



Type CD293 Aluminum Electrolytic Capacitors

Features and Applications:

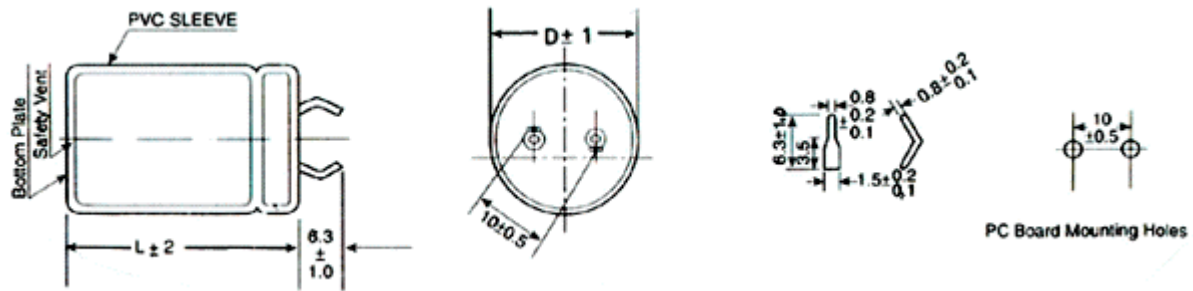
- Load life of 1,000 hours at 85°C.
- Snap-in terminal type.
- Suitable for audio, video and other filtering applications.
- Having safety vents.

Performance and Characteristics:

Item	Characteristics										
Operating temperature range	-40~+85°C (for 10V to 250V) -25~+85°C (for 315V to 450V)										
Rated voltage range	10~450V										
Capacitance range	47-82,000μF										
Capacitance tolerance (at 20°C, 120Hz)	±20%(M)										
Leakage current(I) (at 20°C)	After 1 minute application of rated voltage $I \leq 0.02 C_R U_R$ or 5mA, whichever is smaller. Where C_R : Nominal capacitance in μF, U_R : Rated voltage in V.										
Dissipation factor (tgδ) (at 20°C, 120Hz)	W.V.(v)	10	16	25	35	50	63	80~100	160~350	400~450	
	tgδ (max.)	0.5	0.45	0.4	0.35	0.3	0.25	0.2	0.15	0.2	
Low temperature characteristics (at 120Hz)	W.V.(v)						6.3	10~16	25~100	160~450	
	Impedance ratio			Z-25°C/Z+20°C			4	3	2	6	
	ZT/Z+20°C (max.)			Z-40°C/Z+20°C			8	6	4	-	
Load life	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage has been applied for 2,000 hours at 85°C										
	Capacitance change		≤20% of the initial value								
	tgδ		≤200% of the initial specified value								
	I		≤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 1,000 hours without voltage applied.										
	Capacitance change		≤20% of the initial value								
	tgδ		≤150% of the initial specified value								
	I		≤200% of the initial specified value								
Others	Satisfies characteristic W of JIS C5141										

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Dimensions:



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

W.V.(V)	10								16							
D(mm)	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
Cap.(μF)																
8,200									22×25	2.08						
10,000	22×25	2.18							22×30	2.48	25×25	2.48				
12,000	22×30	2.58							22×35	2.9	25×30	2.93				
15,000	22×30	2.88	25×25	2.88					22×40	3.44	25×30	3.27	30×25	3.4		
18,000	22×35	3.37	25×30	3.4					22×45	3.97	25×35	3.83	30×30	4		
22,000	22×40	3.95	25×35	4.01	30×25	3.9			22×50	4.6	25×40	4.48	30×30	4.42	35×25	4.53
27,000	22×45	4.61	25×40	4.71	30×30	4.64					25×45	5.22	30×35	5.21	35×30	5.37
33,000			25×45	5.48	30×35	5.47	35×25	5.26					30×40	6.09	35×30	5.94
39,000			25×50	6.24	30×35	5.94	35×25	6.13					30×45	6.96	35×35	6.86
47,000					30×40	6.89	35×30	6.73					30×50	8	35×40	7.95
56,000					30×45	7.91	35×35	7.8							35×45	9.12
68,000							35×40	9.07							35×50	10.5

