

CHIP TYPE SERIES

FEATURES

TS13C0

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

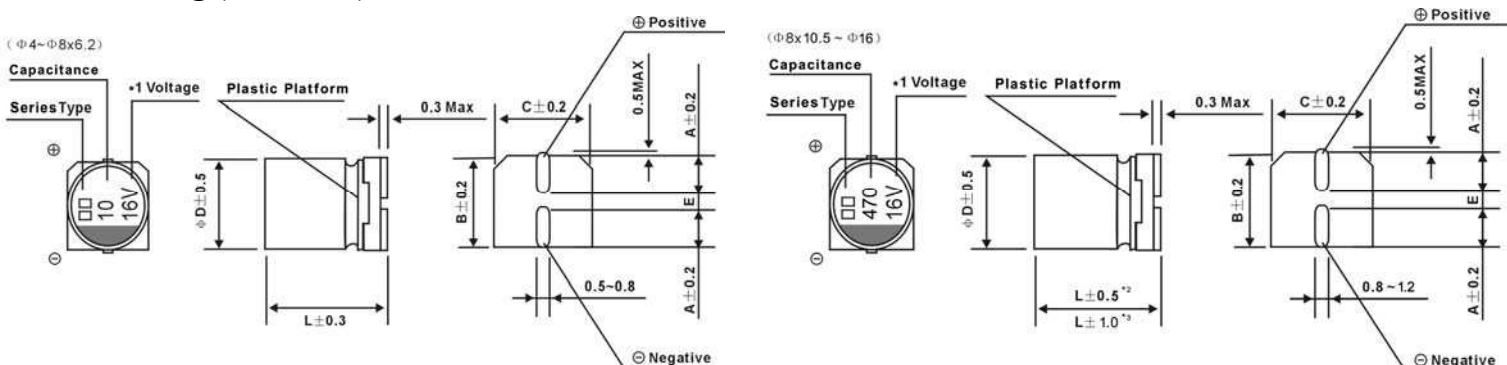


Standard Series

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	0.3	0.24	0.2	0.16	0.14	0.14	0.12	0.10
φ 12.5~φ 16		0.42	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	
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	2
			Z-40°C / Z+20°C	15	8	6	4	4	3	3	3
	φ 12.5~φ 16	Z-25°C / Z+20°C	7	5	4	3	2	2	2	2	
		Z-40°C / Z+20°C	17	12	10	8	5	4	3	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 ± 30% 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	After reflow soldering 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]

*2 Applicable to φ8x10.5~φ10

*3 Applicable to φ12.5~φ16

∅DxL	4x5.4	5x5.4	6.3x5.4	6.3x7.7	8x6.2	8x10.5	10x10.5/13.5	12.5x13.5	12.5x16	16x16.5/21.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	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	7.7	6.2	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)	5×5.4 6.3×5.4	55 76	6.3×5.4 (8×6.2)	86 (200)	6.3×7.7 (8×6.2)	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	6.3×5.8	95	6.3×5.8 6.3×7.7 (8×6.2)	95 150 (250)	8×10.5 6.3×7.7 (8×6.2)	215 (150) (135)	8×10.5	250
330	331	6.3×7.7	150	6.3×7.7 (8×6.2)	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 (6.3×7.7)	300 (150)	10×10.5 (8×10.5)	320 (300)	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	10×13.5	550
1000	102	8×10.5	330	10×10.5 (8×10.5)	430 (330)	10×10.5	450	12.5×13.5 (10×13.5) (10×10.5)	710 (550) (490)	12.5×13.5	820
1500	152	10×10.5	450	10×13.5 (10×10.5)	650 (450)	10×13.5	650	12.5×13.5	750	12.5×16	1000
2200	222	10×13.5 (10×10.5)	620 (480)	12.5×13.5 (10×13.5)	890 (720)	12.5×13.5	960	16×16.5 (12.5×16)	1150 (1000)	16×16.5 16×21.5	1250 1450
3300	332	10×13.5	700	12.5×16 (12.5×13.5)	1000 (900)	16×16.5 (12.5×16)	1300 (1050)	16×16.5 16×21.5	1350 1450	16×21.5	1650
4700	472	12.5×13.5	850	16×16.5 16×21.5	1400 1650	16×16.5 16×21.5	1450 1550	16×21.5	1650		
6800	682	16×16.5 (12.5×16)	1350 (900)	16×21.5	1750	16×21.5	1850				
10000	103	16×21.5	1750	16×21.5	1800					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) (8×6.2)	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) (8×6.2)	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) (8×6.2)	110 (50) (50)
22	220	6.3×5.4	54	6.3×5.4 (8×6.2)	60 (120)	8×10.5 (6.3×7.7) (8×6.2)	140 (70) (35)	10×10.5 (8×10.5)	180 (120)
33	330	6.3×5.4 (8×6.2)	60 (130)	6.3×7.7 (8×6.2)	85 (65)	8×10.5 (6.3×7.7)	160 (85)	10×10.5	190
47	470	6.3×5.8 (8×6.2)	70 (165)	10×10.5 (8×10.5) (6.3×7.7)	130 (110) (90)	10×10.5 (8×10.5)	230 (170)	--	--
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)	10×10.5 (8×10.5)	240 (200)	12.5×13.5 (10×13.5) (10×10.5)	380 (290) (280)	12.5×13.5	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)	10×13.5 (10×10.5)	400 (320)	12.5×13.5 (10×13.5)	580 (330)	16×16.5 16×21.5	700 850
330	331	10×10.5	350	12.5×13.5 (10×13.5)	600 (420)	16×16.5 (12.5×16)	820 (720)	16×21.5	900
470	471	12.5×13.5 (10×13.5) (10×10.5)	600 (530) (400)	16×16.5 (12.5×16)	850 (740)	16×16.5	950		
680	681	12.5×13.5 (10×13.5)	750 (560)	16×16.5	950	16×21.5	1000		
1000	102	16×16.5 (12.5×16)	1100 (800)	16×21.5	1300			Case size	Allowable ripple
2200	222	16×21.5	1550						

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

◆ Frequency coefficient of allowable ripple current

Frequency		50Hz	120Hz	300Hz	1kHz	10kHz~	
Coefficient	φ 4~ φ 10	0.1~68μF	0.70	1.00	1.17	1.50	
		100~3300μF	0.85	1.00	1.08	1.30	
		~68 μF	0.75	1.00	1.35	1.57	2.00
	φ 12.5~ φ 16	100~680 μF	0.80	1.00	1.23	1.34	1.5
		1000~10000 μF	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.