

Distributed by:

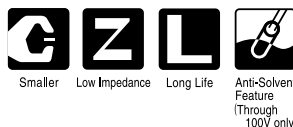
JAMECO[®]
ELECTRONICS

www.Jameco.com ♦ 1-800-831-4242

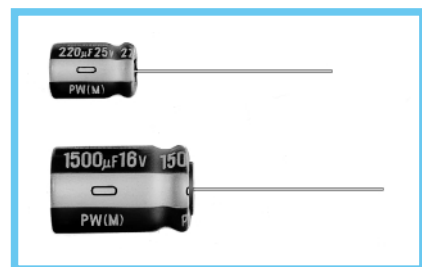
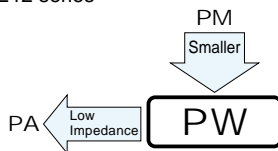
The content and copyrights of the attached
material are the property of its owner.

Jameco Part Number 608391

PW Miniature Sized, Low Impedance,
High Reliability For Switching Power Supplies
series



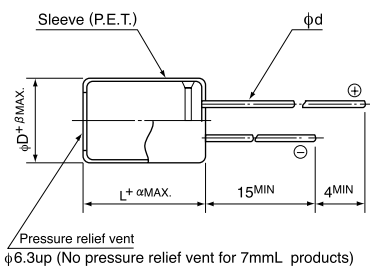
- Smaller case size and lower impedance than PM series.
- Low impedance and high reliability withstanding 2000 hours to 8000 hours.
- Capacitance ranges available based on the numerical values in E12 series under JIS.
- Adapted to the RoHS directive (2002/95/EC).



Specifications

Item	Performance Characteristics
Category Temperature Range	-55 ~ +105°C (6.3 ~ 100V), -40 ~ +105°C (160 ~ 400V), -25 ~ +105°C (450V)
Rated Voltage Range	6.3 ~ 450V
Rated Capacitance Range	0.47 ~ 15000µF
Capacitance Tolerance	±20% at 120Hz, 20°C
Leakage Current	Rated voltage (V)
	Leakage current
tan δ	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz, Temperature : 20°C
	Rated voltage (V)
Stability at Low Temperature	Rated voltage (V)
	Impedance ratio (MAX.)
	Z-25°C / Z+20°C
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 8000 hours (2000 hours for D = 4, 5 and 6.3, 3000 hours for D = 8, 5000 hours for D = 10, 7000 hours for D = 12.5) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristic requirements listed at right.
	Capacitance change
	tan δ
Shelf Life	After storing the capacitors under no load at 105°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above.
	Marking

Radial Lead Type



α	(L = 7) 1.0 (L < 20) 1.5 (L ≥ 20) 2.0	(mm)										
		φD	4	5	6.3	8	10	12.5	16	18	20	22
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5	
φd	0.45	0.5	0.5 (0.45)	0.6	0.6	0.6	0.8	0.8	1.0	1.0	1.0	
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	

※: Applied to L>25 products
(): Applied to 7mmL products

• Please refer to page 21 about the end seal configuration.

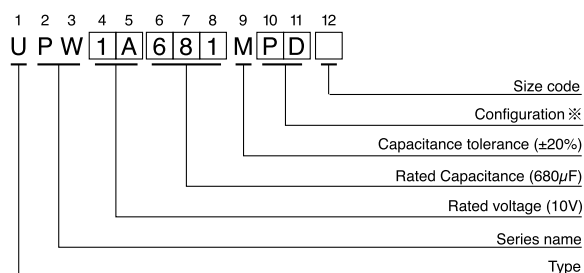
Frequency coefficient of rated ripple current

V	Cap. (µF)	Frequency					
		50Hz	120Hz	300Hz	1kHz	10kHz ~	
6.3 ~ 100	~ 56	0.20	0.30	0.50	0.80	1.00	
	68 ~ 330	0.55	0.65	0.75	0.85	1.00	
	390 ~ 1000	0.70	0.75	0.80	0.90	1.00	
	1200 ~ 15000	0.80	0.85	0.90	0.95	1.00	
160 ~ 450	0.47 ~ 220	0.80	1.00	1.25	1.40	1.60	
	330 ~ 470	0.90	1.00	1.10	1.13	1.15	

Please refer to page 21, 22, 23 about the formed or taped product spec.
Please refer to page 3 for the minimum order quantity.

