

# Radial Lead Electrolytic Capacitors–XA Series



## FEATURES

- 105°C, 4,000 ~ 10,000 hours assured.
- Low ESR, suitable for switching power supplies.
- Smaller size with large permissible ripple current.
- RoHs compliance.

## APPLICATIONS

- Ideally suited for switching power supplies,telecommunication and other electronic products.

## PRODUCT IDENTIFICATION



01 Type	
ZXA	Radial Lead Electrolytic Capacitors

02 Rate Voltage	
6R3	6.3V
10	10V
16	16V
25	25V
35	35V
50	50V
63	63V
100	100V

03 Lead Wire and Sleeve type	
VB	

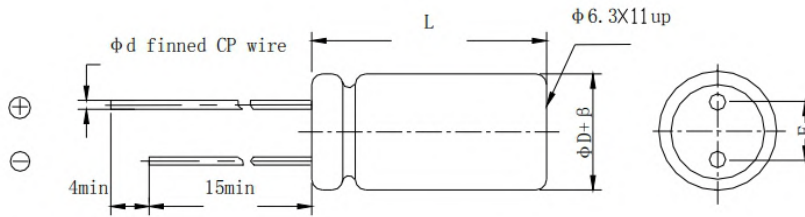
04 Nominal Capacitance	
Example	Nominal value
1R0	1uF
100	10uF
102	1000uF

05 Tolerance	
J	±5%
K	±10%
M	±20%

06 External Dimensions ΦDxL(mm)	
5*11	5x 11
6.3*12	6.3x 12
8*12	8x 12
10*20	10 x 20
12.5*20	12.5 x 20

07 Packing	
2.5TP	Tape & Reel

## SHAPE AND DIMENSIONS



$\beta$ (mm)	$\pm 0.5$			$\pm 1.0$				
$\Phi D$ (mm)	5	6.3	8	10	12.5	16	18	22
$F \pm 0.5$ (mm)	2.	2.5	3.5	5.0		7.5		10.0
$\Phi d \pm 0.1$ (mm)	0.5		0.6			0.8		
L(mm)	11,12		12,16	12,16,	16,20,25	16,20,25,30,35	20,25,30,35,40	25,30,35,40
	$L \pm 2.0$							

## MAIN SPECIFICATIONS

Item	Characteristics																														
Rated Voltage Range	6.3 ~ 100 V <sub>DC</sub>																														
Operating Temperature Range	-40 ~ +105°C																														
Capacitance Tolerance	$\pm 20\%$ (M) (at 20°C, 120Hz)																														
Leakage Current	$I = 0.01CV(\mu A)$ or $3\mu A$ , whichever is greater. Where, I:Max. Leakage current( $\mu A$ ), C:Nominal capacitance( $\mu F$ ), V:Rated voltage(V <sub>DC</sub> ) (at 20°C, 2 minutes)																														
Dissipation Factor(Tan $\delta$ )	<table border="1"> <tr> <td>Rated Voltage(V<sub>DC</sub>)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Tan<math>\delta</math>(Max.)</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.09</td> <td>0.09</td> <td>0.08</td> </tr> </table> <p>When the capacitance exceeds 1,000<math>\mu F</math>, 0.02 shall be added every 1,000<math>\mu F</math> increase. (at 20°C, 120Hz)</p>	Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	80	100	Tan $\delta$ (Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08										
Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	80	100																						
Tan $\delta$ (Max.)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.09	0.08																						
Temperature Characteristics (Max. Impedance ratio)	<table border="1"> <tr> <td>Rated Voltage(V<sub>DC</sub>)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>80</td> <td>100</td> </tr> <tr> <td>Z(-25°C)/Z(+20°C)</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-40°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table> <p>(at 120Hz)</p>	Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	80	100	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2	Z(-40°C)/Z(+20°C)	8	6	4	3	3	3	3	3	3
Rated Voltage(V <sub>DC</sub> )	6.3	10	16	25	35	50	63	80	100																						
Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	2	2	2																						
Z(-40°C)/Z(+20°C)	8	6	4	3	3	3	3	3	3																						
Load Life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage with the rated ripple current is applied (the peak voltage shall not exceed the rated voltage) at 105°C for the specified period of time.</p> <table border="1"> <tr> <td>V<sub>DC</sub></td> <td>Ø5~Ø6.3</td> <td>Ø8~Ø10</td> <td>Ø12.5~Ø18</td> </tr> <tr> <td>6.3~10(V)</td> <td>4,000 hours</td> <td>6,000 hours</td> <td>8,000 hours</td> </tr> <tr> <td>16~100(V)</td> <td>5,000 hours</td> <td>7,000 hours</td> <td>10,000 hours</td> </tr> </table> <p>Capacitance change <math>\leq \pm 25\%</math> of the initial value Tan<math>\delta</math> <math>\leq 200\%</math> of the initial specified value Leakage current <math>\leq</math> The initial specified value</p>	V <sub>DC</sub>	Ø5~Ø6.3	Ø8~Ø10	Ø12.5~Ø18	6.3~10(V)	4,000 hours	6,000 hours	8,000 hours	16~100(V)	5,000 hours	7,000 hours	10,000 hours																		
V <sub>DC</sub>	Ø5~Ø6.3	Ø8~Ø10	Ø12.5~Ø18																												
6.3~10(V)	4,000 hours	6,000 hours	8,000 hours																												
16~100(V)	5,000 hours	7,000 hours	10,000 hours																												
Shelf Life	<p>The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements.</p> <p>Capacitance change <math>\leq \pm 25\%</math> of the initial value Tan<math>\delta</math> <math>\leq 200\%</math> of the initial specified value Leakage current <math>\leq</math> The initial specified value</p>																														
Others	Satisfied characteristics KS C IEC 60384-4																														



