

# SF (CD288)

- ⊙ High frequency, 85°C, Low ESR.
- ⊙ Used in color-TV, VCD, audio set switching power supply, etc.
- ⊙ Adapted to the ROHS directive (2002/95/EC).

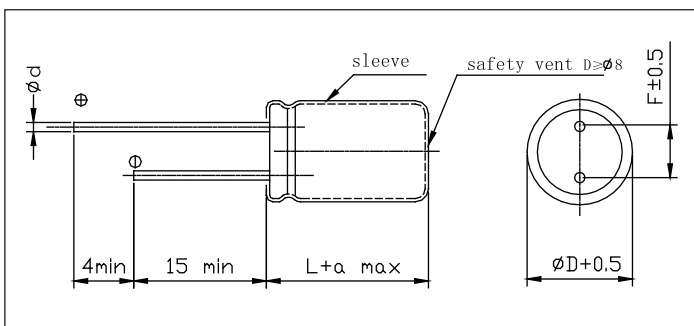


## Specifications

Item	Performance Characteristics																															
Operating temperature range	-40°C~ +85°C	-25°C~ +85°C																														
Rated voltage range	6.3 ~100V	160 ~450V																														
Nominal capacitance range	0.47~15000 $\mu$ F																															
Capacitance tolerance	$\pm$ 20% (120Hz, +20°C)																															
Leakage current	$I \leq 0.02CV$ ( $\mu$ A) 4 $\mu$ A 2 (at 20°C, after 2 minutes) (Whichever is greater)	$I \leq 0.03CV$ ( $\mu$ A) (1 minute)																														
Dissipation factor ( $tg \delta$ ) (+20°C, 120Hz)	<table border="1"> <tr> <td><math>U_R</math> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td><math>tg \delta</math></td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.10</td> <td>0.08</td> <td>0.08</td> </tr> </table> <table border="1"> <tr> <td><math>U_R</math> (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td><math>tg \delta</math></td> <td>0.20</td> <td>0.20</td> <td>0.20</td> <td>0.25</td> <td>0.25</td> </tr> </table> <p>For capacitance value &gt;1000 <math>\mu</math>F, add 0.02 per another 1000 <math>\mu</math>F</p>		$U_R$ (V)	6.3	10	16	25	35	50	63	100	$tg \delta$	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08	$U_R$ (V)	160	200	250	400	450	$tg \delta$	0.20	0.20	0.20	0.25	0.25
$U_R$ (V)	6.3	10	16	25	35	50	63	100																								
$tg \delta$	0.22	0.19	0.16	0.14	0.12	0.10	0.08	0.08																								
$U_R$ (V)	160	200	250	400	450																											
$tg \delta$	0.20	0.20	0.20	0.25	0.25																											
Temperature Characteristics (Impedance ratio at 120Hz)	<table border="1"> <tr> <td><math>U_R</math> (V)</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> </tr> <tr> <td>Z-40°C/ Z+20°C</td> <td>5</td> <td>5</td> <td>5</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> <td>4</td> </tr> </table> <table border="1"> <tr> <td><math>U_R</math> (V)</td> <td>160</td> <td>200</td> <td>250</td> <td>400</td> <td>450</td> </tr> <tr> <td>Z-20°C/ Z+20°C</td> <td colspan="2">4</td> <td colspan="3">5</td> </tr> </table>		$U_R$ (V)	6.3	10	16	25	35	50	63	100	Z-40°C/ Z+20°C	5	5	5	4	4	4	4	4	$U_R$ (V)	160	200	250	400	450	Z-20°C/ Z+20°C	4		5		
$U_R$ (V)	6.3	10	16	25	35	50	63	100																								
Z-40°C/ Z+20°C	5	5	5	4	4	4	4	4																								
$U_R$ (V)	160	200	250	400	450																											
Z-20°C/ Z+20°C	4		5																													
Load life	After applying rated voltage for 2000 hours at +85°C and then resumed 16 hours: Capacitance change : $\pm$ 20% Initial measured value Leakage current : $\leq$ Initial specified value Dissipation factor : $\leq$ 2 times Initial specified value																															
Shelf life	After storage for 1000 hours at +85°C and then resumed 16 hours Capacitance change : $\pm$ 20% Initial measured value Leakage current : $\leq$ 2 times Initial specified value Dissipation factor : $\leq$ 2 times Initial specified value																															

