

## Surface Mount EMI Filters Three Terminal Chips

### Features

- Excellent performance in high current applications
- Non-polar, surface mountable
- Superior filtering characteristics
- Superb ability to withstand transient voltages and surge
- Offers exceptional solderability and resistance to solder heat
- Available in 0603, 0805, 1205 and 1806 body size
- Two amp current rating available
- Available lead free/RoHS Compliant

### Applications

- Cellular telephones and base stations
- Telecommunication equipment
- Industrial electronic interface or programmable controllers
- Electronic automotive equipment
- Computer and peripheral equipment



### Circuit Schematic



### Typical Electrical Characteristics

*Capacitance Range* . . . . . COG (NPO) 22 pF to 470 pF  
 X7R 470 pF to 47,000 pF  
 YV5 100,000 pF and 220,000 pF

*Capacitance Tolerance* . . . . . COG (NPO) +50/-20%  
 X7R +50/-20%  
 Y5V +80/-20%

*Temperature Coefficient* . . . . . COG (NPO) 0 ±30 ppm/°C, -55 to +125°C  
 X7R +/-15%, -55 to +125°C  
 Y5V -25 to +85°C

*Insulation Resistance* . . . . . up to 22,000 pF 10000 Megohms  
 47,000 pF 5000 Megohms

*DC Resistance* . . . . . 0.4 Amp or less 0.3 ohm max.  
 1 Amp 0.08 ohm max.  
 2 Amp 0.04 ohm max.

*Rated Voltage* . . . . . up to 100 VDC

*Rated Current* . . . . . up to 2 Amps

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### Selection Guide

Part Number	Body Size	Capacitance (in picofarad)	Capacitance Tolerance	Temp. Charact.	Rated Voltage (Volts DC)	Rated Current (Amps DC)	IR (Megohms Min.)	DC Resistance (ohm Max.)	Operating Temp.
SF0603C220SBNB-*	0603	22	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C470SBNB-*	0603	47	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C101SBNB-*	0603	100	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603C221SBNB-*	0603	220	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF0603X471SBNB-*	0603	470	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X102SBNB-*	0603	1,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X222SBNB-*	0603	2,200	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF0603X223SANC-*	0603	22,000	+50/-20%	X7R	25	0.5	10,000	0.15	-55/+125°C
<b>SF0603Y104MAND-*</b>	<b>0603</b>	<b>100,000</b>	<b>±20%</b>	<b>Y5V†</b>	<b>25</b>	<b>1</b>	<b>1,000</b>	<b>0.08</b>	<b>-25/+85°C</b>
SF0805C220SBNC-*	0805	22	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C470SBNC-*	0805	47	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C101SBNC-*	0805	100	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805C221SBNC-*	0805	220	+50/-20%	COG	50	0.4	10,000	0.3	-55/+125°C
SF0805X471SBNC-*	0805	470	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
SF0805X102SBNC-*	0805	1,000	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
SF0805X222SBNC-*	0805	2,200	+50/-20%	X7R	50	0.4	10,000	0.3	-55/+125°C
<b>SF0805X223SBND-*</b>	<b>0805</b>	<b>22,000</b>	<b>+50/-20%</b>	<b>X7R</b>	<b>50</b>	<b>1.0</b>	<b>10,000</b>	<b>0.08</b>	<b>-55/+125°C</b>
SF1205C220SBNB-*	1205	22	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C470SBNB-*	1205	47	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C101SBNB-*	1205	100	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205C221SBNB-*	1205	220	+50/-20%	COG	50	0.3	10,000	0.3	-55/+125°C
SF1205X471SBNB-*	1205	470	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X102SBNB-*	1205	1,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X222SBNB-*	1205	2,200	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
SF1205X223SBNB-*	1205	22,000	+50/-20%	X7R	50	0.3	10,000	0.3	-55/+125°C
<b>SF1205X473SBND-*</b>	<b>1205</b>	<b>47,000</b>	<b>+50/-20%</b>	<b>X7R</b>	<b>50</b>	<b>1.0</b>	<b>5,000</b>	<b>0.08</b>	<b>-55/+125°C</b>
SF1806C220SDNB-*	1806	22	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C470SDNB-*	1806	47	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C101SDNB-*	1806	100	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C221SDNB-*	1806	220	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806C471SDNB-*	1806	470	+50/-20%	COG	100	0.3	10,000	0.3	-55/+125°C
SF1806X102SDNB-*	1806	1,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X222SDNB-*	1806	2,200	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X103SDNB-*	1806	10,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
SF1806X223SDNB-*	1806	22,000	+50/-20%	X7R	100	0.3	10,000	0.3	-55/+125°C
<b>2 AMP FILTER SF1806Y224ZBNE-*</b>	<b>1806</b>	<b>220,000</b>	<b>+80/-20%</b>	<b>Y5V†</b>	<b>50</b>	<b>2.0</b>	<b>1,000</b>	<b>0.04</b>	<b>-25/+85°C</b>

