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**TW** General Purpose Series

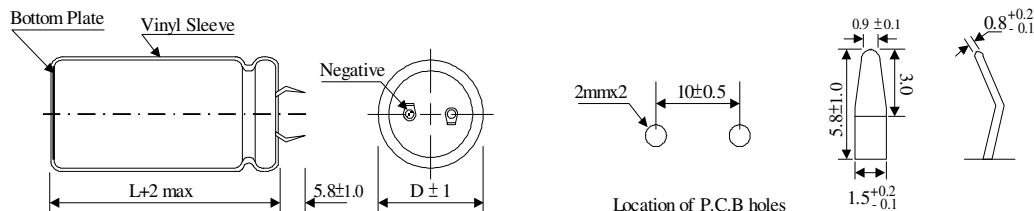
- Endurance : 85°C 2000 hours
- Ideally suitable for using in Switching Power Supplies and other industrial /commercial applications
- Corresponding product to RoHS



**Specifications**

Item	Characteristics							
Operating Temperature Range	-40~+85°C	-25~+85°C						
Rated Voltage Range	6.3 ~ 100VDC	160 ~ 450VDC						
Capacitance Range	820 ~ 120000 $\mu$ F	56 ~ 2200 $\mu$ F						
Capacitance Tolerance	$\pm$ 20 % at 120Hz , 20°C							
Leakage Current (MAX)	I=0.02CV or 3(mA) , whichever is smaller. (After 5 minutes application of rated voltage at 20°C)							
Dissipation Factor (MAX) (tan $\delta$ ) (120Hz ,20°C)	Rated voltage(V)	6.3    10    16    25    35    50    63~100    160~400    450						
	tan $\delta$	0.60    0.55    0.55    0.45    0.35    0.30    0.25    0.15    0.20						
Low Temperature Stability Impedance Ratio (MAX)	Measurement frequency : 120Hz							
	Rated voltage(V)	6.3~16	25	35	50~63	80~100	160~400	450
	Z-25°C / Z+20°C	3	3	3	2	2	4	8
	Z-40°C / Z+20°C	12	10	8	6	5		
Endurance	After applying rated voltage with rated Ripple current for 2000hrs at 85°C, the capacitor shall meet the following requirements.							
	Capacitance Change	Within $\pm$ 20 % of initial value						
	Dissipation Factor	200% or less of initial specified value						
	Leakage Current	initial specified value or less						
Shelf Life	After placed at 85°C without voltage applied for 1000 hours, the capacitor shall meet the same requirement as Endurance.							

**Diagram of Dimensions**



**Multiplier for Ripple Current**

(1) Frequency coefficient

Frequency (Hz)	50	60	120	1K	10K
6.3~100V	0.88	0.90	1.00	1.15	1.16
160~250V	0.75	0.78	1.00	1.16	1.23
350~450V	0.74	0.76	1.00	1.10	1.15

**■ Dimensions, Rated Ripple Current**

Capacitance ( $\mu\text{F}$ )	Rated (Surge) Voltage							
	6.3 (8)		10 (13)		16 (20)		25 (32)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
5600							22x25	2.20
6800							22x30	2.40
							25x25	2.45
8200					22x25	2.60	22x35	2.70
							25x25	2.75
10000					22x30	2.70	22x40	3.10
					25x25	2.75	25x30	3.15
							30x25	3.20
12000			22x25	2.40	22x30	2.90	22x45	3.50
					25x25	2.95	25x35	3.45
							30x30	3.50
							35x25	3.55
15000	22x25	2.44	22x30	2.75	22x35	3.30	22x50	4.00
			25x25	2.75	25x30	3.45	25x40	3.95
					30x25	3.50	30x35	4.00
							35x30	4.05
18000	22x30	2.60	22x35	3.15	22x40	3.70	25x45	4.45
	25x25	2.62	25x25	3.05	25x35	3.75	30x35	4.45
					30x30	3.80	35x30	4.60
22000	22x30	3.06	22x40	3.55	22x50	4.35	30x40	5.20
	25x25	3.07	25x30	3.50	25x40	4.30	35x35	5.15
			30x25	3.55	30x30	4.25	30x45	5.95
					35x25	4.20	35x40	5.90
27000	22x35	3.49	22x45	4.05	25x45	4.70		
	25x30	3.52	25x35	4.00	30x35	4.65	30x50	6.70
	30x25	3.57	30x30	4.05	35x30	4.65	35x45	6.75
33000	22x40	3.97	22x50	4.60	30x40	5.35		
	25x35	4.02	25x40	4.55	35x30	5.40		
	30x30	4.05	30x30	4.50			35x50	7.55
	35x25	4.10	35x25	4.50				
39000	22x50	4.56	25x45	5.10	30x45	6.00		
	25x40	4.50	30x35	5.05	35x35	5.95		
	30x30	4.46	35x30	5.05				
	35x25	4.51						
47000	25x45	5.09	25x50	5.75	30x50	6.80		
	30x35	5.06	30x40	5.70	35x40	6.75		
	35x30	5.03	35x30	5.65				
56000	25x50	5.71	30x45	6.45	35x45	7.60		
	30x40	5.70	35x35	6.40				
	35x30	5.75						
68000	30x45	6.48	30x50	7.05	35x50	8.00		
	35x35	6.42	35x40	7.10				
82000	30x50	7.32	35x50	7.50				
	35x40	7.29						
100000	35x45	8.31						
120000	35x50	8.60						

