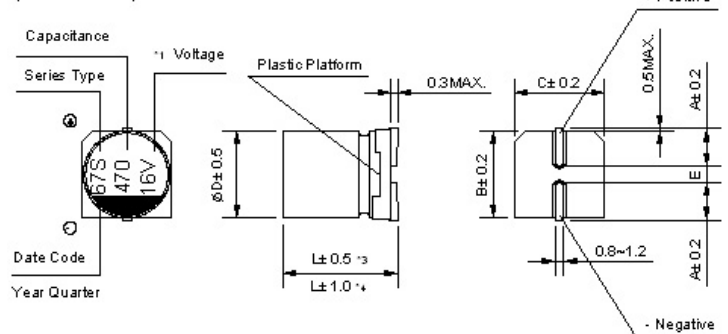
ITEMS		PERFORMANCE CHARACTERISTICS								
Operating Temperature Range	-40°C ~ +85°C									
Voltage Range	4~100V									
Capacitance Range	0.1~10000 μF									
Capacitance Tolerance	±20% at 120Hz, 20°C									
Leakage Current	Leakage current(φ 4~φ 10) ≤ 0.01CV or 3 μA., whichever is greater.(After 2 minutes' application of rated voltage) Leakage current(φ 12.5~φ 16) ≤ 0.03CV or 4 μA., whichever is greater.(After 1 minutes' application of rated voltage)									
Tan δ	Measurement frequency : 120Hz, Temperature : 20°C									
	Rated voltage (V)	4	6.3	10	16	25	35	50	63	100
Tan δ (MAX)	φ 4~φ 10	0.35	0.26	0.20	0.16	0.14	0.12	0.12	0.10	0.10
		φ 12.5~φ 16	0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14
Stability at Low Temperature	Measurement frequency : 120Hz									
	Rated voltage (V)			4	6.3	10	16	25	35	50~100
	Impedance ratio ZT / Z20 (MAX)	φ 4~φ 10	Z-25°C / Z+20°C	7	4	3	2	2	2	2
			Z-40°C / Z+20°C	15	8	6	4	4	3	3
φ 12.5~φ 16	Z-25°C / Z+20°C	7	5	4	3	2	2	2		
	Z-40°C / Z+20°C	17	12	10	8	5	4	3		
Load Life	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right		Capacitance Change	Within ± 20% of initial value (Within ± 25% of initial value for 4V)						
			Tan δ	200% or less of initial specified value						
			Leakage Current	Initial specified value or less						
Self Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for load life characteristics listed above.									
Resistance to Soldering Heat	The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate 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

(φ 4~φ 8x6.2)



(φ 8x10.5~φ 16)



1 Voltage mark [6V] represents 6.3V for φ 4~φ 10;

*2 [L±0.3] is applicable to φ 6.3x7.7 and φ 8x6.2;

*3 [L±0.5] is applicable to φ 8x10.5~φ 10;

*4 [L±1.0] is applicable to φ 12.5~φ 16.

Re: Date code and series type — 1st digit for Year;

2nd digit for Quarter, 4 quarter codes in one year are 1, 4, 7, 0;

3rd character for Series; SS Series = S

	(mm)									
∅DxL	4x5.4	5x5.4	6.3x5.4	8x6.2	6.3x7.7	8x10.5	10x10.5/13.5	12.5x13.5	12.5x16	16x16.5/21.5
A	1.8	2.1	2.4	3.3	2.4	2.9	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	8.3	6.6	8.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	8.3	6.6	8.3	10.3	13.0	13.0	17.0
E±0.2	1.0	1.3	2.2	2.2	2.2	3.1	4.4	4.4	4.4	6.7
L	5.4	5.4	5.4	6.2	7.7	10.5	10.5/13.5	13.5	16.0	16.5/21.5

