

# CD288HL SERIES



## ALUMINUM ELECTROLYTIC CAPACITORS

- Load life of 3000 hours at 105°C
- High frequency and low impedance, wide temperature, long life, small size



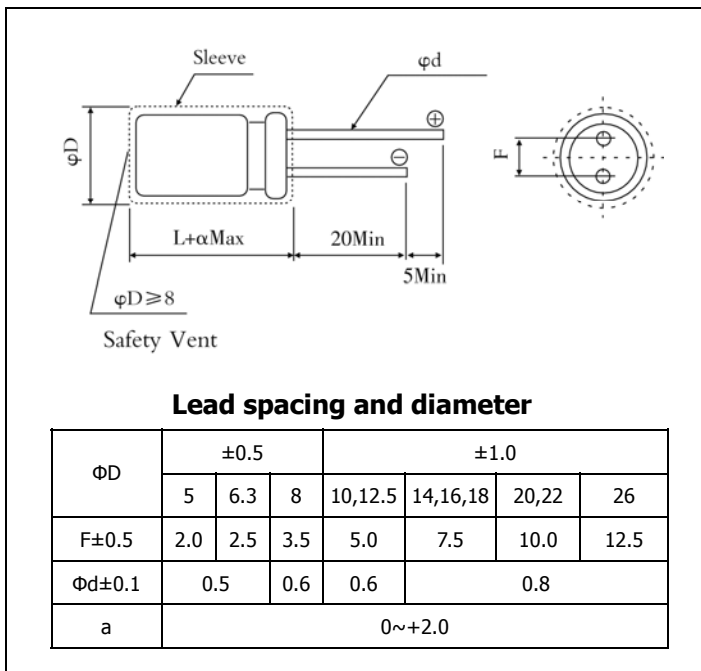
### SPECIFICATIONS

Item	Characteristics																														
Operating Temperature Range(°C)	-55~+105	-40~+105	-25~+105																												
Rated Voltage Range (V)	6.3~100	160~400	450																												
Nominal capacitance range (μF)	0.47~15000																														
Capacitance Tolerance(20°C,120Hz)	±20%																														
Leakage current (μA)	6.3~100V $I \leq 0.03CV$ or 4 (Whichever is greater)		160~450V $I \leq 0.1CV+40$ CV>1000: $I \leq 0.04CV+100$																												
	(at 20°C, after 2 minutes) C: Nominal Capacitance (μF) V: Rated Voltage (V)																														
Dissipation Factor(20°C,120Hz)	<table border="1"> <thead> <tr> <th>Rated Voltage (V)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> <th>63</th> <th>100</th> <th>160~250</th> <th>315~350</th> <th>400~450</th> </tr> </thead> <tbody> <tr> <td>tanδ</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>0.08</td> <td>0.15</td> <td>0.20</td> <td>0.25</td> </tr> </tbody> </table> <p>when nominal capacitance is over 1000uF, tanδ shall be added 0.02 to the listed value with increase of every 1000μF</p>			Rated Voltage (V)	6.3	10	16	25	35	50	63	100	160~250	315~350	400~450	tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20	0.25				
Rated Voltage (V)	6.3	10	16	25	35	50	63	100	160~250	315~350	400~450																				
tanδ	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.20	0.25																				
Temperature Stability(120Hz)	<table border="1"> <thead> <tr> <th>Rated voltage (v)</th> <th>6.3~100</th> <th>160~200</th> <th>250</th> <th>315~350</th> <th>400</th> <th>450</th> </tr> </thead> <tbody> <tr> <td>Impedance Ratio</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Z-25°C/Z+20°C</td> <td>-</td> <td>3</td> <td>3</td> <td>4</td> <td>6</td> <td>15</td> </tr> <tr> <td>Z-40°C/Z+20°C</td> <td>-</td> <td>4</td> <td>6</td> <td>8</td> <td>10</td> <td>-</td> </tr> </tbody> </table>			Rated voltage (v)	6.3~100	160~200	250	315~350	400	450	Impedance Ratio							Z-25°C/Z+20°C	-	3	3	4	6	15	Z-40°C/Z+20°C	-	4	6	8	10	-
Rated voltage (v)	6.3~100	160~200	250	315~350	400	450																									
Impedance Ratio																															
Z-25°C/Z+20°C	-	3	3	4	6	15																									
Z-40°C/Z+20°C	-	4	6	8	10	-																									
Load Life(+105°C)	<table border="1"> <thead> <tr> <th>Time</th> <td>3000 hours(φ5,6.3,8: 2000hrs).</td> </tr> </thead> <tbody> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of the initial value.</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value.</td> </tr> </tbody> </table>			Time	3000 hours(φ5,6.3,8: 2000hrs).	Leakage Current	Not more than the specified value.	Capacitance Change	Within ±20% of the initial value.	Dissipation Factor	Not more than 200% of the specified value.																				
Time	3000 hours(φ5,6.3,8: 2000hrs).																														
Leakage Current	Not more than the specified value.																														
Capacitance Change	Within ±20% of the initial value.																														
Dissipation Factor	Not more than 200% of the specified value.																														
Shelf Life(+105°C)	<table border="1"> <thead> <tr> <th>Time</th> <td>1000 hours.</td> </tr> </thead> <tbody> <tr> <td>Leakage Current</td> <td>Not more than the specified value.</td> </tr> <tr> <td>Capacitance Change</td> <td>Within ±20% of the initial value.</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than 200% of the specified value.</td> </tr> </tbody> </table> <p>After test: Rated voltage to be applied for 30 minutes, 24 to 48 hours before measurement.</p>			Time	1000 hours.	Leakage Current	Not more than the specified value.	Capacitance Change	Within ±20% of the initial value.	Dissipation Factor	Not more than 200% of the specified value.																				
Time	1000 hours.																														
Leakage Current	Not more than the specified value.																														
Capacitance Change	Within ±20% of the initial value.																														
Dissipation Factor	Not more than 200% of the specified value.																														