Bold Letter = High Current Applications  
 † = Temperature Characteristic is +30/-80%

\* = Denotes Packaging Style. Replace with T for Tape and Reel or B for Bulk

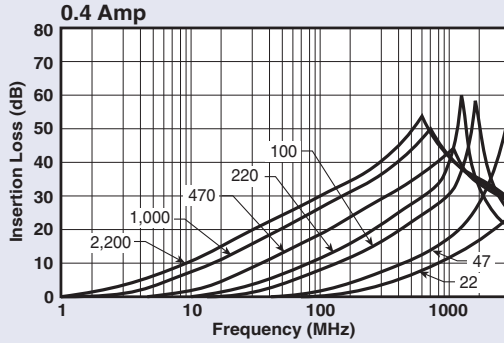
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## Insertion Loss (Per MIL-STD-220)

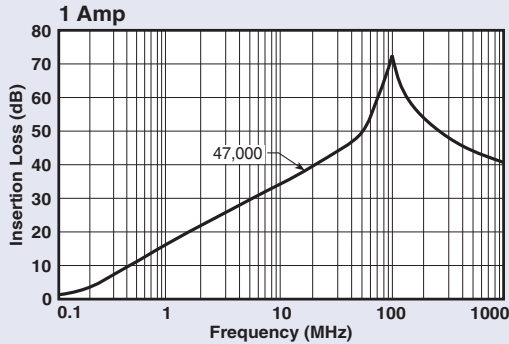
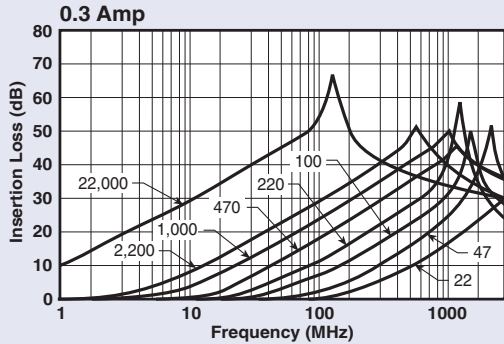
### SF0603 Series



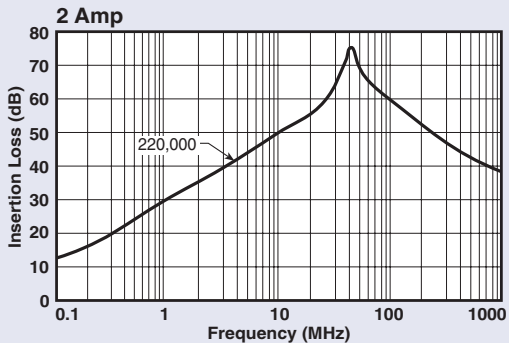
### SF0805 Series



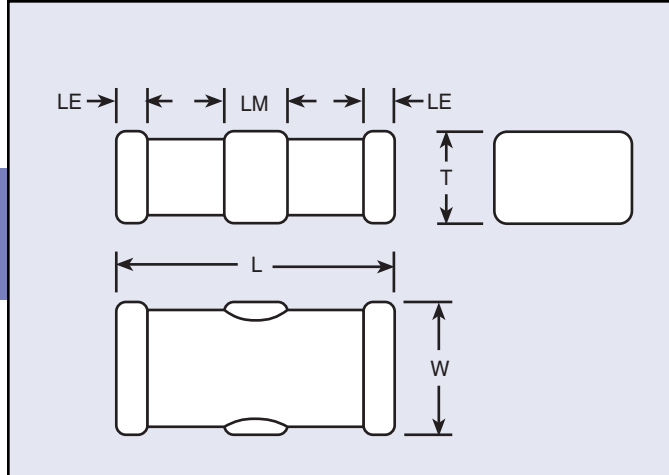
### SF1205 Series



### SF1806 Series



## Surface Mount EMI Filters Three Terminal Chips



### Mechanical Dimensions

Dimensions in inches (mm)

