Common Mode SC47X Coils, SCF47X Series & SCT47X Series, Three-Phase Series

Overview

The KEMET SCF47X & SCT47X coils are common mode chokes with a wide variety of characteristics. These toroidal coils are designed with nanocrystalline metal and Mn-Zn Ferrite cores and are useful in various noise countermeasure fields.

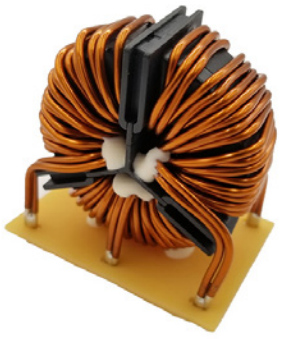
Applications

- Audio-visual equipment
- Industrial equipment
- Home appliances
- Power supplies

Benefits

- Nanocrystalline metal core for SCF47X
- Mn-Zn Ferrite 10HT for SCT47X
- Ultra-high inductance
- Ultra-high permeability
- Operating temperature range from -40°C to +130°C
- UL 94 V–0 flame retardant rated base and cap

SC47X-JV



SC47X-JH

Part Number System

SC	F	47X-	200-	S	1R8	B	011	JV
Series	Core material Code	Dimension Code (See Dimensions)	Rated Current (A)	Phase	Wire Diameter (mm)	Windings	Number of Turns	Terminal Base Type
SC	F = Nanocrystal core T = Mn-Zn Ferrite core 10HT	47X	xxx- = xx.x A Examples: 200 = 20.0 A	S = Three-phase	R = Decimal point Examples: 1R8 = 1.8 mm	A = Single B = Double	00x = x turns 0xx = xx turns Examples: 005 = 5 turns 011 = 11 turns	JV = Vertical type JH = Horizontal type

Magnetic Permeability of Ferrite Material

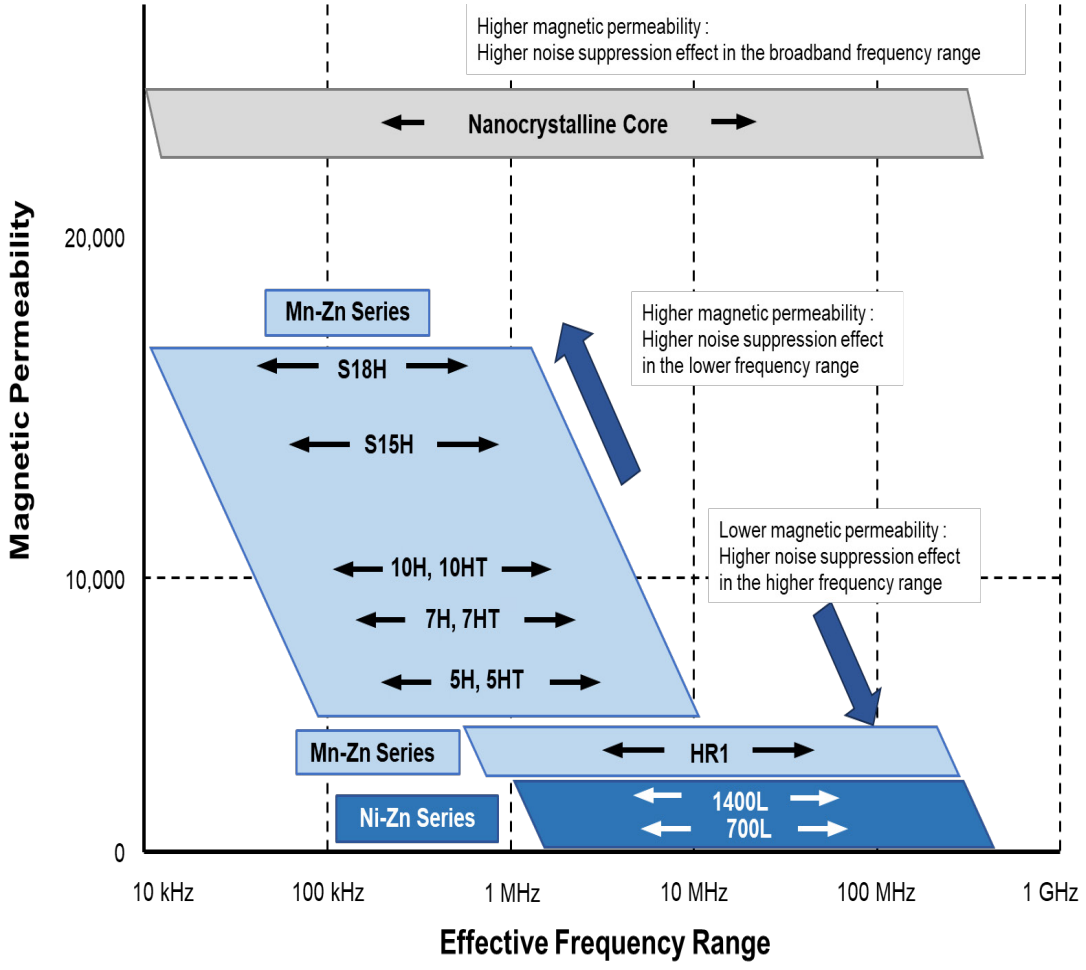
In order to achieve most efficient noise reduction, it is important to select the material according to the target frequency band. Depending on its magnetic permeability, a particular ferrite material or metal material will be effective in a certain frequency band. A schematic representation of the relationship between the magnetic permeability of each material and the corresponding effective band range is shown in Figure 1.

