

CD293 Series

- Standard snap-in series
- Endurance: 2000 hours at 85°C
- Sleeve color: White Print in Black Sleeve

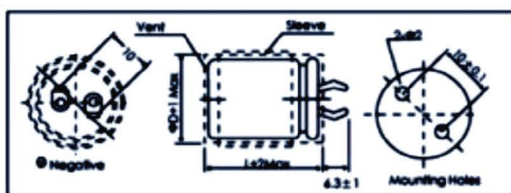


Series Features:

Item	Characteristics																																														
Operating Temperature Range (°C)	-40 ~ +85				-25 ~ +85																																										
Voltage Range (V)	10~400				450 ~ 500																																										
Capacitance Range (μ F)	68~82000																																														
Capacitance Tolerance (20℃, 120Hz)	± 20%																																														
Leakage Current (μA)	After 5 minutes at 20℃ application of rated voltage,leakage current is not more than 0.01CV or 1.5mA,whichever is smaller,C:Nominal Capacitance(μ F) V:Rated Voltage(V)																																														
Dissipation Factor (20 °C, 120Hz)	<table><tr><th>Rated Voltage (V) \ Cap (μF)</th><th>10~16</th><th>25</th><th>35~50</th><th>63</th><th>80~100</th></tr><tr><th>≤ 2700</th><td>-</td><td>-</td><td>0.20</td><td>0.15</td><td>0.15</td></tr><tr><th>3300 ~ 4700</th><td>-</td><td>0.35</td><td>0.25</td><td>0.20</td><td>0.15</td></tr><tr><th>5600 ~ 6800</th><td>0.40</td><td>0.35</td><td>0.30</td><td>0.20</td><td>0.20</td></tr><tr><th>≥ 8200</th><td>0.40</td><td>0.35</td><td>0.35</td><td>0.25</td><td>-</td></tr></table>						Rated Voltage (V) \ Cap (μF)	10~16	25	35~50	63	80~100	≤ 2700	-	-	0.20	0.15	0.15	3300 ~ 4700	-	0.35	0.25	0.20	0.15	5600 ~ 6800	0.40	0.35	0.30	0.20	0.20	≥ 8200	0.40	0.35	0.35	0.25	-	<table><tr><th>Rated Voltage (V) \ φ (mm)</th><th>160~200</th><th>250~500</th></tr><tr><th>22 ~ 30</th><td>0.10</td><td>0.15</td></tr><tr><th>35</th><td>0.12</td><td>0.15</td></tr></table>		Rated Voltage (V) \ φ (mm)	160~200	250~500	22 ~ 30	0.10	0.15	35	0.12	0.15
	Rated Voltage (V) \ Cap (μF)	10~16	25	35~50	63	80~100																																									
	≤ 2700	-	-	0.20	0.15	0.15																																									
	3300 ~ 4700	-	0.35	0.25	0.20	0.15																																									
	5600 ~ 6800	0.40	0.35	0.30	0.20	0.20																																									
	≥ 8200	0.40	0.35	0.35	0.25	-																																									
Rated Voltage (V) \ φ (mm)	160~200	250~500																																													
22 ~ 30	0.10	0.15																																													
35	0.12	0.15																																													
Stability at Low Temperature (Impedance Ratio at 120Hz)	Rated Voltage (V)		10	10~35	50~100	160~200	250~400	450~500																																							
	Z-25℃/Z+20℃		5	4	3		4																																								
	Z-40℃/Z+20℃		18	15	10	6	8	-																																							

	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	4000h	>65000h	2000h	3000h	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 ± 30% of initialvalue		Within ±15 % of initial value	Within ±20 % of initial value	Within ±15 % of initial value
Dissipation Factor	Not more than 300% of specified value		Not more than 150% of specified value	Not more than 200% of specified value	Not more than 150% of specified value
Condition: Applied Voltage Applied Current Applied Temperature Failure Rate Level	U_R I_R 85°C ≤ 1%Failure Rate	U_R $1.2 \times I_R$ 40°C ≤ 1%Failure Rate	U_R I_R 85°C guaranteed	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

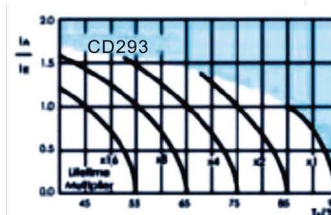
Dimensions (mm)



