

**TW Series**

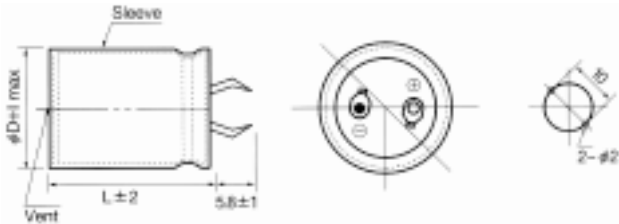
**Specifications**

- Features
  - Lifetime:85°C,2000hrs
  - Snap-in terminal
  - Large ripple current
  - High reliability
- Recommended Applications
  - AV(TV, Video, Audio)
  - Monitor/Computer
  - OA/HA/Communication
  - Smoothing circuit
  - AC Adapter
  - SMPS



Items	Characteristics															
Capacitance Tolerance	±20% (M) (120Hz,20°C)															
Rated Voltage Range (WV)	6.3~100 VDC								160~450 VDC							
Operating Temperature Range	-40 ~ +85°C								-25 ~ +85°C							
Surge Voltage (V) (20°C)	WV	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450	
	SV	8	13	20	32	44	63	79	125	200	250	300	400	450	500	
Leakage Current (Max)	I ≤ 0.02CV or 3mA whichever is smaller (After rated voltage applied for 5 minutes)															
	I= Leakage Current (μA) C= Nominal Capacitance (μF) V= Rated Voltage (V) (20°C)															
Dissipation Factor (Max) (tan δ) (120Hz, 20°C)	Dissipation Factor(tan δ) shall not exceed the values showed in the table of standard rating															
Load Life	After applying rated voltage for 2000 hours at 85°C, the capacitor shall meet the following requirement.															
	Capacitance Change	Within ±20% of the initial value														
	Dissipation Factor	Not more than 200% of the specified value														
	Leakage Current	Not more than the specified value														
Shelf Life	After placed at 85°C without voltage applied for 500 hours, the capacitor shall meet the same requirement as load life.															
Other	Satisfied JIS C-5141															

**Dimensions (mm)**



**Multiplier for Ripple Current**

Frequency coefficient

Freq. (Hz)	50	60	120	400	1K	2.4K	5K	~10K
Coefficient	0.80	0.85	1.00	1.14	1.23	1.30	1.36	1.40

Temperature coefficient

Ambient Temperature (°C)	40	45	50	55	60	65	70	75	80	85
Coefficient	2.32	2.21	2.10	1.98	1.85	1.72	1.57	1.40	1.22	1.00

### Case Size & Max Ripple Current / $\tan \delta$ / ESR

CASE SIZE ( $\phi$  DxL(mm)) & MAX DISSIPATION FACTOR ( $\tan\delta / 120\text{Hz}, 20^\circ\text{C}$ ) & MAX PERMISSIBLE RIPPLE CURRENT (RC(mArms) / 120Hz, 85°C) & MAX EQUIVALENT SERIES RESISTANCE (ESR( $\Omega$ ) / 120Hz, 20°C)

WV	10							16						
SPEC $\mu$ F	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL				$\tan\delta$	RC	ESR
8200								22x25				0.4	2.45	0.065
10000								22x30				0.4	2.6	0.053
12000	22x25				0.4	2.45	0.044	22x35	25x25			0.4	2.9	0.044
15000	22x30				0.4	2.8	0.035	22x40	25x30	30x25		0.4	3.3	0.035
18000	22x35	25x25			0.4	3.15	0.029	22x45	25x35	30x30		0.4	3.7	0.029
22000	22x40	25x30	30x25		0.4	3.5	0.024	22x50	25x45	30x30	35x25	0.4	4.15	0.024
27000	22x45	25x35	30x30		0.4	4	0.020		25x45	30x35	35x30	0.4	4.65	0.020
33000	22x50	25x40	30x30	35x25	0.4	4.45	0.016			30x40	35x35	0.4	5.25	0.016
39000		25x45	30x35	35x30	0.4	4.9	0.014			30x45	35x35	0.4	5.8	0.014
47000		25x50	30x40	35x30	0.4	5.5	0.011				35x40	0.4	6.45	0.011
56000			30x45	35x35	0.4	6.05	0.009							

