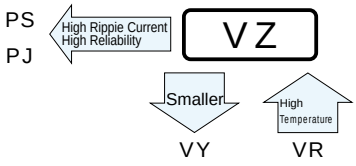
ALUMINUM ELECTROLYTIC CAPACITORS

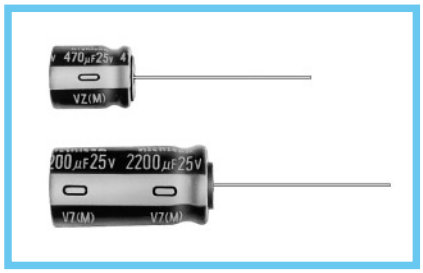
nichicon

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 to +105˚C.
- Adapted to the RoHS directive (2002/95/EC).

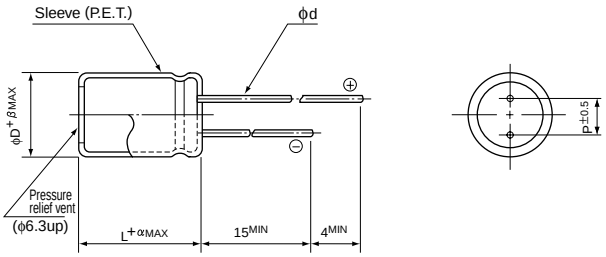




■Specifications

Item	Performance Characteristics
Category Temperature Range	−55 to +105˚C (6.3 to 100V) , −40 to +105˚C (160 to 400V), −25 to +105˚C (450V)
Rated Voltage Range	6.3 to 450V
Rated Capacitance Range	0.1 to 33000µF
Capacitance Tolerance	±20% at 120Hz, 20˚C
Leakage Current	Rated voltage (V) | 6.3 to 100 | 160 to 450 ——— | 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. | After 1 minute's application of rated voltage, CV ≦ 1000 : I = 0.1CV+40 (µA) or less After 1 minute's application of rated voltage, CV > 1000 : I = 0.04CV+100 (µA) or less
Tangent of loss angle (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 to 315 | 350 to 450 tan δ (MAX.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.20 | 0.25
Stability at Low Temperature	Measurement frequency : 120Hz Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 to 200 | 250 to 350 | 400 | 450 Impedance ratio ZT / Z20 (MAX.) Z−25˚C / Z+20˚C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 4 | 6 | 15 Z−40˚C / Z+20˚C | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 4 | 8 | 10 | —
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C. Capacitance change | Within ±20% of initial value tan δ | 200% or less of initial specified value Leakage current | Less than or equal to the initial specified value
Shelf Life	After storing the capacitors under no load at 105˚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.
Marking	Printed with white color letter on black sleeve.

■Radial Lead Type



(mm)

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

• Please refer to page 20 about the end seal configulation.

Type numbering system (Example : 10V 330µF)

1	2	3	4	5	6	7	8	9	10	11
U	V	Z	1	A	3	3	1	M	E	D

- Configuration※
- Capacitance tolerance (±20%)
- Rated Capacitance (330µF)
- Rated voltage (10V)
- Series name
- Type

※Configuration

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

Please refer to page 20, 21, 22 about the formed or taped product spec.
Please refer to page 4 for the minimum order quantity.

● Dimension table in next page.

VZ series

■Dimensions

V	6.3		10		16		25		35		50	
Cap.(μF) / Code	0J		1A		1C		1E		1V		1H	
0.1 / 0R1											5×11	1.3
0.22 / R22											5×11	2.9
0.33 / R33											5×11	4.3
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			Case size φD×L (mm)	Rated ripple
33000 / 333	22×50	2800	22×50	3250	25×50	3450						

V	63		100		160		200		250		315		350		400		450	
Cap.(μF) / Code	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	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															Case size φD×L (mm)	Rated ripple
6800 / 682	25×50	2800																

Rated Ripple (mArms) at 105˚C 120Hz

●Frequency coefficient of rated ripple current

V	Frequency / Cap.(μF)	50Hz	120Hz	300Hz	1 kHz	10 kHz or more
6.3 to 100	Less than 47	0.75	1.00	1.35	1.57	2.00
	100 to 470	0.80	1.00	1.23	1.34	1.50
	1000 to 33000	0.85	1.00	1.10	1.13	1.15
160 to 450	0.47 to 220	0.80	1.00	1.25	1.40	1.60
	330 to 1000	0.90	1.00	1.10	1.13	1.15