### DIMENSIONS

### MM

### MULTIPLIER FOR RIPPLE CURRENT



### Frequency coefficient

Rated Voltage (V)	Freq(Hz) C(μF)	50,60	100	1K	10K~
		6.3~100	~47	0.20	0.30
68~330	0.55		0.65	0.85	1.00
390~1000	0.70		0.75	0.90	1.00
1200~15000	0.80		0.85	0.95	1.00
160~450	0.47~220	0.80	1.00	1.40	1.60
	330~470	0.90	1.00	1.13	1.15

# CD288HL SERIES



## ■ STANDARD RATINGS

WV(V)	6.3			10			16			25		
Cap(μF)	Size	Impedance	Ripple	Size	Impedance	Ripple	Size	Impedance	Ripple	Size	Impedance	Ripple
	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)
4.7	-	-	-	-	-	-	-	-	-	5X11	0.600	180
10	-	-	-	-	-	-	5X11	0.600	180	5X11	0.600	180
22	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180
33	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180
39	-	-	-	-	-	-	-	-	-	5X11	0.650	175
47	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180	5X11	0.600	180
56	-	-	-	-	-	-	5X11	0.650	175	-	-	-
82	-	-	-	5X11	0.650	175	-	-	-	6.3X11	0.350	290
100	5X11	0.650	175	5X11	0.600	180	6.3X11	0.250	290	6.3X11	0.250	290
120	-	-	-	-	-	-	6.3X11	0.250	290	8X11.5	0.250	400
150	6.3X11	0.250	280	6.3X11	0.250	290	6.3X11	0.250	290	8X11.5	0.117	555
180	-	-	-	6.3X11	0.250	290	8X11.5	0.230	400	-	-	-
220	6.3X11	0.250	290	6.3X11	0.250	290	8X11.5	0.117	555	8X11.5	0.117	555
330	8X11.5	0.250	290	8X11.5	0.170	488	8X11.5	0.117	555	10X12.5	0.090	755
470	8X11.5	0.170	488	8X11.5	0.117	555	10X12.5	0.090	755	10X16 8X20	0.068	1050
560	8X11.5	0.117	555	-	-	-	-	-	-	10X20	0.052	1220
680	10X12.5	0.120	613	10X12.5	0.090	755	10X16	0.068	1050	10X20	0.052	1220
820	8X16	0.085	730	-	-	-	10X20	0.052	1220	10X25	0.045	1440
1000	10X12.5	0.090	755	10X16	0.068	1050	10X20	0.052	1220	12.5X20	0.038	1655
1200	8X20	0.065	995	10X20	0.052	1220	10X25	0.045	1440	-	-	-
1500	10X20	0.052	1220	10X20	0.052	1220	12.5X20	0.038	1655	16X25	0.022	1950
1800	-	-	-	-	-	-	-	-	-	14X31.5	0.025	2310
2200	12.5X20	0.045	1400	12.5X20	0.038	1655	12.5X25	0.030	1945	16X25	0.026	2390
2700	10X25	0.035	1815	12.5X25	0.030	1945	14X25	0.025	2310	16X25	0.022	2555
3300	12.5X20	0.038	1655	12.5X25	0.030	1945	16X25	0.026	2390	16X31.5	0.018	3010
3900	12.5X25	0.030	1945	14X31.5	0.022	2510	16X25	0.022	2555	16X35.5	0.016	3150
4700	16X25	0.028	2220	16X25	0.022	2120	16X31.5	0.018	3010	18X35.5	0.015	3680
5600	14X31.5	0.022	2510	16X25	0.022	2555	16X35.5	0.016	3150	-	-	-
6800	16X25	0.022	2555	16X31.5	0.018	3010	18X35.5	0.015	3680	18X40	0.014	3800
8200	16X31.5	0.018	3010	16X35.5	0.016	3150	18X35.5	0.015	3680	-	-	-
10000	16X31.5	0.020	3150	18X35.5	0.015	3680	18X40	0.014	3800	-	-	-
12000	18X31.5	0.016	3635	-	-	-	-	-	-	-	-	-
15000	18X35.5	0.015	3680	18X40	0.014	3800	-	-	-	-	-	-