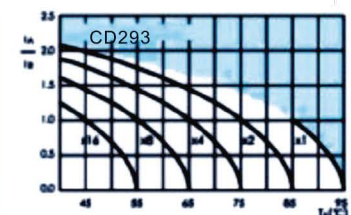
Frequency Coefficient

Freq.(Hz)	50Hz	120Hz	1KHz	10KHz	100KHz
Voltage(V)					
≤ 50	0.95	1.00	1.10	1.15	1.15
6.3 ~ 100	0.95	1.00	1.16	1.30	1.33
≥ 160	0.95	1.00	1.20	1.50	1.55

Lifetime Diagram

Lifetime Diagram $U_R \geq 160V$


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

Lifetime Diagram $U_R < 160V$


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

CD293 Series

Ratings					
V _{DC} (Surge Voltage)	Rated Capa- citan- ce	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φDxL
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
10 (13)	10000	54	43	2.5	22 x 25
	12000	45	36	2.9	22 x 25
	15000	36	29	3.2	22 x 30
		36	29	3.1	25 x 25
	18000	30	24	3.6	25 x 35
		30	24	3.6	25 x 30
	22000	25	20	4	22 x 40
		25	20	4.1	25 x 35
		25	20	4.1	30 x 25
	33000	17	13	4.6	25 x 40
		17	13	4.8	30 x 30
		17	13	4.8	35 x 25
	39000	14	10.9	5.2	25x 45
		14	10.9	5.3	30 x 35
	47000	12	9.1	5.8	25 x50
		12	9.1	6	30 x 40
		12	9.1	6	35 x 30
	56000	9.5	7.6	6.7	30 x 45
		9.5	7.6	6.8	35 x 35
	68000	7.9	6.3	7.5	30 x 50
		7.9	6.3	7.7	35 x 40
16 (20)	82000	6.5	5.2	8.7	35 x 45
	8200	65	52	2.2	22 x 25
		54	43	2.6	22 x 30
	10000	54	43	2.6	25 x 25
		45	36	2.9	22 x 35
	12000	36	29	3.3	22 x 40
		36	29	3.3	25 x 30
	15000	36	29	3.4	30 x 25
		30	24	3.8	22 x 45
	18000	30	24	3.7	25 x 35
		25	20	4.2	22 x 50
	22000	25	20	4.2	25 x 40
		25	20	4.2	30 x 30
		25	20	4.4	35 x 25
	27000	20	16	5	25 x 45
		20	16	5	30 x 35
	33000	17	13	5.6	30 x 40
		17	13	5.6	35 x 30
	39000	14	11	6.2	30 x 45
		14	11	6.3	35 x 35
25 (32)	47000	12	9.1	7	30 x 50
		12	9.1	7.2	35 x 40
	56000	9.5	7.6	8	35 x 45
		83	67	2	22 x 25
	6800	69	55	2.3	22 x 30
		69	55	2.3	25 x 25
	8200	57	46	2.6	22 x 35
		47	38	2.9	22 x 40
	10000	47	38	2.8	25 x 30
		47	38	3	30 x 25
		39	31	3.3	22 x 45
	12000	39	31	3.2	25 x 35
		39	31	3.4	30 x 30
		31	25	3.7	25 x 40
	15000	31	25	3.9	35 x 25
		26	21	4.3	25 x 50
		26	21	4.2	30 x 35
	18000	26	21	4.4	35 x 30
		22	17	4.8	30 x 40
		22	17	5	35 x 35
	22000	15	12	6.5	35 x 40
	39000	12	10	7.5	35 x 45

