

CS Series Low Impedance

CS系列

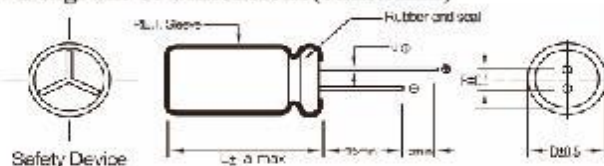
Features

- Very low impedance at high frequency range.
- Endurance with ripple current
- Load life 5000-8000 hrs at 105℃,
- RoHS Compliant

Specifications

Item	Performance Characteristics																		
Operating Temp. Range	-55~+105℃					-25~+105℃													
Rated Voltage Range	6.3to100VDC					160 VDC													
Capacitance Range	1 to 10000 μ F					1 to 2200 μ F													
Capacitance Tolerance	$\pm 20\%$ (120Hz, 20℃)																		
Leakage Current	I _L $\leq$ 0.01CV or 3 (μ A) After 2 minutes whichever is greater measured with rated working voltage applied					I _L $\leq$ 0.02CV (μ A) After 2 minutes with rated working voltage applied													
Dissipation Factor(Tan δ) (max, 120Hz, 20℃)	W.V(VDC)	6.3	10	16	25	35	50	63	80-100	160									
	D.F(%)	19	16	14	12	10	8	7	6	12									
	For capacitance > 1000 μ F, add 2% per anther 1000 μ F																		
Low Temp. Characteristics (Max Impedance Ratio) (120Hz)	W.V(VDC)	6.3	10	16	25	35	50	63	80-100	160									
	Z _(-25℃) /Z _(+25℃)	3							2										
	Z _(-40℃) /Z _(+25℃)	6		4		3													
	For capacitance > 1000 μ F, add 0.5 per anther 1000 μ F for Z _(-25℃) /Z _(+25℃) add 0.5 per anther 1000 μ F for Z _(-40℃) /Z _(+25℃)																		
Load Life	Test conditions Duration time: as righth Ambient temperature: +105℃ Applied voltage: Rated DC working voltage After test requirements at +20℃ Capacitance change: $\leq \pm 20\%$ of the initial measured value Dissipation factor: $\leq 200\%$ of the initial specified value Leakage current: $\leq$ the initial specified value							<table><tr><th>D-Φ</th><th>Life hours</th></tr><tr><td>5-Φ</td><td>5000</td></tr><tr><td>6.3-Φ</td><td>6000</td></tr><tr><td>8-Φ</td><td>7000</td></tr><tr><td>10-Φ -18-Φ</td><td>1000</td></tr></table>		D- Φ	Life hours	5- Φ	5000	6.3- Φ	6000	8- Φ	7000	10- Φ -18- Φ	1000
	D- Φ	Life hours																	
5- Φ	5000																		
6.3- Φ	6000																		
8- Φ	7000																		
10- Φ -18- Φ	1000																		
Shelf Life	Test conditions Duration time: 1000hrs Ambient temperature: +105℃ Applied voltage: None After test requirements at +20℃ : Same limits as Load life. Pre-treatment for measurements shall be conducted after application of DC working voltage for 30minutes																		
Industrial	JIS C-5101-4(IEC30384-4)																		

Diagram of dimensions(cunit:mm)



ΦD	5	6.3	8	10	13	16	18	22
Φd	0.5			0.6		0.8		
F	2.0	2.5	3.5	5.0		7.5		10
L	L $\pm$ 1.0max			L $\pm$ 1.5max		L $\pm$ 2.0max		

Multiplier for ripple current vs frequency

Cap. (μ F)	Fre.(Hz)	50(60)	120	400	1K	10K	100K
≤ 10		0.47	0.59	0.76	0.85	0.97	1.0
12-100		0.52	0.62	0.80	0.89	0.97	1.0
120-1000		0.58	0.72	0.84	0.90	0.98	1.0
> 1000		0.63	0.78	0.87	0.91	0.98	1.0

