Topdiode Manufacturing Company Limited
Diode | Capacitors
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TKL 105°C 5000H. Long life Assurance SMD Electrolytic Capacitor

Wide temperature range -55~+105°C

Load life of 3000~5000 hours

RoHS & REACH compliant, Halogen-free

SPECIFICATIONS

Items	Characteristics
Operation Temperature Range	-55 ~ +105°C
Voltage Range	6.3 ~ 100V
Capacitance Range	0.1 ~ 1500μF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Leakage current ≤0.01CV or 3μA (∅4~∅10), whichever is greater (after 2 minutes application of rated voltage at 20°C) Leakage current ≤0.03CV or 4μA (∅12.5~∅16), whichever is greater (after 1 minute application of rated voltage at 20°C) C: Nominal capacitance (μF) , V: Rated voltage (V)
Dissipation Factor (tan δ)	Measurement frequency : 120Hz, Temperature : 20°C

Rated Voltage (V)		6.3	10	16	25	35	50~100
tan δ (max.)	∅4~∅10	0.28	0.24	0.20	0.16	0.13	0.12
	∅12.5~∅16	0.38	0.34	0.30	0.26	0.22	0.18

Stability at Low Temperature

Measurement frequency : 120Hz

Rated Voltage (V)			6.3	10	16	25	35	50~100
Impedance Ratio ZT/Z20 (max.)	∅4~∅10	Z(-25°C) / Z(20°C)	3	3	2	2	2	2
		Z(-55°C) / Z(20°C)	8	5	4	3	3	3
	∅12.5~∅16	Z(-25°C) / Z(20°C)	5	4	3	2	2	2
		Z(-55°C) / Z(20°C)	12	10	8	5	4	3

Load Life

After 5000 hrs. (3000 hrs. for ∅4~∅6.3×5.8) application of the rated voltage at 105°C, they meet the characteristics listed below.

Capacitance Change	Within ±30% of initial value
Dissipation Factor	300% 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.

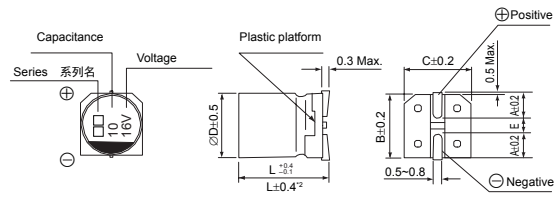
Capacitance Change	Within ±10% of initial value
Dissipation Factor	initial specified value or less
Leakage Current	initial specified value or less

Marking

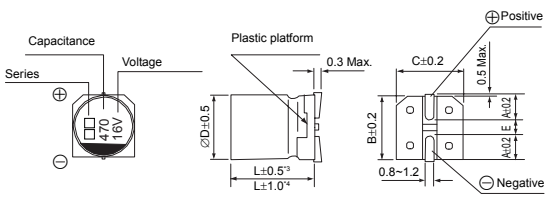
Black print on the case top.

DRAWING (Unit: mm)

(∅4~∅6.3×7.7)



(∅8×10.5~∅16)



*1. Voltage mark for 6.3V is [6V]
*2. Applicable to ∅6.3×7.7
*3. Applicable to ∅8×10.5~∅10
*4. Applicable to ∅12.5~∅16

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DIMENSIONS (Unit: mm)

ØD x L	4 x 5.8	5 x 5.8	6.3 x 5.8	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	5.8	5.8	5.8	7.7	10.5	10.5	13.5	13.5	16.0	16.5

DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

WV / Code / µF		6.3		10		16		25	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
10	106					4 × 5.8	18	5 × 5.8	27
22	226	4 × 5.8	22	5 × 5.8	30	5 × 5.8	30	6.3 × 5.8	44
33	336	5 × 5.8	35	5 × 5.8	36	6.3 × 5.8	48	6.3 × 5.8	50
47	476	5 × 5.8	38	6.3 × 5.8	50	6.3 × 5.8	50	6.3 × 7.7	63
100	107	6.3 × 5.8	69	6.3 × 7.7	81	6.3 × 7.7	81	8 × 10.5	116
150	157	6.3 × 7.7	85	8 × 10.5	125	8 × 10.5	125	10 × 10.5	320
220	227	6.3 × 7.7	120	8 × 10.5	141	10 × 10.5	216	10 × 10.5	320
330	337	8 × 10.5	290	10 × 10.5	290	10 × 10.5	290	10 × 10.5	320
470	477	10 × 10.5	320	10 × 10.5	320	10 × 10.5	320	12.5 × 13.5 (10 × 13.5)	400 (350)
680	687	10 × 10.5	320	10 × 10.5	320	10 × 13.5	420	12.5 × 13.5	415
1000	108	10 × 10.5	410	10 × 13.5	390	12.5 × 13.5	550	12.5 × 13.5	460
1500	158	10 × 13.5	450	12.5 × 13.5	480	12.5 × 13.5	650	12.5 × 16	700
2200	228	12.5 × 13.5	680	12.5 × 16 (12.5 × 13.5)	750 (510)	16 × 16.5	800		
3300	338	12.5 × 16 (12.5 × 13.5)	850 (800)	16 × 16.5	800			Case size	Ripple current

WV / Code / µF		35		50		63		100	
		Size	Ripple current	Size	Ripple current	Size	Ripple current	Size	Ripple current
0.1	104			4 × 5.8	1.0				
0.22	224			4 × 5.8	2.6				
0.33	334			4 × 5.8	3.2				
0.47	474			4 × 5.8	5				
1	105			4 × 5.8	8				
2.2	225			4 × 5.8	12				
3.3	335			4 × 5.8	17			6.3 × 7.7	30
4.7	475	4 × 5.8	16	5 × 5.8	22			8 × 10.5	50
10	106	5 × 5.8	27	6.3 × 5.8	32	6.3 × 7.7	45	8 × 10.5	55
22	226	6.3 × 5.8	44	6.3 × 7.7	58	8 × 10.5	65	10 × 10.5	70
33	336	6.3 × 7.7	57	8 × 10.5	140	10 × 10.5	80	10 × 10.5	80
47	476	8 × 10.5	92	10 × 10.5	310	10 × 10.5	90	12.5 × 13.5 (10 × 13.5)	250 (150)
100	107	10 × 10.5	151	10 × 10.5	310	10 × 13.5	150	12.5 × 13.5	300
150	157	10 × 10.5	290	10 × 10.5	310			16 × 16.5 (12.5 × 16) (12.5 × 13.5)	600 (420) (380)
220	227	10 × 10.5	375	12.5 × 13.5 (10 × 13.5)	340 (320)	12.5 × 13.5	470		
330	337	12.5 × 13.5 (10 × 13.5)	380 (375)	12.5 × 16 (12.5 × 13.5)	600 (500)	16 × 16.5 (12.5 × 16)	650 (550)		
470	477	12.5 × 13.5	520	16 × 16.5	700				
680	687	12.5 × 13.5	550						
1000	108	16 × 16.5 (12.5 × 16)	750 (600)					Case size	Ripple current

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

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FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

Frequency			50Hz	120Hz	300Hz	1KHz	10KHz~
Coefficient	Ø4 ~ Ø10		0.70	1.00	1.17	1.36	1.50
	Ø12.5 ~ Ø16	~ 68μF	0.75	1.00	1.35	1.57	2.00
		100 ~ 470μF	0.80	1.00	1.23	1.34	1.50
		680 ~ 3300μF	0.85	1.00	1.10	1.13	1.15

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5~10°C rise. When long life performance is required in actual use, the rms ripple current has to be reduced.

◆ How to order

TKL	A	106	M	0035	0505	R	000
Type	**Material Code**	**Capacitance Code**	**Tolerance**	**Rated Voltage**	**Size Code**	**Package Code**	**Suffix Indicate Special Requirement**
TKL	**A: Aluminum Cap** For TCS, TCK TFZ TKZ....etc.	**pF Code: 1st two digits** represent significant figures 3rd digit represents multiplier (number of zeros to follow) 106 = 10uF 107 = 100uF	**M: +/-20%**	**Code 0035: 35VDC** **For DC Voltage** 0006: 6.3VDC 0035: 35VDC 0100: 100VDC	**Code 0505: Size 5x5.8mm** **Size for V-chip E-cap** 0405: Size 4x5.8mm 0605: Size 6.3x5.8mm 0607: Size 6.3x7.7mm 1010: Size 10x10.5mm	**R: Tape & Reel**	**000: Indicating Standard**