# CD288HL SERIES



WV(V)	35			50			63			100		
Cap(μF)	Size	Impedance	Ripple	Size	Impedance	Ripple	Size	Impedance	Ripple	Size	Impedance	Ripple
	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)	ΦDxL(mm)	Z(Ω)	(mA)
0.47	-	-	-	5X11	5.000	25	-	-	-	5X11	43.000	20
1	-	-	-	5X11	3.500	40	-	-	-	5X11	20.000	30
2.2	-	-	-	5X11	3.000	55	-	-	-	5X11	9.800	44
3.3	-	-	-	5X11	2.600	65	-	-	-	5X11	6.600	58
4.7	5X11	0.600	180	5X11	2.300	90	5X11	4.700	68	5X11	4.600	74
6.8	-	-	-	-	-	-	5X11	2.500	95	5X11	3.500	95
10	5X11	0.600	180	5X11	1.400	120	5X11	2.100	110	6.3X11	1.800	130
12	-	-	-	-	-	-	5X11	2.000	145	-	-	-
15	-	-	-	-	-	-	6.3X11	1.200	160	8X11.5	0.830	180
18	-	-	-	5X11	1.300	120	-	-	-	8X11.5	0.800	200
22	5X11	0.600	180	5X11	1.200	170	6.3X11	0.710	250	8X11.5	0.680	330
27	5X11	0.650	175	-	-	-	-	-	-	-	-	-
33	5X11	0.600	180	6.3X11	0.430	300	6.3X11	0.710	250	10X12.5	0.460	320
39	-	-	-	-	-	-	8X11.5	0.700	330	-	-	-
47	6.3X11	0.250	290	6.3X11	0.430	300	8X11.5	0.342	360	10X16	0.370	420
56	6.3X11	0.250	290	8X11.5	0.400	360	-	-	-	-	-	-
68	-	-	-	-	-	-	8X11.5	0.342	405	10X20	0.300	490
82	8X11.5	0.200	400	8X11.5	0.234	485	-	-	-	10X25	0.250	540
100	8X11.5	0.117	555	8X11.5	0.234	485	10X12.5	0.256	535	12.5X20	0.180	580
120	-	-	-	8X16	0.155	635	10X16	0.194	600	-	-	-
150	8X11.5	0.117	555	10X12.5	0.162	615	10X16	0.194	660	12.5X25	0.130	710
180	-	-	-	8X20	0.120	860	10X20	0.147	885	14X31.5	0.120	790
220	10X12.5	0.090	755	10X16	0.119	850	10X20	0.200	700	16X25	0.100	890
270	-	-	-	10X25	0.082	1200	12.5X20	0.090	1410	-	-	-
330	10X16	0.068	1050	10X20	0.090	1010	12.5X20	0.085	1285	16X25	0.090	1080
390	10X20	0.052	1220	12.5X20	0.063	1480	12.5X25	0.070	1720	18X25	0.083	1260
470	10X20	0.052	1220	12.5X20	0.060	1500	12.5X25	0.070	1470	16X31.5	0.076	1310
560	10X25	0.045	1440	12.5X25	0.050	1832	-	-	-	18X31.5	0.068	1370
