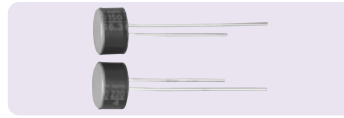


# SF Series



Radial lead type  
5mm height (max.)

The SF series is low-profile, having a maximum height of 5mm.  
Use this series for smooth power supply of notebook PCs.  
Lead free-flow is supported.

SP →

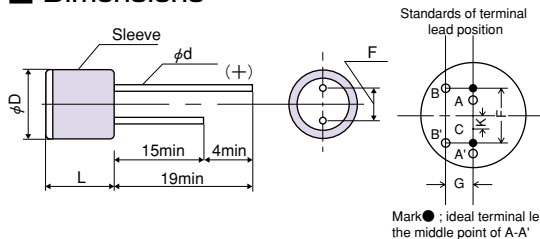
**SF**  
Low profile

## Specifications

Items	Condition	Specifications	
Rated voltage (V)	—	4.0	6.3
Surge voltage (V)	Room temperature	5.2	8.2
Category temperature range (°C)	—	-55 to +105	
Capacitance tolerance (%)	120Hz/20°C	M: ±20	
Dissipation Factor (DF)	120Hz/20°C	Please see the attached characteristics list	
Leakage current*1	Rated voltage applied, after 2 minutes	Please see the attached characteristics list	
Equivalent series resistance (ESR)	100kHz to 300kHz/20°C	Please see the attached characteristics list	
Characteristics of impedance ratio at high temp. and low temp.	Based the value at 100kHz, +20°C	-55°C Z/Z <sub>20°C</sub>	0.75 to 1.25
		+105°C Z/Z <sub>20°C</sub>	0.75 to 1.25
Endurance	105°C, 2,000h, Rated voltage applied	ΔC/C	Within ±20% of the initial value
		DF	Within 1.5 times of the initial limit
		LC	Within the initial limit
Damp heat(Steady state)	60°C, 90 to 95%RH, No-applied voltage 500h,	ΔC/C	Within ±20% of the initial value
		DF	Within 2 times of the initial limit
		LC	Within the initial limit
Resistance to soldering heat	Flow method (260±5°C X 10s)	ΔC/C	Within ±5% of the initial value
		DF	Within 1.5 times of the initial limit
		LC	Within the initial limit (after voltage processing)

\*1 In case of some problems for measured values, measure after applying rated voltage for 30 minutes at 105°C.

## Dimensions



Size code	φD +0.5max	L max	F	φd ±0.05	G max	K max
E1	8.0	5.0	3.5 ±0.5	0.6	0.8	0.8

(unit : mm)

## Size list

RV : Rated voltage

μF \ RV	4.0	6.3
150		E1
220	E1	

**■ SF series characteristics list**

Size code	Part number	Rated voltage (V)	Rated capacitance ( $\mu$ F)	ESR(m $\Omega$ ) (max) 100kHz to 300kHz/20 $^{\circ}$ C	Allowable ripple current (mA rms)*1	DF (% max)	Leakage current ( $\mu$ A) (max) After 2 minutes
E1	6SF150M	6.3	150	32	2420	7	189
	4SF220M	4.0	220	30	2510	7	176

 \*1 100kHz, +45 $^{\circ}$ C

**Temperature coefficient for allowable ripple current**

Ambient temp.	$T_x \leq 45^{\circ}\text{C}$	$45^{\circ}\text{C} < T_x \leq 65^{\circ}\text{C}$	$65^{\circ}\text{C} < T_x \leq 85^{\circ}\text{C}$	$85^{\circ}\text{C} < T_x \leq 95^{\circ}\text{C}$	$95^{\circ}\text{C} < T_x \leq 105^{\circ}\text{C}$
Coefficient	1	0.85	0.7	0.4	0.25

**Frequency coefficient for allowable ripple current**

Frequency	$120\text{Hz} \leq f < 1\text{kHz}$	$1\text{kHz} \leq f < 10\text{kHz}$	$10\text{kHz} \leq f < 100\text{kHz}$	$100\text{kHz} \leq f \leq 500\text{kHz}$
Coefficient	0.05	0.2	0.5	1