

Common Mode SC21X Coils, SCF21X Series & SCT21X Series, Three-Phase Series

Overview

The KEMET SCF21X & SCT21X 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 SCF21X
- Mn-Zn Ferrite 10HT for SCT21X
- 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



Part Number System

SC	F	21X-	030-	S	0R6	A	021	JH
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	21X	xxx- = xx.x A Examples: 030 = 3.0 A	S = Three-phase	R = Decimal point Examples: 0R6 = 0.6 mm	A = Single	00x = x turns 0xx = xx turns Examples: 021 = 21 turns 042 = 42 turns	JH = Horizontal type

Magnetic Permeability of Ferrite Material

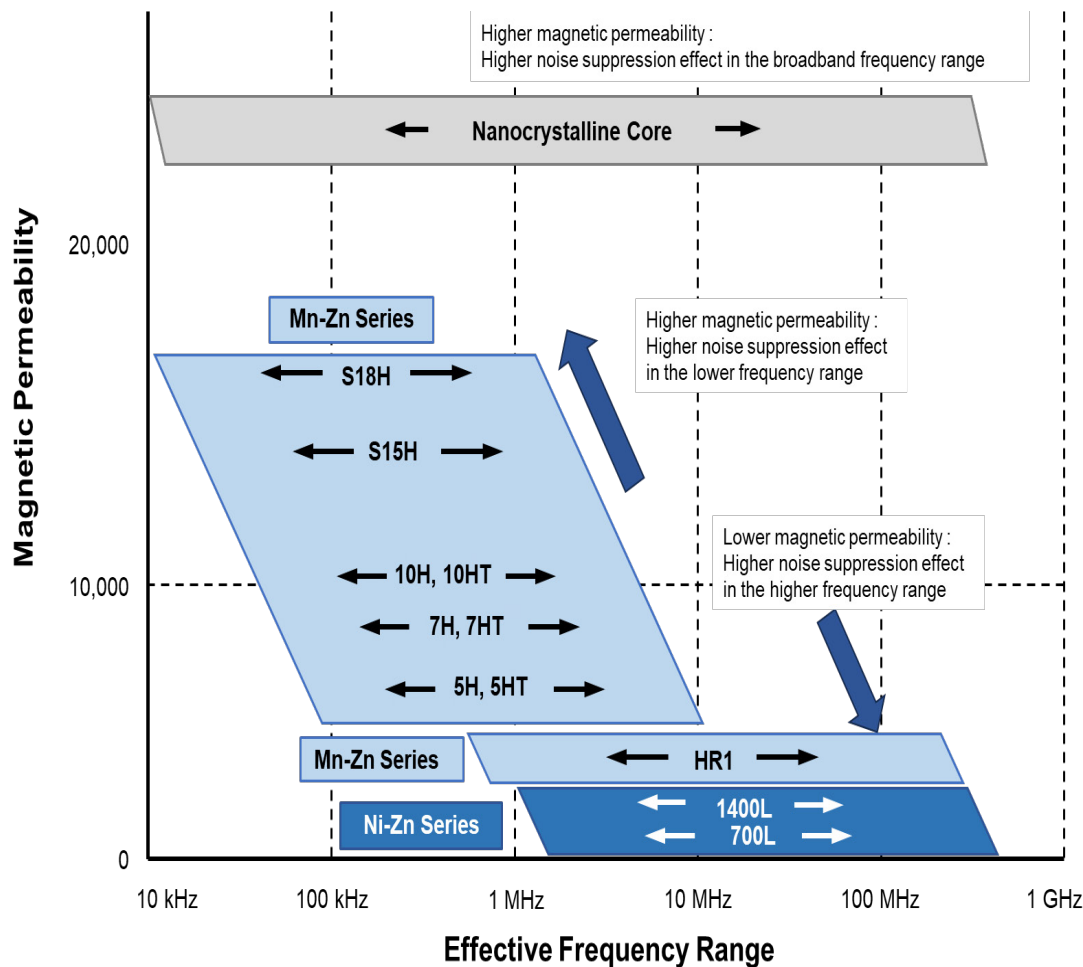
In order to achieve most efficient noise reduction, it is important to select the material according to the target frequency band. Depending on its magnetic permeability, a particular ferrite material or metal material will be effective in a certain frequency band. A schematic representation of the relationship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

