

UPM

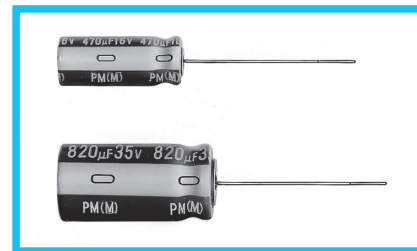
Low Impedance, High Reliability



Low Impedance Long Life

Anti-Solvent
Feature
(Through 100V only)**UPM**

Smaller

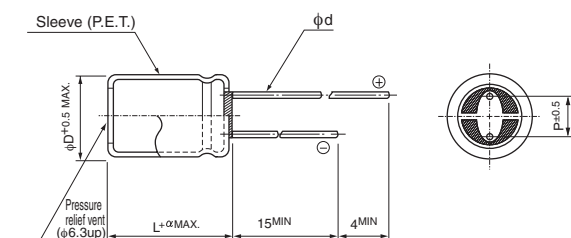
UPW

- High reliability withstanding 5000 hour load life at +105°C (3000/2000 hours for smaller case sizes as specified below).
- Capacitance ranges available based on the numerical values in E12 series under JIS.
- Compliant to the RoHS directive (2011/65/EU).

■ Specifications

Item	Performance Characteristics										
Category Temperature Range	-55 to +105°C (6.3 to 100V), -40 to +105°C (160 to 400V), -25 to +105°C (450V)										
Rated Voltage Range	6.3 to 450V										
Rated Capacitance Range	0.47 to 15000μF										
Capacitance Tolerance	±20% at 120Hz, 20°C										
Leakage Current	Rated Voltage (V)	6.3 to 100					160 to 450				
	Leakage current	After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.					CV ≤ 1000 : I = 0.1CV+40 (μA) max. CV > 1000 : I = 0.04CV+100 (μA) max.				
Tangent of loss angle (tan δ)	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. Measurement frequency : 120Hz at 20°C										
	Rated Voltage (V)	6.3	10	16	25	35	50	63 to 100	160 to 350	400 · 450	
	tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.20	0.25	
Stability at Low Temperature	Rated voltage (V)		6.3 · 10	16	25 · 35	50 to 100	160 · 200	250	315 · 350	400	450
	Impedance ratio (MAX.)	Z-25°C / Z+20°C	—	—	—	—	—	—	—	—	15
		Z-40°C / Z+20°C	—	—	—	—	4	6	8	10	—
		Z-55°C / Z+20°C	4	3	3	2	—	—	—	—	—
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 5000 hours (2000 hours for φD=5 and 6.3, 3000 hours for φD=8) at 105°C, the peak voltage shall not exceed the rated voltage.					Capacitance change		Within ±20% of the initial capacitance value			
						tan δ		200% or less than the initial specified value			
						Leakage current		Less than or equal to the initial specified value			
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the characteristic requirements listed at right.					Capacitance change		Within ±20% of the initial capacitance value			
						tan δ		150% or less than the initial specified value			
						Leakage current		Less than or equal to the initial specified value			
Marking	Printed with white color letter on dark brown sleeve.										

■ Radial Lead Type



α	(φD < 10)	1.5
	(φD ≥ 10)	2.0

	φD	5	6.3	8	10	12.5	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	
φd	0.5	0.5	0.6	0.6	0.6*	0.8	0.8	

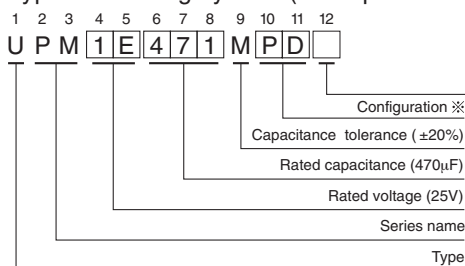
(mm)

● Frequency coefficient of rated ripple current

*In case L > 25 for the φ12.5 dia. unit, lead dia. φd = 0.8mm.

- Please refer to page 20 about the end seal configuration.

Type numbering system (Example : 25V 470µF)

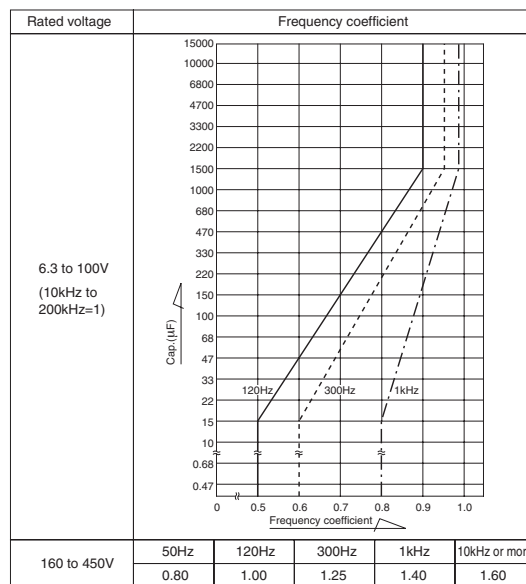


※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
5	DD
6.3	ED
8 · 10	PD
12.5 to 18	HD

Size code

Type	Code
Small Dia	—
Low Profile	6



Please refer to page 20, 21, 22 about the formed or taped product spec.
Please refer to page 4 for the minimum order quantity.