• Dimension table in next page.

Type numbering system (Example : 10V 680µF)



※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
4 · 5	DD
6.3	ED (7mm L : DD)
8 · 10	PD
12.5 ~ 18	HD
20 ~ 25	RD

Standard ratings

V (Code)		Case size φD × L (mm)	6.3 (0J)			10 (1A)			
Cap.(μF)	Item Code		Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
22	220	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
						▲ 4 × 7	2.00	5.00	65
27	270	4 × 7	2.00	5.00	65				
33	330	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
		▲ 5 × 7	0.95	2.40	120	▲ 5 × 7	0.95	2.40	120
39	390					5 × 7	0.95	2.40	120
47	470	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
		▲ 5 × 7	0.95	2.40	120	▲ 4 × 11	1.30	2.60	120
56	560	5 × 7	0.95	2.40	120				
68	680	4 × 11	1.30	2.60	120				
82	820					5 × 11	0.60	1.20	180
						▲ 6.3 × 7	0.45	1.20	200
100	101	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
						▲ 5 × 15	0.50	1.00	235
120	121	6.3 × 7	0.45	1.20	200				
150	151	6.3 × 11	0.25	0.50	290	6.3 × 11	0.25	0.50	290
		▲ 5 × 15	0.50	1.00	235				
180	181					6.3 × 11	0.25	0.50	290
220	221	6.3 × 11	0.25	0.50	290	6.3 × 11	0.25	0.50	290
						▲ 6.3 × 15	0.23	0.46	430
330	331	6.3 × 11	0.25	0.50	290	8 × 11.5	0.117	0.234	555
		▲ 6.3 × 15	0.23	0.46	430				
470	471	8 × 11.5	0.117	0.234	555	8 × 11.5	0.117	0.234	555
560	561	8 × 11.5	0.117	0.234	555				
680	681	10 × 12.5	0.090	0.18	755	10 × 12.5	0.090	0.18	760
						▲ 8 × 15	0.085	0.17	730
820	821	8 × 15	0.085	0.17	730				
		▲ 10 × 12.5	0.090	0.18	755				
1000	102	10 × 12.5	0.090	0.18	755	10 × 16	0.068	0.136	1050
						▲ 8 × 20	0.065	0.13	995
1200	122	8 × 20	0.065	0.13	995	10 × 20	0.052	0.104	1220
		▲ 10 × 16	0.068	0.136	1050				
1500	152	10 × 20	0.052	0.104	1220	10 × 20	0.052	0.104	1220
						▲ 10 × 25	0.045	0.090	1440
2200	222	12.5 × 20	0.038	0.076	1655	12.5 × 20	0.038	0.076	1655
		▲ 10 × 25	0.045	0.090	1440	▲ 10 × 31.5	0.035	0.070	1815
2700	272	10 × 31.5	0.035	0.070	1815	12.5 × 25	0.030	0.060	1945
3300	332	12.5 × 20	0.038	0.076	1655	12.5 × 25	0.030	0.060	1950
						▲ 12.5 × 31.5	0.025	0.050	2310
3900	392	12.5 × 25	0.030	0.060	1945	12.5 × 35.5	0.022	0.044	2510
						▲ 16 × 20	0.029	0.058	2210
4700	472	16 × 25	0.022	0.044	2555	16 × 25	0.022	0.044	2555
		▲ 12.5 × 31.5	0.025	0.050	2310				
5600	562	12.5 × 35.5	0.022	0.044	2510	16 × 25	0.022	0.044	2560
		▲ 16 × 20	0.029	0.058	2210	▲ 18 × 20	0.028	0.056	2490
6800	682	16 × 25	0.022	0.044	2560	16 × 31.5	0.018	0.036	3010
		▲ 18 × 20	0.028	0.056	2490	▲ 18 × 25	0.020	0.040	2740
8200	822	16 × 31.5	0.018	0.036	3010	16 × 35.5	0.016	0.032	3150
						▲ 18 × 31.5	0.016	0.032	3635
10000	103	16 × 31.5	0.016	0.032	3150	18 × 35.5	0.015	0.030	3680
		▲ 18 × 25	0.020	0.040	2740				
12000	123	18 × 31.5	0.016	0.032	3635				
15000	153	18 × 35.5	0.015	0.030	3680	18 × 40	0.014	0.028	3800

