

Series CF

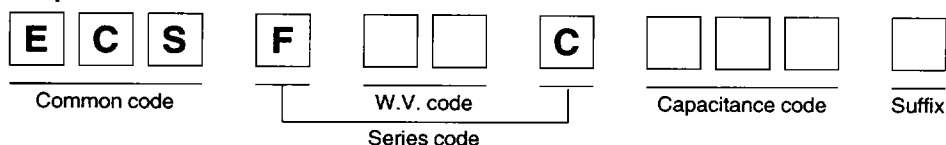
*Series CF is not recommended for new design.
 Select FS Series as alternative.*

Specifications

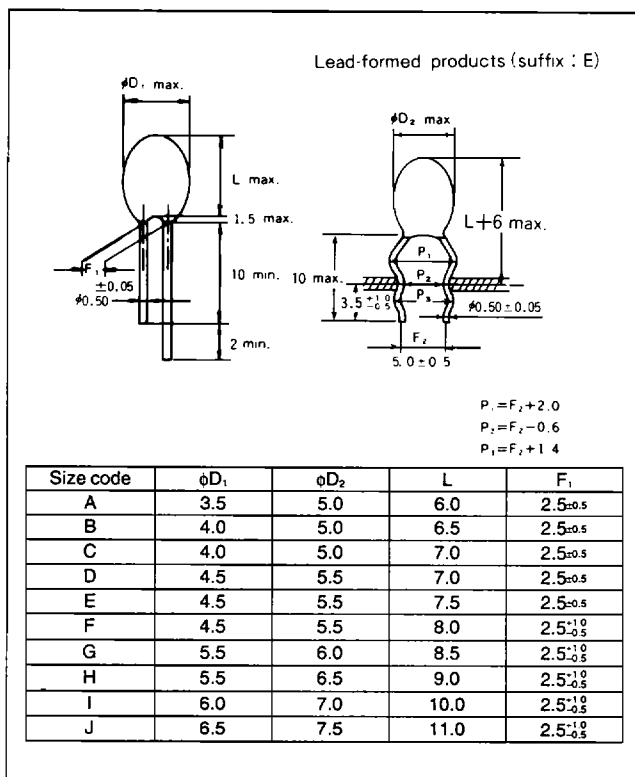
Item	Performance Characteristics																							
Operating Temperature Range	-55 to +125 °C																							
Rated Working Voltage Range	10 to 35 V DC																							
Nominal Capacitance Range	0.1 to 47 μF																							
Capacitance Tolerance	±10 % for ≥ 1 μF, ±15 % for ≤ 0.68 μF (120 Hz, +20 °C)																							
Leakage Current	I ≤ 0.008 CV or 0.05 [μA] Whichever is greater measured after 2 minutes application of rated working voltage at +20 °C.																							
tan δ (120 Hz, +20 °C)	0.04 max. for ≤ 1.0 μF 0.06 max. for ≥ 1.5 μF																							
Characteristics at High and Low Temperature	-55 °C	Capacitance change	±12 % of initial measured value at +20 °C																					
	+125 °C	Leakage current	≤ 0.1 CV or 5 [μA], whichever is greater																					
		Capacitance change	±15 % of initial measured value at +20 °C																					
Moisture Resistance	Test conditions Relative humidity : 90 to 95 % without load Ambient temperature : +60 °C Duration : 1000 hours Post test requirements at +20 °C Leakage current : ≤ 0.012 CV or 0.75 [μA], whichever is greater Capacitance change : ±10 % of initial measured value tan δ : ≤ 150 % of initial specified value																							
Endurance	Test conditions																							
	<table><tr><td>Conditions Item</td><td>Derating</td><td colspan="2">Rating</td></tr><tr><td>Duration</td><td>2000 hours</td><td colspan="2">2000 hours</td></tr><tr><td>Ambient temperature</td><td>+125 °C</td><td colspan="2">+85 °C</td></tr><tr><td>Applied voltage</td><td>Derated working voltage</td><td colspan="2">Rated working voltage</td></tr><tr><td>Source impedance</td><td>1 Ω/V</td><td colspan="2">1 Ω/V</td></tr></table>				Conditions Item	Derating	Rating		Duration	2000 hours	2000 hours		Ambient temperature	+125 °C	+85 °C		Applied voltage	Derated working voltage	Rated working voltage		Source impedance	1 Ω/V	1 Ω/V	
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Derating voltage at +125 °C																								
<table><tr><td>Working voltage [V DC]</td><td>10</td><td>16</td><td>25</td><td>35</td></tr><tr><td>Derating voltage [V DC]</td><td>7</td><td>10</td><td>16</td><td>22</td></tr></table>				Working voltage [V DC]	10	16	25	35	Derating voltage [V DC]	7	10	16	22											
Working voltage [V DC]	10	16	25	35																				
Derating voltage [V DC]	7	10	16	22																				
Post test requirements at +20 °C Leakage current : ≤ 0.01 CV or 0.625 [μA], whichever is greater Capacitance change : ±10 % of initial measured value tan δ : ≤ Initial specified value																								
Shelf Life	Test conditions																							
	Duration : 2000 hours		Post test requirements at +20 °C																					
	Ambient temperature : +125 °C		Same limits for "Endurance".																					
	Applied voltage : (none)																							

