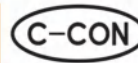


SM CD110



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

2000h at 85°C

- Standard 85°C
- Load life of 2000 hours at 85°C
- High and stable quality
- Small size and low cost
- For general consumer electronic products application



SM

Capacitance tolerance

Terminal Code

DXL

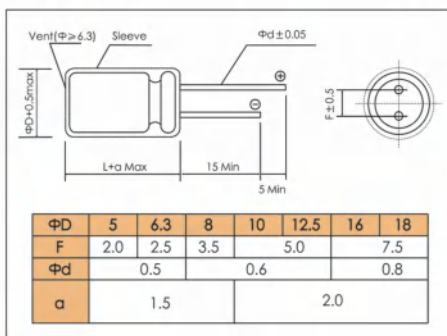
Items	Characteristics	
Operating Temperature Range (°C)	-40 ~ +85	-25 ~ +85
Voltage Range (V)	6.3 ~ 250	315 ~ 500
Capacitance Range (μF)	0.1 ~ 22000	
Capacitance Tolerance (20°C, 120Hz)	± 20%	
Leakage Current (μA)	6.3 ~ 100V	160 ~ 500V
	After 1 minute at 20°C application of rated voltage, leakage current is not more than 0.01CV or 3, whichever is greater.	After 2 minutes at 20°C application of rated voltage, leakage current is not more than 0.03CV + 10
C: Nominal Capacitance (μF) V: Rated Voltage (V)		
Dissipation Factor (20°C, 120Hz)	Rated Voltage (V)	6.3 10 16 25 35 50 63 100 160 200 250-350 400 450 500
	Tan δ (max)	0.22 0.19 0.16 0.14 0.12 0.10 0.09 0.08 0.12 0.15 0.20 0.23
When nominal capacitance is over 1000μF tan δ shall be added 0.02 to the listed value with increase of every 1000μF		
Stability at Low Temperature (Impedance Ratio at 120Hz)	Rated Voltage (V)	6.3 10 16 25 35 50 63 100 160 200 250 315-500
	Z _{-25°C} / Z _{+20°C}	4 3 2 3 6
	Z _{-40°C} / Z _{+20°C}	8 6 4 3 8 -

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	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	Φ ≤ 8 : 3000h Φ ≥ 10 : 4000h	Φ ≤ 8 : 35000h Φ ≥ 10 : 50000h	2000h	2000h	1000h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacitance Change	Within ± 50% of initial value		Within ± 20% of initial value	Within ± 20% of initial value	Within ± 20% of initial value
Dissipation Factor	Not more than 300% of specified value		Not more than 200% of specified value	Not more than 150% of specified value	Not more than 200% of specified value
Condition: Applied Voltage Applied Current Applied Temperature	U _r I _r 85°C	U _r 1.4 x I _r 40°C	U _r I _r 85°C	U _r I _r = 0 85°C	U _r = 0 I _r = 0 85°C After test: U _r to be applied for 30min >24h before measurement

Dimensions

mm

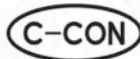


Frequency Coefficient

Rated Voltage (V)	Frequency CV (μFV)	Frequency				
		50/60Hz	120Hz	1kHz	10kHz	100kHz
6.3 ~ 16	ALL CV value	0.80	1.00	1.10	1.20	1.20
25 ~ 35	≤ 1000	0.80	1.00	1.50	1.70	1.70
	> 1000	0.80	1.00	1.20	1.30	1.30
50 ~ 100	≤ 1000	0.80	1.00	1.60	1.90	1.90
	> 1000	0.80	1.00	1.20	1.30	1.30
160 ~ 500	ALL CV value	0.80	1.00	1.30	1.50	1.60