Multiplier for ripple current vs temperature

Temp.(℃)	45	60	70	85	95	105
Multiplier	2.10	1.90	1.65	1.40	1.25	1.00

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WV(sV) Cap(μF)	6.3(7.2)			10 (13)			16 (20)			25 (32)		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
22							5*11	220	0.400	5*11	220	1.100
33							5*11	220	0.400	5*11	220	0.400
47							5*11	300	0.380	5*11	300	0.300
56							5*11	300	0.380	5*11	300	0.300
68				5*11	85	1.400	5*11	300	0.380	5*11	345	0.300
82				5*11	105	1.000	5*11	300	0.340	6.3*12	490	0.300
100	5*11	85	1.000	5*11	121	0.620	5*11	345	0.340	6.3*12	490	0.200
120	5*11	105	0.760	5*11	134	0.560	6.3*12	345	0.340	6.3*12	540	0.200
150	5*11	115	0.700	5*11	150	0.520	6.3*12	480	0.360	6.3*12	540	0.150
180	6.3*12	180	0.500	6.3*12	175	0.440	6.3*12	480	0.360	6.3*12	550	0.150
220	6.3*12	180	0.500	6.3*12	195	0.360	6.3*12	540	0.300	6.3*12	750	0.150
270	6.3*12	195	0.480	6.3*12	230	0.320	6.3*12	540	0.280	8*12	950	0.100
330	6.3*12	200	0.400	6.3*12	270	0.220	8*12	550	0.250	8*12	950	0.100
390	8*12	288	0.280	8*12	310	0.190	10*13	945	0.100	10*13	1150	0.100
470	8*12	300	0.190	8*12	360	0.150	10*13	945	0.100	10*16	1230	0.085
560	8*12	360	0.174	8*16	435	0.140	8*16	1020	0.100	8*20	1420	0.085
							10*13	1080	0.100	10*16	1720	0.076
680	8*12	400	0.160	8*16	505	0.130	8*16	1250	0.100	10*20	1850	0.068
	8*14	407	0.168	10*13	587	0.120	10*17	1330	0.100			
820	8*16	485	0.140	8*16	656	0.110	8*16	1250	0.100	10*20	1960	0.065
				10*13	760	0.096	10*17	1330	0.100			
1000	10*13	500	0.110	8*16	840	0.095	8*20	1500	0.065	10*20	1860	0.070
				10*13	853	0.094	10*17	1800	0.064	13*20	1960	0.065
1200	10*17	590	0.100	10*17	883	0.086	10*20	1850	0.058	13*20	2280	0.055
1500	10*20	700	0.090	10*20	985	0.078	10*25	1960	0.055	13*20	2280	0.055
							13*20	2120	0.053	13*25	2280	0.045
1800	10*20	750	0.082	10*20	1000	0.076	10*25	1960	0.051	13*25	2900	0.042
							13*20	2120	0.051			
2200	10*20	860	0.074	10*20	1180	0.065	10*25	2480	0.048	13*25	2900	0.040
				13*16	1200	0.064	13*20	2620	0.046			
2700	13*16	1040	0.068	13*16	1500	0.062	13*25	2480	0.038	13*30	3570	0.030
				13*20	1550	0.061						
3300	13*20	1145	0.052	13*20	2180	0.060	13*25	2900	0.035	16*26	3630	0.030
3900	13*25	1335	0.044	13*25	2250	0.058	13*30	3400	0.032	16*31	3890	0.026
							16*26	3250	0.030			
4700	13*30	1600	0.042	16*26	3200	0.055	16*31	3630	0.030	16*35	3890	0.024
5600	13*35	1635	0.040	16*31	3300	0.052	16*35	3680	0.028	18*36	3980	0.024