## Case table

Unit: mm



D	5	6.3	8	10	13	16, 18, 19
F	2.0	2.5	3.5	5.0	5.0	7.5
d	0.5	0.5, 0.6	0.6	0.6	0.8	

$\alpha$ MAX	(L < 20) 1.5
	(L $\geq$ 20) 2.0

### Dimensions

$\varnothing D \times L$  (mm)  
 Impedance (20°C / 100KHz)  
 Rated Ripple Current (+85°C, 120Hz)

$C_R(\mu F)$	Item Code	$U_R$			$U_R$			$U_R$			$U_R$				
		6.3V(0J)			10V(1A)			16V(1C)			25V(1E)				
		case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms		
22	220														
27	270														
33	330														
39	390										5x11	4.0	70		
47	470										5x11	3.3	80		
56	560									5x11	2.7	75	6.3x11	2.5	105
68	680									5x11	2.1	85	6.3x11	1.9	115
82	820				5x11	1.8	80	6.3x11	1.6	110	6.3x11	1.5	130		
100	101	5x11	1.6	80	5x11	1.36	90	6.3x11	1.15	125	6.3x11	1.05	150		
120	121	5x11	1.3	95	6.3x11	1.12	110	6.3x11	0.95	145	8x12	0.89	200		
150	151	6.3x11	0.99	125	6.3x11	0.91	130	6.3x11	0.82	160	8x12	0.75	225		
180	181	6.3x11	0.82	145	6.3x11	0.74	150	8x12	0.63	210	8x12	0.59	260		
220	221	6.3x11	0.71	170	8x12	0.62	170	8x12	0.55	235	8x16	0.51	320		
270	271	8x12	0.62	225	8x12	0.51	220	8x12	0.45	275	8x16	0.40	370		
330	331	8x12	0.51	255	8x12	0.44	245	8x16	0.39	335	8x20	0.35	460		
390	391	8x12	0.42	280	8x12	0.37	285	8x16	0.31	370	8x20	0.28	500		
470	471	8x16	0.39	355	8x16	0.32	350	8x20	0.28	465	10x20	0.24	630		
560	561	8x16	0.31	395	8x16	0.27	390	8x20	0.245	505	10x20	0.200	710		
680	681	8x20	0.24	495	8x20	0.26	485	10x20	0.21	630	10x25	0.182	810		
820	821	8x20	0.19	550	8x20	0.2	540	10x20	0.17	690	10x30	0.157	970		
1000	102	10x20	0.156	670	10x20	0.17	685	10x25	0.15	845	13x20	0.135	990		
1200	122	10x20	0.135	735	10x20	0.14	750	10x30	0.125	990	13x25	0.090	1175		
1500	152	10x25	0.11	895	10x25	0.12	920	13x20	0.115	1025	13x25	0.075	1270		
1800	182	10x30	0.084	1010	10x30	0.09	1060	13x25	0.08	1220	13x30	0.060	1460		
2200	222	13x25	0.075	1080	13x20	0.071	1085	13x30	0.072	1385	13x35	0.05	1605		
2700	272	13x25	0.073	1170	13x25	0.065	1255	13x30	0.052	1525	13x40	0.04	1740		
3300	332	13x30	0.071	1255	13x30	0.056	1425	13x35	0.040	1630	16x30	0.037	1820		
3900	392	13x30	0.065	1400	13x35	0.042	1610	13x40	0.036	1770	16x35	0.035	1975		
4700	472	13x35	0.060	1550	13x40	0.040	1735	16x30	0.034	1820	16x40	0.033	2075		
5600	562	13x40	0.057	1670	16x30	0.038	1780	16x35	0.032	1975	18(19)x40	0.032	2180		
6800	682	16x30	0.050	1745	16x35	0.036	1920	16x40	0.03	2075					
8200	822	16x35	0.045	1805	16x40	0.034	1975	18(19)x3	0.028	2140					
10000	103	16x40	0.043	2025	18(19)x40	0.033	2075	18(19)x4	0.025	2240					
12000	123	18(19)x35	0.041	2075											
15000	153	18(19)x40	0.039	2180											