WV	25							35						
SPEC $\mu$ F	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL				$\tan\delta$	RC	ESR
3900								22x25				0.35	2.1	0.119
4700								22x30	25x25			0.35	2.3	0.099
5600	22x25				0.35	2.2	0.083	22x35	25x35	30x25	35x25	0.35	2.6	0.083
6800	22x30	25x25			0.35	2.45	0.068	22x40	25x35	30x30	35x25	0.35	2.9	0.068
8200	22x35	25x30			0.35	2.75	0.057	22x45	25x35	30x30	35x25	0.35	3.2	0.057
10000	22x40	25x30	30x25		0.35	3.1	0.046	22x50	25x40	30x30	35x25	0.35	3.6	0.046
12000	22x45	25x35	30x30	35x25	0.35	3.4	0.039		25x45	30x35	35x30	0.35	4	0.039
15000		25x40	30x35	35x30	0.35	3.9	0.031			30x40	35x35	0.35	4.6	0.031
18000		25x45	30x40	35x30	0.35	4.3	0.026			30x45	35x40	0.35	5.1	0.026
22000			30x45	35x35	0.35	4.85	0.021				35x45	0.35	5.7	0.021
27000			30x50	35x40	0.35	5.45	0.017				35x50	0.35	6.45	0.017
33000				35x45	0.35	6.15	0.014							

### Case Size & Max Ripple Current / $\tan \delta$ / ESR

CASE SIZE ( $\phi$  DxL(mm)) & MAX DISSIPATION FACTOR ( $\tan\delta / 120\text{Hz}, 20^\circ\text{C}$ ) & MAX PERMISSIBLE RIPPLE CURRENT (RC(mArms) / 120Hz, 85°C) & MAX EQUIVALENT SERIES RESISTANCE (ESR( $\Omega$ ) / 120Hz, 20°C)

WV	50					63									
	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL			$\tan\delta$	RC	ESR		
1800									22x25				0.25	1.8	0.184
2200	22x25				0.3	1.8	0.180	22x30	25x25			0.25	2	0.151	
2700	22x30				0.3	1.95	0.147	22x35	25x30			0.25	2.3	0.123	
3300	22x35	25x25			0.3	2.2	0.120	22x40	25x30	30x25		0.25	2.55	0.101	
3900	22x40	25x30			0.3	2.4	0.102	22x45	25x35	30x30		0.25	2.8	0.085	
4700	22x45	25x35	35x25		0.3	2.7	0.085	22x50	25x40	30x30	35x25	0.25	3.15	0.071	
5600		25x35	30x30	35x25	0.3	3	0.071		25x45	30x35	35x30	0.25	3.5	0.059	
6800		25x40	30x35	35x30	0.3	3.35	0.059		25x50	30x40	35x30	0.25	3.9	0.049	
8200		25x50	30x40	35x30	0.3	3.7	0.049			30x45	35x35	0.25	4.35	0.040	
10000			30x45	35x35	0.3	4.2	0.040			30x50	35x40	0.25	4.9	0.033	
12000			30x50	35x40	0.3	4.65	0.033				30x50	0.25	5.45	0.028	
15000				35x45	0.3	5.3	0.027								
18000				35x50	0.3	5.9	0.022								