- Dimension table in next page.

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■ Dimensions

φ D × L (mm)

Cap.(μF)	Code	V(Code) Size code		6.3 (0J)		10 (1A)		16 (1C)		25 (1E)		35 (1V)	
		—	6	—	6	—	6	—	6	—	6	—	6
22	220											5 × 11	
27	270											5 × 11	
33	330									5 × 11		6.3 × 11	
39	390									5 × 11		6.3 × 11	
47	470							5 × 11		6.3 × 11		6.3 × 11	
56	560							5 × 11		6.3 × 11		6.3 × 11	
68	680				5 × 11			6.3 × 11		6.3 × 11		6.3 × 15	
82	820				5 × 11			6.3 × 11		6.3 × 11		6.3 × 15	
100	101	5 × 11			6.3 × 11			6.3 × 11		6.3 × 15		8 × 11.5	
120	121	5 × 11			6.3 × 11			6.3 × 11		6.3 × 15		8 × 15	10 × 12.5
150	151	6.3 × 11			6.3 × 11			6.3 × 15		8 × 11.5		8 × 15	10 × 12.5
180	181	6.3 × 11			6.3 × 11			6.3 × 15		8 × 15	10 × 12.5	8 × 20	10 × 15
220	221	6.3 × 11			6.3 × 15			8 × 11.5		8 × 15	10 × 12.5	8 × 20	10 × 15
270	271	6.3 × 15			6.3 × 15			8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15
330	331	6.3 × 15			8 × 11.5			8 × 15	10 × 12.5	8 × 20	10 × 15	10 × 20	12.5 × 15
390	391	8 × 11.5			8 × 15	10 × 12.5		8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 25	12.5 × 15
470	471	8 × 15	10 × 12.5		8 × 15	10 × 12.5		8 × 20	10 × 15	10 × 20	12.5 × 15	10 × 31.5	16 × 15
560	561	8 × 15	10 × 12.5		8 × 20	10 × 15		10 × 20	12.5 × 15	10 × 25	12.5 × 15	12.5 × 20	16 × 15
680	681	8 × 20	10 × 15		8 × 20	10 × 15		10 × 20	12.5 × 15	10 × 31.5	16 × 15	12.5 × 25	18 × 15
820	821	8 × 20	10 × 15		10 × 20	12.5 × 15		10 × 25	12.5 × 15	12.5 × 20	16 × 15	12.5 × 25	18 × 15
1000	102	10 × 20	12.5 × 15		10 × 20	12.5 × 15		10 × 31.5	16 × 15	12.5 × 25	18 × 15	12.5 × 31.5	16 × 20
1200	122	10 × 20	12.5 × 15		10 × 25	12.5 × 15		12.5 × 20	16 × 15	12.5 × 25	18 × 15	12.5 × 35.5	16 × 25
1500	152	10 × 25	12.5 × 15		10 × 31.5	16 × 15		12.5 × 25	18 × 15	12.5 × 31.5	16 × 20	12.5 × 40	18 × 20
1800	182	10 × 31.5	16 × 15		12.5 × 20	16 × 15		12.5 × 31.5	16 × 20	12.5 × 35.5	16 × 25	16 × 31.5	18 × 25
2200	222	10 × 31.5	16 × 15		12.5 × 25	18 × 15		12.5 × 31.5	16 × 20	12.5 × 40	18 × 20	16 × 35.5	18 × 31.5
2700	272	12.5 × 25	18 × 15		12.5 × 31.5	16 × 20		12.5 × 35.5	16 × 25	16 × 31.5	18 × 25	16 × 40	18 × 35.5
3300	332	12.5 × 25	18 × 15		12.5 × 35.5	16 × 20		12.5 × 40	18 × 20	16 × 35.5	18 × 31.5	18 × 40	
3900	392	12.5 × 31.5	16 × 20		12.5 × 40	18 × 20		16 × 31.5	18 × 25	16 × 40	18 × 35.5		
4700	472	12.5 × 35.5	18 × 20		16 × 31.5	18 × 25		16 × 35.5	18 × 31.5	18 × 40			
5600	562	12.5 × 40	18 × 20		16 × 35.5	18 × 25		16 × 40	18 × 35.5				
6800	682	16 × 31.5	18 × 25		16 × 35.5	18 × 31.5		18 × 35.5					
8200	822	16 × 35.5	18 × 31.5		16 × 40	18 × 35.5		18 × 40					
10000	103	16 × 40	18 × 31.5		18 × 40								
12000	123	18 × 35.5											
15000	153	18 × 40											