## Rating of ZXA

V <sub>oc</sub> #DXL(mm)	6.3				10				16			
	μF	IMP.		Ripple	μF	IMP.		Ripple	μF	IMP.		Ripple
		20°C	-10°C			20°C	-10°C			20°C	-10°C	
5×11	150	0.58	2.3	210	100	0.58	2.3	210	56	0.58	2.3	210
6.3×11	330	0.22	0.87	340	220	0.22	0.87	340	120	0.22	0.87	340
8×11.5	680	0.130	0.52	640	470	0.130	0.52	640	330	0.130	0.52	640
8×15	1,000	0.087	0.35	840	680	0.087	0.35	840	470	0.087	0.35	840
8×20	1,200	0.069	0.27	1,050	1,000	0.069	0.27	1,050	680	0.069	0.27	1,050
10×12	820	0.080	0.32	865	680	0.080	0.32	865	470	0.080	0.32	865
10×12.5	820	0.080	0.32	865	680	0.080	0.32	865	470	0.080	0.32	865
10×16	1,200	0.060	0.24	1,210	1,000	0.060	0.24	1,210	680	0.060	0.24	1,210
10×20	1,500	0.046	0.18	1,400	1,200	0.046	0.18	1,400	1,000	0.046	0.18	1,400
10×25	2,200	0.042	0.17	1,650	1,500	0.042	0.17	1,650	1,200	0.042	0.17	1,650
10×30	2,700	0.031	0.12	1,910	2,200	0.031	0.12	1,910	1,500	0.031	0.12	1,910
12.5×16	1,800	0.049	0.16	1,450	1,500	0.049	0.16	1,450	1,000	0.049	0.16	1,450
12.5×20	3,300	0.035	0.12	1,900	2,200	0.035	0.12	1,900	1,500	0.035	0.12	1,900
12.5×25	3,900	0.027	0.089	2,230	3,300	0.027	0.089	2,230	2,200	0.027	0.089	2,230
12.5×30	4,700	0.024	0.078	2,650	3,900	0.024	0.078	2,650	2,700	0.024	0.078	2,650
12.5×35	5,600	0.020	0.065	2,880	4,700	0.020	0.065	2,880	3,300	0.020	0.065	2,880
16×15	2,700	0.042	0.12	1,940	2,200	0.042	0.12	1,940	1,500	0.042	0.12	1,940
16×20	5,600	0.027	0.078	2,530	3,900	0.027	0.078	2,530	2,700	0.027	0.078	2,530
16×25	6,800	0.021	0.060	2,930	5,600	0.021	0.06	2,930	3,900	0.021	0.06	2,930
16×31.5	8,200	0.017	0.050	3,450	6,800	0.017	0.05	3,450	4,700	0.017	0.05	3,450
16×35.5	10,000	0.015	0.044	3,610	8,200	0.015	0.044	3,610	5,600	0.015	0.044	3,610
16×40	12,000	0.013	0.038	4,080	10,000	0.013	0.038	4,080	6,800	0.013	0.038	4,080
18×20	6,800	0.026	0.067	2,860	5,600	0.026	0.067	2,860	3,900	0.026	0.067	2,860
18×25	10,000	0.019	0.049	3,140	6,800	0.019	0.049	3,140	4,700	0.019	0.049	3,140
18×31.5	12,000	0.017	0.047	4,170	8,200	0.017	0.047	4,170	5,600	0.017	0.047	4,170
18×35.5	15,000	0.016	0.045	4,220	10,000	0.016	0.045	4,220	8,200	0.016	0.045	4,220
18×40	18,000	0.015	0.043	4,280	12,000	0.015	0.043	4,280	10,000	0.015	0.043	4,280