**■ Dimensions, Rated Ripple Current**

Capacitance ( $\mu\text{F}$ )	Rated (Surge) Voltage							
	35 (44)		50 (63)		63 (79)		80 (100)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
1200							22x25	1.65
1500							22x30	1.90
							25x25	1.90
1800					22x25	1.85	22x35	2.20
							25x30	2.20
							30x25	2.20
2200			22x25	1.90	22x30	2.30	22x40	2.45
					25x25	2.30	25x30	2.45
							30x25	2.50
2700			22x30	2.10	22x35	2.45	22x45	2.80
			25x25	2.20	25x30	2.45	25x35	2.80
					30x25	2.50	30x30	2.85
							35x25	2.85
3300			22x30	2.35	22x40	2.60	22x50	3.15
			25x25	2.35	25x30	2.65	25x40	3.20
					30x25	2.70	30x30	3.20
							35x25	3.20
3900	22x25	2.20	22x35	2.65	22x45	2.95	25x45	3.60
			25x30	2.65	25x35	2.95	30x35	3.60
			30x25	2.65	30x30	3.00	35x30	3.60
4700	22x30	2.40	22x40	3.00	22x50	3.40	25x50	4.05
	25x25	2.40	25x35	3.00	25x40	3.35	30x40	4.05
			30x25	2.95	30x30	3.35	35x35	4.10
					35x25	3.40		
5600	22x35	2.75	22x45	3.35	25x45	3.70	30x45	4.55
	25x25	2.75	25x40	3.35	30x35	3.75	35x35	4.50
			30x30	3.35	35x30	3.75		
			35x25	3.40				
6800	22x40	2.85	22x50	3.80	30x40	4.25	30x50	5.15
	25x30	2.85	25x40	3.80	35x30	4.20	35x40	5.15
	30x25	2.90	30x30	3.80				
			30x35	3.85				
			35x30	3.85				
8200	22x45	3.15	25x50	4.35	30x45	4.80	35x45	5.85
	25x35	3.10	30x40	4.35	35x35	4.80		
	30x30	3.15	35x30	4.40				
10000	22x50	3.55	30x45	5.00	30x50	5.50	35x50	6.60
	25x40	3.50	35x35	4.95	35x40	5.45		
	30x30	3.45						
	35x25	3.40						
12000	25x45	3.95	30x50	5.60	35x45	6.20		
	30x35	4.00	35x40	5.55				
	35x30	4.05						
15000	25x50	4.95	35x45	6.45				
	30x40	4.95						
	35x35	5.00						
18000	30x45	5.50	35x50	6.70				
	35x40	5.55						
22000	30x50	6.00						
	35x45	6.05						
27000	35x50	6.90						

