

Common Mode SC56X Coils, SCF56X Series & SCT56X Series, Three-Phase Series

Overview

The KEMET SCF56X & SCT56X 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 SCF56X
- Mn-Zn Ferrite 10HT for SCT56X
- 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

SC56X-JV



SC56X-JH



Part Number System

SC	F	56X-	450-	S	2R0	C	008	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	56X	xxx- = xx.x A Examples: 450 = 45.0 A	S = Three-phase	R = Decimal point Examples: 2R0 = 2.0 mm	B = Double C = Triple	00x = x turns Examples: 008 = 8 turns	"V = Vertical type JH = Horizontal type

Magnetic Permeability of Ferrite Material

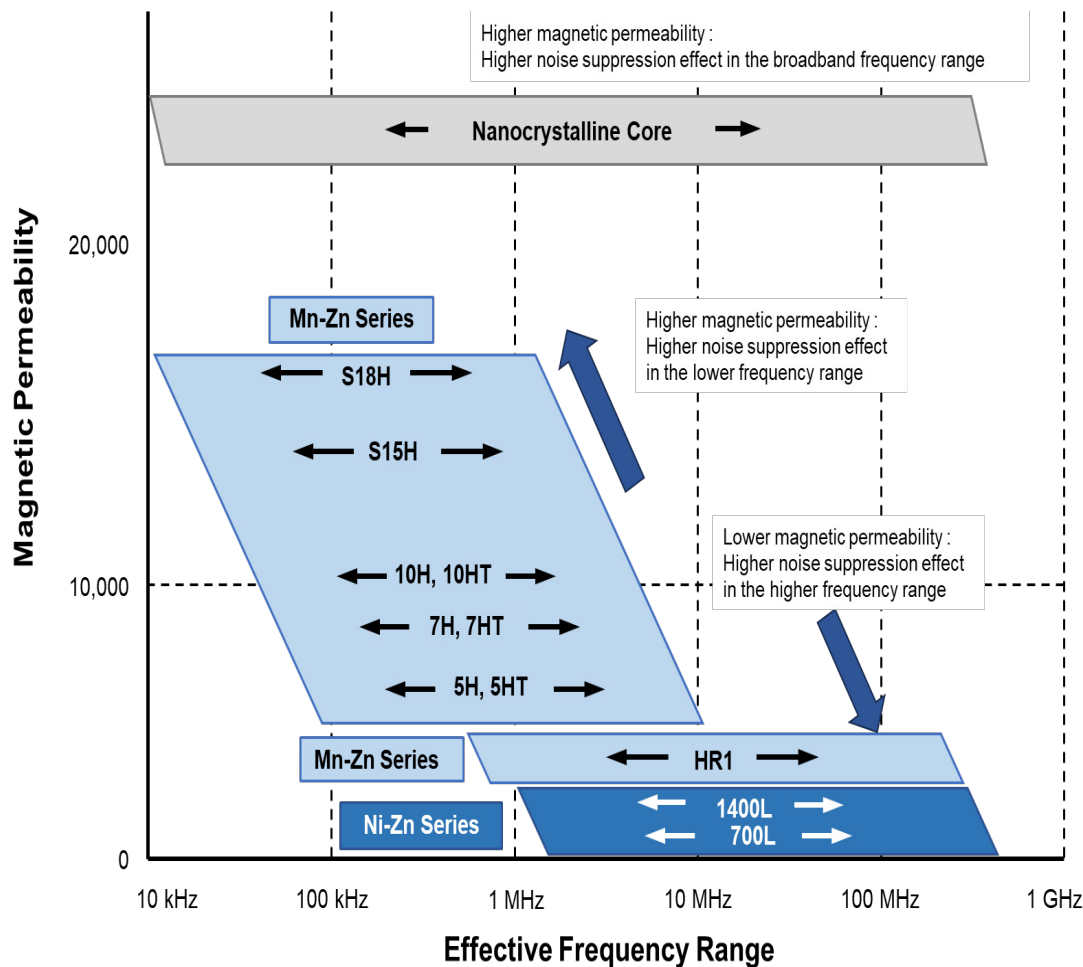
In order to achieve most efficient noise reduction, it is important to select the material according to the target frequency band. Depending on its magnetic permeability, a particular ferrite material or metal material will be effective in a certain frequency band. A schematic representation of the relationship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