Ferrite materials with higher magnetic permeability are effective in the lower frequency range, while those with lower magnetic permeability are effective in the higher frequency range. Thus, Mn-Zn products are mainly used for reducing conduction noise, while Ni-Zn products are commonly used for radiation noise countermeasures. Metal materials, however, are effective throughout the broadband frequency range, in low as well as high frequencies.

The effective frequency range varies depending on core shape, size, and number of windings. This frequency dependence of the magnetic permeability as shown in the figure serves for reference purposes only. It should be tested on the actual device to determine its effectiveness.

S18H, S15H, 10H, 10HT, 7H, 7HT, 5H, 5HT, HR1, 1400L, and 700L are KEMET's proprietary ferrite material names. Other materials are available upon request.

Figure 1 - Relationship between the magnetic permeability of each material and its effective frequency range



Dimensions – Millimeters

Fig.1

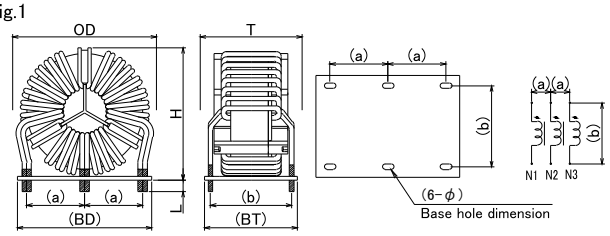
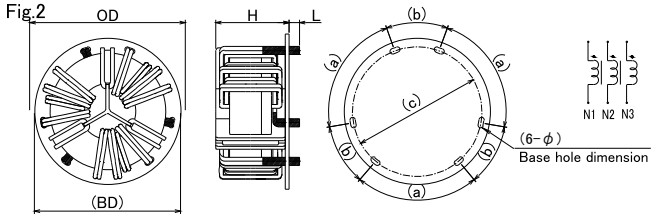


