



Miniature Sized, Low Impedance,
For Switching Power Supplies
series



Smaller

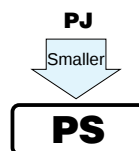


Low Impedance



Anti-Solvent
Feature
(Through 100V only)

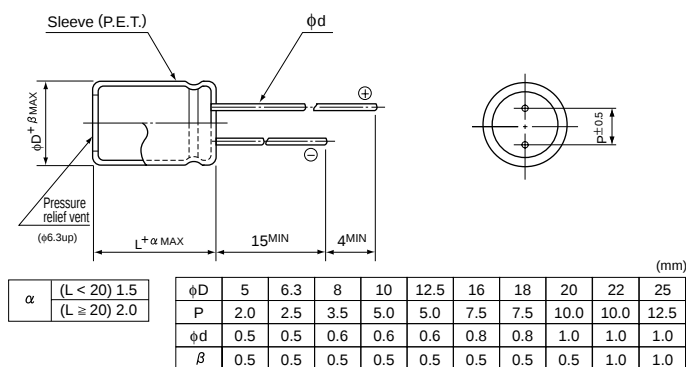
- Wide temperature range type, miniature sized.
- Adapted to the RoHS directive (2002/95/EC).



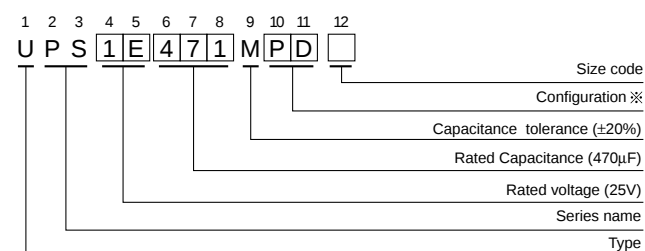
Specifications

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)	6.3 ~ 100						160 ~ 450					
	Leakage current	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA) , whichever is greater.						CV ≤ 1000: I= 0.1CV+40 (μA)max. (1 minute's) CV > 1000: I= 0.04CV+100 (μA)max. (1 minute's)					
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)	6.3	10	16	25	35	50	63	100	160 ~ 250	315 ~ 350	400 ~ 450	
	tan δ (MAX.)	0.24	0.20	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20	0.25	
Stability at Low Temperature	Measurement frequency : 120Hz												
	Rated voltage (V)	6.3 · 10	16 · 25	35 · 50	63 · 100	160 · 200	250	315 · 350	400	450			
	Impedance ratio	Z-25°C / Z+20°C	—	—	—	2	3	3	4	6	15		
		Z-40°C / Z+20°C	—	—	—	3	4	6	8	10	—		
	Z-55°C / Z+20°C	5	4	3	—	—	—	—	—	—			
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 3000 hours (2000 hours for D = 5 ~ 10) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristic requirements listed at right.						Capacitance change		Within ±20% of initial value				
							tan δ		200% or less of initial specified value				
							Leakage current		Initial specified value or less				
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for endurance characteristics listed above.												
Marking	Printed with white color letter on dark brown sleeve.												

Radial Lead Type



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 ~ 18	HD
20 ~ 25	RD

Frequency coefficient of rated ripple current

V	Cap.(μF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz ~
6.3 ~ 100	~ 47	—	—	0.17	0.40	0.65	1.00
	100 ~ 220	0.30	0.50	0.65	0.80	1.00	1.00
	330 ~ 680	0.57	0.71	0.82	0.90	1.00	1.00
	1000 ~ 15000	0.75	0.87	0.96	0.98	1.00	1.00
160 ~ 450	0.47 ~ 220	0.80	1.00	1.25	1.40	1.60	1.60
	330 ~ 470	0.90	1.00	1.10	1.13	1.15	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 pages.