Temperature Coefficient

Temperature(°C)	+70	+85
Coefficient	1.35	1

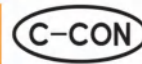


Ratings for CD 110 Series

U _R (Surge Voltage) Code	Rated Capa- cance	Max ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size ΦD x L	
(V)	(μF)	(Ω)	(mA _{rms})	(mm)	
6.3 (7.2) 0J	220	1.33	200	5×11.5	
	330	0.88	270	6.3×11.5	
	470	0.62	322	6.3×11.5	
	1000	0.29	546	8×11.5	
	2200	0.14	1010	10×20	
	3300	0.10	1230	10×20	
	4700	0.08	1710	12.5×20	
	6800	0.06	1930	12.5×25	
	10000	0.05	2450	16×25	
	15000	0.04	2860	16×35.5	
	22000	0.04	3340	18×40	
10 (13) 1A	47	5.36	99	5×11.5	
	100	2.52	146	5×11.5	
	220	1.15	240	6.3×11.5	
	330	0.76	290	6.3×11.5	
	470	0.54	417	8×11.5	
	1000	0.25	650	10×12.5	
	2200	0.13	1080	10×20	
	3300	0.09	1430	12.5×20	
	4700	0.07	1780	12.5×25	
	6800	0.06	2220	16×25	
	10000	0.05	2700	16×35.5	
	15000	0.04	3100	18×35.5	
	16 (20) 1C	10	21.2	50	5×11.5
		22	9.65	75	5×11.5
		33	6.43	92	5×11.5
47		4.52	110	5×11.5	
100		2.12	160	5×11.5	
220		0.97	264	6.3×11.5	
330		0.64	383	8×11.5	
470		0.45	457	8×11.5	
1000		0.21	791	10×16	
2200		0.11	1350	12.5×20	
3300		0.08	1690	12.5×25	
25 (32) 1E	4700	0.06	2100	16×25	
	6800	0.05	2580	16×35.5	
	10000	0.05	3130	18×35.5	
	4.7	39.5	38	5×11.5	
	10	18.6	55	5×11.5	
	22	8.44	82	5×11.5	
	33	5.63	100	5×11.5	
	47	3.95	118	5×11.5	
	100	1.86	199	6.3×11.5	
	220	0.84	349	8×11.5	
	35 (44) 1V	330	0.56	510	10×12.5
470		0.40	545	10×12.5	
1000		0.19	996	10×20	
2200		0.10	1660	12.5×25	
3300		0.07	2030	16×25	
4700		0.06	2650	16×31.5	
6800		0.05	3290	18×35.5	
4.7		33.9	40	5×11.5	
10		15.9	59	5×11.5	
22		7.24	87	5×11.5	
50 (63) 1H		33	4.83	107	5×11.5
	47	3.39	130	5×11.5	
	100	1.59	214	6.3×11.5	
	220	0.72	443	8×11.5	
	330	0.48	542	10×12.5	
	470	0.34	664	10×16	
	1000	0.16	1210	12.5×20	
	2200	0.08	1950	16×25	
	3300	0.06	2510	16×35.5	
	4700	0.05	2990	18×35.5	
	63 (79) 1J	0.1	1327	3	5×11.5
0.22		603	6	5×11.5	
0.33		402	9	5×11.5	
0.47		282	13	5×11.5	
1		133	21	5×11.5	
2.2		60.3	31	5×11.5	
3.3		40.2	38	5×11.5	
4.7		28.2	45	5×11.5	
10		13.3	66	5×11.5	
22		6.03	98	5×11.5	
100 (125) 2A		33	4.02	126	5×11.5
	47	2.82	155	6.3×11.5	
	100	1.33	260	8×11.5	
	220	0.60	443	10×12.5	
	330	0.40	595	10×16	
	470	0.28	887	12.5×20	
	1000	0.13	1400	16×25	
	2200	0.07	2340	16×35.5	
	3300	0.06	2810	18×35.5	
	4.7	25.4	45	5×11.5	
	160 (200) 2C	10	11.9	66	5×11.5
22		5.43	100	5×11.5	
33		3.62	140	6.3×11.5	
47		2.54	170	6.3×11.5	
100		1.19	300	10×12.5	
220		0.54	470	10×16	
330		0.36	710	10×20	
470		0.25	900	12.5×20	
1000		0.12	1300	16×25	
0.1		1062	2.1	5×11.5	
50 (63) 1H		0.22	483	4.7	5×11.5
	0.33	322	7	5×11.5	
	0.47	226	10	5×11.5	
	1	106.2	21	5×11.5	
	2.2	48.3	30	5×11.5	
	3.3	32.2	40	5×11.5	
	4.7	22.6	45	5×11.5	
	10	10.6	75	6.3×11.5	
	22	4.83	130	6.3×11.5	
	33	3.22	180	8×11.5	
	100 (125) 2A	47	2.26	230	10×12.5
100		1.06	370	10×20	
220		0.48	620	12.5×25	
330		0.32	760	16×25	
470		0.23	1000	16×25	
1000		0.11	1380	18×40	
0.47		339	15	6.3×11.5	
1		159	22	6.3×11.5	
2.2		72.4	32	6.3×11.5	
3.3		48.3	40	6.3×11.5	
160 (200) 2C		4.7	33.9	48	6.3×11.5
	10	15.9	81	8×11.5	
	22	7.24	151	10×16	
	33	4.83	202	10×20	
	47	3.39	266	12.5×20	
	100	1.59	422	12.5×25	
	220	0.72	783	16×31.5	
	330	0.48	1080	18×31.5	