☆ Size: D  $\phi$  x L (mm) ☆ Ripple Current : A/rms. 85°C, 120Hz


**TW**
**General Purpose  
Series**
**■ Dimensions, Rated Ripple Current**

Capacitance ( $\mu$ F)	Rated (Surge) Voltage							
	100 (125)		160 (200)		180 (225)		200 (250)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
180					22x20	1.00	22x25	0.95
220					22x25	1.10	22x25	1.10
270			22x25	1.15	22x25	1.25	22x25	1.25
					25x20	1.25	22x30	1.25
330							25x25	1.25
			22x25	1.40	22x25	1.40	22x25	1.45
			25x20	1.35	22x30	1.40	22x30	1.45
390					25x25	1.40	25x25	1.45
			22x30	1.55	22x30	1.60	22x30	1.60
			25x25	1.55	25x25	1.60	25x25	1.55
470			30x25	1.50				
			22x30	1.75	22x35	1.80	22x35	1.80
			25x25	1.75	25x30	1.80	25x30	1.80
560			30x25	1.70	30x25	1.80	30x25	1.80
			22x30	1.95	22x35	2.00	22x40	2.00
			25x30	1.95	22x40	2.00	25x35	2.00
			30x25	1.90	25x30	1.95	30x25	2.00
680					30x25	2.00		
			22x40	2.20	22x45	2.25	22x45	2.35
			25x30	2.20	25x35	2.20	25x35	2.30
			30x25	2.15	30x30	2.20	30x30	2.30
820					35x25	2.20	35x25	2.30
	22x25	1.85	22x45	2.50	22x50	2.55	25x40	2.60
			25x35	2.55	25x40	2.55	25x45	2.60
			30x30	2.50	30x30	2.60	30x30	2.60
			35x25	2.50	30x35	2.60	30x35	2.60
1000					35x25	2.60	35x30	2.60
	22x30	2.10	22x50	2.85	25x45	2.85	25x45	3.00
	25x25	2.10	25x40	2.80	30x35	2.85	25x50	3.00
			30x35	2.80	35x30	2.90	30x35	3.05
			35x25	2.80			30x40	3.05
1200							35x30	3.00
	22x35	2.40	25x45	3.15	30x40	3.25	25x50	3.30
	25x30	2.45	30x35	3.15	35x30	3.30	30x40	3.30
			35x30	3.20	35x35	3.30	30x45	3.30
							35x30	3.30
1500							35x35	3.30
	22x40	2.70	30x45	3.75	30x45	3.85	30x45	3.80
	25x30	2.75	35x30	3.70	35x35	3.80	30x50	3.80
	30x25	2.75	35x35	3.70	35x40	3.80	35x35	3.80
1800							35x40	3.80
	22x45	3.10	30x50	4.20	35x40	4.30	35x40	4.35
	25x35	3.15	35x40	4.20	35x45	4.30	35x45	4.35
	30x30	3.15						
2200								
2700								
3300								
3900								
4700								
5600								

 ☆ Size: D  $\phi$  x L (mm) ☆ Ripple Current : A/rms. 85°C, 120Hz

**■ Dimensions, Rated Ripple Current**

Capacitance ( $\mu$ F)	Rated (Surge) Voltage							
	250 (300)		350 (400)		400 (450)		450 (500)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
47							22x25	0.50
56					22x20	0.55	22x25	0.65
68			22x20	0.55	22x25	0.60	22x30	0.70
					25x20	0.60	25x25	0.70
82			22x25	0.65	22x25	0.80	22x30	0.80
			25x20	0.65	25x20	0.80	25x25	0.80
100			22x30	0.90	22x30	0.90	22x35	0.95
			25x20	0.90	25x25	0.90	25x30	0.95
							30x25	0.95
120	22x20	0.78	22x30	1.00	22x35	1.05	22x40	1.05
			25x25	1.00	25x25	1.05	25x30	1.05
							30x25	1.05
150	22x25	0.90	22x35	1.15	22x35	1.15	22x45	1.20
			25x30	1.15	25x30	1.15	25x35	1.20
			30x25	1.15	30x25	1.15	30x30	1.20
180	22x25	1.05	22x40	1.30	22x45	1.30	25x40	1.35
	25x20	1.00	25x30	1.25	25x35	1.30	30x35	1.35
			30x25	1.25	30x30	1.35	35x25	1.35
220	22x30	1.15	22x45	1.45	22x50	1.50	25x50	1.55
	22x35	1.15	25x35	1.45	25x40	1.50	30x40	1.55
	25x25	1.15	30x30	1.45	30x30	1.50	35x30	1.55
			35x25	1.45	35x25	1.50		
270	22x30	1.30	25x40	1.65	25x40	1.65	30x45	1.75
	25x25	1.30	30x35	1.65	30x35	1.65	35x35	1.70
			35x25	1.65	35x30	1.65		
330	22x30	1.50	25x50	1.80	25x50	1.90	30x50	2.00
	25x25	1.50	30x40	1.80	30x40	1.90	35x40	2.00
	30x25	1.50	35x30	1.80	35x30	1.85		
390	22x35	1.65	30x40	2.00	30x45	2.15	35x45	2.25
	25x35	1.65	35x30	2.00	35x35	2.10		
	30x25	1.65						
470	22x40	1.85	30x45	2.25	30x50	2.40	35x50	2.50
	25x35	1.85	35x35	2.25	35x40	2.40		
	30x30	1.90						
	35x25	1.90						
560	22x45	2.10	35x40	2.50	35x45	2.70		
	25x40	2.10						
	30x30	2.10						
	35x25	2.10						
680	25x45	2.45	35x45	2.90	35x50	2.90	35x60	2.9
	30x35	2.45						
	35x25	2.45						
820	30x45	2.75						
	35x30	2.75						
1000	30x45	3.30						
	35x35	3.30						
1200	35x40	3.55						
1500	35x45	4.05						

☆ Size: D  $\phi$  x L (mm) ☆ Ripple Current : A/rms. 85°C, 120Hz