W.V.(V)	25								35							
D(mm)	22	25	30	35	22	25	30	35	22	25	30	35	22	25	30	35
Cap.(μF)																
3,300									22×25	1.5						
3,900									22×30	1.76						
4,700									22×30	1.93	25×25	1.93				
5,600	22×25	1.83							22×35	2.25	25×30	2.27				
6,800	22×30	2.17	25×25	2.17					22×40	2.63	25×30	2.5	30×25	2.59		
8,200	22×35	2.55	25×30	2.57					22×45	3.04	25×35	2.93	30×30	3.06		
10,000	22×40	2.98	25×30	2.84	30×25	2.94			22×50	3.52	25×40	3.42	30×30	3.38	35×25	3.46
12,000	22×45	3.44	25×35	3.31	30×30	3.46					25×45	3.95	30×35	3.94	35×30	4.06
15,000	22×50	4.03	25×40	3.92	30×30	3.87	35×25	3.96			25×50	4.62	30×40	4.66	35×30	4.54
18,000			25×45	4.52	30×35	4.51	35×30	4.65					30×45	5.36	35×35	5.29
22,000					30×40	5.27	35×30	5.15							35×40	6.17
27,000					30×45	6.14	35×35	6.06							35×45	7.18
33,000							35×40	7.07								



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

W.V.(V)	50								63							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
1,500									22×25	1.2						
1,800									22×30	1.41						
2,200	22×25	1.32							22×30	1.67	25×25	1.41				
2,700	22×30	1.58	25×25	1.58					22×35	1.96	25×30	1.68				
3,300	22×35	1.87	25×30	1.88					22×40	2.28	25×30	1.86	30×25	1.93		
3,900	22×40	2.15	25×30	2.04					22×50	2.6	25×35	2.2	30×30	2.3		
4,700	22×45	2.49	25×35	2.39	30×25	2.32					25×40	2.53	30×30	2.5	35×25	3.46
5,600	22×50	2.84	25×40	2.77	30×30	2.73					25×45	2.92	30×35	2.92	35×30	4.06
6,800			25×45	3.21	30×35	3.2	35×25	3.08			25×50	3.34	30×40	3.37	35×30	4.54
8,200			25×50	3.69	30×40	3.72	35×30	3.63					30×45	3.9	35×35	5.29
10,000					30×45	4.32	35×35	4.26					30×50	4.48	35×40	6.17
12,000					30×50	4.95	35×40	4.92							35×45	7.18
15,000							35×45	5.78								
18,000							35×50	6.62								

W.V.(V)	80								100							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
680									22×25	0.9						
820									22×30	1.07						
1,000	22×25	1.09							22×30	1.18	25×25	1.18				
1,200	22×30	1.29							22×35	1.38	25×30	1.39				
1,500	22×35	1.54	25×25	1.44					22×40	1.63	25×35	1.66	30×25	1.61		
1,800	22×45	2.08	25×30	1.7					22×50	1.97	25×40	1.92	30×30	1.9		
2,200	22×50	2.42	25×35	2.01	30×25	1.95					25×45	2.24	30×35	2.23	35×25	2.15
2,700			25×40	2.35	30×30	2.32	35×25	2.38			25×50	2.6	30×40	2.61	35×30	2.55
3,300			25×45	2.74	30×35	2.73	35×30	2.82					30×45	3.04	35×35	2.99
3,900			25×50	3.12	30×40	3.14	35×30	3.06					30×50	3.46	35×40	3.44
4,700					30×45	3.62	35×35	3.57							35×45	3.96
5,600					30×50	4.14	35×40	4.12							35×50	4.52
6,800							35×45	4.76								
8,200							35×50	5.47								



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

W.V.(V)	160								180							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
180									22×25	0.53						
220	22×25	0.59							22×30	0.64						
270	22×30	0.71	25×25	0.71					22×30	0.71	25×25	0.71				
330	22×30	0.83	25×30	0.84					22×35	0.83	25×30	0.84				
390	22×35	0.91	25×30	0.91					22×40	0.96	25×35	0.98	30×25	0.95		
470	22×40	1.06	25×35	1.07	30×25	1.04			22×45	1.11	25×45	1.07	30×30	1.12		
560	22×50	1.27	25×40	1.24	30×30	1.22					25×40	1.24	30×30	1.22	35×25	1.25
680			25×45	1.44	30×35	1.43	35×25	1.38			25×50	1.5	30×35	1.43	35×30	1.48
820			25×50	1.65	30×35	1.57	35×30	1.62					30×40	1.66	35×30	1.62
1,000					30×40	1.84	35×35	1.9					30×45	1.93	35×35	1.9
1,200					30×50	2.21	35×35	2.09							35×40	2.2
1,500							35×45	2.58							35×50	2.7
1,800							35×50	2.96								

