

TCK Series 105°C V- chip Aluminum Electrolytic Capacitor

Operating with wide temperature range -40~+105°C

Load life of 1000~2000 hours

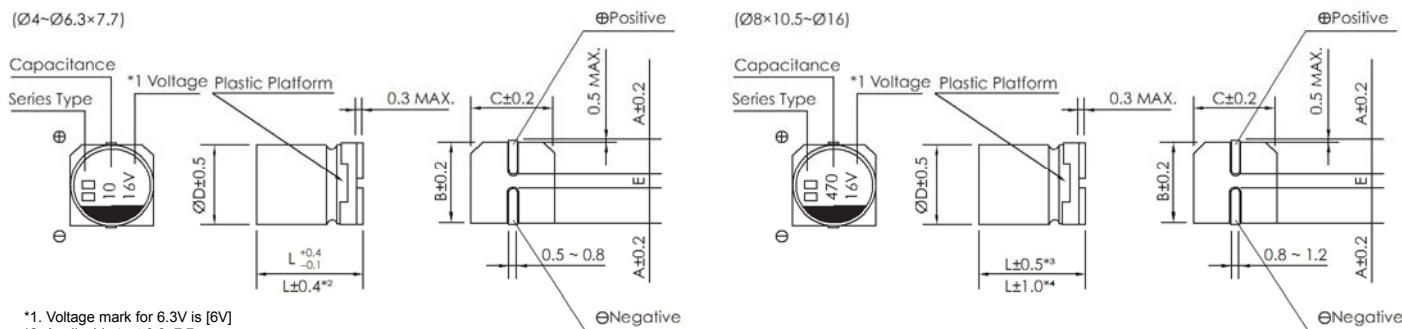
Comply with the RoHS directive



SPECIFICATIONS

Items	Characteristics												
Operation Temperature Range	-40 ~ +105°C												
Voltage Range	4 ~ 450V												
Capacitance Range	0.1 ~ 6800μF												
Capacitance Tolerance	±20% at 120Hz, 20°C												
Leakage Current	Rated Voltage	6.3 ~ 100V								160 ~ 450V			
	Case size	Ø4~Ø10				Ø12.5~Ø16				Ø6.3~Ø16			
	Time	after 2 min. (application of rated voltage)				after 1 min. (application of rated voltage)				after 5 min. (application of rated voltage)			
	Leakage current	≤0.01CV or 3μA, whichever is greater				≤0.03CV or 4μA, whichever is greater				≤0.04CV+100μA, whichever is greater			
Dissipation Factor (tan δ)	Measurement frequency : 120Hz, Temperature												
	Rated Voltage (V)	4	6.3	10	16	25	35	50	63	100	160~250	350~450	
	tan δ (max.)	Ø4~Ø10	0.42	0.30	0.26	0.22	0.16	0.14	0.12	0.10	0.10	0.20	0.25
		Ø12.5~Ø16	0.45	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.10	0.20	0.25
Stability at Low Temperature	Measurement frequency : 120Hz												
	Rated Voltage (V)			4	6.3	10	16	25	35	50~63	100	160~250	350~450
	Impedance Ratio	Ø4~Ø10	Z(-25°C)/Z(20°C)	7	4	3	2	2	2	2	3	2	3
			Z(-40°C)/Z(20°C)	15	8	6	4	4	3	3	4	3	6
	ZT/Z20 (max.)	Ø12.5~Ø16	Z(-25°C)/Z(20°C)	7	5	4	3	2	2	2	2	2	4
Z(-40°C)/Z(20°C)			17	12	10	8	5	4	3	3	6	10	
Load Life	After 2000 hrs. (1000 hrs. for Ø4~Ø6.3×5.4) application of the rated voltage at 105°C, they meet the characteristics listed below.												
	Capacitance Change		Within ±20% of initial value for capacitors of 10V or more (Within ±30% of initial value for capacitors of 4V or less)										
	Dissipation Factor		200% or less of initial specified value										
	Leakage Current		initial specified value or less										
Shelf 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 and restored at room temperature, they meet the characteristics listed below.												
	Capacitance Change		Within ±10% of initial value										
	Dissipation Factor		initial specified value or less										
	Leakage Current		initial specified value or less										
Marking	Black print on the case top.												