■ Standard ratings

V (Code) Cap. (μF) Code		6.3 (0J)			10 (1A)			16 (1C)			25 (1E)		
		Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz
4.7	4R7										5 × 11	1.50	160
10	100							5 × 11	1.50	160	5 × 11	1.50	160
22	220	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160
33	330	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160
47	470	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160	5 × 11	1.50	160
100	101	5 × 11	1.50	160	5 × 11	1.50	160	6.3 × 11	0.50	250	6.3 × 11	0.50	250
150	151	6.3 × 11	0.50	250	6.3 × 11	0.50	250	6.3 × 11	0.50	250	8 × 11.5	0.28	410
220	221	6.3 × 11	0.50	250	6.3 × 11	0.50	250	8 × 11.5	0.28	410	8 × 11.5	0.28	410
330	331	6.3 × 11	0.50	250	8 × 11.5	0.28	410	8 × 11.5	0.28	410	10 × 12.5	0.19	600
470	471	8 × 11.5	0.28	410	8 × 11.5	0.28	410	10 × 12.5	0.19	600	10 × 16	0.14	800
680	681	10 × 12.5	0.19	600	10 × 12.5	0.19	600	10 × 16	0.14	800	10 × 20	0.11	1000
1000	102	10 × 12.5	0.19	600	10 × 16	0.14	800	10 × 20	0.11	1000	12.5 × 20	0.075	1250
1500	152	10 × 20	0.11	1000	10 × 20	0.11	1000	12.5 × 20	0.075	1250	16 × 25	0.038	1900
2200	222	12.5 × 20	0.075	1250	12.5 × 20	0.075	1250	12.5 × 25	0.057	1550	16 × 25	0.038	1900
3300	332	12.5 × 20	0.075	1250	12.5 × 25	0.057	1550	16 × 25	0.038	1900	16 × 31.5	0.033	2350
4700	472	16 × 25	0.038	1900	16 × 25	0.038	1900	16 × 31.5	0.033	2350	18 × 35.5	0.030	2700
6800	682	16 × 25	0.038	1900	16 × 31.5	0.033	2350	18 × 35.5	0.030	2700	18 × 40	0.027	3300
10000	103	16 × 31.5	0.033	2350	18 × 35.5	0.030	2700	18 × 40	0.027	3300			
15000	153	18 × 35.5	0.030	2700	18 × 40	0.027	3300						

V (Code) Cap. (μF) Code		35 (1V)			50 (1H)			63 (1J)			100 (2A)		
		Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX. 20°C 100kHz	Rated ripple (mA rms) 105°C 100kHz
0.47	R47				5 × 11	7.50	25				5 × 11	43.0	20
1	010				5 × 11	5.30	40				5 × 11	20.0	30
2.2	2R2				5 × 11	4.50	55				5 × 11	9.80	44
3.3	3R3				5 × 11	3.90	65				5 × 11	6.60	58
4.7	4R7	5 × 11	1.50	160	5 × 11	3.50	90	5 × 11	4.70	68	5 × 11	4.60	74
10	100	5 × 11	1.50	160	5 × 11	2.10	120	5 × 11	2.10	110	6.3 × 11	1.80	130
22	220	5 × 11	1.50	160	5 × 11	1.80	150	6.3 × 11	0.98	180	8 × 11.5	0.68	230
33	330	5 × 11	1.50	160	6.3 × 11	0.65	250	6.3 × 11	0.71	220	10 × 12.5	0.46	320
47	470	6.3 × 11	0.50	250	6.3 × 11	0.65	250	8 × 11.5	0.65	310	10 × 16	0.37	420
100	101	8 × 11.5	0.28	410	8 × 11.5	0.36	340	10 × 12.5	0.31	390	12.5 × 20	0.18	580
150	151	8 × 11.5	0.28	410	10 × 12.5	0.26	490	10 × 16	0.25	440	12.5 × 25	0.13	710
220	221	10 × 12.5	0.19	600	10 × 16	0.18	650	10 × 20	0.20	700	16 × 25	0.10	890
330	331	10 × 16	0.14	800	10 × 20	0.15	810	12.5 × 20	0.12	980	16 × 25	0.090	1080
470	471	10 × 20	0.11	1000	12.5 × 20	0.13	1100	12.5 × 25	0.081	1200	16 × 31.5	0.076	1310
680	681	12.5 × 20	0.075	1250	12.5 × 25	0.10	1200	16 × 25	0.058	1300	16 × 35.5	0.064	1410
1000	102	12.5 × 25	0.057	1550	16 × 25	0.058	1600	16 × 31.5	0.049	1380	18 × 40	0.047	1520
1500	152	16 × 25	0.038	1900	16 × 31.5	0.040	2000	18 × 35.5	0.038	1750			
2200	222	16 × 31.5	0.033	2350	18 × 35.5	0.035	2300	18 × 40	0.032	2120			
3300	332	18 × 35.5	0.030	2700									
4700	472	18 × 40	0.027	3300									

φD × L (mm)

V Cap. (μF) Code		160 2C		200 2D		250 2E		315 2F		350 2V		400 2G		450 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	Δ18 × 40	285	20 × 40	290	22 × 50	350	25 × 50	350
220	221	•18 × 35.5	500	Δ18 × 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 (mA rms) at 105°C 120Hz

Size φ20×31 is available for capacitors marked "•"

Size φ20×35 is available for capacitors marked "Δ"

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