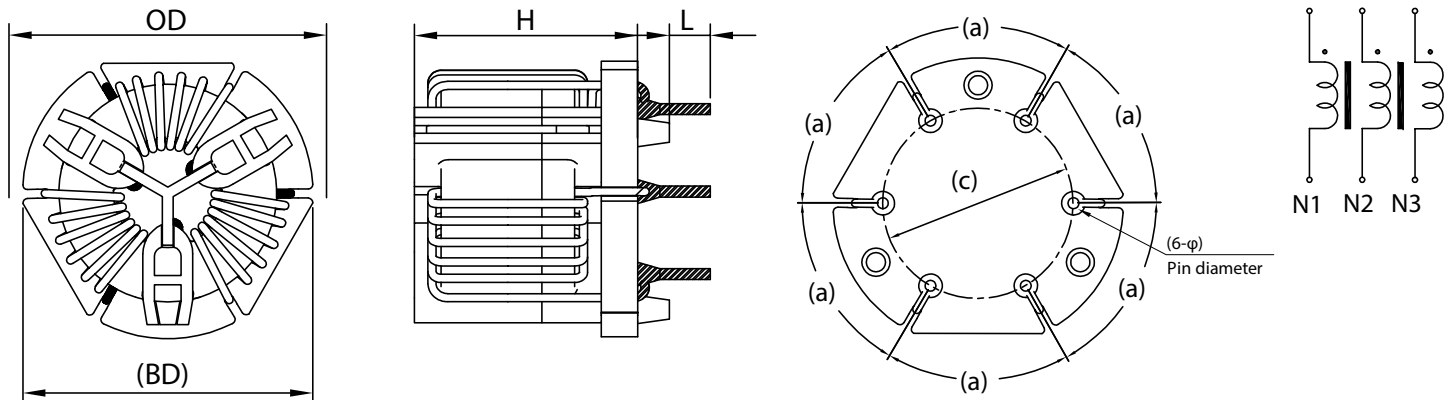
The effective frequency range varies depending on core shape, size, and number of windings. This frequency dependence of the magnetic permeability as shown in the figure serves for reference purposes only. It should be tested on the actual device to determine its effectiveness.

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



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	
SCF21X-010-S0R35A042JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCF21X-020-S0R5A033JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCF21X-030-S0R6A021JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCF21X-040-S0R65A014JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCF21X-050-S0R75A012JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCF21X-070-S0R9A009JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-010-S0R35A042JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-020-S0R5A033JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-030-S0R6A021JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-040-S0R65A014JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-050-S0R75A012JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1
SCT21X-070-S0R9A009JH	33.0	-	30.0	4.0 ±0.5	31.93	-	60°	-	21	1.2	Fig. 1

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.