▲ : In this case, [6] will be put at 12th digit of type numbering system.

Standard ratings

V(Code)		16 (1C)				25 (1E)			
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
4.7	4R7					5 × 11	0.60	1.20	180
10	100	5 × 11	0.60	1.20	180	5 × 11 ▲ 4 × 7	0.60 2.00	1.20 5.00	180 65
15	150	4 × 7	2.00	5.00	65				
22	220	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
		▲ 5 × 7	0.95	2.40	120	▲ 5 × 7	0.95	2.40	120
27	270	5 × 7	0.95	2.40	120	4 × 11	1.30	2.60	120
33	330	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
		▲ 6.3 × 7	0.45	1.20	200				
39	390	4 × 11	1.30	2.60	120	5 × 11 ▲ 6.3 × 7	0.60 0.45	1.20 1.20	180 200
47	470	5 × 11	0.60	1.20	180	5 × 11	0.60	1.20	180
56	560	5 × 11 ▲ 6.3 × 7	0.60 0.45	1.20 1.20	180 200	5 × 15	0.50	1.00	235
82	820	5 × 15	0.50	1.00	235	6.3 × 11	0.25	0.50	290
100	101	6.3 × 11	0.25	0.50	290	6.3 × 11	0.25	0.50	290
120	121	6.3 × 11	0.25	0.50	290	6.3 × 15	0.23	0.46	430
150	151	6.3 × 11	0.25	0.50	290	8 × 11.5	0.117	0.234	555
180	181	6.3 × 15	0.23	0.46	430				
220	221	8 × 11.5	0.117	0.234	555	8 × 11.5	0.117	0.234	555
330	331	8 × 11.5	0.117	0.234	555	10 × 12.5 ▲ 8 × 15	0.090 0.085	0.18 0.17	760 730
470	471	10 × 12.5	0.090	0.18	760	10 × 16	0.068	0.136	1050
		▲ 8 × 15	0.085	0.17	730	▲ 8 × 20	0.065	0.13	995
560	561				10 × 20	0.052	0.104	1220	
680	681	10 × 16	0.068	0.136	1050	10 × 20	0.052	0.104	1220
		▲ 8 × 20	0.065	0.13	995				
820	821	10 × 20	0.052	0.104	1220	10 × 25	0.045	0.090	1440
1000	102	10 × 20	0.052	0.104	1220	12.5 × 20 ▲ 10 × 31.5	0.038 0.035	0.076 0.070	1660 1815
1200	122	10 × 25	0.045	0.090	1440				
1500	152	12.5 × 20	0.038	0.076	1655	16 × 25	0.022	0.044	2555
		▲ 10 × 31.5	0.035	0.070	1815	▲ 12.5 × 25	0.030	0.060	1950
1800	182					12.5 × 31.5 ▲ 16 × 20	0.025 0.029	0.050 0.058	2310 2210
2200	222	12.5 × 25	0.030	0.060	1945	16 × 25 ▲ 18 × 20	0.022 0.028	0.044 0.056	2555 2490
						※ 12.5 × 35.5	0.022	0.044	2510
2700	272	12.5 × 31.5	0.025	0.050	2310	16 × 25	0.022	0.044	2555
		▲ 16 × 20	0.029	0.058	2210				
3300	332	16 × 25	0.022	0.044	2555	16 × 31.5	0.018	0.036	3010
		▲ 12.5 × 35.5	0.022	0.044	2510	▲ 18 × 25	0.020	0.040	2740
3900	392	16 × 25	0.022	0.044	2560	16 × 35.5	0.016	0.032	3150
		▲ 18 × 20	0.028	0.056	2490	▲ 18 × 31.5	0.016	0.032	3635
4700	472	16 × 31.5	0.018	0.036	3010	18 × 35.5	0.015	0.030	3680
		▲ 18 × 25	0.020	0.040	2740				
5600	562	16 × 35.5	0.016	0.032	3150				
		▲ 18 × 31.5	0.016	0.032	3635				
6800	682	18 × 35.5	0.015	0.030	3680	18 × 40	0.014	0.028	3800
8200	822	18 × 35.5	0.015	0.030	3680				
10000	103	18 × 40	0.014	0.028	3800				