V <sub>oc</sub> #DXL(mm)	25				35				50			
	μF	IMP.		Ripple	μF	IMP.		Ripple	μF	IMP.		Ripple
		20°C	-10°C			20°C	-10°C			20°C	-10°C	
5×11	47	0.58	2.3	210	33	0.58	2.3	210	1	4.0	16.0	50
									2.2	2.5	10.0	51
									3.3	2.2	8.8	53
									4.7	3.0	12.0	80
									10	1.5	6.0	100
									22	0.70	2.8	180
6.3×11	100	0.22	0.87	340	56	0.22	0.87	340	22	0.30	1.2	295
									47	0.30	1.2	340
									100	0.17	0.68	555
8×11.5	220	0.13	0.52	640	150	0.13	0.52	640	100	0.17	0.68	555
8×15	330	0.087	0.35	840	220	0.087	0.35	840	120	0.12	0.48	730
8×20	470	0.069	0.27	1,050	270	0.069	0.27	1,050	180	0.090	0.36	910
10×12	330	0.080	0.32	865	220	0.080	0.32	865	150	0.12	0.48	760
10×12.5	330	0.080	0.32	865	220	0.080	0.32	865	150	0.12	0.48	760
10×16	470	0.060	0.24	1,210	330	0.060	0.24	1,210	220	0.084	0.34	1,050
10×20	680	0.046	0.18	1,400	470	0.046	0.18	1,400	270	0.060	0.24	1,220
10×25	820	0.042	0.17	1,650	560	0.042	0.17	1,650	330	0.055	0.22	1,440
10×30	1,000	0.031	0.12	1,910	680	0.031	0.12	1,910	470	0.043	0.17	1,690
12.5×16	680	0.049	0.16	1,450	470	0.049	0.16	1,450	270	0.061	0.20	1,260
12.5×20	1,000	0.035	0.12	1,900	680	0.035	0.12	1,900	470	0.045	0.15	1,660
12.5×25	1,500	0.027	0.089	2,230	1,000	0.027	0.089	2,230	560	0.034	0.11	1,950
12.5×30	1,800	0.024	0.078	2,650	1,200	0.024	0.078	2,650	680	0.030	0.10	2,310
12.5×35	2,200	0.020	0.065	2,880	1,500	0.020	0.065	2,880	820	0.025	0.083	2,510
16×15	1,000	0.042	0.12	1,940	680	0.042	0.12	1,940	470	0.055	0.17	1,690
16×20	1,800	0.027	0.078	2,530	1,200	0.027	0.078	2,530	820	0.034	0.10	2,210
16×25	2,700	0.021	0.060	2,930	1,800	0.021	0.060	2,930	1,000	0.025	0.075	2,555
16×31.5	3,300	0.017	0.050	3,450	2,200	0.017	0.050	3,450	1,200	0.022	0.066	3,010
16×35.5	3,900	0.015	0.044	3,610	2,700	0.015	0.044	3,610	1,500	0.019	0.057	3,150
16×40	4,700	0.013	0.038	4,080	3,300	0.013	0.038	4,080	1,800	0.016	0.048	3,710
18×20	2,200	0.026	0.067	2,860	1,800	0.026	0.067	2,860	1,000	0.036	0.097	2,490
18×25	3,300	0.019	0.049	3,140	2,200	0.019	0.049	3,140	1,200	0.026	0.070	2,740
18×31.5	3,900	0.017	0.047	4,170	2,700	0.017	0.047	4,170	1,800	0.021	0.057	3,635
18×35.5	4,700	0.016	0.045	4,220	3,300	0.016	0.045	4,220	2,200	0.017	0.046	3,680
18×40	5,600	0.015	0.043	4,280	3,900	0.015	0.043	4,280	2,700	0.016	0.045	3,800



