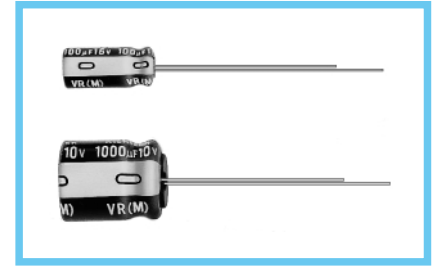
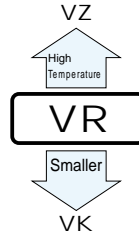


**VR** Miniature Sized  
series



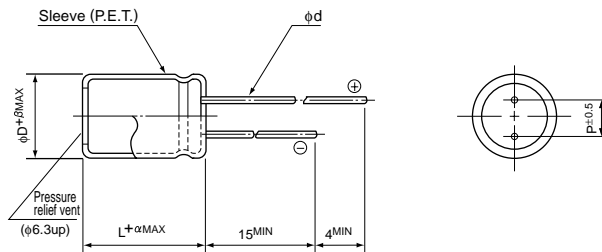
- One rank smaller case sizes than VX series.
- Adapted to the RoHS directive (2002/95/EC).



## Specifications

Item	Performance Characteristics	
Category Temperature Range	-40 ~ +85°C (6.3V ~ 400V), -25 ~ +85°C (450V)	
Rated Voltage Range	6.3 ~ 450V	
Rated Capacitance Range	0.1 ~ 33000µF	
Capacitance Tolerance	±20% at 120Hz, 20°C	
Leakage Current	Rated voltage (V)	6.3 ~ 100V
	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.	160 ~ 450V After 1 minute's application of rated voltage, CV ≤ 1000 : I = 0.1CV+40µA or less After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (µA) or less
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 ~ 315 350 ~ 450
Stability at Low Temperature	tan δ (MAX.)	0.28 0.24 0.20 0.16 0.14 0.12 0.10 0.08 0.20 0.25
	Rated voltage (V)	6.3 10 16 25 35 50 63 100 160 ~ 200 250 ~ 350 400 450
Endurance	Impedance ratio	Z-25°C / Z+20°C 5 4 3 2 2 2 2 2 3 4 6 15
	ZT / Z20 (MAX.)	Z-40°C / Z+20°C 12 10 8 5 4 3 3 3 4 8 10 —
Shelf Life	Capacitance change	Within ±20% of initial value
	tan δ	200% or less of initial specified value
Marking	Leakage current	Initial specified value or less
	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed at right.	
Marking	After storing the capacitors under no load at 85°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.	
	Printed with white color letter on black sleeve.	

## Radial Lead Type

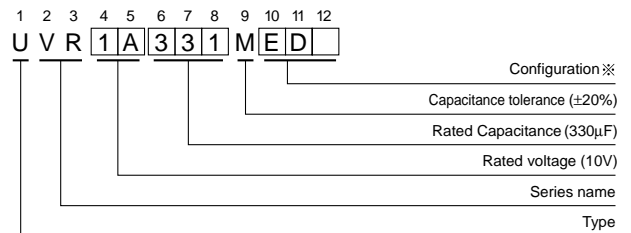


	φD	4	5	6.3	8	10	12.5	16	18	20	22	25
P	1.5	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5	
φd	0.45	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0	1.0	
β	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	

α	(L < 20) 1.5
	(L ≥ 20) 2.0

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

## Type numbering system (Example : 10V 330µF)



### ※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
4	DD6
5	DD
6.3	ED
8 - 10	PD
12.5 ~ 18	HD
20 ~ 25	RD

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.

