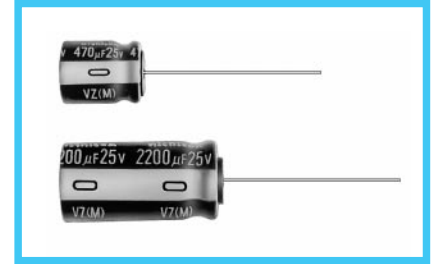
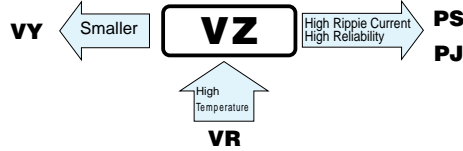


VZ series Wide Temperature Range



Anti-Solvent Feature
(Through 100V only)

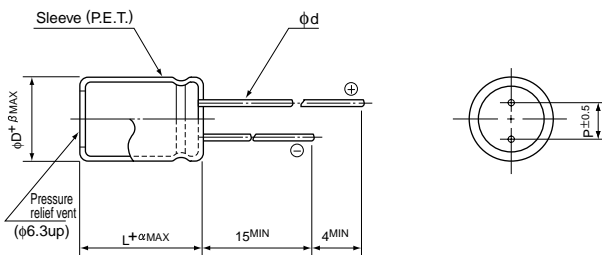
- Small case sizes as same as VR series, but operating over wide temperature range of $-55 \sim +105^{\circ}\text{C}$.



Specifications

Item	Performance Characteristics																																							
Category Temperature Range	$-55 \sim +105^{\circ}\text{C}$ (6.3 ~ 100V), $-40 \sim +105^{\circ}\text{C}$ (160 ~ 400V), $-25 \sim +105^{\circ}\text{C}$ (450V)																																							
Rated Voltage Range	6.3 ~ 450V																																							
Rated Capacitance Range	0.1 ~ 33000µF																																							
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20°C																																							
Leakage Current	Rated voltage (V)	6.3 ~ 100																																						
		<p>After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (µA), whichever is greater.</p> <p>After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (µA), whichever is greater.</p>																																						
tan δ	Rated voltage (V)	160 ~ 450																																						
		<p>After 1 minute's application of rated voltage, $CV \leq 1000$: $I = 0.1CV + 40$ (µA) or less</p> <p>After 1 minute's application of rated voltage, $CV > 1000$: $I = 0.04CV + 100$ (µA) or less</p>																																						
Stability at Low Temperature	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz, Temperature : 20°C																																							
		<table border="1"> <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> <tr> <td>Impedance ratio</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>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>4</td> <td>8</td> <td>10</td> <td>—</td> </tr> </table>	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 200	250 ~ 350	400	450	Impedance ratio	5	4	3	2	2	2	2	2	3	4	6	15	ZT / Z20 (MAX.)	10	8	6	4	3	3	3	3	4	8	10
Rated voltage (V)	6.3	10	16	25	35	50	63	100	160 ~ 200	250 ~ 350	400	450																												
Impedance ratio	5	4	3	2	2	2	2	2	3	4	6	15																												
ZT / Z20 (MAX.)	10	8	6	4	3	3	3	3	4	8	10	—																												
Endurance	After 1000 hours' application of rated voltage at 105°C, capacitors meet the characteristic requirements listed at right.																																							
	Capacitance change	Within $\pm 20\%$ of initial 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 black sleeve.																																							

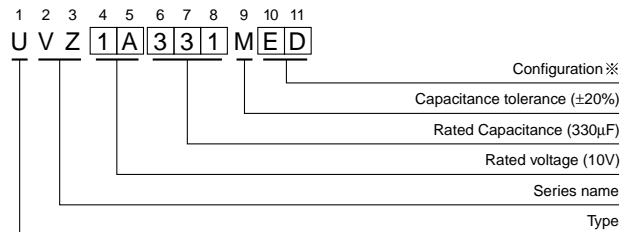
Radial Lead Type



φD	5	6.3	8	10	12.5	16	18	20	22	25
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5	10.0	10.0	12.5
φd	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	1.0	1.0

α	(L < 20) 1.5
	(L ≥ 20) 2.0

Type numbering system (Example : 10V 330µF)



Configuration

φ D	Pb free lead finishing Pb free PET sleeve	Sn-Pb lead finishing PVC sleeve contain Pb
5	DD	DH
6.3	ED	EH
8 · 10	PD	PH
12.5 ~ 18	HD	HH
20 ~ 25	RD	RH

※ 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

D × L (mm)