▲ : In this case, [6] will be put at 12th digit of type numbering system.
 ※ : In this case, [3] will be put at 12th digit of type numbering system.

Standard ratings

Cap.(μ F)	V(Code) Item Code	35 (1V)				50 (1H)			
		Case size ϕ D \times L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size ϕ D \times L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
0.47	R47					5 \times 11	5.00	10.0	25
1	010					5 \times 11	3.50	7.00	40
2.2	2R2					5 \times 11	3.00	6.00	55
3.3	3R3					5 \times 11	2.60	5.20	65
4.7	4R7	5 \times 11	0.60	1.20	180	5 \times 11	2.30	4.60	90
6.8	6R8	4 \times 7	2.00	5.00	65				
10	100	5 \times 11	0.60	1.20	180	5 \times 11	1.40	2.80	120
		▲ 5 \times 7	0.95	2.40	120	▲ 4 \times 11	2.50	5.00	90
12	120	5 \times 7	0.95	2.40	120				
18	180	4 \times 11	1.30	2.60	120	5 \times 11	1.30	2.60	155
22	220	5 \times 11	0.60	1.20	180	5 \times 11	1.20	2.40	170
27	270	5 \times 11	0.60	1.20	180	5 \times 15	0.90	1.80	215
		▲ 6.3 \times 7	0.45	1.20	200				
33	330	5 \times 11	0.60	1.20	180	6.3 \times 11	0.43	0.86	300
39	390	5 \times 15	0.50	1.00	235				
47	470	6.3 \times 11	0.25	0.50	290	6.3 \times 11	0.43	0.86	300
56	560	6.3 \times 11	0.25	0.50	290	6.3 \times 15	0.40	0.80	360
82	820	6.3 \times 15	0.23	0.46	430	8 \times 11.5	0.234	0.468	485
100	101	8 \times 11.5	0.117	0.234	555	8 \times 11.5	0.234	0.468	485
120	121					8 \times 15	0.155	0.31	635
		▲ 10 \times 12.5					0.162	0.324	620
150	151	8 \times 11.5	0.117	0.234	555	10 \times 12.5	0.162	0.324	615
180	181					8 \times 20	0.120	0.240	860
		▲ 10 \times 16					0.119	0.238	850
220	221	10 \times 12.5	0.090	0.18	760	10 \times 16	0.119	0.238	850
		▲ 8 \times 15	0.085	0.17	730	▲ 10 \times 20	0.090	0.18	1030
270	271					10 \times 25	0.082	0.164	1200
330	331	10 \times 16	0.068	0.136	1050	10 \times 20	0.090	0.18	1030
		▲ 8 \times 20	0.065	0.13	995	▲ 10 \times 31.5	0.060	0.12	1610
390	391	10 \times 20	0.052	0.104	1220	12.5 \times 20	0.063	0.126	1480
470	471	10 \times 20	0.052	0.104	1220	12.5 \times 20	0.060	0.12	1500
560	561	10 \times 25	0.045	0.090	1440	12.5 \times 25	0.050	0.10	1832
680	681	12.5 \times 20	0.038	0.076	1660	12.5 \times 25	0.050	0.10	1840
		▲ 10 \times 31.5	0.035	0.070	1815	▲ 16 \times 20	0.048	0.096	1840
820	821					12.5 \times 35.5	0.034	0.068	2290
		▲ 18 \times 20					0.042	0.084	2420
1000	102	12.5 \times 25	0.030	0.060	1950	16 \times 25	0.034	0.068	2235
1200	122	12.5 \times 31.5	0.025	0.050	2310	16 \times 31.5	0.028	0.056	2700
		▲ 16 \times 20	0.029	0.058	2210	▲ 18 \times 25	0.029	0.058	2610
1500	152	16 \times 25	0.022	0.044	2555	16 \times 31.5	0.028	0.056	2700
		▲ 12.5 \times 35.5	0.022	0.044	2510	▲ 16 \times 35.5	0.025	0.050	2790
1800	182	16 \times 25	0.022	0.044	2555	18 \times 31.5	0.025	0.050	3000
		▲ 18 \times 20	0.028	0.056	2490				
2200	222	16 \times 31.5	0.018	0.036	3010	18 \times 35.5	0.023	0.046	3100
		▲ 18 \times 25	0.020	0.040	2740				
2700	272	16 \times 35.5	0.016	0.032	3150				
		▲ 18 \times 31.5	0.016	0.032	3635				
3300	332	18 \times 35.5	0.015	0.030	3680				
4700	472	18 \times 40	0.014	0.028	3800				