Fig.2



Part Name	Dimensions (mm)				Base Dimensions[1] (Reference)		Pin Pitch[2] (Reference)				Figure
	OD (Maximum)	T (Maximum)	H (Maximum)	L	BD	BT	a	b	c	φ	
SCF47X-200-S1R8B011JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCF47X-250-S1R9B010JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCF47X-300-S2R0B009JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCF47X-350-S2R1B008JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCF47X-400-S2R2B007JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCF47X-450-S2R3B006JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCF47X-500-S2R4B005JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCF47X-200-S1R8B011JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	2.2×4.40×R1.10	Fig. 2
SCF47X-250-S1R9B010JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	2.2×4.40×R1.10	Fig. 2
SCF47X-300-S2R0B009JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCF47X-350-S2R1B008JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCF47X-400-S2R2B007JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCF47X-450-S2R3B006JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCF47X-500-S2R4B005JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCT47X-200-S1R8B011JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCT47X-250-S1R9B010JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCT47X-300-S2R0B009JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.3×5.00×R1.15	Fig. 1
SCT47X-350-S2R1B008JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCT47X-400-S2R2B007JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCT47X-450-S2R3B006JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCT47X-500-S2R4B005JV	63.0	45.0	61.0	4.5 ±1.5	62.0	44.0	25.0	35.0	-	2.7×5.25×R1.35	Fig. 1
SCT47X-200-S1R8B011JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	2.2×4.40×R1.10	Fig. 2
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SCT47X-300-S2R0B009JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCT47X-350-S2R1B008JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
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SCT47X-450-S2R3B006JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2
SCT47X-500-S2R4B005JH	70.0	-	38.0	4.5 ±1.5	67.0	-	80°	40°	56.0	3.0×5.40×R1.50	Fig. 2

[1] We do not inspect the terminal base dimension. (design guarantee)
[2] Pin pitch listed above for reference only. Values not guaranteed.

Environmental Compliance

All KEMET AC line filters are RoHS Compliant.