◆ Standard size & Maximum permissible ripple current

WV		4		6.3		10		16		25	
Cap.(μF)		0G		0J		1A		1C		1E	
4.7	4R7	--	--	--	--	--	--	--	--	--	--
10	100	--	--	--	--	--	--	4×5.4	25	5×5.4 (4×5.4)	28 (20)
15	150	--	--	--	--	--	--	4×5.4	28	5×5.4	34
22	220	--	--	4×5.4	31	5×5.4 (4×5.4)	35 (28)	5×5.4 (4×5.4)	39 (28)	6.3×5.4 (5×5.4)	52 (35)
33	330	4×5.4	26	5×5.4 (4×5.4)	39 (31)	5×5.4 (4×5.4)	43 (32)	6.3×5.4 (5×5.4)	57 (40)	6.3×5.4 (5×5.4)	63 (42)
47	470	4×5.4	34	5×5.4 (4×5.4)	47 (36)	6.3×5.4 (5×5.4)	59 (43)	6.3×5.4 (5×5.4)	68 (44)	6.3×5.4	68
56	560	4×5.4	39	5×5.4	46	6.3×5.4	57	6.3×5.4	74	6.3×5.4	82
68	680	5×5.4	45	6.3×5.4 (5×5.4)	62 (52)	6.3×5.4	72	6.3×5.4	80	6.3×5.4	94
100	101	5×5.4	61	6.3×5.4 (5×5.4)	71 (55)	6.3×5.4	76	6.3×5.4 8 X 6.2	86 200	6.3×7.7 8 x 6.2	130 91
150	151	6.3×5.4	74	6.3×5.4	78	6.3×5.4	88	6.3×7.7	135	8×10.5 6.3 x 7.7	200 130
220	221	6.3×5.4	82	6.3×5.4	95	6.3×7.7 8 X 6.2	150 250	8×10.5 (6.3×7.7) 8 X 6.2	215 (150) 135	8×10.5	250
330	331	6.3×7.7	150	6.3×5.4 6.3 X 7.7 8 X 6.2	150 300	8×10.5	280	8×10.5	280	10×10.5 (8×10.5)	340 (310)
470	471	6.3×7.7	150	8×10.5 6.3 X 7.7	300 150	8×10.5 10 X 10.5	300 320	10×10.5 (8×10.5)	420 (330)	10×10.5	400
680	681	8×10.5	300	8×10.5	300	10×10.5	380	10×10.5	450	10X13.5	550
1000	102	8×10.5	330	10×10.5 (8×10.5)	430 (330)	10×10.5	450	10×10.5 12.5x13.5 10x13.5	490 710 550	12.5X13.5	820
1500	152	10×10.5	450	10×10.5 10 X 13.5	450 650	10 X 13.5	650	12.5x13.5	750	12.5X16	1000
2200	222	10x13.5 10×10.5	620 480	12.5x13.5 10x13.5	890 720	12.5x13.5	960	16x16.5 12.5x16	1150 1000	16X16.5 16x21.5	1250 1450
3300	332	10x13.5	700	12.5x16 12.5x13.5	1000 900	16x16.5 12.5x16	1300 1050	16x16.5 16x21.5	1350 1450	16x21.5	1650
4700	472	12.5x13.5	850	16x16.5	1400	16x16.5	1450	16x21.5	1650		
6800	682	16x16.5 12.5x16	1350 900	16x21.5	1750	16x21.5	1850				
10000	103	16x21.5	1750							Case Size	Ripple Current

WV		35		50		63		100	
Cap.(μF)		1V		1H		1J		2A	
0.1	0R1	--	--	4×5.4	1.0	4×5.4	1.0	--	--
0.22	R22	--	--	4×5.4	2.3	4×5.4	2.3	--	--
0.33	R33	--	--	4×5.4	3.5	4×5.4	3.5	--	--
0.47	R47	--	--	4×5.4	5.0	4×5.4	5.0	--	--
1	010	--	--	4×5.4	10	4×5.4	10	4×5.4	10
1.5	1R5	--	--	4×5.4	12	4×5.4	12	6.3×5.4	15
2.2	2R2	--	--	4×5.4	15	4×5.4	15	6.3×5.4	20
3.3	3R3	--	--	4×5.4	18	5×5.4	20	6.3×7.7 (6.3×5.4) (8 X 6.2)	45 (28) (50)
4.7	4R7	--	--	5×5.4 (4×5.4)	23 (19)	6.3×5.4 (5×5.4)	30 (23)	6.3×7.7 (6.3×5.4) (8 X 6.2)	50 (30) (50)
10	100	5×5.4 (4×5.4)	30 (20)	6.3×5.4 (5×5.4)	34 (27)	6.3×7.7 (6.3×5.4)	55 (34)	8×10.5 (6.3×7.7) (8 X 6.2)	110 (50) (50)
22	220	6.3×5.4	54	6.3×5.4 (8 X 6.2)	60 (120)	8×10.5 6.3×7.7	140 (70)	10×10.5 (8×10.5)	180 (120)
33	330	6.3×5.4 8 X 6.2	60 130	6.3×7.7 (8 X 6.2)	85 (65)	8×10.5 (6.3×7.7)	160 (85)	10×10.5	190
47	470	6.3×5.4 8 X 6.2	70 165	6.3×7.7 10×10.5 (8×10.5)	90 130 (110)	10×10.5 (8×10.5)	230 (170)	10×10.5	
56	560	6.3×7.7	80	6.3×7.7	110	10×10.5	250	--	--
68	680	6.3×7.7	110	8×10.5	170	10×10.5	260	--	--
100	101	8×10.5 (6.3×7.7)	175 (120)	8×10.5 10×10.5	200 240	10×10.5 12.5X13.5 10X13.5	280 380 290	12.5X13.5	440
150	151	8×10.5	220	10×10.5	240	10 x 13.5	310	--	--
220	221	10×10.5 (8×10.5)	310 (270)	10×10.5 10×13.5	320 400	12.5X13.5 10X13.5	580 330	16X16.5 16x21.5	700 850
330	331	10×10.5	350	12.5X13.5 10X13.5	600 420	16X16.5 12.5X16	820 720	16x21.5	900
470	471	10×10.5 12.5X13.5 10X13.5	400 600 530	16X16.5 12.5X16	850 740	16X16.5	950		
680	681	12.5X13.5 10X13.5	750 560	16X16.5	950	16x21.5	1000		
1000	102	16X16.5 12.5X16	1100 800	16x21.5	1300	16x21.5	1000	Case size	Allowable ripple
2200	222	16x21.5	1550						

Allowable Ripple (mA ms) at 85°C 120Hz

◆ Frequency coefficient of allowable ripple current

Coefficient	Frequency	0.1~68uF	50Hz	120Hz	300Hz	1kHz	10kHz~
		φ 4~ φ 10	100~3300uF	0.70	1.00	1.17	1.36
φ 12.5~ φ 16	~68 uF	100~680 uF	0.85	1.00	1.08	1.2	1.30
		~68 uF	0.75	1.00	1.35	1.57	2.00
		100~680 uF	0.80	1.00	1.23	1.34	1.5
		1000~10000 uF	0.85	1.00	1.1	1.13	1.15

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