Ripple Current(mA,rms) at 105℃, 100KHz Max Impedance(Ω) at 20℃, 100KHz

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Case Size

WV(V) Cap(μF)	35 (44)			50 (63)			63 (72)		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1	5*11	160	4.000	5*11	160	4.000	5*11	160	4.000
2.2	5*11	160	4.000	5*11	160	4.000	5*11	160	2.500
3.3	5*11	160	4.000	5*11	160	4.000	5*11	160	1.500
4.7	5*11	160	2.500	5*11	160	2.500	5*11	160	1.500
6.8	5*11	160	2.500	5*11	160	2.000	5*11	160	1.500
8.2	5*11	160	2.000	5*11	160	2.000	5*11	160	1.500
10	5*11	160	1.800	5*11	160	1.800	5*11	160	1.500
12	5*11	160	1.500	5*11	160	1.500	5*11	160	1.500
15	5*11	160	1.300	5*11	160	1.300	5*11	160	1.300
18	5*11	160	1.300	5*11	160	2.000	6.3*12	175	1.500
22	5*11	160	1.100	5*11	230	1.100	6.3*12	175	1.000
27	5*11	160	1.100	5*11	230	1.000	6.3*12	260	0.980
33	5*11	210	1.050	6.3*12	250	1.000	6.3*12	340	0.950
39	5*11	210	0.850	6.3*12	350	0.820	8*12	350	0.800
47	6.3*12	345	0.650	6.3*12	390	0.600	8*12	380	0.63
56	6.3*12	490	0.550	6.3*12	385	0.420	8*12	530	0.380
68	6.3*12	540	0.480	6.3*12	400	0.400	8*12	724	0.370
82	6.3*12	540	0.300	6.3*12	700	0.280	8*12	724	0.250
100	6.3*12	540	0.250	8*12	780	0.200	10*13	920	0.180
120	8*12	540	0.200	8*12	820	0.180	8*16	980	0.170
							10*13	920	0.160
							8*16	980	0.110
150	8*12	940	0.140	10*13	780	0.130	8*16	980	0.110
				8*16	950	0.120	10*17	1200	0.100
180	8*12	940	0.130	8*16	1090	0.120	10*17	1200	0.100
				10*16	1230	0.115			
220	8*12	940	0.120	8*16	1090	0.110	10*20	1200	0.100
				10*16	1330	0.100			
270	8*16	1220	0.090	10*17	1520	0.095	13*16	1300	0.090
	10*13	1020	0.095	10*20	1580	0.094			
330	10*13	1340	0.094	10*17	1520	0.092	13*16	1600	0.090
				10*20	1580	0.091	13*20	1870	0.092
390	8*20	1680	0.085	10*20	1580	0.076	13*20	1870	0.074
	10*16	1620	0.084	13*16	1520	0.074			
470	8*20	1920	0.075	13*16	1680	0.062	13*25	2100	0.060
	10*16	1900	0.068	13*20	1700	0.065			
560	10*20	1960	0.064	13*20	1800	0.060	13*25	2300	0.580
							16*20	2500	0.060
680	13*20	2250	0.060	13*20	1950	0.058	16*26	2730	0.055
				13*25	2120	0.055			

Ripple Current(mA,rms) at 105℃, 100KHz Max Impedance(Ω) at 20℃, 100KHz

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● Case Size

W V (sv) Cap (uF)	35 (44)			50 (63)			63 (72)		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
820	13*20	2480	0.058	13*25	2320	0.052	16*26	2730	0.050
1000	13*20	2480	0.045	13*25	2400	0.046	16*26	2810	0.038
				16*26	2680	0.040	16*31	2990	0.030
1200	13*20	2480	0.045	16*26	2680	0.038	16*31	2990	0.030
1500	13*25	3050	0.042	18*26	3280	0.035	18*31	3100	0.028
1800	16*26	3570	0.038	18*31	3300	0.033	18*35	3500	0.025
2200	16*26	3570	0.035	18*31	3280	0.030	18*35	3600	0.022
2700	16*31	4000	0.032	18*32	3680	0.028	20*36	3680	0.021
3300	18*31	4080	0.026	20*36	3880	0.024	22*36	3780	0.020
3900	18*35	4080	0.024	20*36	3980	0.022			
4700	18*35	4080	0.022	22*36	4080	0.020			