Cap.(μF)	Code	V(Code) Size code		50 (1H)		63 (1J)		80 (1K)		100 (2A)	
		—	6	—	6	—	6	—	6	—	6
0.47	R47	5 × 11								5 × 11	
0.68	R68	5 × 11								5 × 11	
1	010	5 × 11								5 × 11	
1.5	1R5	5 × 11								5 × 11	
2.2	2R2	5 × 11								5 × 11	
3.3	3R3	5 × 11								5 × 11	
4.7	4R7	5 × 11						5 × 11		6.3 × 11	
6.8	6R8	5 × 11						5 × 11		6.3 × 11	
10	100	5 × 11			5 × 11			6.3 × 11		6.3 × 11	
12	120	5 × 11			5 × 11			6.3 × 11		6.3 × 11	
15	150	5 × 11			6.3 × 11			6.3 × 11		6.3 × 15	
18	180	5 × 11			6.3 × 11			6.3 × 11		6.3 × 15	
22	220	6.3 × 11			6.3 × 11			6.3 × 15		8 × 11.5	
27	270	6.3 × 11			6.3 × 11			6.3 × 15		8 × 15	10 × 12.5
33	330	6.3 × 11			6.3 × 15			8 × 11.5		8 × 15	10 × 12.5
39	390	6.3 × 11			6.3 × 15			8 × 15	10 × 12.5	8 × 20	10 × 15
47	470	6.3 × 15			8 × 11.5			8 × 15	10 × 12.5	10 × 20	12.5 × 15
56	560	6.3 × 15			8 × 15	10 × 12.5		8 × 20	10 × 15	10 × 20	12.5 × 15
68	680	8 × 11.5			8 × 15	10 × 12.5		10 × 20	12.5 × 15	10 × 25	12.5 × 15
82	820	8 × 15	10 × 12.5		8 × 20	10 × 15		10 × 20	12.5 × 15	10 × 31.5	16 × 15
100	101	8 × 20	10 × 15		10 × 20	12.5 × 15		10 × 25	12.5 × 15	10 × 31.5	16 × 15
120	121	8 × 20	10 × 15		10 × 20	12.5 × 15		10 × 31.5	16 × 15	12.5 × 25	16 × 15
150	151	10 × 20	12.5 × 15		10 × 25	12.5 × 15		10 × 31.5	16 × 15	12.5 × 25	18 × 15
180	181	10 × 20	12.5 × 15		10 × 31.5	16 × 15		12.5 × 25	16 × 15	12.5 × 31.5	16 × 20
220	221	10 × 25	12.5 × 15		12.5 × 20	16 × 15		12.5 × 31.5	18 × 15	12.5 × 35.5	16 × 25
270	271	10 × 31.5	16 × 15		12.5 × 25	18 × 15		12.5 × 31.5	16 × 20	12.5 × 40	18 × 20
330	331	10 × 31.5	16 × 15		12.5 × 25	18 × 15		12.5 × 35.5	16 × 25	16 × 31.5	18 × 25
390	391	12.5 × 25	16 × 15		12.5 × 31.5	16 × 20		12.5 × 40	18 × 20	16 × 35.5	18 × 31.5
470	471	12.5 × 25	18 × 15		12.5 × 35.5	16 × 25		16 × 31.5	18 × 25	16 × 40	18 × 35.5
560	561	12.5 × 31.5	16 × 20		12.5 × 40	18 × 20		16 × 35.5	18 × 31.5	18 × 35.5	
680	681	12.5 × 35.5	16 × 20		16 × 31.5	18 × 25		16 × 40	18 × 31.5	18 × 40	
820	821	12.5 × 40	18 × 20		16 × 35.5	18 × 31.5		18 × 35.5			
1000	102	16 × 31.5	18 × 25		16 × 40	18 × 35.5		18 × 40			
1200	122	16 × 35.5	18 × 31.5		18 × 40						
1500	152	16 × 40	18 × 31.5								
1800	182	18 × 35.5									
2200	222	18 × 40									

※In case of low profile type, [6] will be put at 12th digit of type numbering system.

Dimension table for 160 to 450V products are shown in 200 page.