▲ : In this case, [6] will be put at 12th digit of type numbering system.

Standard ratings

V(Code)		63 (1J)				100 (2A)				
Cap.(μF)	Code	Item	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mArms) 105°C / 100kHz
				20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
0.47	R47						5 × 11	43.0	86.0	20
1	010						5 × 11	20.0	40.0	30
2.2	2R2						5 × 11	9.80	19.6	44
3.3	3R3						5 × 11	6.60	13.2	58
4.7	4R7		5 × 11	4.70	9.40	68	5 × 11	4.60	9.20	74
6.8	6R8		5 × 11	2.50	5.00	95	5 × 11	3.50	7.00	95
		▲ 4 × 11	3.50	7.00	80					
10	100		5 × 11	2.10	4.20	110	6.3 × 11	1.80	3.60	130
12	120		5 × 11	2.00	4.00	145				
15	150		6.3 × 11	1.20	2.40	160	8 × 11.5	0.83	1.66	180
18	180		5 × 15	1.30	2.60	200	6.3 × 15	0.80	1.60	200
22	220		6.3 × 11	0.71	1.42	250	8 × 11.5	0.68	1.36	230
33	330		6.3 × 11	0.71	1.42	250	10 × 12.5	0.46	0.92	320
		▲ 8 × 15	0.45	0.90	360					
39	390		6.3 × 15	0.70	1.40	330				
47	470		8 × 11.5	0.342	0.684	405	10 × 16	0.37	0.74	420
		▲ 8 × 20	0.37	0.74	420					
68	680		8 × 11.5	0.342	0.684	405	10 × 20	0.30	0.60	490
82	820						10 × 25	0.25	0.50	540
100	101		10 × 12.5	0.256	0.512	540	12.5 × 20	0.18	0.36	580
		▲ 8 × 15	0.23	0.46	535					
120	121		10 × 16	0.194	0.388	600				
150	151		10 × 16	0.194	0.388	660	12.5 × 25	0.13	0.26	710
180	181		10 × 20	0.147	0.294	890	12.5 × 31.5	0.12	0.24	790
		▲ 12.5 × 15	0.15	0.30	1020	▲ 16 × 20	0.13	0.26	750	
220	221		10 × 20	0.147	0.294	885	16 × 25	0.10	0.20	890
		▲ 10 × 25	0.13	0.26	1050	▲ 18 × 20	0.11	0.22	850	
270	271		16 × 15	0.090	0.18	1410				
330	331		12.5 × 20	0.085	0.17	1290	16 × 25	0.090	0.18	1080
390	391		12.5 × 25	0.070	0.14	1720	18 × 25	0.083	0.166	1260
		▲ 18 × 15	0.086	0.172	1690					
470	471		12.5 × 25	0.070	0.14	1720	16 × 31.5	0.076	0.152	1310
		▲ 12.5 × 31.5	0.055	0.11	2090					
560	561		12.5 × 25	0.070	0.14	1720	18 × 31.5	0.068	0.136	1370
		※ 16 × 20	0.059	0.118	1770					
680	681		16 × 25	0.050	0.10	2160	16 × 35.5	0.064	0.128	1410
		▲ 12.5 × 35.5	0.047	0.094	2270					
		※ 18 × 20	0.055	0.11	2290					
820	821		16 × 31.5	0.043	0.086	2670				
		▲ 18 × 25	0.043	0.086	2590					
1000	102		16 × 31.5	0.043	0.086	2770	18 × 40	0.047	0.094	1520
		▲ 16 × 35.5	0.036	0.072	2770					
1200	122		18 × 31.5	0.032	0.064	2950				
1500	152		18 × 35.5	0.030	0.060	3100				
2200	222		18 × 40	0.028	0.056	3200				