Cap. (μF)	V Code	6.3		10		16		25		35		50	
		0J		1A		1C		1E		1V		1H	
0.1	0R1											5 × 11	13
0.22	R22											5 × 11	29
0.33	R33											5 × 11	43
0.47	R47											5 × 11	7
1	010											5 × 11	13
2.2	2R2											5 × 11	20
3.3	3R3											5 × 11	25
4.7	4R7							5 × 11	25	5 × 11	28	5 × 11	30
10	100					5 × 11	35	5 × 11	36	5 × 11	41	5 × 11	46
22	220	5 × 11	45	5 × 11	45	5 × 11	54	5 × 11	58	5 × 11	61	5 × 11	68
33	330	5 × 11	55	5 × 11	58	5 × 11	65	5 × 11	68	5 × 11	75	5 × 11	90
47	470	5 × 11	65	5 × 11	68	5 × 11	79	5 × 11	83	5 × 11	93	6.3 × 11	115
100	101	5 × 11	95	5 × 11	105	5 × 11	115	6.3 × 11	140	6.3 × 11	150	8 × 11.5	190
220	221	5 × 11	145	6.3 × 11	175	6.3 × 11	190	8 × 11.5	240	10 × 12.5	275	10 × 12.5	300
330	331	6.3 × 11	195	6.3 × 11	210	8 × 11.5	265	10 × 12.5	315	10 × 12.5	350	10 × 16	410
470	471	6.3 × 11	230	6.3 × 11	250	8 × 11.5	315	10 × 12.5	380	10 × 16	460	12.5 × 20	530
1000	102	8 × 11.5	390	10 × 12.5	460	10 × 16	560	10 × 20	680	12.5 × 20	810	12.5 × 25	950
2200	222	10 × 20	710	10 × 20	760	12.5 × 20	920	12.5 × 25	1090	16 × 25	1260	16 × 35.5	1470
3300	332	10 × 20	840	12.5 × 20	1000	12.5 × 25	1170	16 × 25	1400	16 × 35.5	1610	18 × 35.5	1770
4700	472	12.5 × 20	1090	12.5 × 25	1260	16 × 25	1480	16 × 31.5	1710	18 × 35.5	1910	20 × 40	2100
6800	682	12.5 × 25	1350	16 × 25	1570	16 × 35.5	1780	18 × 35.5	2040	20 × 40	2150	22 × 50	2500
10000	103	16 × 25	1650	16 × 35.5	1890	18 × 35.5	2060	20 × 40	2150	22 × 50	2650	25 × 50	2850
15000	153	16 × 35.5	2010	18 × 35.5	2180	20 × 40	2430	22 × 50	2750	25 × 50	3100		
22000	223	18 × 40	2350	20 × 40	2650	22 × 50	3000	25 × 50	3250				
33000	333	22 × 50	2800	22 × 50	3250	25 × 50	3450					Case size	Rated ripple

Cap. (μF)	V Code	63		100		160		200		250		315		350		400		450	
		1J		2A		2C		2D		2E		2F		2V		2G		2W	
0.1	0R1			5 × 11	1.5														
0.22	R22			5 × 11	3.4														
0.33	R33			5 × 11	5.0														
0.47	R47			5 × 11	7.1	6.3 × 11	11	6.3 × 11	11	6.3 × 11	10								
1	010			5 × 11	15	6.3 × 11	16	6.3 × 11	16	6.3 × 11	15	6.3 × 11	15	8 × 11.5	17	8 × 11.5	13		
2.2	2R2			5 × 11	21	6.3 × 11	25	6.3 × 11	25	6.3 × 11	23	8 × 11.5	26	8 × 11.5	26	10 × 12.5	30	10 × 12.5	23
3.3	3R3			5 × 11	29	6.3 × 11	30	6.3 × 11	30	8 × 11.5	32	10 × 12.5	38	10 × 12.5	38	10 × 12.5	38	10 × 16	31
4.7	4R7			5 × 11	32	6.3 × 11	34	8 × 11.5	39	8 × 11.5	39	10 × 12.5	45	10 × 12.5	45	10 × 16	50	10 × 20	40
10	100	5 × 11	46	6.3 × 11	54	8 × 11.5	41	10 × 12.5	65	10 × 16	74	10 × 20	80	10 × 20	80	12.5 × 20	90	12.5 × 20	65
22	220	5 × 11	71	6.3 × 11	93	10 × 16	100	10 × 20	120	12.5 × 20	130	12.5 × 20	115	12.5 × 25	115	16 × 25	165	16 × 25	115
33	330	6.3 × 11	100	8 × 11.5	130	10 × 20	145	12.5 × 20	160	12.5 × 20	160	16 × 25	195	16 × 25	195	16 × 31.5	215	16 × 35.5	165
47	470	6.3 × 11	120	10 × 12.5	165	12.5 × 20	195	12.5 × 20	195	12.5 × 25	210	16 × 25	230	16 × 35.5	270	16 × 35.5	270	18 × 40	185
100	101	10 × 12.5	215	10 × 20	265	12.5 × 25	215	16 × 31.5	375	16 × 31.5	365	18 × 35.5	395	18 × 40	420	20 × 40	450	22 × 40	270
220	221	10 × 16	335	12.5 × 25	440	16 × 35.5	570	18 × 35.5	575	20 × 40	600	22 × 50	620	22 × 50	620	25 × 50	660		
330	331	10 × 20	510	12.5 × 25	540	18 × 40	750	20 × 40	705	22 × 50	730	25 × 50	760						
470	471	12.5 × 20	640	16 × 25	715	22 × 40	900	22 × 50	840	25 × 50	870								
1000	102	16 × 25	930	18 × 40	985	25 × 50	1310												
2200	222	18 × 35.5	1650	22 × 50	1750														
3300	332	20 × 40	1950	25 × 50	2070														
4700	472	22 × 50	2450																
6800	682	25 × 50	2800															Case size	Rated ripple

Rated Ripple (mA rms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap. (μF)	Frequency					
		~ 47	50Hz	120Hz	300Hz	1 kHz	10 kHz ~
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