DRAWING (Unit: mm)



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

*2. Applicable to Ø6.3×7.7

*3. Applicable to Ø8×10.5~Ø10

*4. Applicable to Ø12.5~Ø16

DIMENSIONS (Unit: mm)

ØD x L	4 x 5.4	5 x 5.4	6.3 x 5.4	6.3 x 7.7	8 x 10.5	10 x 10.5	10 x 13.5	12.5 x 13.5	12.5 x 16	16 x 16.5
A	2.0	2.2	2.6	2.6	3.0	3.3	3.3	4.9	4.9	5.8
B	4.3	5.3	6.6	6.6	8.4	10.4	10.4	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.4	10.4	10.4	13.0	13.0	17.0
E ± 0.2	1.0	1.4	1.9	1.9	3.1	4.7	4.7	4.7	4.7	6.4
L	5.4	5.4	5.4	7.7	10.5	10.5	13.5	13.5	16.0	16.5

DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

•Case size ØD×L(mm), ripple current (mA rms) at 105°C, 120Hz

WV µF Code	4V		6.3 V		10 V		16 V		25 V	
	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
4.7 475									4 × 5.4	13
10 106							4 × 5.4	18	5 × 5.4 (4 × 5.4)	20 (14)
22 226			4 × 5.4	22	5 × 5.4 (4 × 5.4)	25 (20)	5 × 5.4 (4 × 5.4)	27 (20)	6.3 × 5.4 (5 × 5.4)	36 (25)
33 336	5 × 5.4 (4 × 5.4)	30 (18)	5 × 5.4 (4 × 5.4)	27 (22)	5 × 5.4 (4 × 5.4)	30 (22)	6.3 × 5.4 (5 × 5.4)	40 (28)	6.3 × 5.4 (5 × 5.4)	44 (29)
47 476	5 × 5.4 (4 × 5.4)	36 (24)	5 × 5.4 (4 × 5.4)	33 (25)	5 × 5.4	30	6.3 × 5.4 (5 × 5.4)	48 (31)	6.3 × 5.4	48
100 107	6.3 × 5.4 (5 × 5.4)	60 (43)	6.3 × 5.4 (5 × 5.4)	50 (39)	6.3 × 5.4 (5 × 5.4)	53 (45)	6.3 × 5.4	60	6.3 × 7.7	91
150 157	6.3 × 5.4	52	6.3 × 5.4	55	6.3 × 5.4	62	6.3 × 7.7	95	8 × 10.5 (6.3 × 7.7)	140 (100)
220 227	6.3 × 5.4	57	6.3 × 7.7 (6.3 × 5.4)	105 (67)	6.3 × 7.7	105	8 × 10.5 (6.3 × 7.7)	150 (105)	8 × 10.5	175
330 337	6.3 × 7.7	100	6.3 × 7.7	105	8 × 10.5	196	8 × 10.5	195	10 × 10.5 (8 × 10.5)	240 (220)
470 477	6.3 × 7.7	105	8 × 10.5 (6.3 × 7.7)	210 (120)	10 × 10.5 (8 × 10.5)	260 (210)	10 × 10.5 (8 × 10.5)	295 (230)	10 × 10.5	280
680 687	8 × 10.5	210	8 × 10.5	210	10 × 10.5	270	10 × 10.5	315	10 × 13.5	400
1000 108	8 × 10.5	230	10 × 10.5 (8 × 10.5)	300 (230)	10 × 10.5	315	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	500 (390) (340)	12.5 × 13.5	580
1500 158	10 × 10.5	315	10 × 13.5 (10 × 10.5)	450 (315)	10 × 13.5	460	12.5 × 13.5	550	12.5 × 16	850
2200 228	10 × 13.5 (10 × 10.5)	440 (340)	12.5 × 13.5 (10 × 13.5)	620 (500)	12.5 × 13.5	680	16 × 16.5 (12.5 × 16)	950 (750)	16 × 16.5	1050
3300 338	10 × 13.5	490	12.5 × 16 (12.5 × 13.5)	700 (660)	16 × 16.5	1000	16 × 16.5	1000		
4700 478	12.5 × 13.5	600	16 × 16.5	1000						
6800 688	16 × 16.5 (12.5 × 16)	950 (650)								

