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ALUMINUM ELECTROLYTIC CAPACITORS

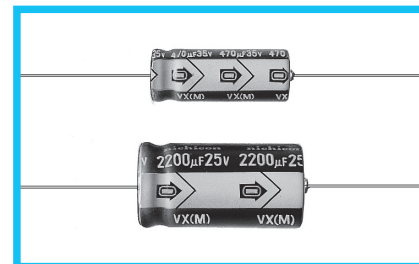
nichicon

TVX (02 type)

Standard, For General Purposes - Axial Lead Type



Anti-Solvent
Feature
(Through 100V only)

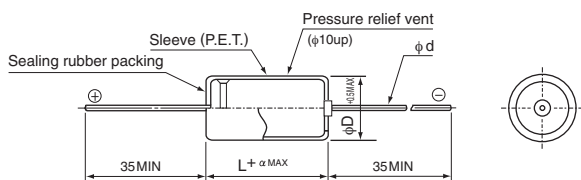


- Axial lead type of standard series for general purposes.
- Compliant to the RoHS directive (2011/65/EU).

Specifications

Item	Performance Characteristics	
Category Temperature Range	-40 to +85°C (6.3 to 250V), -25 to +85°C (315 to 450V)	
Rated Voltage Range	6.3 to 450V	
Rated Capacitance Range	0.47 to 10000µF	
Capacitance Tolerance	±20% at 120Hz, 20°C	
Leakage Current	Rated voltage (V)	6.3 to 100
	Leakage current	After 1 minute's application of rated voltage at 20°C, not more than 0.03CV or 4 (µA), whichever is greater. After 2 minutes' application of rated voltage at 20°C, not more than 0.01CV or 3 (µA), whichever is greater.
Tangent of loss angle (tan δ)	Rated voltage (V)	160 to 450
	tan δ (MAX.)	In case of CV ≤ 1000 After 1 minute's application of rated voltage at 20°C, not more than 0.1CV+40 (µA). In case of CV > 1000 After 1 minute's application of rated voltage at 20°C, not more than 0.04CV+100 (µA).
Stability at Low Temperature	Measurement frequency : 120Hz at 20°C	
	Rated voltage (V)	6.3 10 16 25 35 50 63 to 100 160 to 315 350 to 450
Endurance	Impedance ratio ZT / Z20 (MAX.)	0.24 0.20 0.16 0.14 0.12 0.10 0.08 0.20 0.25
	For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF.	
Shelf Life	Rated voltage (V)	6.3 10 16 25 35 to 100 160 to 250 315 - 350 400 - 450
	Impedance ratio Z-25°C / Z+20°C	4 3 2 2 2 4 6 15
Marking	Impedance ratio Z-40°C / Z+20°C	10 8 6 4 3 12 — —
	The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C.	
Configuration ※	Capacitance change	Within ±20% of the initial capacitance value
	tan δ	200% or less than the initial specified value
Type	Leakage current	Less than or equal to the initial specified value
	Capacitance change	Within ±20% of the initial capacitance value
Series name	tan δ	200% or less than the initial specified value
	Leakage current	Less than or equal to the initial specified value
Printed with white color letter on purple blue sleeve.	Capacitance change	Within ±20% of the initial capacitance value
	tan δ	200% or less than the initial specified value
Type	Leakage current	Less than or equal to the initial specified value
	Capacitance change	Within ±20% of the initial capacitance value
Series name	tan δ	200% or less than the initial specified value
	Leakage current	Less than or equal to the initial specified value

Axial Lead Type



		(mm)	
α	(φD < 10) 1	φD	5 to 13 16 to 18
	(φD ≥ 10) 2	φd	0.6 0.8

Type numbering system (Example : 10V 330µF)

1	2	3	4	5	6	7	8	9	10	11
T	V	X	1	A	3	3	1	M	A	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 to 8	AD
10 to 18	CD

Please refer to page 22 about the taped product spec.
Please refer to page 4 for the minimum order quantity.

● Dimension table in next page.