Body Style/Size	Body Length (L)	Body Width (W)	Body Thickness (T)	End Terminal Length (LE)	Middle Terminal Length (LM)
<b>SF0603</b>	0.063 +/-0.006 (1.60 +/-0.15)	0.031 +/-0.006 (0.80 +/-0.15)	0.023 +/-0.006 (0.6 +/-0.15)	0.008 +/-0.006 (0.2 +/-0.15)	0.020 +/-0.006 (0.5 +/-0.15)
<b>SF0805</b>	0.079 +/-0.008 (2.0 +/-0.2)	0.049 +/-0.008 (1.25 +/-0.2)	0.032 +/-0.008 (0.8 +/-0.2)	0.012 +/-0.008 (0.3 +/-0.2)	0.024 +/-0.008 (0.6 +/-0.2)
<b>SF1205</b>	0.126 +/-0.008 (3.2 +/-0.2)	0.049 +/-0.008 (1.25 +/-0.2)	0.028 +/-0.008 (0.7 +/-0.2)	0.016 +/-0.012 (0.4 +/-0.3)	0.043 +/-0.012 (1.1 +/-0.3)
<b>SF1806</b>	0.177 +/-0.012 (4.5 +/-0.3)	0.063 +/-0.012 (1.6 +/-0.3)	0.039 +/-0.012 (1.0 +/-0.3)	0.020 +/-0.012 (0.5 +/-0.3)	0.055 +/-0.012 (1.4 +/-0.3)

### Ordering Information

*Example:* **SF0805C221SBNCT**

This part number represents a three terminal chip with a body size of 0805 with a COG (NPO) dielectric. The capacitance is 220 pF with a capacitance tolerance of +50%/-20%. Voltage rating is 50 Volts DC. It has nickel barrier, solder plated terminations and a current rating of 0.4 Amp, (400 milliamps). The parts are taped and reeled.

SF	0805	C	221	S	B	N	C	T
Style	Size	Ceramic	Capacitance Code	Capacitance Tolerance	Rated Voltage (Vdc)	Termination	Current Rating	Packaging
SF	0603 0805 1205 1806	C - COG X - X7R Y - Y5V	First two numbers are significant, the third number refers to number of zeroes	S - +50%/-20% Z - +80%/-20%	A - 25 B - 50 D - 100	N - Ni Barrier, Solder Plated	B - 0.3 A C - 0.4 A D - 1 A E - 2 A F - 3 A G - 4 A H - 5 A I - 6 A	T - Tape & Reel B - Bulk

# Surface Mount EMI Filters Three Terminal Chips Soldering Specifications

## Soldering Instructions

### Reflow Soldering



Board Pattern Dimensions in inches (mm)

Body Style/Size	Dimension		
	A	B	C
SF0603	0.020 (0.5)	0.047 (1.2)	0.031 (0.8)
SF0805	0.024 (0.6)	0.059 (1.5)	0.039 (1.0)
SF1205	0.051 (1.3)	0.091 (2.3)	0.047 (1.2)
SF1806	0.079 (2.0)	0.138 (3.5)	0.051 (1.3)

### Reflow Soldering



## General Soldering Notes

1. High soldering temperatures and long soldering times can cause leaching of the termination and adversely affect adhesion. These conditions can also decrease capacitance value. Use the above recommended solder temperature cycle.
2. Due to the mechanical characteristic of ceramic composition, aggressive thermal shock will degrade performance. Preheat the assembly before soldering using the above solder temperature profile as a guide.

### Flow Soldering



Board Pattern Dimensions in inches (mm)

Body Style/Size	Dimension					
	A	B	C	D	E	F
SF0603	0.020 (0.5)	0.031 (0.8)	0.047 (1.2)	0.031 (0.8)	0.071 (1.8)	0.016 (0.4)
SF0805	0.024 (0.6)	0.031 (0.8)	0.059 (1.5)	0.039 (1.0)	0.087 (2.2)	0.024 (0.6)
SF1205	0.051 (1.3)	0.059 (1.5)	0.091 (2.3)	0.047 (1.2)	0.118 (3.0)	0.024 (0.6)
SF1806	0.059 (1.5)	0.079 (1.5)	0.138 (3.5)	0.051 (1.3)	0.118 (3.0)	0.024 (0.6)

### Flow Soldering



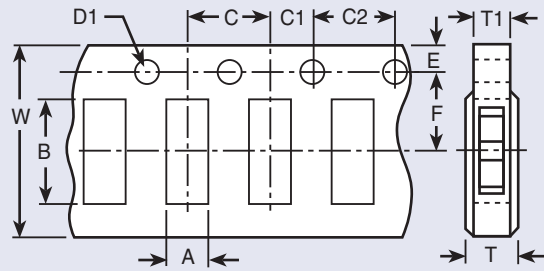
3. Use mild flux (less than 0.2% by weight of Chlorine), preferable rosin based. If water soluble, wash thoroughly to assure all residue is removed from the underside of components.
4. Ultrasonic Cleaning  
When using an ultrasonic cleaning method, the following range is recommended:  
Frequency: Not to exceed 28kHz  
Output Power: Not to exceed 20W/liter  
Cleaning Time: 5 minutes max

