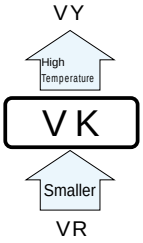
ALUMINUM ELECTROLYTIC CAPACITORS

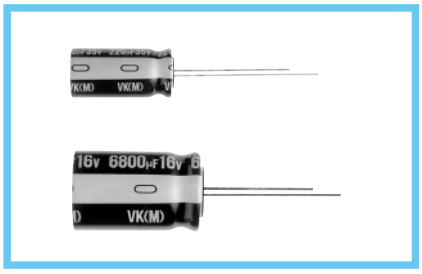
nichicon

VK Miniature Sized series

Smaller | Anti-Solvent Feature (Through 100V only)

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





■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 ~ 68000μF
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	160~250	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

Stability at Low Temperature — Measurement frequency : 120Hz

Rated voltage (V)		6.3	10	16	25	35	50~100	160~200	250~350	400	450
Impedance ratio	Z−25˚C / Z+20˚C	5	4	3	2	2	2	3	4	6	15
ZT / Z20 (MAX.)	Z−40˚C / Z+20˚C	12	10	8	5	4	3	4	8	10	—

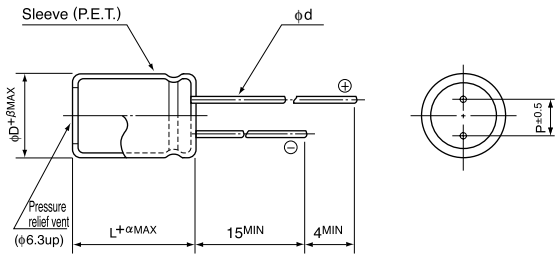
Endurance — After 2000 hours' application of rated voltage at 85˚C,capacitors meet the characteristic requirements listed at right.

Capacitance change	Within ±20% of initial value
tan δ	200% or less of initial specified value
Leakage current	Initial specified value or less

Shelf Life — 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.

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 21 about the end seal configulation.

Type numbering system (Example : 10V 330μF)

1	2	3	4	5	6	7	8	9	10	11
U	V	K	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 ~ 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.

VK series

■Dimensions

Cap.(μF) \ V / Code	6.3		10		16		25		35		50		63	
	0J		1A		1C		1E		1V		1H		1J	
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	6.2		
1	010										5×11	17		
2.2	2R2										5×11	28		
3.3	3R3										5×11	35		
4.7	4R7										5×11	40		
10	100										5×11	60		
22	220										5×11	95	5×11	100
33	330										5×11	125	6.3×11	140
47	470								5×11	130	6.3×11	155	6.3×11	170
68	680								6.3×11	160	6.3×11	210	8×11.5	220
100	101						5×11	180	6.3×11	210	8×11.5	260	8×11.5	280
220	221		5×11	220	6.3×11	260	6.3×11	280	8×11.5	350	10×12.5	430	10×16	490
330	331		6.3×11	290	6.3×11	320	8×11.5	390	10×12.5	490	10×16	590	10×20	710
470	471		6.3×11	350	8×11.5	440	10×12.5	550	10×16	650	10×20	760	12.5×20	900
1000	102	8×11.5	540	10×12.5	650	10×12.5	700	10×16	860	12.5×20	1150	12.5×25	1350	16×25	1300
2200	222	10×16	890	10×16	990	10×20	1000	12.5×25	1550	16×25	1800	16×31.5	1980	18×35.5	2300
3300	332	10×20	1190	12.5×20	1450	12.5×25	1700	16×25	1980	16×31.5	2100	18×35.5	2500	20×40	2700
4700	472	12.5×20	1550	12.5×25	1800	16×25	2100	16×25	2200	16×35.5	2500	20×40	2900	22×50	3400
6800	682	12.5×25	1920	16×25	2250	16×25	2250	16×35.5	2600	18×40	2800	22×50	3500	25×50	3900
10000	103	16×25	2350	16×31.5	2550	16×35.5	2710	18×40	2800	22×50	3700	25×50	4000		
15000	153	16×31.5	2550	16×35.5	2880	18×40	3100	22×50	3800	25×50	4300				
22000	223	18×35.5	3200	18×40	3400	22×40	3800	25×50	4500						
33000	333	20×40	3500	22×50	4500	25×50	4800								
47000	473	22×50	3900	25×50	5000								Case size φD×L (mm)		Rated ripple
68000	683	25×50	4300												

Cap.(μF) \ V / Code	100		160		200		250		350		400		450	
	2A		2C		2D		2E		2V		2G		2W	
0.1	0R1	5×11	2.1			6.3×11	2.1							
0.22	R22	5×11	4.7			6.3×11	4.7							
0.33	R33	5×11	7			6.3×11	7							
0.47	R47	5×11	10			6.3×11	15				6.3×11	12		
1	010	5×11	21			6.3×11	22				6.3×11	20		
2.2	2R2	5×11	30			6.3×11	33		6.3×11	30	8×11.5	38	8×11.5	28
3.3	3R3	5×11	40			6.3×11	40	6.3×11	40	8×11.5	43	8×11.5	48	10×12.5	40
4.7	4R7	5×11	45			6.3×11	50	6.3×11	50	8×11.5	55	10×12.5	60	10×12.5	46
10	100	5×11	70	8×11.5	80	8×11.5	80	10×12.5	100	10×12.5	90	10×16	90	10×20	80
22	220	6.3×11	130	10×12.5	130	10×16	150	10×20	150	12.5×20	150	12.5×25	200	12.5×25	140
33	330	8×11.5	180	10×16	180	10×20	200	10×20	200	12.5×25	240	16×25	240	16×25	180
47	470	8×11.5	200	10×20	210	12.5×20	270	12.5×20	270	16×25	300	16×25	280	16×31.5	220
68	680	10×12.5	270	12.5×20	350	12.5×25	350	16×25	380	16×25	400	16×31.5	340	18×35.5	260
100	101	10×16	340	12.5×25	430	16×25	450	16×25	440	18×35.5	520	18×35.5	440	18×40	280
220	221	12.5×20	550	16×31.5	580	16×35.5	700	18×35.5	680	22×50	760	22×50	650	25×50	350
330	331	12.5×25	760	18×35.5	800	18×40	950	20×40	1000	25×50	1000				
470	471	16×25	1000	18×40	1200	22×40	1300	22×50	1400						
1000	102	18×35.5	1350	25×50	1900										
2200	222	22×50	2400										Case size φD×L (mm)		Rated ripple
3300	332	25×50	2900												

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	~ 68	0.75	1.00	1.35	1.57	2.00
	100 ~ 470	0.80	1.00	1.23	1.34	1.50
	1000 ~ 68000	0.85	1.00	1.10	1.13	1.15
160 ~ 450	0.1 ~ 220	0.80	1.00	1.25	1.40	1.60
	330 ~ 1000	0.90	1.00	1.10	1.13	1.15