

PA

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



Smaller



Low Impedance



Long Life

Anti-Solvent
Feature

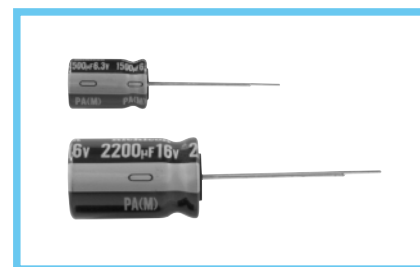
NEW

- Lower impedance than PW series.
- Smaller case size and high ripple current.
- Adapted to the RoHS directive (2002/95/EC).

PA

Low
Impedance

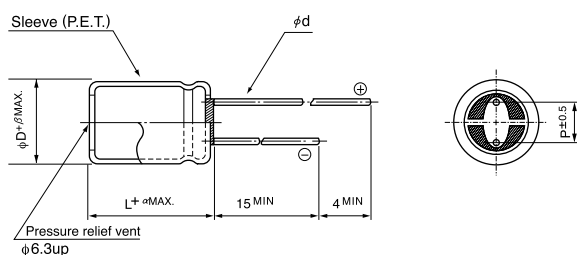
PW



Specifications

Item	Performance Characteristics						
Category Temperature Range	-55 ~ +105°C						
Rated Voltage Range	6.3 ~ 35V						
Rated Capacitance Range	180 ~ 10000μF						
Capacitance Tolerance	± 20% at 120Hz, 20°C						
Leakage Current	After 1 minutes' application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.						
tan δ	Rated voltage (V)	6.3	10	16	25	35	120Hz 20°C
	tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	
	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.						
Stability at Low Temperature	Rated voltage (V)	6.3	10	16	25	35	120Hz
	Impedance ratio ZT / Z20 (MAX.)	Z-55°C / Z+20°C	3	3	3	3	
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 5000 hours (3000 hours for D = 8, 4000 hours for D = 10) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristic requirements listed below.						
	Capacitance change	Within ± 20% of initial value (6.3V, 10V : ± 30%)					
	tan δ	200% or less of initial specified value (6.3V, 10V : 300%)					
	Leakage current	Initial specified value or less					
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	Printed with white color letter on dark brown sleeve.						

Radial Lead Type

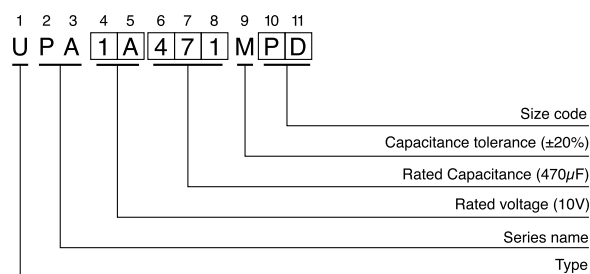


α	(L < 20) 1.5 (L ≥ 20) 2.0
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	φD	8	10	12.5	16	18
P	3.5	5.0	5.0	7.5	7.5	
φd	0.6	0.6	*0.6	0.8	0.8	
β	0.5	0.5	0.5	0.5	0.5	

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

Type numbering system (Example : 10V 470µF)



※ Configuration

φD	Pb-free leadwire Pb-free PET sleeve
8-10	PD
12.5~18	HD

Frequency coefficient of rated ripple current

Cap. (µF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz~
180 ~ 330		0.55	0.65	0.75	0.85	1.00
390 ~ 1000		0.70	0.75	0.80	0.90	1.00
1200 ~ 10000		0.80	0.85	0.90	0.95	1.00

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

Please refer to page 20, 21 about the formed or taped product spec.
Please refer to page 3 for the minimum order quantity.

• Dimension table in next page.

■ Standard ratings

V (Code) Cap. (μF) Item Code		6.3 (0J)				10 (1A)				16 (1C)			
		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	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			20°C / 100kHz	-10°C / 100kHz	
330	331									8 × 11.5	0.09	0.18	630
390	391									8 × 11.5	0.09	0.18	630
470	471					8 × 11.5	0.09	0.18	630	10 × 12.5	0.063	0.126	900
560	561	8 × 11.5	0.09	0.18	630	8 × 11.5	0.09	0.18	630				
680	681	8 × 11.5	0.09	0.18	630					8 × 15	0.062	0.124	860
										▲10 × 12.5	0.063	0.126	900
820	821					8 × 15	0.062	0.124	860	8 × 20	0.044	0.088	1220
						▲10 × 12.5	0.063	0.126	900	▲10 × 16	0.049	0.098	1240
1000	102	8 × 15	0.062	0.124	860	8 × 20	0.044	0.088	1220	10 × 16	0.049	0.098	1240
		▲10 × 12.5	0.063	0.126	900	▲10 × 12.5	0.063	0.126	900				
						●10 × 16	0.049	0.098	1240	●10 × 20	0.035	0.07	1490
1200	122	10 × 12.5	0.063	0.126	900	8 × 20	0.044	0.088	1220	10 × 20	0.035	0.07	1490
		●10 × 16	0.049	0.098	1240	▲10 × 16	0.049	0.098	1240				
1500	152	8 × 20	0.044	0.088	1220					10 × 25	0.033	0.066	1680
		▲10 × 16	0.049	0.098	1240	10 × 20	0.035	0.07	1490				
		●10 × 20	0.035	0.07	1490								
1800	182					10 × 20	0.035	0.07	1490				
						▲10 × 25	0.033	0.066	1680				
2200	222	10 × 20	0.035	0.07	1490	10 × 25	0.033	0.066	1680	12.5 × 20	0.029	0.058	1890
		●10 × 25	0.033	0.066	1680	●12.5 × 20	0.029	0.058	1890	●12.5 × 25	0.022	0.044	2280
2700	272	10 × 25	0.033	0.066	1680	12.5 × 20	0.029	0.058	1890	12.5 × 25	0.022	0.044	2280
3300	332	12.5 × 20	0.029	0.058	1890	12.5 × 25	0.022	0.044	2280	12.5 × 31.5	0.018	0.036	2720
										▲16 × 20	0.026	0.052	2330
3900	392	12.5 × 25	0.022	0.044	2280	12.5 × 25	0.022	0.044	2280	12.5 × 35.5	0.016	0.032	2940
4700	472	12.5 × 25	0.022	0.044	2280	12.5 × 31.5	0.018	0.036	2720	16 × 25	0.019	0.038	2760
						▲16 × 20	0.026	0.052	2330	▲18 × 20	0.025	0.05	2640
5600	562	12.5 × 31.5	0.018	0.036	2720					16 × 31.5	0.017	0.035	2810
		▲16 × 20	0.026	0.052	2330	12.5 × 35.5	0.016	0.032	2940	▲18 × 25	0.018	0.036	2850
6800	682	12.5 × 35.5	0.016	0.032	2940	16 × 25	0.019	0.038	2760	18 × 25	0.018	0.036	2850
8200	822	16 × 25	0.019	0.038	2760	16 × 31.5	0.017	0.034	2810				
		▲18 × 20	0.025	0.05	2640	▲18 × 25	0.018	0.036	2850				
10000	103	16 × 31.5	0.017	0.034	2810								
		▲18 × 25	0.018	0.036	2850								

V (Code) Cap. (μF) Item Code		25 (1E)				35 (1V)			
		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	
180	181					8 × 11.5	0.09	0.18	630
270	271	8 × 11.5	0.09	0.18	630	8 × 15	0.062	0.124	860
						▲10 × 12.5	0.063	0.126	900
330	331	8 × 11.5	0.09	0.18	630				
390	391	8 × 15	0.062	0.124	860	8 × 20	0.044	0.088	1220
						▲10 × 16	0.049	0.098	1240
470	471	8 × 15	0.062	0.124	860				
		▲10 × 12.5	0.063	0.126	900				
560	561	8 × 20	0.044	0.088	1220	10 × 20	0.035	0.07	1490
		▲10 × 16	0.049	0.098	1240				
680	681	10 × 16	0.049	0.098	1240	10 × 25	0.033	0.066	1680
820	821	10 × 20	0.035	0.07	1490	12.5 × 20	0.029	0.058	1890
1000	102	10 × 25	0.033	0.066	1680	12.5 × 20	0.029	0.058	1890
		●12.5 × 20	0.029	0.058	1890				
1200	122	12.5 × 20	0.029	0.058	1890	12.5 × 25	0.022	0.044	2280
1500	152					12.5 × 31.5	0.018	0.036	2720
						▲16 × 20	0.026	0.052	2330
1800	182	12.5 × 25	0.022	0.044	2280	12.5 × 35.5	0.016	0.032	2940
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2200	222	12.5 × 31.5	0.018	0.036	2720	16 × 25	0.019	0.038	2760
		▲16 × 20	0.026	0.052	2330	▲18 × 20	0.025	0.05	2640
2700	272	12.5 × 35.5	0.016	0.032	2940	16 × 31.5	0.017	0.035	2810
						▲18 × 25	0.018	0.036	2850
3300	332	16 × 25	0.019	0.038	2760	18 × 31.5	0.016	0.032	2910
		▲18 × 20	0.025	0.05	2640				
4700	472	18 × 25	0.018	0.036	2850				

▲ : 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.