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■ Standard Ratings

V(Code) Size code Item Code Cap.(μF)		6.3 (0J)									
		—					6				
		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
			20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
100	101	5 × 11	0.85	1.70	150	99					
120	121	5 × 11	0.65	1.30	175	115					
150	151	6.3 × 11	0.49	0.98	225	155					
180	181	6.3 × 11	0.39	0.78	250	175					
220	221	6.3 × 11	0.30	0.60	285	205					
270	271	6.3 × 15	0.24	0.48	370	275					
330	331	6.3 × 15	0.20	0.40	405	310					
390	391	8 × 11.5	0.17	0.34	445	345					
470	471	8 × 15	0.14	0.28	550	440	10 × 12.5	0.14	0.28	635	505
560	561	8 × 15	0.12	0.24	595	485	10 × 12.5	0.13	0.26	670	545
680	681	8 × 20	0.10	0.20	730	605	10 × 15	0.11	0.22	825	685
820	821	8 × 20	0.085	0.17	795	675	10 × 15	0.095	0.19	840	715
1000	102	10 × 20	0.075	0.15	950	820	12.5 × 15	0.085	0.17	890	770
1200	122	10 × 20	0.065	0.13	1060	930	12.5 × 15	0.075	0.15	950	835
1500	152	10 × 25	0.055	0.11	1260	1130	12.5 × 15	0.065	0.13	1020	915
1800	182	10 × 31.5	0.050	0.10	1370	1230	16 × 15	0.055	0.11	1270	1140
2200	222	10 × 31.5	0.043	0.086	1470	1320	16 × 15	0.049	0.098	1340	1200
2700	272	12.5 × 25	0.038	0.076	1700	1530	18 × 15	0.044	0.088	1500	1350
3300	332	12.5 × 25	0.034	0.068	1710	1530	18 × 15	0.039	0.078	1600	1440
3900	392	12.5 × 31.5	0.031	0.062	1980	1780	16 × 20	0.036	0.072	1770	1590
4700	472	12.5 × 35.5	0.028	0.056	2230	2000	18 × 20	0.032	0.064	1920	1720
5600	562	12.5 × 40	0.026	0.052	2460	2210	18 × 20	0.030	0.060	1980	1780
6800	682	16 × 31.5	0.024	0.048	2510	2250	18 × 25	0.027	0.054	2350	2110
8200	822	16 × 35.5	0.022	0.044	2770	2490	18 × 31.5	0.025	0.050	2600	2340
10000	103	16 × 40	0.020	0.040	3110	2790	18 × 31.5	0.023	0.046	2720	2440
12000	123	18 × 35.5	0.019	0.038	3050	2740					
15000	153	18 × 40	0.018	0.036	3300	2970					

V(Code) Size code Item Code Cap.(μF)		10 (1A)									
		—					6				
		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
			20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
68	680	5 × 11	0.80	1.60	155	97					
82	820	5 × 11	0.65	1.30	175	110					
100	101	6.3 × 11	0.55	1.10	210	135					
120	121	6.3 × 11	0.44	0.88	235	160					
150	151	6.3 × 11	0.35	0.70	265	185					
180	181	6.3 × 11	0.29	0.58	290	205					
220	221	6.3 × 15	0.24	0.48	370	270					
270	271	6.3 × 15	0.20	0.40	405	300					
330	331	8 × 11.5	0.16	0.32	460	350					
390	391	8 × 15	0.14	0.28	550	430	10 × 12.5	0.15	0.30	635	490
470	471	8 × 15	0.12	0.24	595	475	10 × 12.5	0.13	0.26	670	535
560	561	8 × 20	0.10	0.20	730	595	10 × 15	0.11	0.22	700	570
680	681	8 × 20	0.085	0.17	795	660	10 × 15	0.090	0.18	825	685
820	821	10 × 20	0.070	0.14	985	835	12.5 × 15	0.080	0.16	920	780
1000	102	10 × 20	0.060	0.12	1060	915	12.5 × 15	0.065	0.13	1040	900
1200	122	10 × 25	0.050	0.10	1260	1120	12.5 × 15	0.060	0.12	1060	930
1500	152	10 × 31.5	0.045	0.090	1450	1300	16 × 15	0.050	0.10	1330	1190
1800	182	12.5 × 20	0.039	0.078	1470	1320	16 × 15	0.044	0.088	1420	1270
2200	222	12.5 × 25	0.034	0.068	1710	1530	18 × 15	0.039	0.078	1600	1440
2700	272	12.5 × 31.5	0.030	0.060	1980	1780	16 × 20	0.035	0.070	1740	1560
3300	332	12.5 × 35.5	0.026	0.052	2230	2000	16 × 20	0.031	0.062	1850	1660
3900	392	12.5 × 40	0.024	0.048	2460	2210	18 × 20	0.028	0.056	2050	1840
4700	472	16 × 31.5	0.023	0.046	2420	2170	18 × 25	0.026	0.052	2350	2110
5600	562	16 × 35.5	0.021	0.042	2610	2340	18 × 25	0.024	0.048	2440	2190
6800	682	16 × 35.5	0.020	0.040	2770	2490	18 × 31.5	0.022	0.044	2720	2440
8200	822	16 × 40	0.019	0.038	3110	2790	18 × 35.5	0.021	0.042	3050	2740
10000	103	18 × 40	0.017	0.034	3300	2970					

