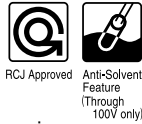
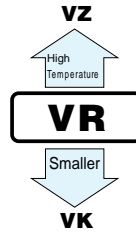


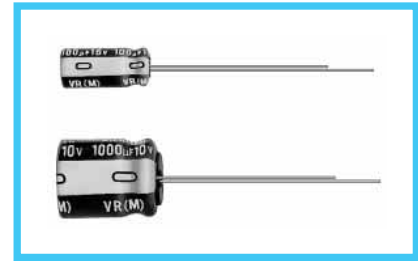
VR Miniature Sized series



● One rank smaller case sizes than VX series.



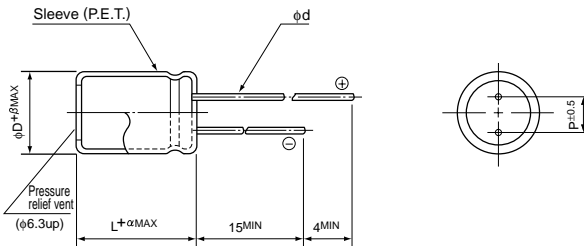
Approved by Reliability Center for Electronic Component, Japan-Certification No. RCJ-03-22C



Specifications

Item	Performance Characteristics																																								
Category Temperature Range	-40 ~ +85°C (6.3V ~ 400V), -25°C ~ +85°C (450V)																																								
Rated Voltage Range	6.3 ~ 450V																																								
Rated Capacitance Range	0.1 ~ 33000μF																																								
Capacitance Tolerance	±20% at 120Hz, 20°C																																								
Leakage Current	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>6.3 ~ 100V</th> <th>160 ~ 450V</th> </tr> </thead> <tbody> <tr> <td>After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.</td> <td>After 1 minute's application of rated voltage, CV ≤ 1000 : I = 0.1CV+40μA or less</td> <td>After 1 minute's application of rated voltage, CV ≤ 1000 : I = 0.1CV+40μA or less</td> </tr> <tr> <td>After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.</td> <td>After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (μA) or less</td> <td>After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (μA) or less</td> </tr> </tbody> </table>	Rated voltage (V)	6.3 ~ 100V	160 ~ 450V	After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.	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 = 0.1CV+40μA or less	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.	After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (μA) or less	After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (μA) or less																															
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tan δ	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. Measurement frequency : 120Hz, Temperature : 20°C <table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160 ~ 315</th> <th>350 ~ 450</th> </tr> </thead> <tbody> <tr> <td>tan δ (MAX.)</td> <td>0.28</td> <td>0.24</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.20</td> <td>0.25</td> </tr> </tbody> </table>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 315	350 ~ 450	tan δ (MAX.)	0.28	0.24	0.20	0.16	0.14	0.12	0.10	0.08	0.20	0.25																		
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Stability at Low Temperature	<table border="1"> <thead> <tr> <th>Rated voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160 ~ 200</th> <th>250 ~ 350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Impedance ratio Z-25°C / Z+20°C</td> <td>5</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>4</td> <td>6</td> <td>15</td> </tr> <tr> <td>ZT / Z20 (MAX.)</td> <td>12</td> <td>10</td> <td>8</td> <td>5</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>8</td> <td>10</td> <td>—</td> </tr> </tbody> </table>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 200	250 ~ 350	400	450	Impedance ratio Z-25°C / Z+20°C	5	4	3	2	2	2	2	2	3	4	6	15	ZT / Z20 (MAX.)	12	10	8	5	4	3	3	3	4	8	10	—	Measurement frequency : 120Hz
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Impedance ratio Z-25°C / Z+20°C	5	4	3	2	2	2	2	2	3	4	6	15																													
ZT / Z20 (MAX.)	12	10	8	5	4	3	3	3	4	8	10	—																													
Endurance	After 2000 hours' application of rated voltage at 85°C, capacitors meet the characteristic requirements listed at right. <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within ±20% of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </tbody> </table>	Capacitance change	Within ±20% of initial value	tan δ	200% or less of initial specified value	Leakage current	Initial specified value or less																																		
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Shelf Life	After leaving capacitors under no load at 85°C for 1000 hours, they meet the specified value for endurance characteristics listed above.																																								
Marking	Printed with white color letter on black sleeve.																																								