WV	80					100									
	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL			$\tan\delta$	RC	ESR		
820									22x25				0.2	1.7	0.324
1000									22x30	25x25			0.2	1.95	0.265
1200	22x25				0.2	1.7	0.221	22x35	25x30			0.2	2.15	0.221	
1500	22x30	25x25			0.2	1.95	0.177	22x40	25x30	30x25		0.2	2.45	0.177	
1800	22x35	25x30			0.2	2.15	0.147	22x45	25x35	30x30		0.2	2.75	0.147	
2200	22x40	25x30	30x25		0.2	2.45	0.121	22x50	25x40	30x30	35x25	0.2	3.05	0.121	
2700	22x45	25x35	30x30		0.2	2.75	0.098		25x45	30x35	35x30	0.2	3.45	0.098	
3000	22x50	25x40	30x30	35x25	0.2	3.1	0.080		25x50	30x40	35x30	0.2	3.9	0.080	
3900		25x45	30x35	35x30	0.2	3.4	0.068			30x45	35x35	0.2	4.3	0.068	
4700		25x50	30x40	35x30	0.2	3.8	0.056				35x40	0.2	4.75	0.056	
5600			30x45	35x35	0.2	4.2	0.047				35x50	0.2	5.3	0.047	
6800			30x50	35x40	0.2	4.7	0.039								
8200				35x50	0.2	5.25	0.032								

**Case Size & Max Ripple Current /  $\tan \delta$  / ESR**

CASE SIZE ( $\phi$  DxL(mm)) & MAX DISSIPATION FACTOR ( $\tan\delta / 120\text{Hz}, 20^\circ\text{C}$ ) & MAX PERMISSIBLE RIPPLE CURRENT (RC(mArms) / 120Hz, 85°C) & MAX EQUIVALENT SERIES RESISTANCE (ESR( $\Omega$ ) / 120Hz, 20°C)

wv	160							180						
SPEC $\mu$ F	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL				$\tan\delta$	RC	ESR
270								22x25				0.15	1.1	0.737
330	22x25				0.15	1.15	0.603	22x30				0.15	1.25	0.603
390	22x30				0.15	1.3	0.510	22x30	25x25			0.15	1.4	0.510
470	22x35	25x25			0.15	1.5	0.423	22x35	25x30			0.15	1.6	0.423
560	22x35	25x30			0.15	1.7	0.355	22x40	25x30	30x25		0.15	1.8	0.355
680	22x40	25x35	30x25		0.15	1.95	0.293	22x45	25x35	30x30		0.15	2.05	0.292
820	22x50	25x35	30x30		0.15	2.15	0.243	22x50	25x40	30x30	35x25	0.15	2.25	0.243
1000		25x40	30x35	35x25	0.15	2.45	0.199		25x45	30x35	35x30	0.15	2.55	0.199
1200		25x50	30x40	35x30	0.15	2.75	0.166			30x40	35x35	0.15	2.85	0.166
1500			30x45	35x35	0.15	3	0.133			30x50	35x40	0.15	3.1	0.130
1800			30x50	35x40	0.15	3.5	0.111				35x45	0.15	3.6	0.111
2200				35x45	0.15	3.9	0.090				35x50	0.15	4	0.090

wv	200							250						
SPEC $\mu$ F	$\phi$ DxL				$\tan\delta$	RC	ESR	$\phi$ DxL				$\tan\delta$	RC	ESR
180								22x25				0.15	1	1.11
220	22x25	22x30			0.15	1	0.905	22x30	22x35			0.15	1.15	0.905
270	22x30	25x25			0.15	1.15	0.737	22x30	25x25			0.15	1.3	0.737
330	22x35	25x25	22x40		0.15	1.3	0.603	22x35	25x30	22x40		0.15	1.45	0.603
390	22x35	25x30	30x25		0.15	1.45	0.510	22x40	25x35	30x25		0.15	1.6	0.510
470	22x40	25x35	30x25	22x40	0.15	1.65	0.423	22x45	25x40	30x30	35x25	0.15	1.8	0.423
560	22x45	25x40	30x30	22x40	0.15	1.85	0.355		25x40	30x35	35x30	0.15	2	0.355
680	22x50	25x40	30x35	35x30	0.15	2.1	0.293		25x50	30x40	35x30	0.15	2.3	0.293
820		25x50	30x40	35x30	0.15	2.3	0.243			30x45	35x35	0.15	2.55	0.243
1000			30x45	35x35	0.15	2.6	0.199			30x50	35x40	0.15	2.9	0.199
1200			30x50	35x40	0.15	2.9	0.166				35x45	0.15	3.25	0.166
1500				35x50	0.15	3.25	0.133							