▲ : In this case, [6] will be put at 12th digit of type numbering system.

※ : In this case, [3] will be put at 12th digit of type numbering system.

V(Code)		160		200		250		315		350		400		450	
Cap. (μF)	Code	2C		2D		2E		2F		2V		2G		2W	
		0.47	R47	6.3 × 11	12	6.3 × 11	12	6.3 × 11	12	8 × 11.5	11	8 × 11.5	11		
1	010	6.3 × 11	17	6.3 × 11	17	6.3 × 11	17	8 × 11.5	16	10 × 12.5	17	10 × 12.5	16	10 × 12.5	18
2.2	2R2	6.3 × 11	25	6.3 × 11	25	8 × 11.5	29	10 × 12.5	28	10 × 16	31	10 × 16	27	10 × 20	29
3.3	3R3	8 × 11.5	36	8 × 11.5	36	10 × 12.5	42	10 × 12.5	34	10 × 16	38	10 × 20	36	12.5 × 20	41
4.7	4R7	8 × 11.5	43	10 × 12.5	50	10 × 12.5	50	10 × 16	45	10 × 20	49	10 × 20	43	12.5 × 20	49
10	100	10 × 12.5	70	10 × 16	80	10 × 20	88	10 × 20	72	12.5 × 20	82	12.5 × 25	72	16 × 25	75
22	220	10 × 20	130	10 × 20	140	12.5 × 25	155	12.5 × 25	120	16 × 25	130	16 × 25	110	16 × 31.5	115
33	330	12.5 × 20	180	12.5 × 25	190	12.5 × 25	190	16 × 25	155	16 × 31.5	160	16 × 31.5	140	● 18 × 35.5	145
47	470	12.5 × 25	220	12.5 × 25	220	16 × 25	230	16 × 35.5	190	● 18 × 35.5	200	● 18 × 35.5	170	20 × 40	175
100	101	16 × 25	330	16 × 31.5	335	● 18 × 35.5	340	Δ 18 × 40	285	20 × 40	290	22 × 50	350	25 × 50	350
220	221	● 18 × 35.5	500	Δ 18 × 40	515	20 × 40	525	22 × 50	540	25 × 50	550				
330	331	20 × 40	900	22 × 40	1100	22 × 50	1150								
470	471	22 × 50	1200	22 × 50	1310	25 × 50	1350								

※ Rated Ripple (mArms) at 105°C 120Hz
 Size 20 × 31 is available for capacitors marked " ● "
 Size 20 × 35 is available for capacitors marked " Δ "
 In this case, [6] will be put at 12th digit of type numbering system.