

PR

Standard, For Switching Power Supplies

series

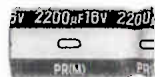
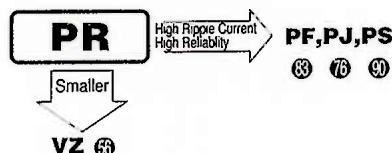


Smaller

Low Impedance

Anti-Solvent!
Feature
(Through 100V only)

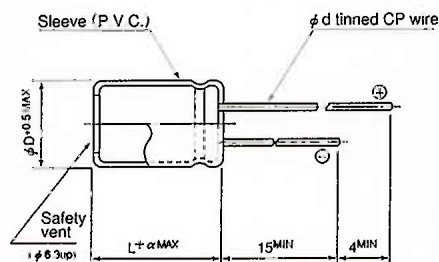
- Same case sizes as VX series, but operating at higher temperature range up to +105°C.
- Designed specifically for use in switching power supplies.



■ Specifications

Item		Performance Characteristics										
Operating Temperature Range		-55~+105°C (6.3~100V), -40~+105°C (160~400V), -25 ~+105°C (450V)										
Voltage Range		6.3~450V										
Capacitance Range		0.47~22000 μF										
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. After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (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 1000 μF, add 0.02 for every increase of 1000 μF 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)	0.26	0.22	0.18	0.16	0.13	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	25~100	160~200	250	315~350	400	450	
	Impedance ratio ZT/Z20 (MAX)	Z-25°C/Z+20°C	4	3	2	2	3	3	4	6	15	
Load Life	After an application of D.C. bias voltage plus the rated ripple current for 2000 hours (1000 hours for D=8 or less) at 105°C the peak voltage shall not exceed the rated D.C. voltage, the capacitors meet the characteristic requirements shown on the right.											
	Capacitance change		Within ±20% of initial value									
	tan δ		200% or less of initial specified value									
Shelf Life	Leakage current		Initial specified value or less									
	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above.											
Marking		Printed with white color letter on dark brown sleeve.										
Applicable Standards		JIS C 5141 and JIS C 5102										

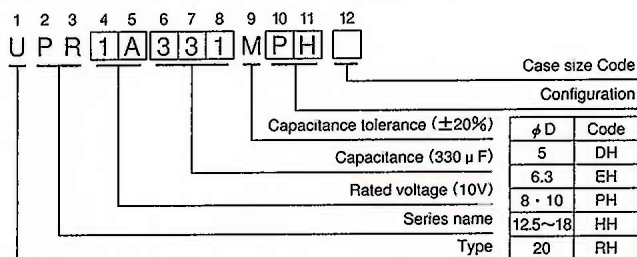
■ Radial Lead Type



ϕD	5	6.3	8	10	12.5	16	18	20
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0
ϕd	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0

α	$(L < 20)$ 1.5
	$(L \geq 20)$ 2.0

Type numbering system (Example : 10V 330 μ F)



Please refer to page 17, 18, 19 about the formed or taped product spec.
Please refer to page 3 for the minimum order quantity.

- Dimension table in next page

PR series

■ Standard ratings

V(Code)		6.3 (0J)			10 (1A)			16 (1C)			25 (1E)			
Cap (μF)	Code	Item	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple
4.7	4R7											5×11	5.00	24
10	100								5×11	2.80	35	5×11	2.80	39
22	220		5×11	2.40	34	5×11	2.40	45	5×11	2.40	55	5×11	2.40	60
33	330		5×11	2.30	50	5×11	2.30	60	5×11	2.30	70	5×11	2.20	75
47	470		5×11	2.10	65	5×11	2.10	75	5×11	1.80	85	5×11	1.60	90
100	101		5×11	1.90	100	5×11	1.80	110	6.3×11	0.80	135	6.3×11	0.62	145
220	221		6.3×11	0.67	165	6.3×11	0.58	180	8×11.5	0.36	235	8×11.5	0.35	250
330	331		6.3×11	0.48	200	8×11.5	0.36	255	8×11.5	0.32	285	10×12.5	0.22	355
470	471		8×11.5	0.31	280	8×11.5	0.26	305	10×12.5	0.20	395	10×16	0.16	470
1000	102		10×12.5	0.22	470	10×16	0.14	570	10×20	0.12	700	12.5×20	0.10	855
2200	222		12.5×20	0.096	930	12.5×20	0.090	1010	12.5×25	0.067	1150	16×25	0.053	1230
3300	332		12.5×20	0.090	1100	12.5×25	0.074	1220	16×25	0.052	1350	16×31.5	0.045	1450
4700	472		16×25	0.061	1320	16×25	0.054	1410	16×31.5	0.045	1560	• 18×35.5	0.040	1660
6800	682		16×25	0.056	1490	16×31.5	0.046	1610	• 18×35.5	0.040	1750	20×40	0.030	2070
10000	103		16×31.5	0.051	1830	• 18×35.5	0.038	1980	△18×40	0.035	2170			
15000	153		• 18×35.5	0.039	2280	△18×40	0.033	2470						
22000	223		20×40	0.030	2860									