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Cap(μF)	WV(V)	80(92)			100(125)		
		Size	Ripple	Impedance	Size	Ripple	Impedance
1		5*11	150	6.000	5*11	150	6.000
2.2		5*11	150	6.000	5*11	150	6.000
3.3		5*11	150	2.000	5*11	150	2.000
4.7		5*11	150	2.000	5*11	150	2.000
5.6		5*11	150	2.000	5*11	150	1.500
6.8		5*11	150	2.000	5*11	150	1.500
8.2		5*11	150	1.500	5*11	150	1.500
10		6.3*12	160	1.500	6.3*12	240	1.000
12		6.3*12	160	1.500	6.3*12	240	1.000
15		6.3*12	240	1.000	6.3*12	260	1.000
18		6.3*12	270	0.650	6.3*12	260	1.000
22		6.3*12	270	0.650	6.3*12	260	0.800
27		6.3*12	270	0.630	8*12	450	0.600
33		6.3*12	270	0.650	8*12	450	0.600
39		8*12	450	0.400	8*12	450	0.400
47		8*12	450	0.400	8*16	580	0.300
56		8*12	450	0.400	8*16	620	0.300
68		10*13	480	0.350	10*13	650	0.250
82		8*16	565	0.300	10*17	780	0.200
100		10*17	780	0.200	10*20	1040	0.150
120		10*17	780	0.200	10*20	1170	0.130
150		10*20	1040	0.130	13*20	1280	0.150
180		10*20	1040	0.130	13*20	1430	0.100
220		13*20	1040	0.130	13*20	1580	0.100
270		13*20	1430	0.100	13*25	1720	0.065
330		13*25	1620	0.070	13*25	2280	0.065
390		13*25	1750	0.060	16*26	2280	0.050
470		13*25	1780	0.060	16*26	2280	0.050
560		16*21	2210	0.050	16*31	2600	0.035
680		16*26	2400	0.040	18*31	2600	0.035
820		16*31	2400	0.036	18*35	2680	0.030
1000		18*32	2470	0.034	20*35	2780	0.025
1200		18*32	2860	0.030	20*36	2880	0.025
1500		18*35	3500	0.030	22*36	2880	0.025
1800		20*36	3580	0.030	25*36	2880	0.025
2200		22*36	3680	0.030	25*36	2880	0.025

Current(mA,rms) at 105℃, 100KHz Max Impedance(Ω) at 20℃, 100KHz

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WV(SV) Cap(μF)	160(200)			200(250)			250(300)			350(400)		
	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
1.0										6.3*12	95	28
1.2										6.3*12	95	28
1.5										6.3*12	95	28
1.8										6.3*12	95	19
2.2	6.3*12	70	15	6.3*12	95	14	6.3*12	95	14	6.3*12	95	19
2.7	6.3*12	95	15	6.3*12	95	14	6.3*12	95	14	6.3*12	105	16
3.3	6.3*12	95	15	6.3*12	95	14	6.3*12	95	14	8*12	120	15
3.9	6.3*12	95	15	6.3*12	95	14	6.3*12	95	14	8*12	120	15
4.7	6.3*12	105	15	6.3*12	105	14	6.3*12	100	14	8*12	120	15
5.6	6.3*12	105	15	6.3*12	105	7.8	6.3*12	100	8	8*16	140	15
										10*13	180	15
6.8	6.3*12	115	15	8*12	135	7.8	8*12	135	8	8*16	140	11
										10*13	180	11
8.2	6.3*12	125	12	6.3*15	135	7.8	8*12	135	8	8*16	200	11
				8*12	135	7.8				10*13	250	11
10	8*12	160	12	6.3*15	150	7.8	8*12	150	8	10*17	250	8
				8*12	220	7.8						
12	8*12	160	12	8*16	230	6	10*13	250	6	10*17	300	8
15	8*12	132	12	8*16	230	3.5	10*13	250	3.5	10*20	400	6
										13*16	500	6
18	8*16	200	7.5	10*17	350	3.5	10*17	320	3.4	10*20	450	6
	10*13	300	7.5							13*16	550	6