Design, Specifications are subject to change without notice. Ask factory for technical specifications before purchase and/or use. Whenever a doubt about safety arises from this product, please inform us immediately for technical consultation without fail.

Explanation of Part Numbers



Dimensions in mm (not to scale)



Case Size

W.V. [V.DC]	10 (1A)	16 (1C)	25 (1E)	35 (1V)
Cap. [μF]				
0.10 (104)				A
0.15 (154)				A
0.22 (224)				A
0.33 (334)				A
0.47 (474)				B
0.68 (684)				B
1.0 (105)				C
1.5 (155)			C	D
2.2 (225)		C	D	E
3.3 (335)	C	D	E	F
4.7 (475)	D	E	F	G
6.8 (685)	E	F	G	I
10 (106)	F	G	I	
15 (156)	G	H	J	
22 (226)	H	I		
33 (336)	I	J		
47 (476)	J			

() indicates W.V. and capacitance code

Standard Products

W.V. [V.DC]	Cap. [μF]	Part No.	D.C.L. (+20 °C/2 min) [μA] max.	tan δ (120 Hz, +20 °C) max.
10	3.3	ECSF1AC335	0.3	0.06
	4.7	ECSF1AC475	0.4	0.06
	6.8	ECSF1AC685	0.6	0.06
	10	ECSF1AC106	0.8	0.06
	15	ECSF1AC156	1.2	0.06
	22	ECSF1AC226	1.8	0.06
	33	ECSF1AC336	2.7	0.06
	47	ECSF1AC476	3.8	0.06
16	2.2	ECSF1CC225	0.3	0.06
	3.3	ECSF1CC335	0.5	0.06
	4.7	ECSF1CC475	0.7	0.06
	6.8	ECSF1CC685	0.9	0.06
	10	ECSF1CC106	1.3	0.06
	15	ECSF1CC156	2.0	0.06
	22	ECSF1CC226	2.9	0.06
	33	ECSF1CC336	4.3	0.06
25	1.5	ECSF1EC155	0.3	0.06
	2.2	ECSF1EC225	0.5	0.06

W.V. [V.DC]	Cap. [μF]	Part No.	D.C.L. (+20 °C/2 min) [μA] max.	tan δ (120 Hz, +20 °C) max.
25	3.3	ECSF1EC335	0.7	0.06
	4.7	ECSF1EC475	1.0	0.06
	6.8	ECSF1EC685	1.4	0.06
	10	ECSF1EC106	2.0	0.06
	15	ECSF1EC156	3.0	0.06
35	0.10	ECSF1VC104	0.05	0.04
	0.15	ECSF1VC154	0.05	0.04
	0.22	ECSF1VC224	0.07	0.04
	0.33	ECSF1VC334	0.1	0.04
	0.47	ECSF1VC474	0.2	0.04
	0.68	ECSF1VC684	0.2	0.04
	1.0	ECSF1VC105	0.3	0.04
	1.5	ECSF1VC155	0.5	0.06
	2.2	ECSF1VC225	0.7	0.06
	3.3	ECSF1VC335	1.0	0.06
	4.7	ECSF1VC475	1.4	0.06
	6.8	ECSF1VC685	2.0	0.06

Tantalum
Series CF

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