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

UPM

■ Standard Ratings

Cap.(μF) V(Code) Size Code Item Code		16 (1C)									
		—					6				
		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
			20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
47	470	5 × 11	0.80	1.60	155	92					
56	560	5 × 11	0.65	1.30	175	105					
68	680	6.3 × 11	0.50	1.00	220	135					
82	820	6.3 × 11	0.42	0.84	240	155					
100	101	6.3 × 11	0.35	0.70	265	175					
120	121	6.3 × 11	0.29	0.58	290	195					
150	151	6.3 × 15	0.23	0.46	375	260					
180	181	6.3 × 15	0.20	0.40	405	285					
220	221	8 × 11.5	0.16	0.32	460	335					
270	271	8 × 15	0.14	0.28	550	410	10 × 12.5	0.14	0.28	635	470
330	331	8 × 15	0.12	0.24	595	455	10 × 12.5	0.12	0.24	670	510
390	391	8 × 20	0.10	0.20	730	570	10 × 15	0.10	0.20	730	570
470	471	8 × 20	0.090	0.18	770	615	10 × 15	0.090	0.18	825	660
560	561	10 × 20	0.075	0.15	950	775	12.5 × 15	0.080	0.16	920	750
680	681	10 × 20	0.065	0.13	1060	880	12.5 × 15	0.070	0.14	985	820
820	821	10 × 25	0.055	0.11	1260	1070	12.5 × 15	0.060	0.12	1060	900
1000	102	10 × 31.5	0.047	0.094	1410	1220	16 × 15	0.055	0.11	1270	1100
1200	122	12.5 × 20	0.041	0.082	1430	1250	16 × 15	0.046	0.092	1390	1220
1500	152	12.5 × 25	0.036	0.072	1700	1530	18 × 15	0.041	0.082	1560	1400
1800	182	12.5 × 31.5	0.032	0.064	1880	1690	16 × 20	0.037	0.074	1700	1530
2200	222	12.5 × 31.5	0.028	0.056	2010	1800	16 × 20	0.033	0.066	1800	1620
2700	272	12.5 × 35.5	0.025	0.050	2230	2000	16 × 25	0.030	0.060	2190	1970
3300	332	12.5 × 40	0.023	0.046	2460	2210	18 × 20	0.027	0.054	2090	1880
3900	392	16 × 31.5	0.022	0.044	2510	2250	18 × 25	0.025	0.050	2350	2110
4700	472	16 × 35.5	0.020	0.040	2770	2490	18 × 31.5	0.023	0.046	2720	2440
5600	562	16 × 40	0.019	0.038	3110	2790	18 × 35.5	0.022	0.044	2620	2350
6800	682	18 × 35.5	0.018	0.036	3050	2740					
8200	822	18 × 40	0.017	0.034	3300	2970					

Cap.(μF) V(Code) Size Code Item Code		25 (1E)									
		—					6				
		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
			20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
33	330	5 × 11	0.80	1.60	155	88					
39	390	5 × 11	0.65	1.30	175	100					
47	470	6.3 × 11	0.55	1.10	210	125					
56	560	6.3 × 11	0.44	0.88	235	140					
68	680	6.3 × 11	0.36	0.72	260	160					
82	820	6.3 × 11	0.30	0.60	285	180					
100	101	6.3 × 15	0.24	0.48	370	245					
120	121	6.3 × 15	0.20	0.40	405	275					
150	151	8 × 11.5	0.16	0.32	460	320					
180	181	8 × 15	0.14	0.28	550	390	10 × 12.5	0.15	0.30	635	450
220	221	8 × 15	0.11	0.22	625	455	10 × 12.5	0.13	0.26	670	485
270	271	8 × 20	0.095	0.19	750	560	10 × 15	0.11	0.22	700	525
330	331	8 × 20	0.085	0.17	795	610	10 × 15	0.095	0.19	825	630
390	391	10 × 20	0.070	0.14	985	770	12.5 × 15	0.080	0.16	920	720
470	471	10 × 20	0.065	0.13	1060	845	12.5 × 15	0.070	0.14	985	785
560	561	10 × 25	0.055	0.11	1260	1030	12.5 × 15	0.060	0.12	1060	860
680	681	10 × 31.5	0.046	0.092	1420	1180	16 × 15	0.055	0.11	1270	1050
820	821	12.5 × 20	0.041	0.082	1440	1220	16 × 15	0.049	0.098	1340	1140
1000	102	12.5 × 25	0.036	0.072	1700	1470	18 × 15	0.043	0.086	1520	1310
1200	122	12.5 × 25	0.032	0.064	1760	1550	18 × 15	0.039	0.078	1600	1400
1500	152	12.5 × 31.5	0.029	0.058	1980	1780	16 × 20	0.034	0.068	1770	1590
1800	182	12.5 × 35.5	0.026	0.052	2230	2000	16 × 25	0.031	0.062	2190	1970
2200	222	12.5 × 40	0.024	0.048	2460	2210	18 × 20	0.028	0.056	2050	1840
2700	272	16 × 31.5	0.022	0.044	2510	2250	18 × 25	0.025	0.050	2350	2110
3300	332	16 × 35.5	0.020	0.040	2770	2490	18 × 31.5	0.023	0.046	2720	2440
3900	392	16 × 40	0.019	0.038	3110	2790	18 × 35.5	0.021	0.042	3050	2740
4700	472	18 × 40	0.018	0.036	3300	2970					