680	12.5X20	0.038	1655	12.5X25	0.050	1470	16X25	0.050	2160	18X35.5	0.064	1410
820	-	-	-	14X31.5	0.034	2285	16X31.5	0.043	2670	-	-	-
1000	12.5X25	0.030	1945	16X25	0.034	2235	16X31.5	0.043	2340	18X40	0.047	1520
1200	14X25	0.025	2310	16X31.5	0.028	2700	18X31.5	0.032	2950	-	-	-
1500	16X25	0.026	2390	16X31.5	0.026	1970	18X35.5	0.030	3095	-	-	-
1800	16X25	0.022	2555	18X31.5	0.025	3000	-	-	-	-	-	-
2200	16X31.5	0.018	3010	18X35.5	0.023	3100	18X40	0.028	3200	-	-	-
2700	16X35.5	0.016	3150	-	-	-	-	-	-	-	-	-
3300	18X35.5	0.015	3680	-	-	-	-	-	-	-	-	-
4700	18X40	0.014	3800	-	-	-	-	-	-	-	-	-

# CD288HL SERIES



WV(V)	160		200		250		315		350		400		450	
Cap(μF)	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)	ΦDxL(mm)	(mA)
0.47	6.3X11	12	6.3X11	12	6.3X11	12	8X11.5	11	8X11.5	11	-	-	-	-
1	6.3X11	17	6.3X11	17	6.3X11	17	8X11.5	16	10X12.5	17	10X12.5	16	10X12.5	18
2.2	6.3X11	25	6.3X11	25	8X11.5	29	10X12.5	28	10X16	31	10X16	27	10X20	29
3.3	8X11.5	36	8X11.5	36	10X12.5	42	10X12.5	34	10X16	38	10X20	36	12.5X20	41
4.7	8X11.5	43	10X12.5	50	10X12.5	50	10X16	45	10X20	49	10X20	43	12.5X20	49
10	10X12.5	70	10X16	80	10X20	88	10X20	72	12.5X20	82	12.5X20	72	16X25	75
22	10X20	130	10X20	140	12.5X25	155	12.5X25	120	16X25	130	16X25	110	16X31.5	115
33	12.5X20	180	12.5X25	190	12.5X25	190	16X25	155	16X31.5	160	16X31.5	140	18X35.5	145
47	12.5X25	220	12.5X25	220	16X25	230	16X35.5	190	18X35.5	200	18X35.5	170	20X40	175
100	16X25	330	16X31.5	335	18X35.5	340	18X40	285	20X40	290	22X50	350	26X50	350
220	18X35.5	500	18X40	515	20X40	525	22X50	540	26X50	550	-	-	-	-
330	20X40	900	22X40	1100	22X50	1150	-	-	-	-	-	-	-	-
470	22X50	1200	22X50	1300	26X50	1350	-	-	-	-	-	-	-	-

■ Ripple Current: 105°C, 100Hz or 120Hz; Impedance: 20°C, 100KHz.

The specific capacitance and case size are available on request.