

CHIP TYPE SERIES

TS13C1

FEATURES

- Temperature up to +105°C with load life of 1000~2000 hours.
- Lead-free reflow soldering is available subject to customers' request.



Fig 1



Fig 2



Fig 3

Note: Fig 1 & 2: Diameter 4 ~10mm

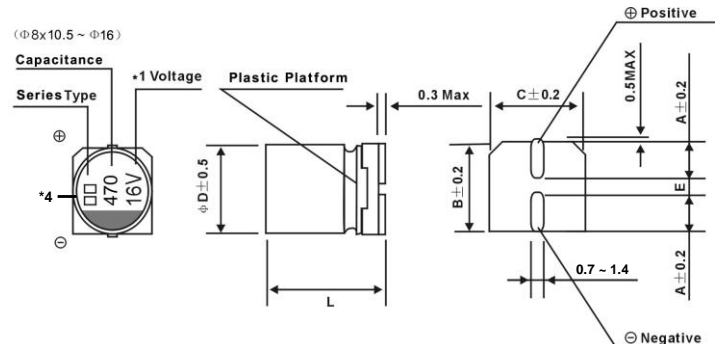
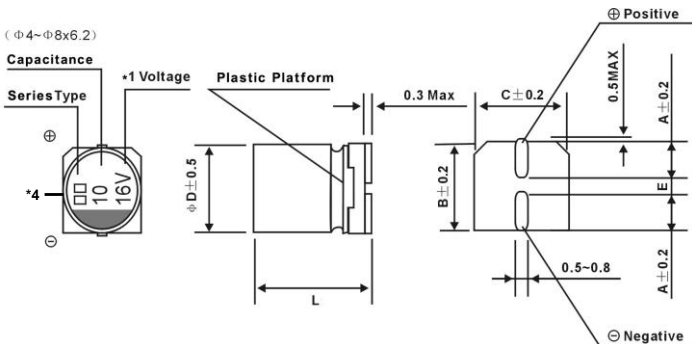
Fig 3 : Diameter: ≥12.5mm

Wide Temperature Series

◆ Specifications

ITEMS		PERFORMANCE CHARACTERISTICS									
Operating Temperature Range	-55°C ~ +105°C										
Voltage Range	4~100V										
Capacitance Range	1~10000 μF										
Capacitance Tolerance	±20% at 120Hz, 20°C										
Leakage Current	Leakage current(φ 4~φ 10)≤0.01CV or 3 μ A., whichever is greater.(After 2 minutes' application of rated voltage) Leakage current(φ 12.5~φ 16)≤0.03CV or 4 μ A., 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	0.37	0.26	0.22	0.18	0.16	0.14	0.14	0.14	
	φ 12.5~φ 16	0.42	0.42	0.38	0.32	0.30	0.22	0.18	0.16	0.16	
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	4	3	2	2	3	
			Z-40°C / Z+20°C	15	12	8	6	4	3	4	
	φ 12.5~φ 16	Z-25°C / Z+20°C	7	5	4	3	2	2	3		
		Z-40°C / Z+20°C	17	12	10	8	5	4	4		
Load Life	After 2000 hours' (1000hours' for φ 4~φ 6.3x5.8) application of rated voltage at 105°C, capacitors meet the characteristics requirements listed at right		Capacitance Change	Within ± 20% of initial value for capacitors of 10V or more Within ± 30% of initial value for capacitors of 4V & 6.3V							
			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°C 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.										

◆ Drawing (Unit: mm)



*1 Voltage mark for 6.3V is [6V] or [6.3V]

*4 Markings: Su1, S1, CK, XT

(mm)

∅DxL	4x5.4	5x5.4	6.3x5.4	6.3x7.7	8x6.5	8x10.5	10x10.5	10x13.5	12.5x13.5	12.5x16	16x16.5/21.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
E	1.0±0.2	1.3±0.2	2.2±0.2	2.2±0.2	3.1±0.2	3.1±0.2	4.5±0.2	4.4±0.2	4.8±0.6	4.4±0.2	6.7±0.2
L	5.4±0.6	5.4±0.6	5.4±0.6	7.7±0.6	6.5±0.6	10.5±0.6	10.5±0.6	13.5±1.0	13.5±1.0	16.0±1.0	16.5/21.5±1.0