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

UPM

■ Standard Ratings

Cap.(μF)		V(Code) Size code		35 (1V)									
		Item	Code	—				6					
				Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
					20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
22	220			5 × 11	0.75	1.50	160	85					
27	270			5 × 11	0.60	1.20	180	99					
33	330			6.3 × 11	0.49	0.98	225	125					
39	390			6.3 × 11	0.41	0.82	245	140					
47	470			6.3 × 11	0.34	0.68	270	160					
56	560			6.3 × 11	0.28	0.56	295	180					
68	680			6.3 × 15	0.24	0.48	370	230					
82	820			6.3 × 15	0.19	0.38	415	265					
100	101			8 × 11.5	0.16	0.32	460	305					
120	121			8 × 15	0.14	0.28	550	370	10 × 12.5	0.15	0.30	635	425
150	151			8 × 15	0.12	0.24	595	415	10 × 12.5	0.12	0.24	680	475
180	181			8 × 20	0.10	0.20	730	520	10 × 15	0.11	0.22	700	500
220	221			8 × 20	0.085	0.17	795	580	10 × 15	0.090	0.18	825	600
270	271			10 × 20	0.070	0.14	985	735	12.5 × 15	0.080	0.16	920	690
330	331			10 × 20	0.060	0.12	1060	810	12.5 × 15	0.065	0.13	1020	780
390	391			10 × 25	0.055	0.11	1260	980	12.5 × 15	0.060	0.12	1060	825
470	471			10 × 31.5	0.046	0.092	1450	1160	16 × 15	0.055	0.11	1270	1010
560	561			12.5 × 20	0.041	0.082	1430	1170	16 × 15	0.048	0.096	1360	1110
680	681			12.5 × 25	0.036	0.072	1700	1410	18 × 15	0.042	0.084	1540	1280
820	821			12.5 × 25	0.032	0.064	1760	1490	18 × 15	0.038	0.076	1620	1380
1000	102			12.5 × 31.5	0.029	0.058	1980	1710	16 × 20	0.034	0.068	1770	1530
1200	122			12.5 × 35.5	0.026	0.052	2230	1960	16 × 25	0.031	0.062	2190	1920
1500	152			12.5 × 40	0.024	0.048	2460	2210	18 × 20	0.028	0.056	2050	1840
1800	182			16 × 31.5	0.022	0.044	2510	2250	18 × 25	0.025	0.050	2350	2110
2200	222			16 × 35.5	0.020	0.040	2770	2490	18 × 31.5	0.023	0.046	2720	2440
2700	272			16 × 40	0.018	0.036	3110	2790	18 × 35.5	0.021	0.042	3050	2740
3300	332			18 × 40	0.017	0.034	3300	2970					

Cap.(μF)		V(Code) Size code		50 (1H)									
		Item	Code	—				6					
				Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)		Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms)	
					20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
0.47	R47			5 × 11	23.0	46.0	22	11					
0.68	R68			5 × 11	16.0	32.0	28	14					
1	010			5 × 11	11.0	22.0	36	18					
1.5	1R5			5 × 11	7.50	15.0	45	22					
2.2	2R2			5 × 11	5.00	10.0	54	27					
3.3	3R3			5 × 11	3.30	6.60	66	33					
4.7	4R7			5 × 11	2.20	4.40	81	40					
6.8	6R8			5 × 11	1.80	3.60	91	45					
10	100			5 × 11	1.40	2.80	115	57					
12	120			5 × 11	1.20	2.40	125	62					
15	150			5 × 11	0.93	1.86	145	72					
18	180			5 × 11	0.80	1.60	165	79					
22	220			6.3 × 11	0.65	1.30	195	100					
27	270			6.3 × 11	0.53	1.06	215	115					
33	330			6.3 × 11	0.43	0.86	240	135					
39	390			6.3 × 11	0.36	0.72	260	150					
47	470			6.3 × 15	0.30	0.60	330	195					
56	560			6.3 × 15	0.25	0.50	360	220					
68	680			8 × 11.5	0.20	0.40	415	260					
82	820			8 × 15	0.17	0.34	505	320	10 × 12.5	0.18	0.36	530	340
100	101			8 × 20	0.14	0.28	620	410	10 × 15	0.16	0.32	580	385
120	121			8 × 20	0.12	0.24	755	510	10 × 15	0.13	0.26	755	510
150	151			10 × 20	0.10	0.20	820	570	12.5 × 15	0.11	0.22	785	545
180	181			10 × 20	0.085	0.17	945	670	12.5 × 15	0.095	0.19	845	605
220	221			10 × 25	0.075	0.15	1150	840	12.5 × 15	0.080	0.16	920	670
270	271			10 × 31.5	0.065	0.13	1200	900	16 × 15	0.070	0.14	1120	840
330	331			10 × 31.5	0.055	0.11	1300	995	16 × 15	0.060	0.12	1210	925
390	391			12.5 × 25	0.048	0.096	1440	1120	16 × 15	0.055	0.11	1270	990
470	471			12.5 × 25	0.044	0.088	1500	1200	18 × 15	0.046	0.092	1470	1170
560	561			12.5 × 31.5	0.040	0.080	1720	1410	16 × 20	0.044	0.088	1550	1270
680	681			12.5 × 35.5	0.036	0.072	1900	1580	16 × 20	0.040	0.080	1630	1350
820	821			12.5 × 40	0.033	0.066	2120	1800	18 × 20	0.036	0.072	1810	1540
1000	102			16 × 31.5	0.030	0.060	2150	1860	18 × 25	0.033	0.066	2020	1750
1200	122			16 × 35.5	0.028	0.056	2320	2040	18 × 31.5	0.031	0.062	2140	1880
1500	152			16 × 40	0.026	0.052	2650	2380	18 × 31.5	0.029	0.058	2340	2100
1800	182			18 × 35.5	0.025	0.050	2620	2350					
2200	222			18 × 40	0.024	0.048	2790	2510					

