



Type CD110X Miniature Aluminum Electrolytic Capacitors

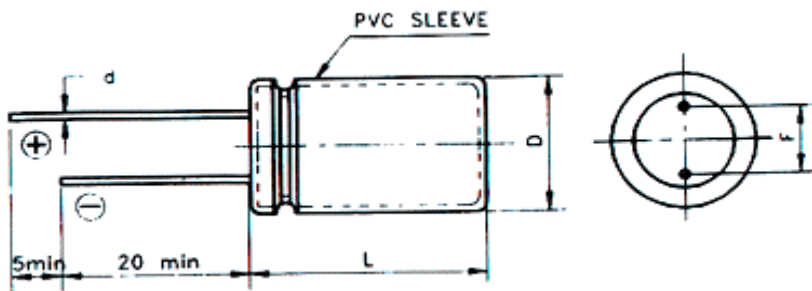
Features and Applications:

- Load life of 1,000 hours at 85°C.
- Standard type.
- Suitable for high-request circuits, such as color TV sets, Video sets, computers, stereos, etc.
- Case Size larger than 5mm diameter has safety vents.

Performance and Characteristics:

Item	Characteristics										
Operating temperature range	-40~+85°C (for 6.3V to 250V) -25~+85°C (for 350V to 450V)										
Rated voltage range	6.3~450V										
Capacitance range	0.1-15,000 μ F										
Capacitance tolerance (at 20°C, 120Hz)	$\pm 20\%$ (M)										
Leakage current(I) (at 20°C)	After 1 minute application of rated voltage $I \leq 0.01 C_R U_R$ or 3μ A, whichever is greater. (for 6.3v to 100v). $I \leq 0.01 C_R U_R + 10 \mu$ A (for 160v to 450V). Where C_R : Nominal capacitance in μ F, U_R : Rated voltage in V.										
Dissipation factor (tg δ) (at 20°C, 120Hz)	W.V.(v)	6.3	10	16	25	35	50	63	100	160~250	350~450
	tg δ (max.)	0.24	0.2	0.16	0.14	0.12	0.1	0.09	0.08	0.15	0.2
	For capacitance of more than 1,000 μ F, add 0.02 for every increase of 1,000 μ F.										
Low temperature Characteristics (At 120Hz)	W.V.(v)		6.3	10	16~100	160~250	350~450				
	Impedance ratio	Z-25°C / Z+20°C	4	3	2	4	6				
	ZT/Z+20°C (max.)	Z-40°C / Z+20°C	8	6	4	8	-				
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage has been applied for 1,000 hours at 85°C										
	Capacitance change		$\leq 20\%$ of the initial value								
	tg δ		$\leq 200\%$ of the initial specified value								
	I		\leq The initial specified value								
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them at 85°C for 500 hours without voltage applied.										
	Capacitance change		$\leq 20\%$ of the initial value								
	tg δ		$\leq 150\%$ of the initial specified value								
	I		$\leq 200\%$ of the initial specified value								
Others	Satisfies characteristic W of JIS C5141										

Dimensions



D±0.5	5	6.3	8	10	13	16	18	22						
L	±1.0						±2.0							
	11	11	12	12	16	20	20	25	25	30	35	35	40	35
F±0.5	2	2.5	3.5	5			7.5				10			
d±0.05	0.5			0.6			0.8							

Frequency multiplying factor

W.V.(v)	Freq(Hz)	50	120	300	1k	10k
	6.3~100	Cap.(μ F)				
0.1~47		0.75	1.00	1.35	1.57	2.00
100~470		0.80	1.00	1.23	1.34	1.50
160~450	1,000~15,000	0.85	1.00	1.10	1.13	1.15
	0.47~470	0.80	1.00	1.25	1.40	1.60

Temperature multiplying factor

Temperature(°C)	45	65	85
Factor	1.59	1.23	1.00

Nominal Capacitance, Case Size D × L(mm) and Maximum Ripple current(mA/at 85 °C,120Hz)

W.V.(v) Cap.(μ F)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
0.1						5×11		5×11						
						1.3		2.7						
0.22						5×11		5×11						
						2.9		5.9						
0.33						5×11		5×11						
						4.4		8.8						
0.47						5×11		5×11	5×11	5×11	5×11	6.3×12	6.3×11	6.3×11
						6.3		11	8.2	8.2	8.2	8.1	8.1	8.1



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Nominal Capacitance, Case Size $D \times L$ (mm) and Maximum Ripple current(mA/at 85 °C,120Hz)

(Continues)

W.V.(v) Cap.(μ F)	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
1						5×11		5×11	5×11	6×12	6.3×12	8×12	8×12	8×12
						13		16	12	12	14	12	14	14
2.2						5×11		5×11	6.3×12	8×12	8×12	8×12	8×12	10×12
						22		24	20	20	20	21	24	24
3.3						5×11		5×11	8×12	8×12	8×12	8×14	8×14	10×16
						27		30	25	25	30	29	33	33
4.7				5×11	5×11	5×11	5×11	5×11	8×14	10×12	10×12	10×16	10×16	10×20
				27	29	32	34	36	35	35	40	39	39	43
10			5×11	5×11	5×11	5×11	5×11	6.3×12	10×16	10×18	10×18	10×18	12×20	13×20
			37	39	42	47	49	59	59	59	66	63	63	73
22		5×11	5×11	5×11	5×11	5×11	6.3×11	8×12	10×20	10×20	12×20	13×20	13×25	16×25
		49	55	58	63	69	83	105	98	108	108	109	120	135
33	5×11	5×11	5×11	5×11	5×11	6.3×11	6.3×11	10×16	12×20	12×20	13×20	16×25	16×25	16×30
	55	60	67	71	77	96	101	146	133	154	154	165	165	178
47	5×11	5×11	5×11	5×11	6.3×11	6×12	8×11	10×20	12×25	12×25	13×25	18×35	18×35	18×35
	65	71	80	85	105	115	144	196	183	183	202	213	228	228
100	5×11	5×11	5×11	6.3×12	8×11	8×12	8×14	12×20	16×25	16×25	16×25	18×40	22×35	22×35
	95	104	132	142	182	199	239	316	331	331	359	355	398	398
220	6.3×11	6.3×12	6×12	8×12	8×14	10×16	10×20	16×25	22×35	22×35	22×35			
	160	176	234	250	307	380	442	599	608	646	681			
330	6.3×11	8×12	8×12	10×12	10×16	10×20	12×20	16×30	25×35	25×35				
	196	256	286	348	425	513	627	824	834	834				
470	8×12	8×12	8×12	10×12	10×20	12×20	12×25	18×35	25×40					
	279	306	389	470	507	710	825	1,065	1,055					
1,000	10×12	8×16	10×16	10×20	12×25	16×25	16×25	22×35						
	463	573	641	875	945	1,141	1,465	1,988						
2,200	10×12	10×20	13×25	13×25	16×25	16×35	18×35							
	822	1,035	1,145	1,338	1,609	2,151	2,515							
3,300	13×20	13×20	13×25	16×25	16×35	19×35	22×35							
	1,124	1,214	1,197	1,738	2,137	2,894	3,003							
4,700	13×20	13×25	16×25	16×30	19×35	22×35								
	1,275	1,506	1,835	2,226	2,652	3,134								
6,800	16×25	16×25	16×30	18×35	22×40									
	1,789	1,901	2,362	2,781	3,241									
10,000	16×30	16×35	18×40	22×35										
	2,144	2,414	2,892	3,144										
15,000	18×35	18×40	22×35											
	2,698	2,981	3,284											

Ripple Current Multipliers

Note: 10×12 can also be 8×15 as per customer's request