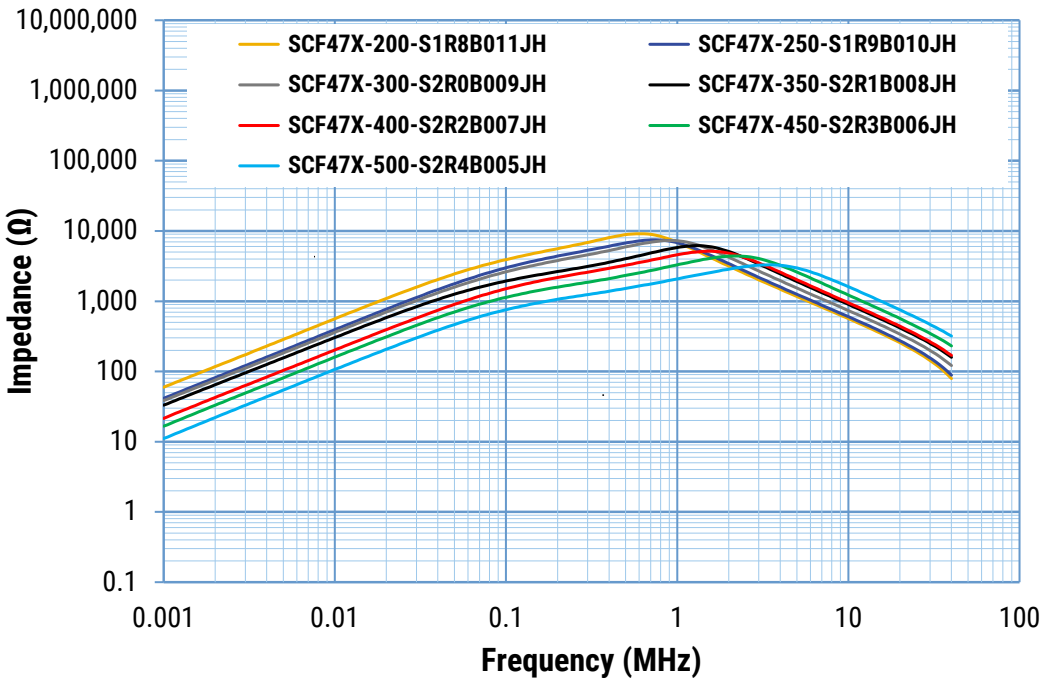
Performance Characteristics

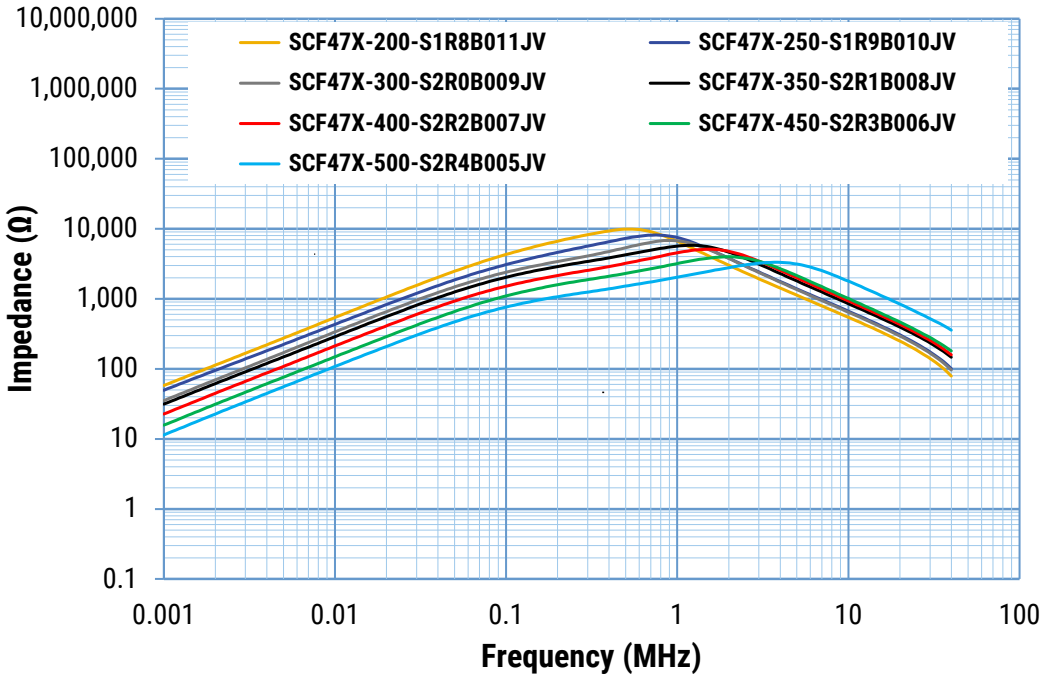
Item	Performance Characteristics
Rated Voltage	500 VAC/VDC
Withstanding Voltage	2,400 VAC (2 seconds, between lines)
Insulation Resistance	> 100 MΩ at 500 VDC (between lines)
Rated Current Range	20 – 50 A
Rated Inductance Range	0.22 – 3.21 mH minimum
Inductance Measurement Condition	100 kHz
Thermal Class	130°C
Operating Temperature Range	-40°C to +130°C (include self temperature rise)