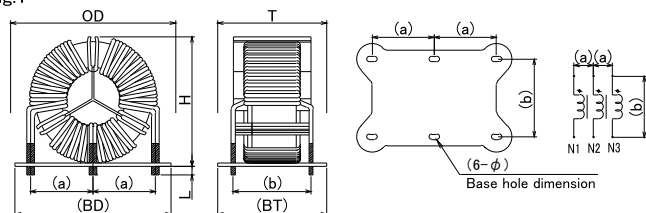
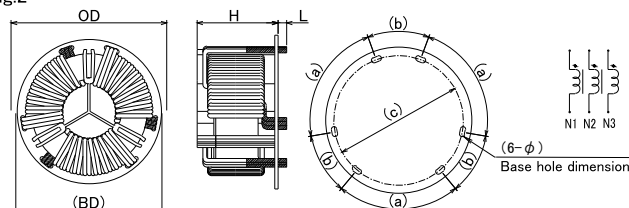


Fig.2



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	
SCF56X-400-S2R4B009JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.7×5.25×R1.35	Fig. 1
SCF56X-450-S2R0C008JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
SCF56X-500-S2R1C007JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
SCF56X-550-S2R2C006JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
SCF56X-650-S2R3C005JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
SCF56X-800-S2R4C004JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
SCF56X-400-S2R4B009JH	80.0	-	45.0	4.5 ±1.5	79.0	-	80°	40°	68	2.7×5.25×R1.35	Fig. 2
SCF56X-450-S2R0C008JH	80.0	-	45.0	4.5 ±1.5	79.0	-	80°	40°	68	2.9×8.70×R1.45	Fig. 2
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SCT56X-400-S2R4B009JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.7×5.25×R1.35	Fig. 1
SCT56X-450-S2R0C008JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
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SCT56X-550-S2R2C006JV	82.0	58.0	75.0	4.5 ±1.5	80.0	56.0	32.0	40.0	-	2.9×8.70×R1.45	Fig. 1
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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.



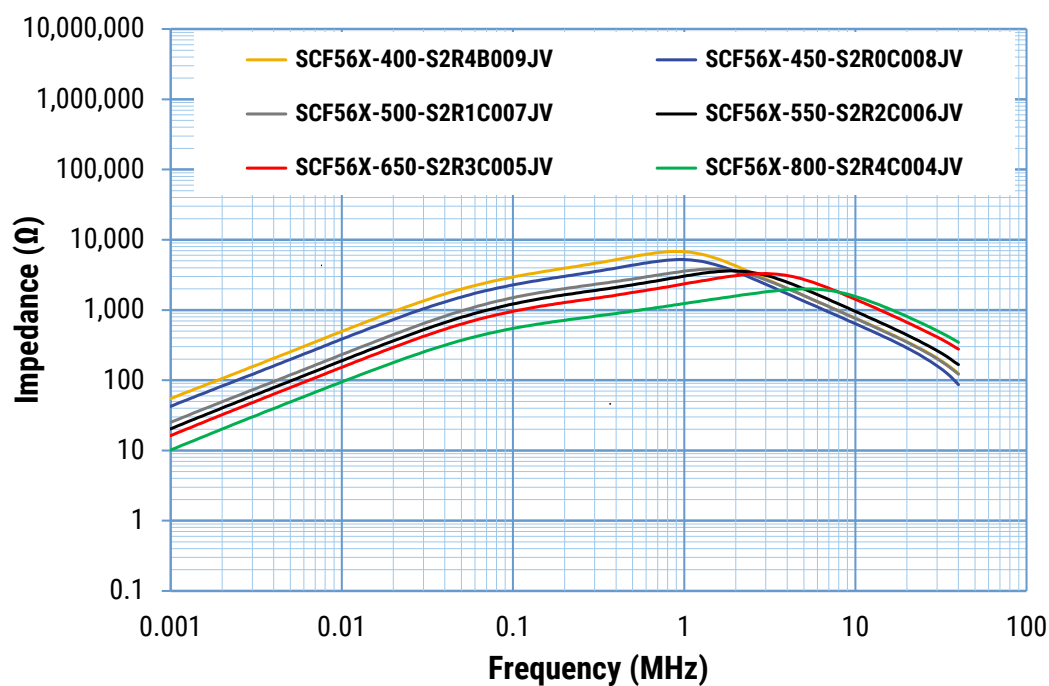
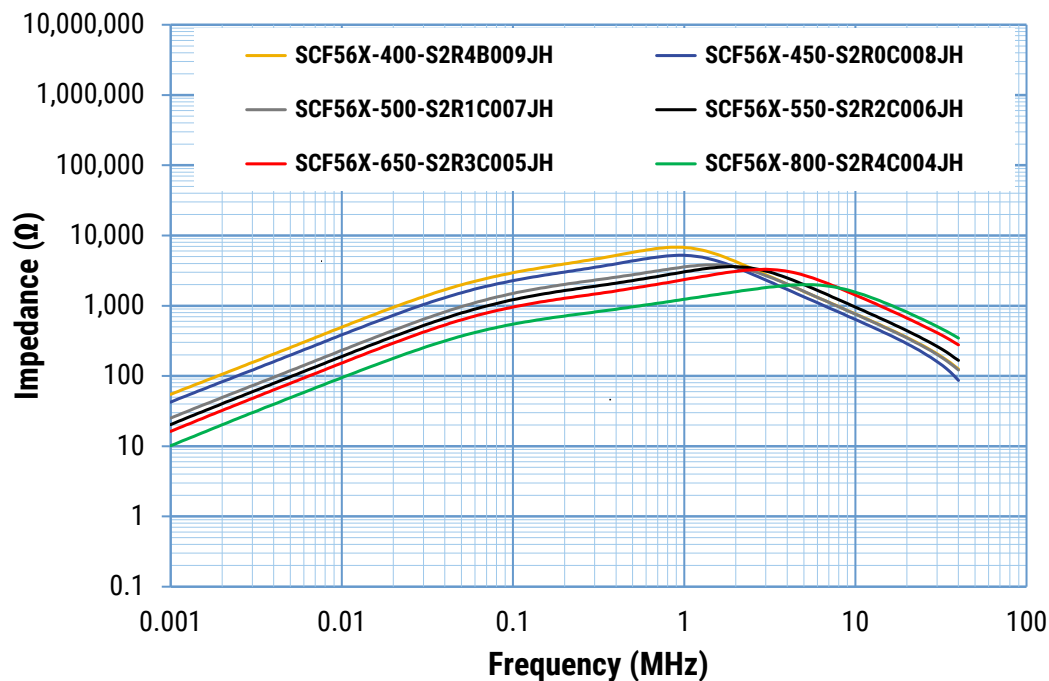
Performance Characteristics