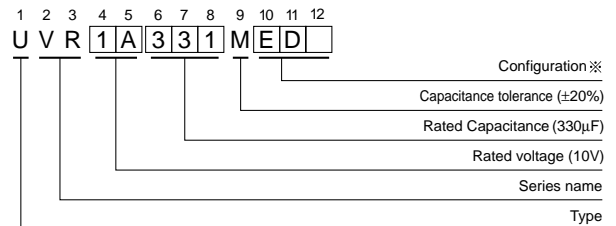
Radial Lead Type



	(mm)										
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

Type numbering system (Example : 10V 330μF)



※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve	Sn-Pb finished leadwire PVC sleeve (containing Pb)
4	DD6	DA6
5	DD	DA
6.3	ED	EA
8 · 10	PD	PA
12.5 ~ 18	HD	HA
20 ~ 25	RD	RA

※ Please contact to us if other configurations are required.

Please refer to page 19, 20, 21 about the formed or taped product spec.
Please refer to page 3 for the minimum order quantity.

● Dimension table in next page.



■ Dimensions

φD×L (mm)

V Cap.(μF) Code	6.3		10		16		25		35		50		63		100		
	0J		1A		1C		1E		1V		1H		1J		2A		
0.1	0R1										• 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 ▲25×40	2400 2400
3300	332	10×20	1190	12.5×20	1450	12.5×25	1700	16×25	1980	16×35.5	2280	18×35.5 ▲22×30	2500 2450	20×40 ▲25×30	2700 2600	25×50	2900
4700	472	12.5×20	1550	12.5×25	1800	16×25	2100	16×31.5	2450	18×35.5 ▲20×31	2700	20×40 ▲25×30	2900 2900	22×50 ▲25×40	3400 3200		
6800	682	12.5×25	1920	16×25	2250	16×35.5	2650	18×35.5 ▲20×31	2900 2700	20×40 ▲25×30	3000 2900	22×50 ▲25×40	3500 3300	25×50	3900		
10000	103	16×25	2350	16×35.5	2700	18×35.5 ▲20×31	2950 3000	20×40 ▲25×30	3000 2900	22×50 ▲25×40	3700 3600	25×50	4000				
15000	153	16×35.5	2850	18×35.5	3100	20×40 ▲25×30	3400 3300	22×50 ▲25×40	3800 3600	25×50	4300						
22000	223	18×40 ▲22×30	3350 3200	20×40 ▲25×30	3700 3300	22×50 ▲25×40	4200 4000	25×50	4500								
33000	333	22×50 ▲25×40	3900 3800	22×50 ▲25×40	4500 4800	25×50	4800									Case size	Rated ripple

V Cap.(μF) Code	160		200		250		315		350		400		450			
	2C		2D		2E		2F		2V		2G		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 ▲22×30	300 290	
100	101	12.5×25	430	16×31.5	530	16×31.5	520	18×35.5	560	18×40 ▲22×30	590 570	20×40 ▲25×30	550 530	22×40	350	
220	221	16×35.5	800	18×35.5	810	20×40 ▲22×30	740 820	22×50 ▲25×30	850 770	22×50 ▲25×40	850 890	25×50	750			
330	331	18×40 ▲22×30	940 900	20×40 ▲25×30	1130 1090	22×50 ▲25×30	1170 970	25×50	1250							
470	471	22×40 ▲25×30	1410 1290	22×50 ▲25×40	1490 1550	25×50	1600								Case size	Rated ripple
1000	102	25×50	1900													

Size 4x11 is available for capacitors marked "•"

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

Rated Ripple (mA rms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap.(μF)	Frequency				
		50Hz	120Hz	300Hz	1 kHz	10kHz ~
6.3 ~ 100	~ 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	0.80	1.00	1.25	1.40	1.60
	330 ~ 1000	0.90	1.00	1.10	1.13	1.15