V(Code)		35 (1V)			50 (1H)			63 (1J)			100 (2A)			
Cap. (μ F)	Code	Item	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple	Case size	Impedance	Allowable ripple
0.47	R47					5×11	47.0	7				5×11	43.0	10
1	010					5×11	22.0	12				5×11	20.0	15
2.2	2R2					5×11	10.0	18				5×11	9.80	22
3.3	3R3					5×11	6.70	25				5×11	6.60	29
4.7	4R7	5×11	5.00	27	5×11	4.70	30	5×11	4.70	34	5×11	4.60	37	
10	100	5×11	2.80	44	5×11	2.20	50	5×11	2.10	55	6.3×11	1.80	65	
22	220	5×11	2.30	65	5×11	1.90	75	6.3×11	0.98	90	8×11.5	0.68	115	
33	330	5×11	1.90	85	6.3×11	0.84	105	6.3×11	0.71	110	10×12.5	0.46	160	
47	470	6.3×11	1.00	115	6.3×11	0.80	125	8×11.5	0.65	155	10×16	0.37	210	
100	101	8×11.5	0.50	190	8×11.5	0.45	210	10×12.5	0.31	260	12.5×20	0.18	385	
220	221	10×12.5	0.24	325	10×16	0.21	400	10×20	0.20	465	16×25	0.10	590	
330	331	10×16	0.20	440	10×20	0.19	535	12.5×20	0.12	650	16×25	0.090	720	
470	471	10×20	0.12	580	12.5×20	0.10	730	12.5×25	0.081	800	16×31.5	0.076	875	
1000	102	12.5×25	0.067	995	16×25	0.053	1110	16×31.5	0.049	1200	△18×40	0.047	1320	
2200	222	16×31.5	0.044	1450	●18×35.5	0.037	1530	△18×40	0.032	1840				
3300	332	●18×35.5	0.038	1660	20×40	0.028	1950							
4700	472	△18×40	0.033	2030										

Case size : D×L (mm) MAX. Impedance : (Ω) at 20°C 100kHz Allowable ripple : (mA) at 105°C 120Hz

V		160		200		250		315		350		400		450	
Cap (μF)	Code	2 C		2 D		2 E		2 F		2 V		2 G		2 W	
0.47	R47	6.3X11	12	6.3X11	12	6.3X11	12	8X11.5	11	8X11.5	11				
1	010	6.3X11	17	6.3X11	17	6.3X11	17	8X11.5	16	10X12.5	17	10X12.5	16	10X12.5	18
2.2	2R2	6.3X11	25	6.3X11	25	8X11.5	29	10X12.5	28	10X16	31	10X16	27	10X20	29
3.3	3R3	8X11.5	36	8X11.5	36	10X12.5	42	10X12.5	34	10X16	38	10X20	36	12.5X20	41
4.7	4R7	8X11.5	43	10X12.5	50	10X12.5	50	10X16	45	10X20	49	10X20	43	12.5X20	49
10	100	10X12.5	70	10X16	80	10X20	88	10X20	72	12.5X20	82	12.5X25	72	16X25	75
22	220	10X20	130	10X20	140	12.5X25	155	12.5X25	120	16X25	130	16X25	110	16X31.5	115
33	330	12.5X20	180	12.5X25	190	12.5X25	190	16X25	155	16X31.5	160	16X31.5	140	18X35.5	145
47	470	12.5X25	220	12.5X25	220	16X25	230	16X35.5	190	18X35.5	200	18X35.5	170	20X40	175
100	101	16X25	330	16X31.5	335	18X35.5	340	20X40	285	20X40	290				
220	221	18X35.5	500	20X40	515	20X40	525								

Allowable Ripple (mA rms) at 105°C 120Hz

Size 20X31 is available for capacitors marked. "●"
 Size 20X35 is available for capacitors marked. "△"
 In this case, 16 will be put at 12th digit of type numbering system.

● Frequency coefficient of allowable ripple current

V	Cap (μF)	Frequency	50Hz	120Hz	300Hz	1kHz	10kHz~
6.3~100	~47	~47	0.75	1.00	1.35	1.57	2.00
		100~470	0.80	1.00	1.23	1.34	1.50
		1000~22000	0.85	1.00	1.10	1.13	1.15
160~450	0.47~220		0.80	1.00	1.25	1.40	1.60

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