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

UPM

■ Standard Ratings

Cap.(μF)	Code	Item	63 (1J)									
			—				6					
			Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA rms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA rms)	
				20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
10	100	5 × 11		1.06	2.12	135	67					
12	120	5 × 11		0.93	1.86	145	72					
15	150	6.3 × 11		0.73	1.46	185	92					
18	180	6.3 × 11		0.63	1.26	195	100					
22	220	6.3 × 11		0.52	1.04	215	110					
27	270	6.3 × 11		0.43	0.86	240	130					
33	330	6.3 × 15		0.35	0.70	305	170					
39	390	6.3 × 15		0.30	0.60	330	190					
47	470	8 × 11.5		0.25	0.50	365	215					
56	560	8 × 15		0.21	0.42	450	275	10 × 12.5	0.23	0.46	450	275
68	680	8 × 15		0.17	0.34	500	315	10 × 12.5	0.19	0.38	495	310
82	820	8 × 20		0.15	0.30	600	385	10 × 15	0.16	0.32	580	375
100	101	10 × 20		0.12	0.24	750	495	12.5 × 15	0.14	0.28	695	460
120	121	10 × 20		0.10	0.20	820	555	12.5 × 15	0.12	0.24	750	510
150	151	10 × 25		0.090	0.18	950	665	12.5 × 15	0.095	0.19	845	590
180	181	10 × 31.5		0.075	0.15	1110	790	16 × 15	0.080	0.16	1050	750
220	221	12.5 × 20		0.065	0.13	1140	835	16 × 15	0.070	0.14	1120	820
270	271	12.5 × 25		0.055	0.11	1340	1000	18 × 15	0.060	0.12	1290	965
330	331	12.5 × 25		0.049	0.098	1420	1090	18 × 15	0.050	0.10	1410	1080
390	391	12.5 × 31.5		0.043	0.086	1620	1260	16 × 20	0.047	0.094	1500	1170
470	471	12.5 × 35.5		0.039	0.078	1780	1420	16 × 25	0.042	0.084	1700	1360
560	561	12.5 × 40		0.035	0.070	1950	1590	18 × 20	0.039	0.078	1730	1410
680	681	16 × 31.5		0.032	0.064	2050	1700	18 × 25	0.035	0.070	1940	1610
820	821	16 × 35.5		0.029	0.058	2220	1890	18 × 31.5	0.032	0.064	2110	1790
1000	102	16 × 40		0.027	0.054	2370	2050	18 × 35.5	0.029	0.058	2280	1970
1200	122	18 × 40		0.025	0.050	2510	2210					

Cap.(μF)	Code	Item	80 (1K)									
			—				6					
			Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA rms)		Case size φ D × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA rms)	
				20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	-10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
4.7	4R7	5 × 11		4.20	11.00	53	26					
6.8	6R8	5 × 11		2.60	7.00	68	34					
10	100	6.3 × 11		1.70	4.60	87	43					
12	120	6.3 × 11		1.40	3.80	96	48					
15	150	6.3 × 11		1.20	3.20	104	52					
18	180	6.3 × 11		1.00	2.70	150	78					
22	220	6.3 × 15		0.77	2.10	180	95					
27	270	6.3 × 15		0.63	1.70	220	115					
33	330	8 × 11.5		0.53	1.40	275	150					
39	390	8 × 15		0.46	1.20	300	170	10 × 12.5	0.49	1.30	380	215
47	470	8 × 15		0.39	1.10	360	215	10 × 12.5	0.42	1.10	410	245
56	560	8 × 20		0.34	0.92	490	295	10 × 15	0.36	0.97	500	305
68	680	10 × 20		0.28	0.76	570	355	12.5 × 15	0.31	0.84	520	325
82	820	10 × 20		0.25	0.68	620	395	12.5 × 15	0.27	0.73	560	355
100	101	10 × 25		0.21	0.57	795	525	12.5 × 15	0.23	0.62	605	400
120	121	10 × 31.5		0.18	0.49	870	585	16 × 15	0.20	0.54	663	445
150	151	10 × 31.5		0.15	0.41	955	665	16 × 15	0.18	0.47	699	470
180	181	12.5 × 25		0.13	0.35	1040	735	16 × 15	0.15	0.41	766	545
220	221	12.5 × 31.5		0.12	0.32	1160	845	18 × 15	0.13	0.35	881	645
270	271	12.5 × 31.5		0.10	0.27	1270	945	16 × 20	0.11	0.30	1240	920
330	331	12.5 × 35.5		0.088	0.24	1450	1100	16 × 25	0.099	0.27	1440	1100
390	391	12.5 × 40		0.078	0.21	1610	1250	18 × 20	0.089	0.24	1450	1120
470	471	16 × 31.5		0.069	0.19	1790	1430	18 × 25	0.080	0.22	1650	1320
560	561	16 × 35.5		0.062	0.17	2000	1640	18 × 31.5	0.072	0.19	1750	1430
680	681	16 × 40		0.055	0.15	2200	1830	18 × 31.5	0.065	0.18	1850	1540
820	821	18 × 35.5		0.049	0.13	2250	1910					
1000	102	18 × 40		0.044	0.12	2370	2050					