Ratings					
V _{DC} (Surge Voltage)	Rated Capa- citan- ce	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φDxL
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
35 (44)	3300	100	81	1.8	22 x 25
	3900	86	69	2.1	22 x 30
	4700	71	57	2.2	25 x 25
	5600	72	57	2.3	22 x 35
		72	57	2.3	25 x 30
	6800	59	47	2.9	22 x 40
		59	47	2.6	25 x 35
		59	47	2.7	30 x 25
	8200	57	46	2.8	22 x 50
		57	46	2.8	25 x 40
		57	46	2.8	30 x 30
		57	46	2.9	35 x 25
	10000	47	38	3.1	25 x 45
		47	38	3.2	30 x 35
	12000	39	31	3.5	25 x 50
		39	31	3.5	30 x 40
		39	31	3.6	35 x 30
	15000	31	25	4.1	30 x 45
		31	25	4.1	35 x 35
	18000	26	21	4.6	30 x 50
		26	21	4.7	35 x 40
	22000	22	17	5.3	35 x 45
	27000	18	14	7	35 x 50
50 (63)	2200	120	97	1.7	22 x 25
	2700	100	79	1.9	22 x 30
		100	79	1.9	25 x 25
	3300	100	81	2	22 x 35
	3900	86	69	2.1	22 x 35
		86	69	2.1	25 x 30
		86	69	2.4	30 x 25
	4700	71	57	2.4	22 x 40
		71	57	2.4	25 x 35
	5600	72	57	2.5	22 x 50
		72	57	2.5	25 x 40
		72	57	2.5	30 x 30
		72	57	2.6	35 x 25
	6800	59	47	2.8	25 x 45
		59	47	2.8	30 x 35
		57	46	3.2	25 x 50
	8200	57	46	3	30 x 40
		57	46	3	35 x 30
		47	38	3.4	30 x 45
	10000	47	38	3.4	35 x 35
		39	31	3.8	30 x 50
	12000	39	31	3.8	35 x 40
		31	25	4.5	35 x 50
63 (79)	1500	135	107	1.6	22 x 25
	1800	110	89	1.8	22 x 30
	2200	91	73	2	22 x 30
		91	73	2	25 x 25
	2700	74	59	2.2	22 x 35
		74	59	2.3	25 x 30
	3300	81	65	2.3	22 x 40
		81	65	2.3	25 x 35
		81	65	2.3	30 x 25
	3900	69	55	2.5	22 x 45
		69	55	2.6	25 x 40
		69	55	2.6	30 x 30
		69	55	2.7	35 x 25
	5600	48	38	3.1	25 x45
		48	38	3.2	30 x 35
		48	38	3.3	35 x 30
	6800	40	32	3.6	30 x 40
		40	32	3.7	35 x 35
	8200	41	33	3.7	30 x 50
		41	33	3.8	35 x40
	10000	34	27	4.3	35 x 45
	12000	28	23	4.8	35 x50

CD293 Series

Ratings					
V _{DC} (Surge Voltage)	Rated Capacitance	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φ DxL
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
80 (100)	1000	200	160	1.3	22 x 25
	1200	165	133	1.5	22 x 30
	1500	133	107	1.7	25 x 25
	1800	111	89	1.9	22 x 35
		111	89	1.9	25 x 30
	2200	91	73	2.1	22 x 40
		91	73	2.2	25 x 35
	2700	91	73	2.2	30 x 25
		74	59	2.5	22 x 50
	2700	74	59	2.5	25 x 40
		74	59	2.5	30 x 30
	3300	74	59	2.5	35 x 25
		61	49	2.8	25 x 45
	3300	61	49	2.8	30 x 35
	3900	52	41	3.1	25 x 50
		52	41	3.2	30 x 40
	4700	52	41	3.2	35 x 30
		43	34	3.6	30 x 45
	4700	43	34	3.6	35 x 35
	5600	48	38	3.5	30 x 50
		48	38	3.5	35 x 40
	6800	40	32	4.1	35 x 50
100 (125)	680	293	235	1.1	22 x 25
	820	243	195	1.2	22 x 30
	1000	200	160	1.4	25 x 25
	1200	166	133	1.6	22 x 35
		166	133	1.6	25 x 30
	1500	133	107	1.8	22 x 40
		133	107	1.7	25 x 35
		133	107	1.8	30 x 25
	1800	111	89	2.1	22 x 50
		111	89	2	25 x 40
		111	89	2.1	30 x 30
		111	89	2.2	35 x 25
	2200	91	73	2.2	25 x 45
		91	73	2.3	30 x 35
		91	73	2.5	35 x 30
	2700	74	59	2.6	25 x 50
		74	59	2.7	30 x 40
	3300	61	49	3	30 x 45
		61	49	3.1	35 x 35
	3900	52	41	3.4	30 x 50
		52	41	3.4	35 x 40
	4700	43	34	4	35 x 50
160 (200)	220	600	483	1.1	22 x 25
	270	490	393	1.2	22 x 25
	330	400	322	1.3	22 x 25
	390	341	273	1.5	22 x 30
		341	273	1.5	25 x 25
	470	283	226	1.6	25 x 30
	560	237	190	1.9	22 x 35
		237	190	1.9	25 x 30
	560	237	190	2	30 x 25
		237	190	2	30 x 25

