

ALUMINUM ELECTROLYTIC CAPACITORS



TW Series

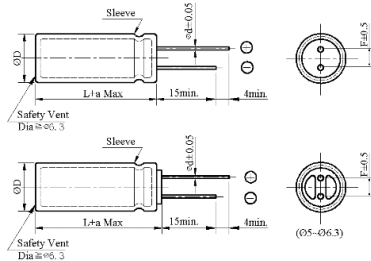
- High temperature 125°C, high reliability
- Load life 2,000 hours at 125°C



◆ SPECIFICATIONS

Item	Performance Characteristics	
Category Temperature Range	-40 ~ +125°C	-25 ~ +125°C
Working Voltage Range	10 ~ 100Vdc	160 ~ 450Vdc
Capacitance Range	4.7 ~ 1000 μF	4.7 ~ 150 μF
Capacitance Tolerance	±20% (at 25°C and 120Hz)	
Dissipation Factor (tanδ) (at 25°C, 120Hz)	Rated Voltage (V)	10 16 25 35 50 63 100 160~250 350~450
	tanδ(Max)	0.20 0.16 0.14 0.12 0.10 0.10 0.09 0.20 0.24
When nominal capacitance exceeds 1,000uF, add 0.02 to the value above for each 1,000uF increase.		
Leakage Current	I=0.01CV or 3μA whichever is greater (10~100V) I=0.03CV + 10μA (160~450V) I : Leakage current (μA) C : Rated capacitance (μF) V : Rated voltage (V) Impress the rated voltage for 2 minutes	
Low Temperature Characteristics Impedance Ratio(MAX)	Rated voltage (V)	10 16 25 35 50 63 100 160~250 350 400~450
	Z(-40°C)/Z(+20°C)	6 4 4 4 4 4 4 — — —
Z(-25°C)/Z(+20°C) — — — — — — — 3 6 6 (at 120Hz)		
Endurance	The following specifications shall be satisfied when the capacitors are restored to 25°C after subjected to DC voltage with the rated ripple current is applied for 2,000 hours at 125°C.	
	Capacitance change	≦ ±25% of the initial value
	Dissipation factor(tanδ)	≦ 200% of the specified value
	Leakage current	≦ specified value
Shelf Life	The following requirements shall be satisfied when the capacitor are restored to 25°C after exposing them for 1,000 hours at 125°C without voltage applied.	
	Capacitance change	≦ ±25% of the initial value
	Dissipation factor(tanδ)	≦ 200% of the specified value
	Leakage current	≦ 200% of the specified value
Others	Conforms to JIS-C-5101-4 (1998)	

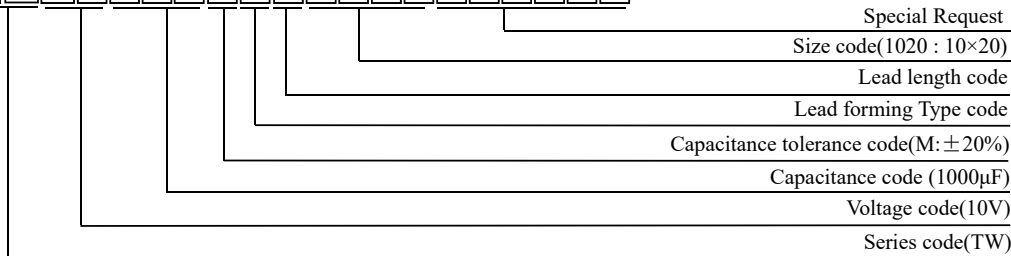
◆ DIMENSIONS (mm)



ΦD	6.3	8	10	12.5	16
ΦD	ΦD + 0.5 Max				
Φd	0.5	0.6	0.6	0.6	0.8
F	2.5	3.5	5.0	5.0	7.5
a	L + 1.5 Max			≦ 35 L + 1.5 Max ≧ 40 L + 2.0 Max	L + 1.5 Max

◆ PART NUMBER SYSTEM (Example : 10V 1000μF)