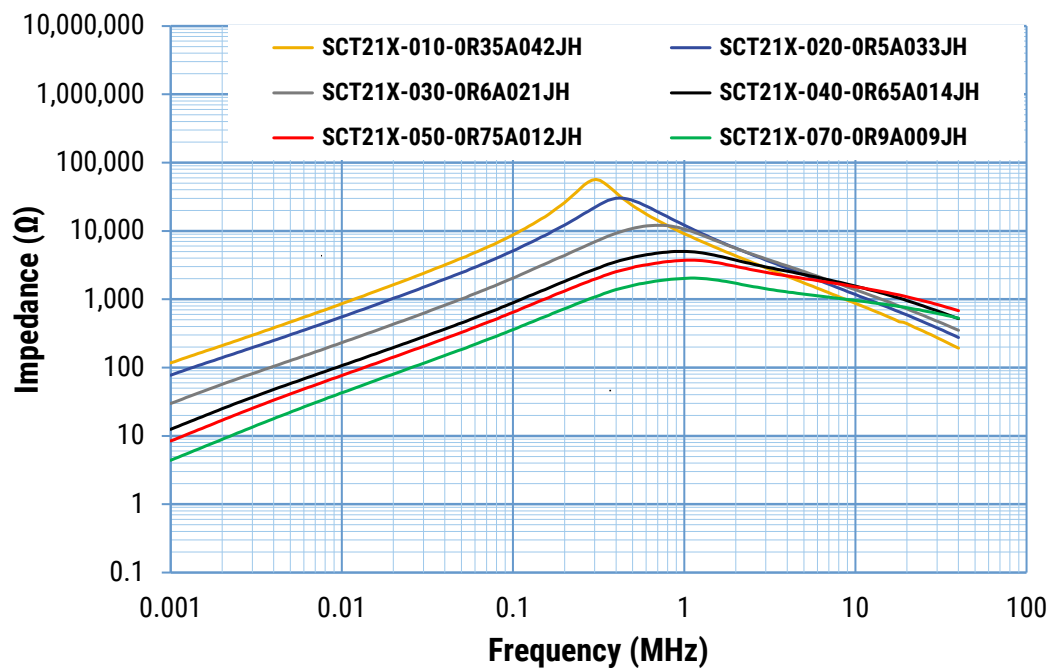
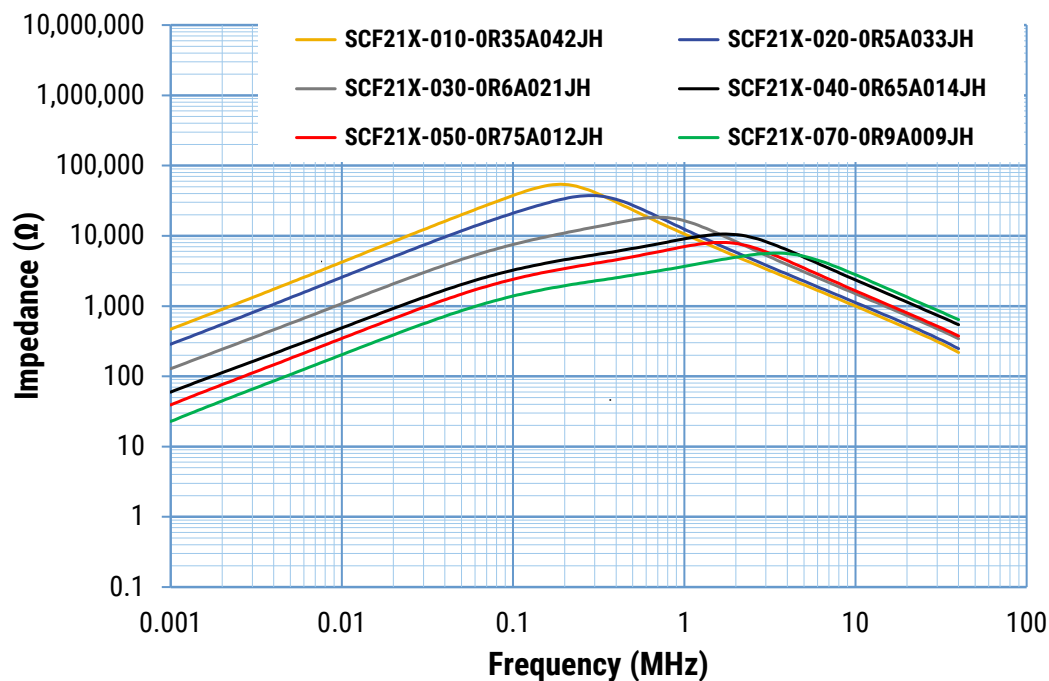
Performance Characteristics

Item	Performance Characteristics
Rated Voltage	500 VAC
Withstanding Voltage	2,400 VAC (2 seconds, between lines)
Insulation Resistance	> 100 MΩ at 500 VDC (between lines)
Rated Current Range	1 – 7 A
Rated Inductance Range	0.40 – 25.63 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
SCF21X-010-S0R35A042JH	500	1	25.63	403.55	55	0.35	26.1
SCF21X-020-S0R5A033JH	500	2	15.83	159.13	65	0.5	30.3
SCF21X-030-S0R6A021JH	500	3	6.40	72.40	65	0.6	29.4
SCF21X-040-S0R65A014JH	500	4	2.84	41.92	65	0.65	28.6
SCF21X-050-S0R75A012JH	500	5	2.08	27.74	70	0.75	29.5
SCF21X-070-S0R9A009JH	500	7	1.17	14.70	70	0.9	28.7
SCT21X-010-S0R35A042JH	500	1	8.99	403.55	55	0.35	25.3
SCT21X-020-S0R5A033JH	500	2	5.54	159.13	65	0.5	28.5
SCT21X-030-S0R6A021JH	500	3	2.24	72.40	65	0.6	27.7
SCT21X-040-S0R65A014JH	500	4	0.99	41.92	65	0.65	26.3
SCT21X-050-S0R75A012JH	500	5	0.72	27.74	70	0.75	27.2
SCT21X-070-S0R9A009JH	500	7	0.40	14.70	70	0.9	27.8

Frequency Characteristics



Packaging

Type	Packaging Type	Pieces Per Box
SCF21X-JH	Tray	210
SCT21X-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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