WV µF Code	35 V		50 V		63 V		100 V	
	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
0.1 104			4 × 5.4	0.7	4 × 5.4	0.7		
0.22 224			4 × 5.4	1.6	4 × 5.4	1.6		
0.33 334			4 × 5.4	2.5	4 × 5.4	2.5		
0.47 474			4 × 5.4	3.5	4 × 5.4	3.5		
1 105			4 × 5.4	7	4 × 5.4	7	4 × 5.4	7
2.2 225			4 × 5.4	11	4 × 5.4	11	6.3 × 5.4	14
3.3 335	4 × 5.4	13	4 × 5.4	13	5 × 5.4	13	6.3 × 7.7 (6.3 × 5.4)	32 (20)
4.7 475	4 × 5.4	14	5 × 5.4 (4 × 5.4)	16 (13)	5 × 5.4	16	6.3 × 7.7 (6.3 × 5.4)	35 (21)
10 106	5 × 5.4 (4 × 5.4)	21 (14)	6.3 × 5.4	24	6.3 × 7.7 (6.3 × 5.4)	39 (24)	8 × 10.5 (6.3 × 7.7)	77 (35)
22 226	6.3 × 5.4 (5 × 5.4)	38 (30)	6.3 × 7.7 (6.3 × 5.4)	51 (42)	8 × 10.5 (6.3 × 7.7)	98 (49)	10 × 10.5 (8 × 10.5)	126 (84)
33 336	6.3 × 5.4	42	6.3 × 7.7	60	8 × 10.5	112	10 × 10.5	133
47 476	6.3 × 7.7 (6.3 × 5.4)	70 (50)	8 × 10.5 (6.3 × 7.7)	120 (63)	10 × 10.5 (8 × 10.5)	160 (119)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	250 (160) (140)
68 686					Case size	Ripple current	12.5 × 13.5 (10 × 13.5)	300 (180)



DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

Case size $\varnothing D \times L$ (mm), ripple current (mA rms) at 105°C, 120Hz

WV Code μF		35 V		50 V		63 V		100 V		160 V	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
22	226									10 × 13.5	50
33	336									12.5 × 13.5	95
47	476									12.5 × 13.5 (16 × 16.5)	205 (240)
100	107	8 × 10.5 (6.3 × 7.7)	120 (84)	10 × 10.5 (8 × 10.5)	170 (140)	12.5 × 13.5 (10 × 13.5) (10 × 10.5)	270 (210) (196)	16 × 16.5 (12.5 × 13.5)	450 (380)	16 × 16.5	250
150	157	8 × 10.5	155	10 × 10.5	170	10 × 13.5	225				
220	227	10 × 10.5 (8 × 10.5)	220 (190)	10 × 13.5 (10 × 10.5)	280 (220)	16 × 16.5 (12.5 × 13.5)	560 (470)	16 × 16.5	550		
330	337	10 × 10.5	245	16 × 16.5 (12.5 × 13.5) (10 × 13.5)	600 (420) (295)	16 × 16.5 (12.5 × 16)	700 (510)				
470	477	12.5 × 13.5 (10 × 13.5)	520 (375)	16 × 16.5 (12.5 × 16)	700 (520)	16 × 16.5	750				
680	687	12.5 × 13.5	530	16 × 16.5	750						
1000	108	16 × 16.5 (12.5 × 16)	750 (600)								

WV Code μF		200 V		250 V		350 V		400 V		450 V	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
3.3	335							10 × 13.5	40	10 × 13.5	40
4.7	475			10 × 13.5		10 × 13.5	85	10 × 13.5 (12.5 × 13.5)	45 (48)	10 × 13.5 (12.5 × 13.5)	42 (45)
10	106	10 × 13.5	75	10 × 13.5	75	12.5 × 13.5	105	12.5 × 13.5	50	12.5 × 13.5	55
22	226	12.5 × 13.5	105	12.5 × 13.5	105	16 × 16.5	130	16 × 16.5	85	16 × 16.5	85
33	336	12.5 × 13.5	120	16 × 16.5	135						
47	476	16 × 16.5	220								
100	107										

FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

Frequency			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient	$\varnothing 4 \sim \varnothing 10$	0.1 ~ 68 μF	0.70	1.00	1.17	1.36	1.50
		100 ~ 3300 μF	0.85	1.00	1.08	1.20	1.30
	$\varnothing 12.5 \sim \varnothing 16$	~ 68 μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 680 μF	0.80	1.00	1.23	1.34	1.50
		1000 ~ 6800 μF	0.85	1.00	1.10	1.13	1.15

■ Package Quantity

Size $\varnothing D \times L$ (mm)	Quantity per Reel	Reels in Box	Quantity in Box/Pcs	3 Inbox per cartons (pcs)
4 × 5.4/5.8	2,000	6	12,000	36,000
5 × 5.4/5.8	1,000	6	6,000	18,000
6.3 × 5.4/5.8	1,000	5	5,000	15,000
6.3 × 7.7	1,000	5	5,000	15,000
8 × 10.5	500	4	2,000	6,000
10 × 10.5	500	4	2,000	6,000
10 × 13.5	500	4	2,000	6,000
12.5 × 13.5	250	3	750	2,250
12.5 × 16	200/150*	3	600/450*	1,800/1,350*