Ratings					
V _{DC} (Surge Voltage)	Rated Capacitance	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φ DxL
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
160 (200)	680	196	157	2.1	22 x 40
		196	157	2.2	25 x 35
	820	162	130	2.5	22 x 50
		162	130	2.4	25 x 40
		162	130	2.5	30 x 30
		195	156	2.4	35 x 25
	1000	133	107	2.7	25 x 45
		133	107	2.8	30 x 35
		160	128	2.7	35 x 30
		111	89	3.1	25 x 50
	1200	111	89	3.2	30 x 40
		133	107	3.0	35 x 35
		89	71	3.7	30 x 45
		107	85	3.5	35 x 40
	1500	89	71	3.9	35 x 45
		73	58	4.5	35 x 50
		495	393	1.2	22 x 25
		400	322	1.4	22 x 30
	390	340	273	1.5	25 x 25
		283	226	1.7	22 x 35
		283	226	1.7	25 x 30
		283	226	1.8	30 x 25
180 (225)	470	237	190	1.9	22 x 40
		237	190	2.0	25 x 35
		196	157	2.3	22 x 50
		196	157	2.2	25 x 40
	680	196	157	2.3	30 x 30
		235	188	2.2	35 x 25
		162	130	2.5	25 x 45
		162	130	2.6	30 x 35
	820	195	156	2.5	35 x 30
		133	107	2.9	25 x 50
		133	107	2.9	30 x 40
		111	89	3.3	30 x 45
	1200	133	107	3.1	35 x 35
		107	85	3.6	35 x 45
		89	71	4.1	35 x 50
		600	483	1.1	22 x 25
	270	492	393	1.2	22 x 30
		402	322	1.4	22 x 30
		402	322	1.4	25 x 25
		341	273	1.6	22 x 35
200 (250)	390	341	273	1.6	25 x 30
		283	226	1.8	22 x 40
		283	226	1.9	30 x 25
		237	190	2.0	22 x 45
	560	237	190	2.0	25 x 35
		237	190	2.1	30 x 30
		285	228	2.0	35 x 25
		196	157	2.3	25 x 40
	680	196	157	2.4	30 x 35
		162	130	2.6	25 x 50
		162	130	2.7	30 x 40
		195	156	2.5	35 x 30
	1000	133	107	3.1	30 x 45
		160	128	2.8	35 x 35
		111	89	3.4	30 x 50
		133	107	3.2	35 x 40
	1500	107	85	3.8	35 x 50
		1990	1592	0.68	22 x 25
		1106	885	0.94	22 x 25
		905	724	1.1	22 x 30
250 (300)	220	905	724	1.1	25 x 25
		737	590	1.2	22 x 35
		603	483	1.4	22 x 40
		603	483	1.4	25 x 30
	330	603	483	1.5	30 x 25
		511	409	1.6	22 x 45
		511	409	1.6	25 x 35
		424	339	1.8	22 x 50
	470	424	339	1.8	25 x 40
		424	339	1.8	30 x 30
		424	339	2.4	35 x 25
		356	285	2.0	25 x 45
	560	356	285	2.0	30 x 35
		293	235	2.3	30 x 40
		293	235	2.6	35 x 30
		243	195	2.6	30 x 45
	820	243	195	2.6	35 x 35
		199	160	3.0	35 x 40
		166	133	3.4	35 x 45
		166	133	3.4	35 x 45