T W 1 A 1 0 2 M N N 1 0 2 0



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TW Series

◆ STANDARD RATINGS

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 125°C, 120Hz)	Part Number
10 (1A)	47	6.3×11	80	TW1A470MNN6311
	100	6.3×11	105	TW1A101MNN6311
	220	8×11.5	230	TW1A221MNN08B5
	330	10×12.5	310	TW1A331MNN10C5
	470	10×12.5	420	TW1A471MNN10C5
	1000	10×20	760	TW1A102MNN1020
16 (1C)	33	6.3×11	70	TW1C330MNN6311
	47	6.3×11	82	TW1C470MNN6311
	100	8×11.5	146	TW1C101MNN08B5
	220	10×12.5	300	TW1C221MNN10C5
	330	10×12.5	385	TW1C331MNN10C5
	470	10×16	520	TW1C471MNN1016
	1000	12.5×20	800	TW1C102MNN1220
25 (1E)	22	6.3×11	70	TW1E220MNN6311
	33	8×11.5	90	TW1E330MNN08B5
	47	8×11.5	110	TW1E470MNN08B5
	100	8×11.5	220	TW1E101MNN08B5
	220	10×12.5	450	TW1E221MNN10C5
	330	10×16	620	TW1E331MNN1016
	470	10×20	800	TW1E471MNN1020
	1000	12.5×25	900	TW1E102MNN1225
35 (1V)	22	8×11.5	78	TW1V220MNN08B5
	33	8×11.5	105	TW1V330MNN08B5
	47	8×11.5	148	TW1V470MNN08B5
	100	10×12.5	252	TW1V101MNN10C5
	220	10×16	530	TW1V221MNN1016
	330	10×20	710	TW1V331MNN1020
	470	12.5×20	890	TW1V471MNN1220
	1000	16×25	1100	TW1V102MNN1625
50 (1H)	22	8×11.5	150	TW1H220MNN08B5
	33	8×11.5	182	TW1H330MNN08B5
	47	8×15	205	TW1H470MNN0815
	100	10×16	442	TW1H101MNN1016
	220	10×20	690	TW1H221MNN1020
	330	10×25	885	TW1H331MNN1025
	470	12.5×25	1120	TW1H471MNN1225
	1000	16×30	1405	TW1H102MNN1630
100 (2A)	4.7	8×11.5	72	TW2A4R7MNN08B5
	10	8×11.5	120	TW2A100MNN08B5

WV (Vdc)	Cap (μF)	Case Size (mm) ΦD×L	Rated Ripple current (mA rms/ 125°C, 120Hz)	Part Number
100 (2A)	22	10×12.5	200	TW2A220MNN10C5
	33	10×12.5	225	TW2A330MNN10C5
	47	10×16	330	TW2A470MNN1016
	100	12.5×20	550	TW2A101MNN1220
	220	16×25	763	TW2A221MNN1625
	330	16×30	950	TW2A331MNN1630
160 (2C)	22	10×20	120	TW2C220MNN1020
	33	10×25	160	TW2C330MNN1025
	47	12.5×20	195	TW2C470MNN1220
	68	12.5×25	255	TW2C680MNN1225
	100	16×25	345	TW2C101MNN1625
	150	16×30	450	TW2C151MNN1630
	200 (2D)	10	10×20	86
22		10×25	138	TW2D220MNN1025
33		12.5×20	172	TW2D330MNN1220
47		12.5×25	224	TW2D470MNN1225
68		16×20	275	TW2D680MNN1620
100		16×25	360	TW2D101MNN1625
250 (2E)	10	10×20	90	TW2E100MNN1020
	22	12.5×20	140	TW2E220MNN1220
	33	12.5×25	188	TW2E330MNN1225
	47	16×25	250	TW2E470MNN1625
350 (2V)	68	16×30	320	TW2E680MNN1630
	4.7	10×20	58	TW2V4R7MNN1020
	10	10×25	94	TW2V100MNN1025
	22	12.5×25	152	TW2V220MNN1225
	33	16×25	208	TW2V330MNN1625
	47	16×30	265	TW2V470MNN1630
400 (2G)	4.7	10×20	60	TW2G4R7MNN1020
	10	10×25	100	TW2G100MNN1025
	22	12.5×30	163	TW2G220MNN1230
	33	16×25	217	TW2G330MNN1625
	47	16×30	280	TW2G470MNN1630
450 (2W)	4.7	10×25	70	TW2W4R7MNN1025
	10	12.5×20	103	TW2W100MNN1220
	22	16×25	185	TW2W220MNN1625
	33	16×30	245	TW2W330MNN1630

◆ RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

Vdc	Cap(μF)	Frequency (Hz)				
		50/60	120	1K	≥10K	≥50K
10~35	<100	0.75	1.00	1.57	2.00	---
	100~470	0.80	1.00	1.34	1.50	---
	>470	0.85	1.00	1.10	1.15	---
50~100	---	0.95	1.00	1.00	1.08(10K)	1.08

Vdc	Cap(μF)	Frequency (Hz)				
		50/60	120	1K	10K	100K
160~450	4.7~33	0.75	1.00	1.50	1.75	1.80
	47~150	0.80	1.00	1.30	1.40	1.50