## ■ Dimensions

V Cap.(μF) Code	6.3 0J	10 1A	16 1C	25 1E	35 1V	50 1H	63 1J	100 2A
0.1 R01						• 5 × 11 13		5 × 11 21
0.22 R22						• 5 × 11 29		5 × 11 47
0.33 R33						• 5 × 11 43		5 × 11 7
0.47 R47						• 5 × 11 62		5 × 11 10
1 010						• 5 × 11 17		5 × 11 21
2.2 2R2						• 5 × 11 28		5 × 11 30
3.3 3R3						• 5 × 11 35		5 × 11 40
4.7 4R7				• 5 × 11 35	• 5 × 11 40	• 5 × 11 40		5 × 11 45
10 100			• 5 × 11 50	• 5 × 11 55	• 5 × 11 60	• 5 × 11 60	5 × 11 65	6.3 × 11 75
22 220	• 5 × 11 65	• 5 × 11 65	• 5 × 11 75	• 5 × 11 80	• 5 × 11 90	• 5 × 11 95	5 × 11 100	6.3 × 11 130
33 330	• 5 × 11 80	• 5 × 11 85	• 5 × 11 90	• 5 × 11 95	5 × 11 105	5 × 11 125	6.3 × 11 140	8 × 11.5 180
47 470	• 5 × 11 95	• 5 × 11 100	• 5 × 11 110	• 5 × 11 115	5 × 11 130	6.3 × 11 155	6.3 × 11 170	10 × 12.5 230
100 101	• 5 × 11 135	• 5 × 11 145	5 × 11 160	6.3 × 11 190	6.3 × 11 210	8 × 11.5 260	10 × 12.5 300	10 × 20 370
220 221	5 × 11 200	6.3 × 11 240	6.3 × 11 260	8 × 11.5 330	10 × 12.5 385	10 × 12.5 430	10 × 16 490	12.5 × 25 620
330 331	6.3 × 11 270	6.3 × 11 290	8 × 11.5 370	10 × 12.5 440	10 × 12.5 490	10 × 16 590	10 × 20 710	12.5 × 25 760
470 471	6.3 × 11 320	6.3 × 11 350	8 × 11.5 440	10 × 12.5 550	10 × 16 650	12.5 × 20 760	12.5 × 20 900	16 × 25 1000
1000 102	8 × 11.5 540	10 × 12.5 650	10 × 16 790	10 × 20 960	12.5 × 20 1150	12.5 × 25 1350	16 × 25 1300	18 × 40 1380
2200 222	10 × 20 1000	10 × 20 1100	12.5 × 20 1300	12.5 × 25 1550	16 × 25 1800	16 × 35.5 2100	18 × 35.5 2300	22 × 50 2400 ▲ 25 × 40 2400
3300 332	10 × 20 1190	12.5 × 20 1450	12.5 × 25 1700	16 × 25 1980	16 × 35.5 2280	18 × 35.5 2500 ▲ 22 × 30 2450	20 × 40 2700 ▲ 25 × 30 2600	25 × 50 2900
4700 472	12.5 × 20 1550	12.5 × 25 1800	16 × 25 2100	16 × 31.5 2450	18 × 35.5 2700 ▲ 20 × 31 2700	20 × 40 2900 ▲ 25 × 30 2900	22 × 50 3400 ▲ 25 × 40 3200	
6800 682	12.5 × 25 1920	16 × 25 2250	16 × 35.5 2650	18 × 35.5 2900 ▲ 20 × 31 2700	20 × 40 3000 ▲ 25 × 30 2900	22 × 50 3500 ▲ 25 × 40 3300	25 × 50 3900	
10000 103	16 × 25 2350	16 × 35.5 2700	18 × 35.5 2950 ▲ 20 × 31 3000	20 × 40 3000 ▲ 25 × 30 2900	22 × 50 3700 ▲ 25 × 40 3600	25 × 50 4000		
15000 153	16 × 35.5 2850	18 × 35.5 3100	20 × 40 3400 ▲ 25 × 30 3300	22 × 50 3800 ▲ 25 × 40 3600	25 × 50 4300			
22000 223	18 × 40 3350 ▲ 22 × 30 3200	20 × 40 3700 ▲ 25 × 30 3300	22 × 50 4200 ▲ 25 × 40 4000	25 × 50 4500				
33000 333	22 × 50 3900 ▲ 25 × 40 3800	22 × 50 4500 ▲ 25 × 40 4800	25 × 50 4800					Case size φ D × L (mm) Rated ripple

V Cap.(μF) Code	160 2C	200 2D	250 2E	315 2F	350 2V	400 2G	450 2W
0.47 R47	6.3 × 11 15	6.3 × 11 15	6.3 × 11 15				
1 010	6.3 × 11 22	6.3 × 11 22	6.3 × 11 22	6.3 × 11 22	6.3 × 11 22	8 × 11.5 25	8 × 11.5 23
2.2 2R2	6.3 × 11 33	6.3 × 11 33	6.3 × 11 33	8 × 11.5 33	8 × 11.5 38	10 × 12.5 45	10 × 12.5 35
3.3 3R3	6.3 × 11 40	6.3 × 11 40	8 × 11.5 46	10 × 12.5 55	10 × 12.5 55	10 × 12.5 55	10 × 16 45
4.7 4R7	6.3 × 11 50	8 × 11.5 55	8 × 11.5 55	10 × 12.5 65	10 × 12.5 65	10 × 16 70	10 × 20 55
10 100	8 × 11.5 80	10 × 12.5 95	10 × 16 105	10 × 20 115	10 × 20 115	12.5 × 20 130	12.5 × 20 90
22 220	10 × 16 155	10 × 20 170	12.5 × 20 190	12.5 × 20 190	12.5 × 25 200	16 × 25 240	16 × 25 165
33 330	10 × 20 205	12.5 × 20 230	12.5 × 20 230	16 × 25 275	16 × 25 275	16 × 31.5 300	16 × 35.5 230
47 470	12.5 × 20 270	12.5 × 20 270	12.5 × 25 300	16 × 25 340	16 × 35.5 380	16 × 35.5 370	18 × 40 300 ▲ 22 × 30 290
100 101	12.5 × 25 430	16 × 31.5 530	16 × 31.5 520	18 × 35.5 560	18 × 40 590 ▲ 22 × 30 570	20 × 40 550 ▲ 25 × 30 530	22 × 40 350
220 221	16 × 35.5 800	18 × 35.5 810	20 × 40 740 ▲ 22 × 30 820	22 × 50 850 ▲ 25 × 30 770	22 × 50 850 ▲ 25 × 40 890	25 × 50 750	
330 331	18 × 40 940 ▲ 22 × 30 900	20 × 40 1130 ▲ 25 × 30 1090	22 × 50 1170 ▲ 25 × 30 970	25 × 50 1250			
470 471	22 × 40 1410 ▲ 25 × 30 1290	22 × 50 1490 ▲ 25 × 40 1550	25 × 50 1600				Case size φ D × L (mm) Rated ripple
1000 102	25 × 50 1900						

Size 4 × 11 is available for capacitors marked "•"

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

Rated Ripple (mArms) at 85°C 120Hz

## ● Frequency coefficient of rated ripple current

V	Cap.(μF)	Frequency	50Hz	120Hz	300Hz	1 kHz	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 ~ 33000	0.85	1.00	1.10	1.13	1.15
160 ~ 450	0.47 ~ 220	0.47 ~ 220	0.80	1.00	1.25	1.40	1.60
		330 ~ 1000	0.90	1.00	1.10	1.13	1.15