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Soldering Specifications

**Package Quantities**

Body Style/Size	Tape and Reel
SF0603	4,000 units/reel
SF0805	4,000 units/reel
SF1205	4,000 units/reel
SF1806	2,000 units/reel

**Package Information**  
Paper Tape Dimensions  
SF0805 and SF1205 Bodies



Dimensions in inches (mm)

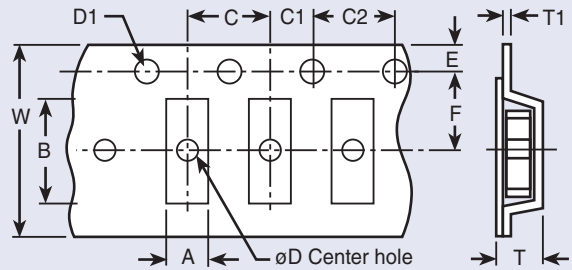
Body Style/Size	Chip Cavity		Tape			Holes			Hole Diameter		Thickness	
	Length A	Width B	Width W	Center to End F	Indexing to End E	Center to Center C	Indexing to Center C1	Indexing to Indexing C2	Center D (Min.)	Indexing D1	Overall T (Max.)	Carrier Tape T1 (Max.)
SF0603	0.039 +/-0.00? (1.0 +/-0.?)	0.075 +/-0.00? (1.9 +/-0.?)	0.315 +/-0.012 (8.0 +/-0.3)	0.138 +/-0.002 (3.5 +/-0.05)	0.069 +/-0.004 (1.75 +/-0.1)	0.157 +/-0.004 (4.0 +/-0.1)	0.079 +/-0.004 (2.0 +/-0.1)	0.157 +/-0.008 (4.0 +/-0.1)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.043 (1.1)	0.039 (1.0)
SF0805	0.064 +/-0.008 (1.62 +/-0.2)	0.091 +/-0.008 (2.3 +/-0.2)	0.315 +/-0.012 (8.0 +/-0.3)	0.138 +/-0.002 (3.5 +/-0.05)	0.069 +/-0.004 (1.75 +/-0.1)	0.157 +/-0.004 (4.0 +/-0.1)	0.079 +/-0.004 (2.0 +/-0.1)	0.157 +/-0.008 (4.0 +/-0.1)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.043 (1.1)	0.039 (1.0)
SF1205	0.067 +/-0.008 (1.70 +/-0.2)	0.138 +/-0.008 (3.5 +/-0.2)	0.315 +/-0.012 (8.0 +/-0.3)	0.138 +/-0.002 (3.5 +/-0.05)	0.069 +/-0.004 (1.75 +/-0.1)	0.157 +/-0.004 (4.0 +/-0.1)	0.079 +/-0.004 (2.0 +/-0.1)	0.157 +/-0.008 (4.0 +/-0.1)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.043 (1.1)	0.039 (1.0)

**Plastic Reel Dimensions**

Dimensions in inches (mm)

Body Style/Size	Diameter (Max.)	Width (Max.)
SF0603	7.00 (180)	0.46 (11.5)
SF0805	7.00 (180)	0.46 (11.5)
SF1205	7.00 (180)	0.46 (11.5)
SF1806	7.00 (180)	0.61 (11.5)

**Package Information**  
Tape and Reel Specification  
Plastic Carrier Tape Dimensions  
SF1806 Body



Dimensions in inches (mm)

Body Style/Size	Chip Cavity		Tape			Holes			Hole Diameter		Thickness	
	Length A	Width B	Width W	Center to End F	Indexing to End E	Center to Center C	Indexing to Center C1	Indexing to Indexing C2	Center D (Min.)	Indexing D1	Overall T (Max.)	Tape T1 (Max.)
SF1806	0.071 +/-0.008 (1.80 +/-0.2)	0.185 +/-0.008 (4.70 +/-0.2)	0.472 +/-0.008 (12.0 +/-0.2)	0.217 +/-0.002 (5.5 +/-0.05)	0.069 +/-0.004 (1.75 +/-0.1)	0.157 +/-0.004 (4.0 +/-0.1)	0.079 +/-0.004 (2.0 +/-0.1)	0.157 +/-0.008 (4.0 +/-0.1)	0.059 (1.5)	0.059 +0.004/-0 (1.5 +0.1/-0)	0.098 (2.5)	0.024 (0.6)



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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