**Case Size & Max Ripple Current / tan δ / ESR**

CASE SIZE ( φ DxL(mm) ) & MAX DISSIPATION FACTOR (tanδ / 120Hz,20°C) & MAX PERMISSIBLE RIPPLE CURRENT (RC(mArms) / 120Hz,85°C) & MAX EQUIVALENT SERIES RESISTANCE (ESR(Ω) / 120Hz,20°C)

WV SPEC μ F	315							350						
	φ DxL				tanδ	RC	ESR	φ DxL				tanδ	RC	ESR
82								22x25				0.15	0.7	2.43
100	22x25				0.15	0.75	1.99	22x30				0.15	0.8	1.99
120	22x30				0.15	0.8	1.66	22x30	25x25			0.15	0.85	1.66
150	22x30	25x25			0.15	1	1.33	22x35	25x25			0.15	1.05	1.33
180	22x35	25x30			0.15	1.1	1.11	22x40	25x35	30x25		0.15	1.15	1.11
220	22x40	25x30	30x25		0.15	1.25	0.905	22x45	25x35	30x30	35x25	0.15	1.3	0.905
270	22x45	25x35	30x30	35x25	0.15	1.4	0.737		25x45	30x35	35x25	0.15	1.45	0.737
330	22x50	25x40	30x35	35x25	0.15	1.6	0.603		25x50	30x40	35x30	0.15	1.65	0.603
390		25x45	30x35	35x30	0.15	1.75	0.510			30x45	35x35	0.15	1.85	0.510
470			30x40	35x35	0.15	2	0.423			30x50	35x40	0.15	2.1	0.423
560			30x45	35x40	0.15	2.2	0.355				35x45	0.15	2.3	0.355
680				35x45	0.15	2.5	0.293				35x50	0.15	2.6	0.293
820				35x50	0.15	2.8	0.243							

WV SPEC μ F	400							450						
	φ DxL				tanδ	RC	ESR	φ DxL				tanδ	RC	ESR
56								22x25				0.15	0.65	3.56
68	22x25				0.15	0.65	2.93	22x30				0.15	0.75	2.93
82	22x25				0.15	0.75	2.43	22x30	25x25			0.15	0.85	2.43
100	22x30	25x25			0.15	0.85	1.99	22x35	25x30			0.15	0.9	1.99
120	22x35	25x25	18x36		0.15	0.9	1.66	22x40	25x35	30x25		0.15	1.1	1.66
150	22x40	25x30	30x25		0.15	1.1	1.33	22x50	25x40	30x30		0.15	1.2	1.33
180	22x45	25x35	30x30		0.15	1.2	1.11		25x45	30x35	35x25	0.15	1.35	1.11
220	22x50	25x40	30x30	35x25	0.15	1.35	0.905		25x50	30x40	35x30	0.15	1.5	0.905
270		25x45	30x35	35x30	0.15	1.5	0.737			30x45	35x35	0.15	1.7	0.737
330		25x50	30x40	35x35	0.15	1.7	0.603			30x50	35x40	0.15	1.9	0.503
390			30x45	35x35	0.15	1.9	0.510				35x45	0.15	2.1	0.510
470				35x40	0.15	2.1	0.423				35x50	0.15	2.3	0.423
560				35x50	0.15	2.3	0.355							
680				35x50	0.15	2.53	0.292							