## Rating of ZXA

V <sub>oc</sub> #DxL(mm)	63				80				100			
	μF	IMP.		Ripple	μF	IMP.		Ripple	μF	IMP.		Ripple
		20°C	-10°C			20°C	-10°C			20°C	-10°C	
5 × 11	15	0.88	3.5	165					4.7	1.5	6.0	105
									6.8	1.4	5.6	125
6.3 × 11	33	0.35	1.4	265					15	0.57	2.3	205
8 × 11.5	47	0.22	0.88	500					22	0.50	1.9	310
									56	0.22	0.88	500
8 × 15	82	0.16	0.64	665					39	0.25	1.0	450
8 × 20	120	0.12	0.48	820					68	0.19	0.76	565
10 × 12	82	0.11	0.44	690	68	0.17	0.66	480	47	0.17	0.66	480
10 × 12.5	82	0.11	0.44	690	68	0.17	0.66	480	47	0.17	0.66	480
10 × 16	120	0.076	0.31	950	100	0.11	0.47	600	68	0.11	0.47	600
10 × 20	180	0.056	0.23	1,150	120	0.084	0.34	800	82	0.084	0.34	800
									100	0.084	0.34	800
10 × 25	220	0.046	0.19	1,350	150	0.069	0.28	900	100	0.069	0.28	900
									120	0.069	0.28	900
12.5 × 16	180	0.072	0.29	1,150	150	0.11	0.34	750	100	0.11	0.34	750
12.5 × 20	270	0.041	0.13	1,500	220	0.062	0.18	1,100	150	0.062	0.18	1,100
12.5 × 25	390	0.031	0.093	1,900	330	0.047	0.14	1,250	220	0.047	0.14	1,250
12.5 × 30	470	0.028	0.084	2,300	390	0.042	0.13	1,500	270	0.042	0.13	1,500
12.5 × 35	560	0.024	0.072	2,500	470	0.036	0.11	1,650	330	0.036	0.11	1,650
									390	0.036	0.11	1,650
16 × 20	470	0.032	0.096	2,000	330	0.048	0.15	1,350	220	0.048	0.15	1,350
16 × 25	680	0.025	0.075	2,600	470	0.038	0.12	1,700	330	0.036	0.11	1,650
16 × 31.5	820	0.021	0.063	2,850	680	0.032	0.095	1,850	470	0.032	0.095	1,850
16 × 35.5	1,000	0.019	0.057	2,900	820	0.029	0.086	2,000	560	0.029	0.086	2,000
16 × 40	1,200	0.018	0.054	3,400	1,000	0.027	0.081	2,200	680	0.027	0.081	2,200
18 × 20	680	0.030	0.090	2,500	470	0.038	0.12	1,700	330	0.045	0.14	1,500
18 × 25	1,000	0.024	0.072	2,800	680	0.036	0.11	1,750	470	0.036	0.11	1,750
18 × 31.5	1,200	0.020	0.060	3,300	820	0.030	0.090	1,900	560	0.030	0.09	1,900
18 × 35.5	1,500	0.018	0.054	3,400	1,000	0.027	0.081	2,200	680	0.027	0.081	2,200
18 × 40	1,800	0.017	0.051	3,500	1,200	0.026	0.077	2,700	820	0.026	0.077	2,700

### RATED RIPPLE CURRENT MULTIPLIERS

Frequency Multipliers

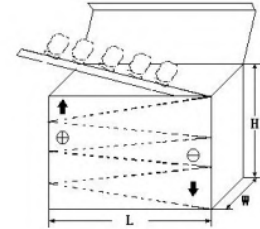
Freq.(Hz) Cap.( μF)	120	1k	10k	50K	100k
1 ~ 180	0.40	0.75	0.90	0.95	1.00
220 ~ 560	0.50	0.85	0.94	0.96	1.00
680 ~ 1,800	0.60	0.87	0.95	0.97	1.00
2,200 ~ 3,900	0.75	0.90	0.95	0.97	1.00
4,700 ~ 18,000	0.85	0.95	0.98	0.99	1.00



## PACKAGING STYLE

### ● Taped Packaging Quantity

直径 ΦD(mm)	数量(只) Qty. (Pcs)	L(电容高度)≤22mm	L(电容高度)=25±2mm
		L×W×H(mm)	L×W×H(mm)
Φ5	2000	328×235×50	328×235×57
Φ6.3	1500		
Φ8	1000		
Φ10	600		
Φ12.5	400		
Φ16	250		
Φ18	200		



### ● Bulk Packaging Quantity

ΦD(mm)Diameter	L(mm)Length	Quantity (pcs/bag)	bag/box	PCS/INNERBOX	PCS/OUTERBOX
Φ4	7-8	1000	15	4	60,000
Φ5	5-7	1000	12	4	48,000
Φ5	11	1000	10	4	40,000
Φ6.3	5-7	1000	10	4	40,000
Φ6.3	8-15	1000	8	4	32,000
Φ6.3	15-20	1000	6	4	24,000
Φ8	5-12	500	8	4	16,000
Φ8	14-16	500	8	4	16,000
Φ8	20	500	6	4	12,000
Φ10	9-13	500	6	4	12,000
Φ10	14-16	250	8	4	12,000
Φ10	17-20	250	8	4	8,000
Φ10	25-30	200	8	4	6,400
Φ10	31-45	200	8	4	4,800
Φ12.5	16-28	200	6	4	4,800
Φ12.5	30-40	100	8	4	3,200
Φ12.5	45-50	100	6	4	2,400
Φ16	15-20	100	6	4	3,200
Φ16	21-30	100	6	4	2,400
Φ16	31-40	50	10	4	2,000
Φ18	15-20	100	6	4	1,200
Φ18	25-30	50	8	4	800
Φ18	35-40	50	6	4	600
Φ18	41-50	25	10	4	500

