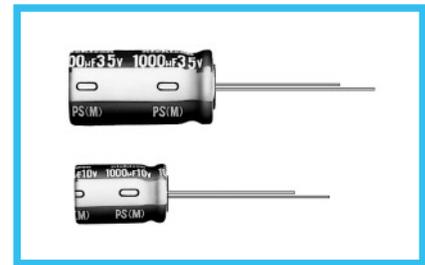
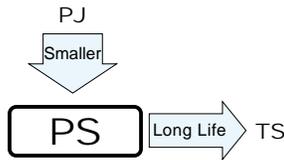


**PS** Miniature Sized, Low Impedance, For Switching Power Supplies series



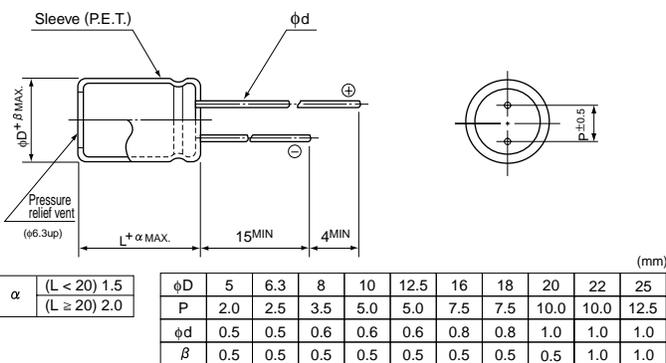
- Wide temperature range type, miniature sized.
- Compliant to the RoHS directive (2002/95/EC).



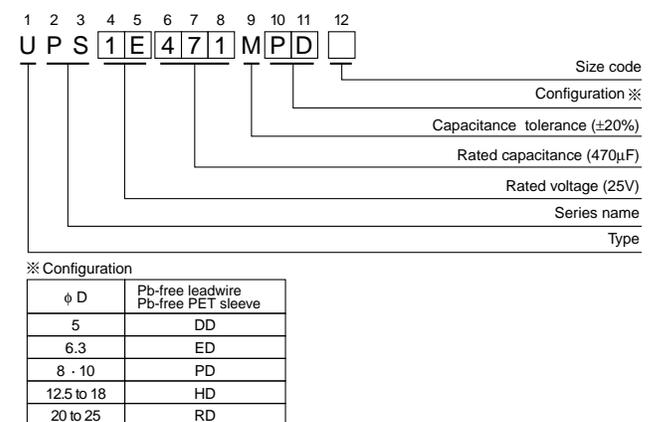
## Specifications

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
	Leakage current After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (µA), whichever is greater.
Tangent of loss angle (tan δ)	160 to 450
	CV ≤ 1000: I= 0.1CV+40 (µA)max. (1 minute's) CV > 1000: I= 0.04CV+100 (µA)max. (1 minute's)
Stability at Low Temperature	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF
	Measurement frequency : 120Hz, Temperature : 20°C
Endurance	Rated voltage (V) 6.3 10 16 25 35 50 63 100 160 to 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
Shelf Life	Measurement frequency : 120Hz
	Rated voltage (V) 6.3 · 10 16 · 25 35 · 50 63 · 100 160 · 200 250 315 · 350 400 450
Marking	Impedance ratio (MAX.)
	Z-25°C / Z+20°C — — — 2 3 3 4 6 8 10 — Z-40°C / Z+20°C — — — 3 4 6 8 10 — Z-55°C / Z+20°C 5 4 3 — — — — — — —
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 3000 hours (2000 hours for φD= 5 to 10) at 105°C, the peak voltage shall not exceed the rated voltage.
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 specified values for the endurance characteristics listed above.
Marking	Printed with white color letter on dark brown sleeve.

## Radial Lead Type



## Type numbering system (Example : 25V 470µF)



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

## Frequency coefficient of rated ripple current

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

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 pages.

## Standard Ratings

V (Code)		6.3 (0J)			10 (1A)			16 (1C)			25 (1E)			
Cap. (μF)	Code	Item	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple
			φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 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)		35 (1V)			50 (1H)			63 (1J)			100 (2A)			
Cap. (μF)	Code	Item	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple	Case size	Impedance	Rated ripple
			φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 105°C/100kHz	φD × L (mm)	(Ω) MAX. 20°C/100kHz	(mArms) 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									

V		160		200		250		315		350		400		450	
Cap. (μF)	Code	2C		2D		2E		2F		2V		2G		2W	
		φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)	φD × L (mm)	Rated ripple (mArms)
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 current (mArms) 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.

CAT.8100Z