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■ Dimensions

V		6.3		10		16		25		35		50		63		100	
Cap.(μF)	Code	0J		1A		1C		1E		1V		1H		1J		2A	
0.47	R47											5 × 12	5			5 × 12	10
1	010											5 × 12	10			5 × 12	18
2.2	2R2											5 × 12	23			5 × 12	28
3.3	3R3											5 × 12	28			5 × 12	34
4.7	4R7											5 × 12	34			5 × 12	40
10	100											5 × 12	50	5 × 12	55	6.3 × 12	60
22	220									5 × 12	70	6.3 × 12	85	6.3 × 12	90	8 × 16	120
33	330							5 × 12	80	6.3 × 12	90	6.3 × 16	110	6.3 × 16	120	8 × 16	150
47	470					5 × 12	85	6.3 × 12	100	6.3 × 16	120	6.3 × 16	130	8 × 16	160	8 × 20	190
100	101	5 × 12	110	6.3 × 12	130	6.3 × 16	160	6.3 × 16	170	8 × 16	210	8 × 16	220	8 × 20	260	10 × 26	340
220	221	6.3 × 16	200	6.3 × 16	210	8 × 16	260	8 × 16	280	8 × 20	340	10 × 21	410	10 × 26	480	13 × 26	560
330	331	6.3 × 16	250	8 × 16	300	8 × 16	320	8 × 20	380	10 × 21	460	10 × 26	560	13 × 26	650	13 × 31.5	750
470	471	8 × 16	330	8 × 16	350	8 × 20	430	10 × 26	510	10 × 26	610	13 × 26	730	13 × 31.5	840	16 × 31.5	970
1000	102	10 × 21	600	10 × 21	640	10 × 26	770	13 × 26	900	13 × 31.5	1060	16 × 31.5	1260	16 × 31.5	1330		
2200	222	13 × 26	1020	13 × 26	1090	13 × 31.5	1180	16 × 31.5	1480	16 × 31.5	1580	18 × 41	1920				
3300	332	13 × 26	1200	13 × 31.5	1390	16 × 31.5	1620	16 × 41.5	1710	16 × 41.5	2050						
4700	472	16 × 31.5	1500	16 × 31.5	1730	16 × 41.5	1840	18 × 41	2170								
6800	682	16 × 31.5	1840	16 × 41.5	1930	18 × 41	2310										
10000	103	16 × 41.5	2260	18 × 41	2350												

V		160		200		250		315		350		400		450	
Cap.(μF)	Code	2C		2D		2E		2F		2V		2G		2W	
1	010	6.3 × 12	13	6.3 × 12	13	6.3 × 16	14	6.3 × 16	14	6.3 × 16	12	8 × 16	14	8 × 16	14
2.2	2R2	6.3 × 16	23	6.3 × 16	23	8 × 16	27	8 × 16	27	8 × 16	24	8 × 20	28	10 × 21	31
3.3	3R3	8 × 16	33	8 × 16	33	8 × 16	33	8 × 20	36	8 × 20	32	10 × 21	38	10 × 21	38
4.7	4R7	8 × 16	39	8 × 16	39	8 × 20	45	8 × 20	45	10 × 21	46	10 × 21	46	10 × 26	50
10	100	8 × 20	60	10 × 21	70	10 × 21	70	10 × 26	80	13 × 26	85	13 × 26	85	13 × 26	85
22	220	10 × 26	120	13 × 26	140	13 × 26	140	13 × 31.5	150	13 × 31.5	140	16 × 31.5	150	16 × 31.5	150
33	330	13 × 26	170	13 × 26	170	13 × 31.5	190	16 × 31.5	210	16 × 31.5	190	16 × 41.5	210	18 × 41	230
47	470	13 × 31.5	230	13 × 31.5	230	16 × 31.5	260	16 × 31.5	260	16 × 41.5	260	18 × 41	290	Case size φ D × L (mm)	Rated ripple
100	101	16 × 41.5	430	16 × 41.5	430	16 × 41.5	430								

Rated ripple current (mA rms) at 85°C 120Hz

● Frequency coefficient of rated ripple current

V	Cap.(μF)	Frequency	120 Hz	300 Hz	1kHz	10kHz or more
6.3 to 100		0.47 to 47	1.00	1.35	1.57	2.00
		100 to 470	1.00	1.23	1.34	1.50
		1000 to 10000	1.00	1.10	1.13	1.15
160 to 450		1 to 100	1.00	1.25	1.40	1.60