Table 1 – Ratings & Part Number Reference

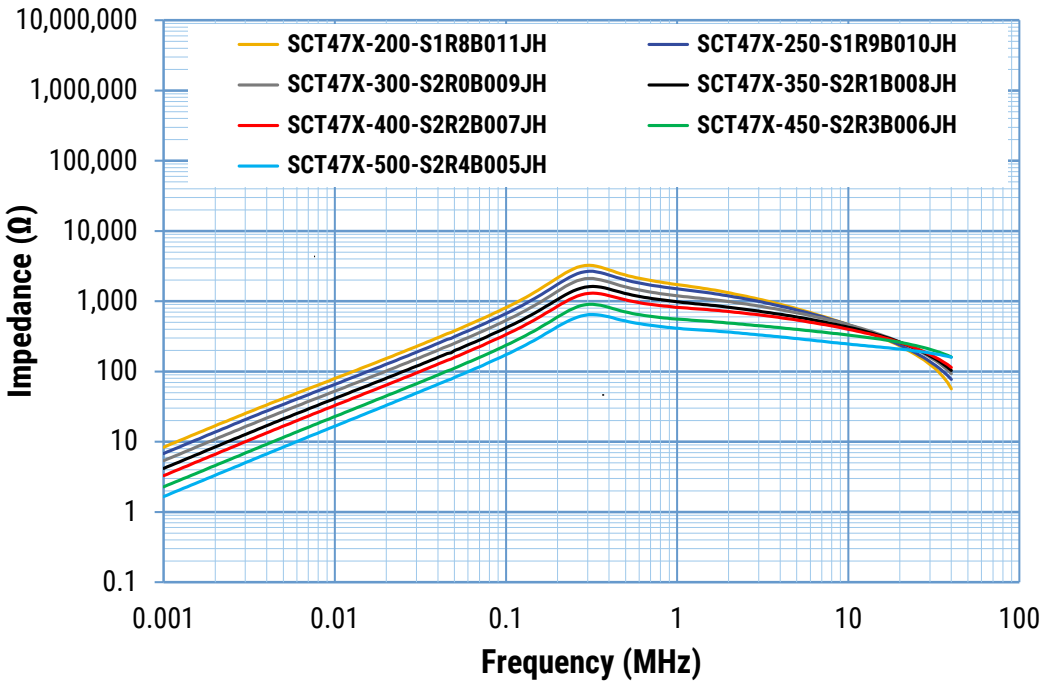
Part Number	Rated Voltage AC/DC (V)	Rated Current AC (A)	Inductance 100kHz (mH) Minimum	DC Resistance/Line (mΩ) Maximum	Temperature Rise (K) Maximum	Wire Diameter (mm)	Weight (g) Approximate
SCF47X-200-S1R8B011JV	500	20	3.21	3.52	40	1.8 x 2 Parallel	235
SCF47X-250-S1R9B010JV	500	25	2.65	2.91	50	1.9 x 2 Parallel	237
SCF47X-300-S2R0B009JV	500	30	2.15	2.31	60	2.0 x 2 Parallel	234
SCF47X-350-S2R1B008JV	500	35	1.69	1.91	65	2.1 x 2 Parallel	237
SCF47X-400-S2R2B007JV	500	40	1.30	1.53	70	2.2 x 2 Parallel	237
SCF47X-450-S2R3B006JV	500	45	0.95	1.16	60	2.3 x 2 Parallel	229
SCF47X-500-S2R4B005JV	500	50	0.66	0.96	65	2.4 x 2 Parallel	216
SCF47X-200-S1R8B011JH	500	20	3.21	3.52	40	1.8 x 2 Parallel	237
SCF47X-250-S1R9B010JH	500	25	2.65	2.91	50	1.9 x 2 Parallel	233
SCF47X-300-S2R0B009JH	500	30	2.15	2.31	60	2.0 x 2 Parallel	239
SCF47X-350-S2R1B008JH	500	35	1.69	1.91	65	2.1 x 2 Parallel	236
SCF47X-400-S2R2B007JH	500	40	1.30	1.53	70	2.2 x 2 Parallel	234
SCF47X-450-S2R3B006JH	500	45	0.95	1.16	65	2.3 x 2 Parallel	232
SCF47X-500-S2R4B005JH	500	50	0.66	0.96	65	2.4 x 2 Parallel	216
SCT47X-200-S1R8B011JV	500	20	1.08	3.52	40	1.8 x 2 Parallel	227
SCT47X-250-S1R9B010JV	500	25	0.89	2.91	50	1.9 x 2 Parallel	230
SCT47X-300-S2R0B009JV	500	30	0.72	2.31	60	2.0 x 2 Parallel	231
SCT47X-350-S2R1B008JV	500	35	0.57	1.91	65	2.1 x 2 Parallel	229
SCT47X-400-S2R2B007JV	500	40	0.43	1.53	70	2.2 x 2 Parallel	226
SCT47X-450-S2R3B006JV	500	45	0.32	1.16	60	2.3 x 2 Parallel	221
SCT47X-500-S2R4B005JV	500	50	0.22	0.96	65	2.4 x 2 Parallel	226
SCT47X-200-S1R8B011JH	500	20	1.08	3.52	40	1.8 x 2 Parallel	227
SCT47X-250-S1R9B010JH	500	25	0.89	2.91	50	1.9 x 2 Parallel	231
SCT47X-300-S2R0B009JH	500	30	0.72	2.31	60	2.0 x 2 Parallel	231
SCT47X-350-S2R1B008JH	500	35	0.57	1.91	65	2.1 x 2 Parallel	231
SCT47X-400-S2R2B007JH	500	40	0.43	1.53	70	2.2 x 2 Parallel	206
SCT47X-450-S2R3B006JH	500	45	0.32	1.16	65	2.3 x 2 Parallel	221
SCT47X-500-S2R4B005JH	500	50	0.22	0.96	65	2.4 x 2 Parallel	211