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	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance	Size	Ripple	Impedance
22	8*16	200	7.5	10*17	350	3.5	10*17	350	3.4	10*25	600	6
	10*13	300	7.5							13*20	550	6
27	10*17	350	5.6	10*20	450	3.0	13*20	600	3.0	13*20	650	6
33	10*17	350	5.6	10*20	500	1.6	10*25	750	1.7	13*25	800	6
				13*16	550	1.6	13*20	800	1.7			
39	10*20	400	5.3	13*16	550	1.6	13*20	860	1.5	13*25	900	4.5
	13*16	450	5.3									
47	10*20	400	5.3	13*20	630	1.4	13*20	860	1.4	16*26	1050	2.2
	13*16	450	5.3									
56	10*20	550	4.3	13*20	680	1.4	13*25	860	2.2	16*26	1050	2.2
	13*16	450	4.3									
68	10*25	680	4.3	13*20	950	1.3	16*26	1000	2.0	16*26	1100	2.0
	13*20	770	4.3									
82	10*25	880	4.3	13*25	1050	1.2	16*26	1080	1.6	18*31	1300	1.6
	13*20	770	4.3									
100	13*20	1040	3.0	13*25	1210	1.3	16*26	1300	1.6	18*32	1800	1.6
				16*21	1200	1.3	16*26	1300	1.6	18*32	1800	1.6
120	13*25	1260	3.0	16*26	1550	1.2	16*31	1600	1.6	18*35	2000	1.6
150	13*25	1400	2.2	16*31	1680	1.3	18*32	1800	0.9	20*36	2500	1.5
180	16*26	1600	1.8	18*32	2000	1.2	18*32	2000	0.9	20*36	2800	1.5
220	16*31	1800	1.8	18*35	2200	0.9	20*36	2400	0.8	22*36	3250	1.4
270	18*32	2080	0.9	18*35	2400	0.9	22*36	2480	0.8			
330	18*32	2400	0.9	20*36	2480	0.8						
390	18*35	2860	0.8	22*36	2580	0.8						
470	20*36	2880	0.8	22*36	2580	0.8						
560	20*36	2710	0.90									
680	22*36	2710	0.90									
820	22*36	2780	0.90									
1000	25*36	2780	0.90									

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Case Size

WV(V) Cap(μF)	400(450)			450(500)		
	Size	Ripple	Impedance	Size	Ripple	Impedance
1.0	6.3*10	62	28	6.3*12	60	32
1.2	6.3*12	62	28	8*12	70	27
1.5	6.3*12	70	28	8*12	70	27
1.8	6.3*12	70	19	8*12	800	21
2.2	6.3*9	70	16	6.3*12	90	16
2.7	6.3*12	80	16	8*16	130	16
	8*10	100	16			
3.3	6.3*12	80	16	8*16	135	16
	8*10	100	16			
3.9	6.3*12	100	16	8*16	135	16
	8*10	100	16			
4.7	8*12	100	16	8*16	135	11
5.6	8*10	130	11	10*17	200	8
6.8	8*16	180	11	10*17	200	8
	10*13	180	11			
8.2	8*16	160	11	10*20	300	8
	10*13	180	8			
10	8*20	200	8	10*20	280	7
	10*16	230	8			
12	10*16	260	8	13*20	350	7
15	10*20	300	6	10*20	290	6
	13*16	550	6	13*16	330	6
18	13*16	400	6	13*20	400	5.3
22	10*25	500	5	13*20	400	4.2
	13*20	400	5			
27	13*20	500	4.5	16*26	680	2
33	13*20	500	4	13*25	630	2
				16*22	680	2
39	16*26	950	3	16*26	600	2
47	10*50	1200	2.2	16*26	900	1.6
	16*26	1000	2.2			
56	16*26	1000	2.2	18*32	1050	1.6
68	16*26	1000	1.6	18*32	1080	1.4
82	18*32	1650	1.6	18*35	1290	1.3
100	18*32	1850	1.6	20*36	1560	1.3
120	18*32	2050	1.6	18*35	1350	1.2
150	18*35	2400	1.6	22*36	1960	1.1
180	22*36	3250	1.5			

Ripple Current(mA,rms) at 105℃, 100KHz Max Impedance(Ω) at 20℃, 100KHz

● For special designing requirement, please contact us