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

UPM

■ Standard Ratings

Cap.(μF)	V(Code)	Size code	Item	100 (2A)									
				—				6					
				Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mAmps)		Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mAmps)	
					20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz		20°C / 100kHz	−10°C / 100kHz	105°C / 10kHz to 200kHz	105°C / 120Hz
0.47	R47		5 × 11		43.0	116.0	17	8					
0.68	R68		5 × 11		23.0	62.0	23	11					
1	010		5 × 11		17.0	46.0	27	13					
1.5	1R5		5 × 11		10.0	27.0	35	17					
2.2	2R2		5 × 11		6.60	18.0	43	21					
3.3	3R3		5 × 11		4.10	11.0	54	27					
4.7	4R7		6.3 × 11		2.80	7.60	68	34					
6.8	6R8		6.3 × 11		1.90	5.10	83	41					
10	100		6.3 × 11		1.20	3.20	104	52					
12	120		6.3 × 11		1.00	2.70	150	75					
15	150		6.3 × 15		0.81	2.20	180	90					
18	180		6.3 × 15		0.67	1.80	220	110					
22	220		8 × 11.5		0.55	1.50	275	145					
27	270		8 × 15		0.47	1.30	300	160	10 × 12.5	0.50	1.40	380	205
33	330		8 × 15		0.38	1.00	360	200	10 × 12.5	0.42	1.10	410	230
39	390		8 × 20		0.33	0.89	490	280	10 × 15	0.36	0.97	500	285
47	470		10 × 20		0.28	0.76	570	340	12.5 × 15	0.31	0.84	520	310
56	560		10 × 20		0.24	0.65	620	375	12.5 × 15	0.27	0.73	560	340
68	680		10 × 25		0.21	0.57	795	500	12.5 × 15	0.23	0.62	605	380
82	820		10 × 31.5		0.18	0.49	870	555	16 × 15	0.19	0.51	681	435
100	101		10 × 31.5		0.15	0.41	955	635	16 × 15	0.17	0.46	719	475
120	121		12.5 × 25		0.13	0.35	1040	700	16 × 15	0.14	0.38	793	535
150	151		12.5 × 25		0.11	0.30	1120	780	18 × 15	0.12	0.32	917	640
180	181		12.5 × 31.5		0.098	0.26	1270	900	16 × 20	0.11	0.30	1240	880
220	221		12.5 × 35.5		0.087	0.23	1450	1050	16 × 25	0.093	0.25	1440	1050
270	271		12.5 × 40		0.072	0.19	1610	1200	18 × 20	0.080	0.22	1450	1080
330	331		16 × 31.5		0.062	0.17	1790	1370	18 × 25	0.070	0.19	1650	1260
390	391		16 × 35.5		0.053	0.14	2000	1550	18 × 31.5	0.062	0.17	1850	1430
470	471		16 × 40		0.047	0.13	2200	1760	18 × 35.5	0.056	0.15	1970	1570
560	561		18 × 35.5		0.041	0.11	2250	1840					
680	681		18 × 40		0.036	0.097	2300	1910					

※ In case of low profile type, [6] will be put at 12th digit of type numbering system.

Cap.(μF)	V(Code)	160		200		250		315		350		400		450	
		2C		2D		2E		2F		2V		2G		2W	
1	010	8 × 11.5	19	8 × 11.5	19	8 × 11.5	19	8 × 11.5	19	10 × 12.5	21	10 × 12.5	17	10 × 15	17
2.2	2R2	8 × 11.5	30	8 × 11.5	30	10 × 12.5	32	10 × 12.5	32	10 × 15	34	10 × 15	28	10 × 20	28
3.3	3R3	10 × 12.5	50	10 × 12.5	50	10 × 15	52	10 × 15	52	10 × 20	54	10 × 20	47	12.5 × 20	48
4.7	4R7	10 × 12.5	57	10 × 15	60	10 × 15	60	10 × 20	65	10 × 20	65	12.5 × 20	55	12.5 × 25	55
10	100	10 × 15	90	10 × 20	95	12.5 × 20	98	12.5 × 20	98	12.5 × 25	100	12.5 × 25	85	16 × 25	90
22	220	12.5 × 20	140	12.5 × 25	145	16 × 25	150	16 × 25	150	16 × 25	150	16 × 31.5	130	16 × 35.5	135
33	330	12.5 × 25	175	16 × 25	180	16 × 25	180	16 × 31.5	185	16 × 35.5	190	18 × 35.5	170	18 × 40	170
47	470	16 × 25	220	16 × 25	220	16 × 31.5	225	18 × 35.5	235	18 × 40	240			Case size φD × L (mm) ※	
100	101	16 × 35.5	330	18 × 40	345	18 × 40	345								

※ Rated ripple current (mAmps) at 105°C 120Hz