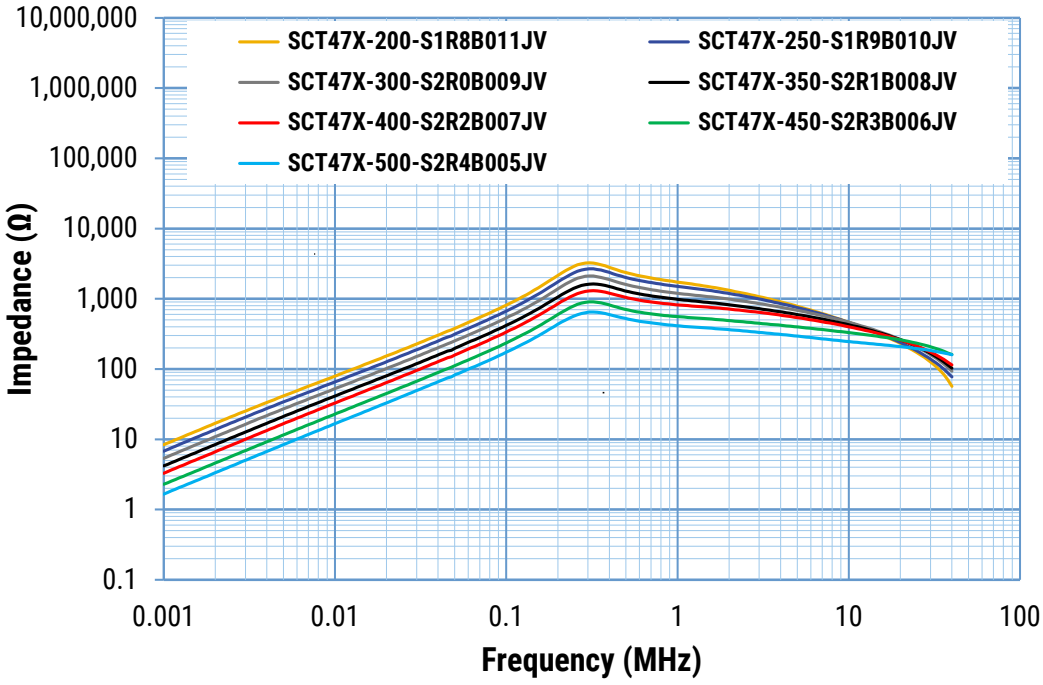
Frequency Characteristics





Frequency Characteristics cont.





Packaging

Type	Packaging Type	Pieces Per Box
SCF47X-JV	Tray	27
SCF47X-JH		
SCT47X-JV		
SCT47X-JH		

Handling Precautions

Precautions for product storage
AC Line Filters should be stored in normal working environments. While the chokes themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage.

KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 70% relative humidity. Atmospheres should be free of chlorine and sulfur bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts. Avoid storage near strong magnetic fields, as this might magnetize the product.

For optimized solderability, AC line filters stock should be used promptly and preferably within 6 months of receipt.

Product temperature rise values
The values listed for temperature rise are the result of self-heating in wires when the rated current (commercial frequency) is applied.

When using the product, check and evaluate the value of the core temperature rise under actual operating conditions.

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Although all product–related warnings, cautions and notes must be observed, the customer should not assume that all safety measures are indicated or that other measures may not be required.

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