$C_R(\mu F)$	Item Code	$U_R$			$U_R$			$U_R$			$U_R$		
		35V(1V)			50V(1H)			63V(1J)			100V(2A)		
		case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mA rms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms	case size $\varnothing D \times L$	Imp. ( $\Omega$ max)	Ripple mArms
0.47	R47				5x11	31	9						
0.68	R68				5x11	24	11						
1	010				5x11	22	14						
1.5	1R5				5x11	20.6	18						
2.2	2R2				5x11	19.2	22				5x11	8.95	15
3.3	3R3				5x11	18.5	26				5x11	7.21	20
4.7	4R7				5x11	16.5	32				6.3x11	6.38	25
6.8	6R8				5x11	12.1	36				6.3x11	5.72	30
10	100				5x11	10.2	46	5x11	9.1	55	6.3x11	4.55	40
12	120				5x11	8.6	50	5x11	7.5	60	6.3x11	4.25	45
15	150				5x11	7.31	55	6.3x11	6.97	75	8x12	4.12	50
18	180				5x11	6.42	65	6.3x11	6.2	80	8x12	3.92	55
22	220				6.3x11	5.6	80	6.3x11	4.8	90	8x12	3.78	95
27	270				6.3x11	4.2	90	6.3x11	3.97	105	8x16	3.63	115
33	330	6.3x11	3.8	130	6.3x11	3.61	105	8x12	3.32	135	8x16	3.1	135
39	390	6.3x11	3.21	145	6.3x11	3.15	120	8x12	2.98	150	8x20	2.84	160
47	470	8x12	2.4	185	8x12	2.32	155	8x12	2.21	170	10x20	1.63	200
56	560	8x12	1.79	210	8x12	1.65	175	8x16	1.55	220	10x20	1.57	215
68	680	8x12	1.4	245	8x12	1.32	205	8x16	1.21	150	10x25	1.13	260
82	820	8x16	0.98	295	8x16	1.2	255	8x20	0.98	305	10x30	1.05	305
100	101	8x16	0.85	330	8x20	0.78	325	10x20	0.54	395	10x30	0.77	350
120	121	8x20	0.71	415	8x20	0.66	365	10x20	0.49	445	13x25	0.68	415
150	151	8x20	0.55	465	10x20	0.48	455	10x25	0.36	530	13x30	0.51	440
180	181	10x20	0.46	585	10x20	0.35	505	10x30	0.29	630	13x30	0.47	515
220	221	10x20	0.35	645	10x25	0.28	605	13x20	0.245	665	13x35	0.35	585
270	271	10x25	0.31	765	10x30	0.26	720	13x25	0.238	800	13x40	0.33	675
330	331	10x30	0.23	905	10x30	0.185	795	13x25	0.160	875	16x30	0.23	925
390	391	13x20	0.21	930	13x25	0.171	895	13x30	0.152	1005	16x35	0.21	1070
470	471	13x25	0.16	1100	13x25	0.130	950	13x35	0.115	1135	16x40	0.16	1225
560	561	13x25	0.14	1195	13x30	0.120	1085	13x40	0.111	1265	18(19)x35	0.152	1345
680	681	13x30	0.110	1165	13x35	0.090	1225	16x30	0.080	1360	18(19)x40	0.13	1525
820	821	13x35	0.10	1535	13x40	0.075	1360	16x35	0.068	1505			
1000	102	13x40	0.08	1605	16x30	0.06	1465	16x40	0.055	1640			
1200	122	16x30	0.07	1775	16x35	0.057	1590	18(19)x40	0.053	1765			
1500	152	16x35	0.05	1925	16x40	0.040	1735						
1800	182	16x40	0.04	2085	18(19)x35	0.039	1770						
2200	222	18(19)x40	0.03	2185	18(19)x40	0.037	1840						

LOW Z

**Dimensions**

$U_R$		160V		200V		250V		400		450V	
		Code		2C		2D		2E		2G	
1	010	8x12	19	8x12	19	8x12	19	10x13	17	10x16	17
2.2	2R2	8x12	30	8x12	30	10x13	32	10x16	28	10x20	28
3.3	3R3	10x13	50	10x13	50	10x16	52	10x20	47	13x20	48
4.7	4R7	10x13	57	10x16	57	10x20	60	13x20	55	13x25	55
10	100	10x16	90	10x20	90	13x20	98	13x25	85	16x25	90
22	220	13x20	140	13x25	140	16x25	150	16x30	130	16x25	135
33	330	13x25	175	16x25	175	16x25	180	18(19)x35	170	18(19)x40	170
47	470	16x25	220	16x25	220	16x30	225				
100	101	16x35	330	18(19)x40	330	18(19)x40	345				

Rated ripple current(mA, +85°C, 120Hz)

General

◇ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT

