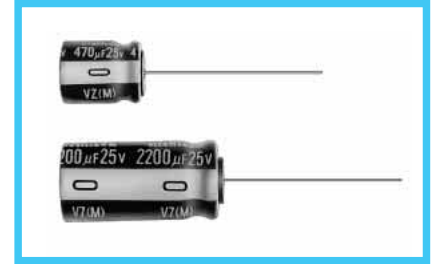
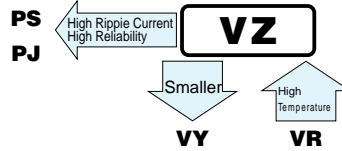


**VZ** Wide Temperature Range series



Anti-Solvent Feature  
(Through 100V only)

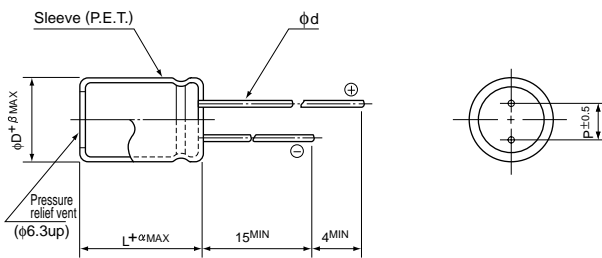
- Small case sizes as same as VR series, but operating over wide temperature range of  $-55 \sim +105^{\circ}\text{C}$ .



## 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 ~ 33000 $\mu\text{F}$						
Capacitance Tolerance	$\pm 20\%$ at 120Hz, 20 $^{\circ}\text{C}$						
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 (<math>\mu\text{A}</math>), whichever is greater.</p> <p>After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (<math>\mu\text{A}</math>), whichever is greater.</p>					
tan $\delta$	Rated voltage (V)	160 ~ 450					
		<p>After 1 minute's application of rated voltage, <math>\text{CV} \leq 1000</math>: <math>I = 0.1\text{CV} + 40</math> (<math>\mu\text{A}</math>) or less</p> <p>After 1 minute's application of rated voltage, <math>\text{CV} &gt; 1000</math>: <math>I = 0.04\text{CV} + 100</math> (<math>\mu\text{A}</math>) or less</p>					
Stability at Low Temperature	For capacitance of more than 1000 $\mu\text{F}$ , add 0.02 for every increase of 1000 $\mu\text{F}$ . Measurement frequency : 120Hz, Temperature : 20 $^{\circ}\text{C}$						
	Rated voltage (V)	6.3 10 16 25 35 50 63 100 160~200 250~350 400 450					
Endurance	Impedance ratio	tan $\delta$ (MAX.)					
	ZT / Z20 (MAX.)						
Shelf Life	After 1000 hours' application of rated voltage at 105 $^{\circ}\text{C}$ , capacitors meet the characteristic requirements listed at right.						
	<table border="1"> <tr> <td>Capacitance change</td> <td>Within <math>\pm 20\%</math> of initial value</td> </tr> <tr> <td>tan <math>\delta</math></td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table>		Capacitance change	Within $\pm 20\%$ of initial value	tan $\delta$	200% or less of initial specified value	Leakage current
Capacitance change	Within $\pm 20\%$ of initial value						
tan $\delta$	200% or less of initial specified value						
Leakage current	Initial specified value or less						
Marking	After leaving capacitors under no load at 105 $^{\circ}\text{C}$ for 1000 hours, they meet the specified value for endurance characteristics listed above.						
	Printed with white color letter on black sleeve.						

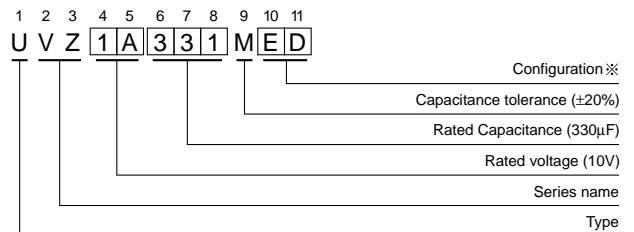
## Radial Lead Type



	5	6.3	8	10	12.5	16	18	20	22	25
$\phi D$	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
$\phi d$	0.5	0.5	0.6	0.6	0.6	0.8	0.8	1.0	1.0	1.0
$\beta$	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0

$\alpha$	(L < 20) 1.5
	(L $\geq$ 20) 2.0

## Type numbering system (Example : 10V 330 $\mu\text{F}$ )



### Configuration

$\phi D$	Pb-free leadwire Pb-free PET sleeve	Sn-Pb finished leadwire PVC sleeve (containing 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

φD×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