TS13C1

◆ Case Size

WV/V		4		6.3		10		16		25	
Cap/μF		0G		0J		1A		1C		1E	
4.7	4R7	--	--	--	--	--	--	--	--	4x5.4	14
10	100	--	--	--	--	--	--	4x5.4	19	4x5.4 5x5.4	14 14
22	220	--	--	4x5.4	20	4x5.4 5x5.4	21 27	4x5.4 5x5.4	22 30	5x5.4 6.3x5.4	25 36
33	330	4x5.4 5x5.4	22 27	4x5.4 5x5.4	22 27	4x5.4 5x5.4	23 34	5x5.4 6.3x5.4	28 40	5x5.4 6.3x5.4	29 44
47	470	4x5.4 5x5.4	25 37	4x5.4 5x5.4	25 37	5x5.4 6.3x5.4	30 41	5x5.4 6.3x5.4	31 55	6.3x5.4 8x6.5	48 79
100	101	5x5.4 6.3x5.4	39 57	5x5.4 6.3x5.4	39 57	5x5.4 6.3x5.4	41 53	6.3x5.4 8x6.5	70 120	6.3x7.7 8x6.5 8x10.5	91 100 150
150	151	6.3x5.4	61	6.3x5.4	55	6.3x5.4	55	6.3x7.7	80	6.3x7.7 8x10.5	92 140
220	221	6.3x5.4	67	6.3x5.4 6.3x7.7	95 69	6.3x5.4 6.3x7.7 8x6.5	80 67 120	6.3x7.7 8x6.5 8x10.5	89 105 180	8x10.5 10x7.7	175 180
330	331	6.3x7.7	100	6.3x7.7 8x6.5 8x10.5	105 105 230	6.3x7.7 8x10.5	125 195	8x10.5 10x7.7	195 185	8x10.5 10x10.5	205 220
470	471	6.3x7.7	105	6.3x7.7 8x10.5	120 230	8x10.5 10x10.5 10x7.7	210 295 290	8x10.5 10x10.5	250 280	10x10.5	280
680	681	8x10.5	210	8x10.5	230	10x10.5	270	10x10.5	305	--	--
1000	102	8x10.5	230	8x10.5 10x10.5	290 315	10x10.5	315	10x10.5 10x13.5 12.5x13.5	315 390 500	12.5x13.5	580
1500	152	10x10.5	315	10x10.5	410	12.5x13.5	458	12.5x13.5	550	--	--
2200	222	--	--	12.5x13.5	620	12.5x13.5	680	--	--	--	--

WV/V		35		50		63		100	
Cap/μF		1V		1H		1J		2A	
1	010	--	--	4x5.4	8	4x5.4	8	4x5.4	7
2.2	2R2	--	--	4x5.4	11	4x5.4	11	6.3x5.4	13
3.3	3R3	--	--	4x5.4	13	5x5.4 6.3x5.4	14 30	6.3x5.4 6.3x7.7	18 30
4.7	4R7	4x5.4	15	4x5.4 5x5.4	14 18	5x5.4 6.3x5.4	15 18	5x5.4 6.3x5.4 6.3x7.7	15 19 33
10	100	4x5.4 5x5.4	17 24	5x5.4 6.3x5.4	20 28	6.3x5.4 6.3x7.7 8x6.5	24 39 25	6.3x7.7 8x10.5	34 77
22	220	5x5.4 6.3x5.4	30 40	6.3x5.4 6.3x7.7 8x6.5	38 42 70	6.3x7.7 8x6.5 8x10.5	48 55 98	8x10.5 10x10.5	82 122
33	330	6.3x5.4 8x6.5	46 76	6.3x7.7 8x6.5	60 70	6.3x7.7 8x10.5	49 112	10x10.5	130
47	470	6.3x5.4 6.3x7.7 8x6.5	50 57 80	6.3x7.7 8x6.5 8x10.5	63 85 100	8x10.5 10x10.5	117 160	10x10.5 10x13.5 12.5x13.5	140 160 250
100	101	6.3x7.7 8x10.5 10x7.7	80 150 160	8x10.5 10x10.5 10x7.7	145 160 160	10x10.5 10x13.5 12.5x13.5	196 210 270	12.5x13.5	380
150	151	8x10.5	185	10x10.5	200	--	--	--	--
220	221	8x10.5 10x10.5	185 250	10x10.5 10x13.5	220 280	12.5x13.5	470	--	--
330	331	10x10.5 10x13.5	300 330	12.5x13.5	420	--	--	--	--
470	471	10x10.5 10x13.5 12.5x13.5	310 375 356	--	--	--	--	--	--
680	681	12.5x13.5	530	--	--	--	--	--	--

Allowable Ripple (mA rms) at 105°C 120Hz

◆ Frequency coefficient of allowable ripple current

Frequency	50Hz	120Hz	1kHz	10kHz~
Coefficient	≦ 1000μF	0.70	1.00	1.30
	> 1000μF	0.80	1.00	1.20

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