

# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

- ULTRA. Low impedance at 100kHz
- Load life: 105°C 2000~5000 hours
- HIGH QUALITY

### SPECIFICATIONS

Item	Performance Characteristics																							
Operating Temperature Range	-55°C~105°C																							
Rated Voltage Range	6.3~50W.V.																							
Capacitance Range	0.22~18000uF																							
Capacitance Tolerance	±20%, 120Hz, 20°C																							
Leakage Current (MAX)	I=0.01CV or 3uA whichever is greater.(after 2 minutes) I=Leakage Current(uA), C=Nominal Capacitance(uF), V=Rated Voltage(V)																							
Dissipation Factor (tan δ)	When nominal capacitance is over 1000uF, tan δ shall be added 0.02 to the listed value with increase of every 1000uF, <table border="1"> <tr> <td>Rated voltage (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>MAX</td> </tr> <tr> <td>Tan δ</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>(20°C 120Hz)</td> </tr> </table>	Rated voltage (V)	6.3	10	16	25	35	50	MAX	Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	(20°C 120Hz)							
Rated voltage (V)	6.3	10	16	25	35	50	MAX																	
Tan δ	0.22	0.19	0.16	0.14	0.12	0.10	(20°C 120Hz)																	
Low Temperature Stability Impedance Ratio	<table border="1"> <tr> <td>Rated Voltage(V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>MAX</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 rowspan="2">(120Hz)</td> </tr> <tr> <td>Z(-55°C)/Z(+20°C)</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> <td>3</td> <td>3</td> </tr> </table>	Rated Voltage(V)	6.3	10	16	25	35	50	MAX	Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	(120Hz)	Z(-55°C)/Z(+20°C)	8	6	4	3	3	3
Rated Voltage(V)	6.3	10	16	25	35	50	MAX																	
Z(-25°C)/Z(+20°C)	4	3	2	2	2	2	(120Hz)																	
Z(-55°C)/Z(+20°C)	8	6	4	3	3	3																		
Load Life	After life test at conditions stated in the table below, the capacitors shall meet the following requirement <table border="1"> <tr> <td>Leakage Current</td> <td>Not more than the specified value</td> <td>Case Dia</td> <td>Life Time(hrs)</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±25% of initial value.</td> <td>φ D ≤ 6.3</td> <td>2000</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value</td> <td>φ D=8</td> <td>3000</td> </tr> <tr> <td></td> <td></td> <td>φ D=10</td> <td>4000</td> </tr> <tr> <td></td> <td></td> <td>φ D ≥ 12.5</td> <td>5000</td> </tr> </table>	Leakage Current	Not more than the specified value	Case Dia	Life Time(hrs)	Capacitance Change	Within ±25% of initial value.	φ D ≤ 6.3	2000	Dissipation Factor	Not more than 200% of the specified value	φ D=8	3000			φ D=10	4000			φ D ≥ 12.5	5000			
Leakage Current	Not more than the specified value	Case Dia	Life Time(hrs)																					
Capacitance Change	Within ±25% of initial value.	φ D ≤ 6.3	2000																					
Dissipation Factor	Not more than 200% of the specified value	φ D=8	3000																					
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		φ D ≥ 12.5	5000																					
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours and applying voltage according to JIS C-5102 4-3, they meet the specified value for load life characteristics listed above.																							
Standard	According to JIS C 5141																							

### MULTIPLIER FOR RIPPLE CURRENT

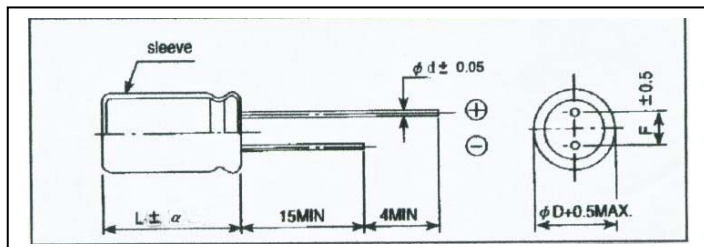
#### Frequency coefficient

Frequency(Hz) Cap(uF)	60(50)	120	1k	10k	≥ 100k
0.22-33	0.45	0.55	0.75	0.90	1.00
39-330	0.60	0.70	0.85	0.95	1.00
390-1000	0.65	0.75	0.90	0.98	1.00
1200-18000	0.75	0.80	0.95	1.00	1.00


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### DIMENSIONS (mm)



$\varphi D$	5	6.3	8	10	12.5	16	18
$\varphi d$	0.5		0.6			0.8	
F	2.0	2.5	3.5	5.0		7.5	
$\alpha$	$L \leq 16: \alpha = 1.5, L \geq 20: \alpha = 2.0$						