MINIATURE

SM CD110



MINIATURE ALUMINUM
ELECTROLYTIC CAPACITORS

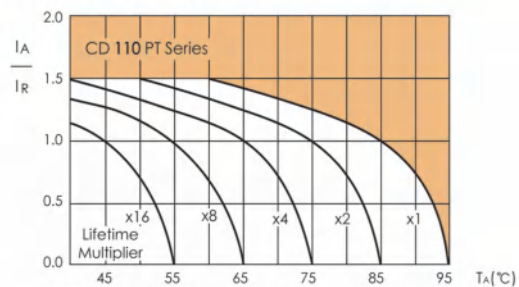
Ratings for CD 110 Series

MINIATURE

U _r (Surge Voltage) Code	Rated Capa- cittance	Max ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size ΦD x L
(V)	(μF)	(Ω)	(mA _{rms})	(mm)
200 (250) 2D	0.47	339	15	6.3×11.5
	1	159	22	6.3×11.5
	2.2	72.4	32	6.3×11.5
	3.3	48.3	40	6.3×11.5
	4.7	33.9	56	8×11.5
	10	15.9	94	8×11.5
	22	7.24	170	10×20
	33	4.83	223	12.5×20
	47	3.39	265	12.5×20
	100	1.59	483	16×25.5
250 (300) 2E	0.47	423	15	6.3×11.5
	1	199	22	6.3×11.5
	2.2	90.5	32	6.3×11.5
	3.3	60.3	48	8×11.5
	4.7	42.3	56	8×11.5
	10	19.9	101	10×12.5
	22	9.05	182	10×20
	33	6.03	243	12.5×20
	47	4.23	295	12.5×25
	100	1.99	528	16×31.5
315 (350) 2F	0.47	423	15	6.3×11.5
	1	199	22	6.3×11.5
	2.2	90.5	38	8×11.5
	3.3	60.3	53	10×12.5
	4.7	42.3	65	10×12.5
	10	19.9	115	10×16
	22	9.05	182	12.5×20
	33	6.03	277	16×25.5
	47	4.23	330	16×25.5
	100	1.99	567	18×31.5
350 (400) 2V	0.47	423.5	15	6.3×11.5
	1	199	22	6.3×11.5
	2.2	90.5	38	6.3×11.5
	3.3	60.3	53	8×11.5
	4.7	42.3	65	10×12.5
	10	19.9	115	10×20
	22	9.05	197	12.5×20
	33	6.03	277	12.5×25
	47	4.23	330	16×25.5
	100	1.99	507	18×31.5

U _r (Surge Voltage) Code	Rated Capa- cittance	Max ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size ΦD x L
(V)	(μF)	(Ω)	(mA _{rms})	(mm)
400 (450) 2G	0.47	565	15	6.3×11.5
	1	265	22	6.3×11.5
	2.2	121	38	8×11.5
	3.3	80.4	54	10×12.5
	4.7	56.5	71	10×12.5
	10	26.5	123	10×20
	22	12.1	197	12.5×25
	33	8.04	277	16×25.5
	47	5.65	361	16×25.5
	68	3.9	423	18×25.5
450 (500) 2W	82	3.2	509	18×31.5
	100	2.7	595	18×36
	0.47	649	18	6.3×11.5
	1	305	25	6.3×11.5
	2.2	139	43	8×11.5
	3.3	92.5	59	10×12.5
	4.7	64.9	76	10×16
	10	30.5	123	10×20
	22	13.9	226	12.5×25
	33	9.2	304	16×25.5
500 (550) 2H	47	6.5	380	16×31.5
	68	4.5	436	18×25.5
	82	3.7	530	18×31.5
	100	2.6	610	18×36
	1	305	35	10×12.5
	2.2	139	45	10×16
	3.3	92.5	75	10×20
	4.7	64.9	100	12.5×20
	10	30.5	165	12.5×25

Lifetime Diagram



I_A = actual ripple current at 120Hz, I_R = rated ripple current at 120Hz, 85°C
Multiplier of Useful Life as a function of ambient temperature and ripple current load