CD293 Series

Ratings					
V _{DC} (Surge Voltage)	Rated Capacitance	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φ D x L
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
315 (365)	100	1990	1592	0.67	22 x 25
	150	1327	1062	0.85	22 x 30
	180	1327	1062	0.85	25 x 25
		1106	885	0.96	22 x 35
	220	1106	885	0.96	25 x 30
		905	724	1.1	22 x 40
		905	724	1.1	25 x 35
		905	724	1.1	30 x 25
	270	737	590	1.2	22 x 45
		737	590	1.3	25 x 40
		737	590	1.3	30 x 30
		737	590	1.3	35 x 25
	330	603	483	1.4	25 x 45
		603	483	1.4	30 x 35
	390	511	409	1.6	25 x 50
		511	409	1.6	30 x 40
	470	511	409	1.6	35 x 30
		424	339	1.8	30 x 45
	560	424	339	1.8	35 x 35
		356	285	2.0	30 x 50
350 (400)	680	356	285	2.0	35 x 40
		293	235	2.3	35 x 45
	82	2427	1941	0.64	22 x 25
	100	1990	1592	0.80	22 x 25
	120	1658	1327	0.82	22 x 30
		1658	1327	0.81	25 x 25
	150	1327	1062	0.94	22 x 35
		1327	1062	0.94	25 x 30
	180	1106	885	1.1	22 x 40
		1106	885	1.1	30 x 25
	220	905	724	1.2	22 x 45
		905	724	1.2	25 x 35
		905	724	1.2	30 x 30
		905	724	1.3	35 x 25
	270	737	590	1.4	25 x 45
		737	590	1.4	30 x 35
	330	603	483	1.6	25 x 50
		603	483	1.6	35 x 30
	390	511	409	1.7	30 x 40
		511	409	1.8	35 x 35
	470	424	339	2.0	30 x 45
		424	339	2.0	35 x 40
	560	356	285	2.3	35 x 45
	680	293	235	2.6	35 x 50
	820	243	195	2.8	35 x 60
400 (450)	68	2926	2341	0.55	22 x 25
	82	2427	1941	0.65	22 x 25
	100	1990	1592	0.70	22 x 30
		1990	1592	0.70	25 x 25
	120	1658	1327	0.79	22 x 35
		1327	1062	0.90	22 x 40
	150	1327	1062	0.89	25 x 30
		1327	1062	0.95	30 x 25
		1106	885	1.0	22 x 45
		1106	885	1.0	25 x 35
	180	1106	885	1.1	30 x 30
		1106	885	1.2	35 x 25
		905	724	1.1	22 x 50
		905	724	1.2	25 x 40
	220	905	724	1.2	30 x 35
		737	590	1.3	25 x 45
		737	590	1.4	25 x 50
	270	737	590	1.5	30 x 40
		603	483	1.6	35 x 30
	330	603	483	1.7	30 x 45
		511	409	1.8	35 x 35
	390	511	409	1.8	30 x 50
		424	339	2.1	35 x 45
	470	424	339	2.1	35 x 45
	560	356	285	2.3	35 x 50

Ratings					
V _{DC} (Surge Voltage)	Rated Capacitance	Max. ESR 20°C, 120Hz	Typ. ESR 20°C, 120Hz	Rated Ripple Current 85°C, 120Hz	Size φ D x L
(V)	(μF)	(mΩ)	(mΩ)	(Arms)	(mm)
450 (500)	68	2926	2341	0.57	22 x 30
	82	2427	1941	0.68	25 x 35
	100	1990	1592	0.72	22 x 35
		1990	1592	0.73	25 x 30
	120	1658	1327	0.80	22 x 40
		1658	1327	0.83	25 x 35
	150	1327	1062	0.95	25 x 40
		1327	1062	0.95	30 x 30
		1327	1062	0.98	35 x 25
		1106	885	1.1	25 x 45
	180	1106	885	1.1	30 x 35
		1106	885	1.2	35 x 25
		905	724	1.2	25 x 50
	220	905	724	1.3	30 x 40
		905	724	1.3	35 x 30
		737	590	1.4	30 x 45
	270	737	590	1.5	35 x 35
		330	603	1.7	30 x 50
	390	511	409	1.9	35 x 45
	470	424	339	2.2	35 x 50
500 (550)	100	1990	1592	0.90	30 x 25
	120	1658	1327	1.0	30 x 30
		1658	1327	1.0	35 x 25
	150	1327	1062	1.2	30 x 35
	180	1106	885	1.4	30 x 40
		1106	885	1.3	35 x 30
	220	905	724	1.6	30 x 45
		905	724	1.5	35 x 35
	270	737	590	1.8	30 x 50
		737	590	1.7	35 x 40
	330	603	483	2.0	35 x 45
	390	511	409	2.3	35 x 50

Customer products are available on request.