### STANDARD SIZE PERMISSIBLE RIPPLE CURRENT

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 6.3V (0J)				
Nominal capacitance (uF)	Size $\varphi D \times L$ (mm)	Ripple Current	Impedance ( $\Omega$ MAX)	
			20°C, 100kHz	-10°C, 100kHz
47	5 x11	215	1.68	5.880
68	5 x11	225	1.48	5.180
120	5 x11	245	0.66	2.310
150	5 x11	330	0.57	1.995
220	5 x11	390	0.48	1.680
220	6.3 x11	475	0.35	1.225
330	6.3 x11	575	0.21	0.735
470	6.3 x11	830	0.175	0.612
390	8 x11.5	765	0.18	0.630
470	8 x11.5	960	0.15	0.525
680	8 x11.5	1090	0.13	0.455
820	8 x11.5	1245	0.108	0.378
1000	8 x11.5	1245	0.108	0.378
	10 x12.5	1730	0.070	0.245
1200	8 x20	1730	0.070	0.245
	10 x12.5	2020	0.058	0.203
1500	8 x20	2020	0.058	0.203
	10 x12.5	2095	0.080	0.280
1800	10 x16	2145	0.058	0.203
2200	10 x20	2515	0.044	0.154
2700	10 x23	2935	0.040	0.140
	12.5 x20	3215	0.041	0.143
3300	10 x30	3160	0.032	0.112
	12.5 x20	3150	0.035	0.122
3900	12.5 x25	3675	0.026	0.091
	16 x20	3645	0.043	0.150
4700	12.5 x30	4370	0.024	0.072
	16 x25	4600	0.022	0.077
5600	12.5 x35	4750	0.020	0.070
	16 x25	4560	0.020	0.070
6800	12.5 x40	5525	0.017	0.059
	16 x25	4835	0.020	0.070
	18 x20	4715	0.026	0.078
8200	16 x31.5	5690	0.017	0.059
	18 X25	5956	0.016	0.056
10000	16 x35.5	5956	0.015	0.045
	18 x25	5956	0.019	0.057
12000	16 x40	6765	0.012	0.036
	18 x31.5	6880	0.015	0.045
15000	18 x35.5	6960	0.014	0.042
18000	18 x40	7095	0.011	0.033



# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 10V (1A)				
Nominal capacitance (uF)	Size	Ripple Current	Impedance ( $\Omega$ MAX)	
	$\phi$ D x L (mm)		20°C, 100kHz	-10°C, 100kHz
47	5 x11	245	0.66	2.310
68	5 x11	285	0.615	2.152
100	5 x11	330	0.57	1.995
150	5 x11	390	0.48	1.680
220	5 X11	420	0.435	1.522
	6.3 x11	575	0.21	0.735
270	6.3 x11	705	0.19	0.665
330	6.3 x11	830	0.17	0.595
	8 x11.5	960	0.15	0.525
390	8 x11.5	1020	0.14	0.490
470	8 x11.5	1085	0.13	0.455
560	8 x11.5	1155	0.12	0.420
680	8 x11.5	1245	0.108	0.378
	10 x12.5	1435	0.080	0.280
820	8 x20	1650	0.074	0.259
	10 x12.5	1580	0.075	0.262
1000	8 X20	1730	0.070	0.245
	10 x16	2030	0.060	0.210
1200	10 x20	2310	0.046	0.161
1500	10 x20	2525	0.042	0.147
	12.5 X16	2390	0.049	0.171
1800	10 x20	2630	0.040	0.140
	12.5 X20	2770	0.042	0.147
2200	10 x28	3165	0.030	0.105
	12.5 x20	3150	0.035	0.122
	16 x16	3215	0.041	0.123
2700	12.5 x25	3415	0.031	0.108
	18 x16	3645	0.043	0.129
3300	12.5 x25	3675	0.026	0.091
3900	12.5 x30	4370	0.024	0.072
	16 X20	4170	0.027	0.081
4700	12.5 x30	4560	0.022	0.077
	16 x25	4500	0.024	0.084
5600	16 x25	4830	0.021	0.063
	18 x20	4715	0.026	0.078
6800	16 x31.5	5690	0.017	0.051
	18 x25	5180	0.019	0.057
8200	16 x35.5	5955	0.015	0.045
	18 x31.5	6880	0.015	0.045
10000	16 x40	6765	0.012	0.036
	18 x35.5	6960	0.014	0.042
12000	18 x40	7095	0.011	0.033

# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

Ripple Current (mA 105°C, 100kHz) r.m.s

Nominal capacitance (µF)	Size	Ripple Current	Impedance (Ω MAX)	
	φ D×L(mm)		20°C, 100kHz	-10°C, 100kHz
1	5 ×11	115	3.78	13.230
3.3	5 ×11	165	2.75	9.625
10	5 ×11	215	1.68	5.880
22	5 ×11	225	1.48	5.180
39	5 ×11	235	1.05	3.675
47	5 ×11	245	0.62	2.170
56	5 ×11	330	0.57	1.995
68	5 ×11	410	0.48	1.680
100	5 ×11	450	0.45	1.575
120	6.3 ×11	575	0.21	0.735
150	6.3 ×11	705	0.19	0.665
220	8 ×11.5	960	0.15	0.525
330	8 ×11.5	1085	0.13	0.455
390	8 ×11.5	1155	0.12	0.420
470	8 ×11.5	1245	0.108	0.378
	10 ×12.5	1435	0.080	0.280
560	8 X16	1400	0.098	0.343
	10 ×12.5	1580	0.075	0.262
680	8 X20	1730	0.069	0.241
	10 ×16	2030	0.060	0.210
820	10 ×16	2095	0.057	0.199
1000	8 X20	1950	0.061	0.213
	10 ×20	2310	0.046	0.161
	12.5 ×16	2390	0.049	0.171
1200	10 X23	2722	0.042	0.147
	12.5 ×16	2770	0.042	0.147
1500	8 X25	2640	0.060	0.210
	10 ×28	3165	0.030	0.105
	12.5 ×20	3150	0.035	0.122
1800	10 X23	3180	0.032	0.112
	12.5 ×20	3280	0.033	0.115
2200	10 X23	3300	0.030	0.105
	12.5 ×20	3415	0.031	0.108
	18 ×16	3645	0.043	0.129
2700	12.5 ×25	4025	0.025	0.087
	16 ×20	4170	0.027	0.081
3300	12.5 ×30	4560	0.022	0.077
	16 X25	4500	0.024	0.084
3900	16 ×25	4830	0.020	0.060
	18 ×20	4715	0.026	0.078
4700	16 ×31.5	5690	0.017	0.051
	18 ×25	5180	0.019	0.057
5600	16 ×31.5	5820	0.016	0.056
	18 ×31.5	6880	0.015	0.045
6800	16 ×40	6765	0.012	0.036
	18 ×35.5	6920	0.015	0.052
8200	18 ×35.5	6960	0.014	0.042
10000	18 ×40	7095	0.011	0.033



# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 25V (1E)				
Nominal capacitance (uF)	Size	Ripple Current	Impedance (Ω MAX)	
	φ DxL(mm)		20°C, 100kHz	-10°C, 100kHz
10	5 x11	240	0.9	3.150
22	5 x11	280	0.74	2.590
33	5 x11	305	0.66	2.310
39	5 x11	315	0.62	2.170
47	5 x11	330	0.57	1.995
56	5 x11	355	0.53	1.855
68	6.3 x11	450	0.39	1.365
82	6.3 x11	510	0.30	1.050
100	6.3 x11	575	0.21	0.735
120	6.3 x11	830	0.19	0.665
150	6.3 x11	960	0.18	0.630
180	8 x11.5	1020	0.16	0.560
220	8 x11.5	1085	0.13	0.455
330	8 x16	1400	0.086	0.301
	10 X12.5	1435	0.080	0.280
390	8 x20	1650	0.074	0.259
	10 X12.5	1580	0.075	0.262
470	8 x20	1730	0.069	0.241
	10 x16	2030	0.060	0.210
560	10 x16	2095	0.057	0.199
680	10 x16	2165	0.053	0.185
820	10 x20	2515	0.044	0.154
1000	10 x28	3165	0.030	0.105
	12.5 x16	2770	0.042	0.147
1200	12.5 x20	3280	0.033	0.115
	18 x16	3645	0.043	0.129
1500	12.5 x25	3675	0.026	0.078
1800	12.5 x30	4370	0.024	0.072
	16 x20	4170	0.027	0.081
2200	12.5 x30	4560	0.022	0.077
	16 x25	4500	0.034	0.119
2500	12.5 x30	4560	0.022	0.077
2700	16 x25	4830	0.020	0.070
3300	16 x31.5	5690	0.017	0.051
3900	18 x31.5	6880	0.015	0.045
4700	16 x40	6765	0.012	0.036
	18 x35.5	6960	0.014	0.042
5600	18 x40	7095	0.011	0.033



# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 35V (1V)				
Nominal capacitance (uF)	Size φ DxL(mm)	Ripple Current	Impedance (Ω MAX)	
			20°C, 100kHz	-10°C, 100kHz
10	5 x11	245	0.86	3.010
22	5 x11	280	0.65	2.275
27	5 x11	305	0.61	2.135
33	5 x11	330	0.57	1.995
39	5 x11	360	0.52	1.820
47	6.3 x11	450	0.39	1.365
56	6.3 x11	575	0.31	0.930
68	6.3 x11	830	0.26	0.910
82	6.3 x11	895	0.24	0.840
100	6.3 x11	960	0.21	0.735
	8 x11.5	1020	0.14	0.490
120	8 x16	1110	0.127	0.444
	10 X12.5			
150	8 X16	1165	0.119	0.416
180	8 x16	1245	0.108	0.378
220	8 x16	1400	0.086	0.301
	10 X12.5	1435	0.080	0.280
330	8 x20	1880	0.065	0.227
	10 x16	2030	0.060	0.210
390	10 x16	2095	0.057	0.199
470	10 X20	2310	0.046	0.161
	12.5 x16	2390	0.049	0.171
560	10 x23	2720	0.042	0.147
	12.5 x20	2900	0.038	0.133
680	10 x25	2945	0.036	0.126
	12.5 x20	3150	0.035	0.122
820	12.5 x25	3545	0.030	0.105
1000	12.5 x25	3675	0.026	0.091
1200	12.5 x30	4370	0.024	0.072
	16 x20	4170	0.027	0.081
1500	12.5 x30	4560	0.023	0.080
1800	12.5 x40	5525	0.017	0.051
	16 x25	4830	0.020	0.060
2200	16 x25	5260	0.019	0.066
2700	16 x35.5	5955	0.015	0.045
	18 x31.5	6880	0.015	0.045
3300	16 x40	6765	0.012	0.036
	18 x35.5	6960	0.014	0.042
3900	18 x40	7095	0.011	0.033
4700	18 x45	7260	0.010	0.030



# ALUMINUM ELECTROLYTIC CAPACITORS

## LZD series ULTRAL LOW IMPEDANCE, HIGH RELIABILITY

Ripple Current (mA 105°C, 100kHz) r.m.s

Rated voltage 50V (1H)				
Nominal capacitance (uF)	Size	Ripple Current	Impedance (Ω MAX)	
	φ D xL(mm)		20°C, 100kHz	-10°C, 100kHz
0.22	5 x11	80	9.4	32.900
0.47	5 x11	95	5.28	18.480
0.68	5 x11	105	4.53	15.855
1	5 x11	115	3.78	13.230
2.2	5 x11	140	2.28	7.980
3.3	5 x11	170	1.98	6.930
4.7	5 x11	215	1.68	5.880
6.8	5 x11	220	1.48	5.180
10	5 x11	230	1.28	4.480
18	5 X11	270	0.98	3.430
22	5 x11	310	0.68	2.380
27	5 x11	360	0.59	2.065
33	6.3 x11	400	0.49	1.715
39	6.3 x11	425	0.43	1.505
47	6.3 x11	445	0.395	1.382
56	6.3 x11	495	0.30	1.050
68	6.3 x11	710	0.24	0.840
82	8 x11.5	815	0.205	0.717
100	8 x11.5	920	0.17	0.595
	10 X12.5	1085	0.145	0.507
120	8 x16	1220	0.12	0.420
	10 x12.5	1170	0.133	0.465
150	8 x20	1353	0.105	0.367
	10 x12.5	1250	0.12	0.420
180	8 x20	1500	0.090	0.315
220	8 X20	1615	0.087	0.304
	10 x16	1730	0.084	0.294
330	10 x16	1960	0.071	0.248
390	10 X20	2225	0.056	0.196
	12.5 x20	2405	0.053	0.185
470	10 x20	2375	0.055	0.192
	12.5 x20	2735	0.045	0.157
560	12.5 x25	3230	0.034	0.119
680	12.5 x30	3510	0.030	0.105
820	12.5 x30	3630	0.028	0.098
	16 x20	3645	0.034	0.102
1000	12.5 x35	4475	0.025	0.087
	16 x25	4220	0.025	0.075
	18 x20	4105	0.036	0.108
1200	16 x31.5	4965	0.021	0.063
	18 x25	4520	0.026	0.078
1500	16 x35.5	5195	0.019	0.057
1800	16 x40	6120	0.016	0.048
	18 x31.5	6005	0.021	0.063
2200	18 x35.5	6070	0.017	0.051
	18 x40	6170	0.015	0.045
2700	18 x40	6270	0.014	0.042