W.V.(V)	200								250							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
120									22×25	0.44						
150									22×30	0.53						
180	22×25	0.53							22×30	0.58	25×25	0.58				
220	22×30	0.64	25×25	0.64					22×35	0.68	25×30	0.69				
270	22×35	0.75	25×30	0.76					22×40	0.8	25×30	0.76	30×25	0.79		
330	22×40	0.88	25×30	0.84					22×45	0.93	25×35	0.9	30×30	0.94		
390	22×45	1.01	25×35	0.98	30×25	0.95			22×50	1.07	25×40	1.03	30×30	1.02	35×25	1.04
470	22×50	1.17	25×40	1.13	30×30	1.12					25×45	1.19	30×35	1.19	35×30	1.23
560			25×45	1.3	30×35	1.3	35×25	1.25					30×40	1.37	35×30	1.34
680			25×50	1.5	30×40	1.51	35×30	1.48					30×45	1.59	35×35	1.57
820					30×45	1.75	35×35	1.72					30×50	1.83	35×40	1.82
1,000					30×50	2.02	35×40	2.01							35×45	2.11
1,200							35×45	2.31							35×50	2.41
1,500							35×50	2.7								



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

W.V.(V)	300								350							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
82									22×25	0.36						
100	22×25	0.4							22×30	0.43						
120	22×30	0.47	25×25	0.47					22×30	0.47	25×25	0.47				
150	22×35	0.56	25×30	0.57					22×35	0.56	25×30	0.57				
180	22×40	0.65	25×30	0.62	30×25	0.64			22×40	0.65	25×35	0.66	30×25	0.64		
220	22×45	0.76	25×35	0.73	30×30	0.77			22×50	0.8	25×40	0.78	30×30	0.77		
270	22×50	0.88	25×40	0.86	30×30	0.86	35×25	0.9			25×45	0.9	30×35	0.9	35×25	0.87
330			25×45	1	30×35	1	35×30	1			25×50	1.05	30×40	1.05	35×30	1.03
390					30×40	1.15	35×30	1.1					30×40	1.15	35×35	1.19
470					30×45	1.32	35×35	1.3					30×50	1.39	35×35	1.3
560					30×50	1.51	35×40	1.5							35×40	1.5

WV(V)	400								450							
D(mm)	22		25		30		35		22		25		30		35	
Cap.(μF)																
47									22×25	0.36						
56	22×25	0.26							22×30	0.43						
68	22×30	0.31							22×30	0.47	25×25	0.31				
82	22×30	0.34	25×25	0.34					22×35	0.56	25×30	0.36				
100	22×35	0.4	25×30	0.4					22×40	0.65	25×30	0.4	30×25	0.42		
120	22×40	0.46	25×30	0.44	30×25	0.46			22×50	0.8	25×35	0.47	30×30	0.49		
150	22×45	0.54	25×35	0.52	30×30	0.55					25×40	0.55	30×30	0.55	35×25	0.56
180			25×40	0.61	30×30	0.6	35×25	0.61			25×45	0.64	30×35	0.64	35×30	0.66
220			25×50	0.74	30×35	0.71	35×30	0.73					30×40	0.75	35×30	0.73
270					30×40	0.83	35×30	0.81					30×45	0.87	35×35	0.86
330					30×45	0.96	35×35	0.95							35×40	1

Ripple Current Multipliers

Frequency multiplying factor

Freq.(Hz)	50	60	120	1k	10~50k
10~100	0.88	0.9	1.00	1.15	1.15
160~350	0.85	0.88	1.00	1.15	1.20
400~450	0.88	0.9	1.00	1.10	1.15

Temperature multiplying factor

Temperature (°C)	45	60	70	85
Factor	1.46	1.42	1.30	1.00