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	40 – 80 A
Rated Inductance Range	0.13 – 1.72 mH minimum
Inductance Measurement Condition	100 kHz
Thermal Class	130°C
Operating Temperature Range	-40°C to +130°C (include self temperature rise)

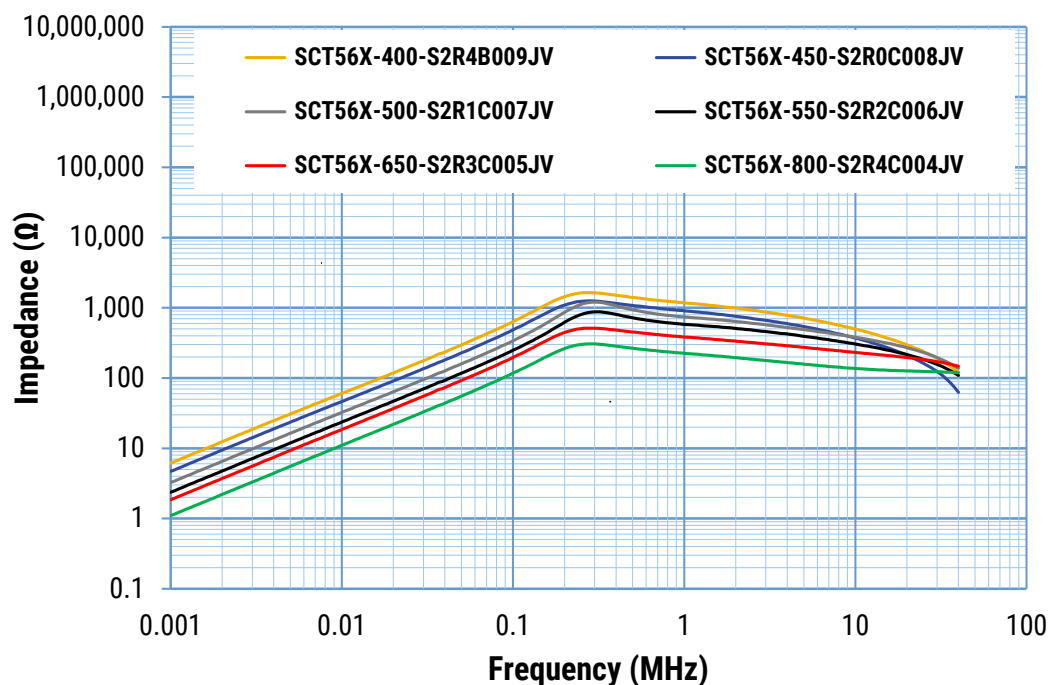
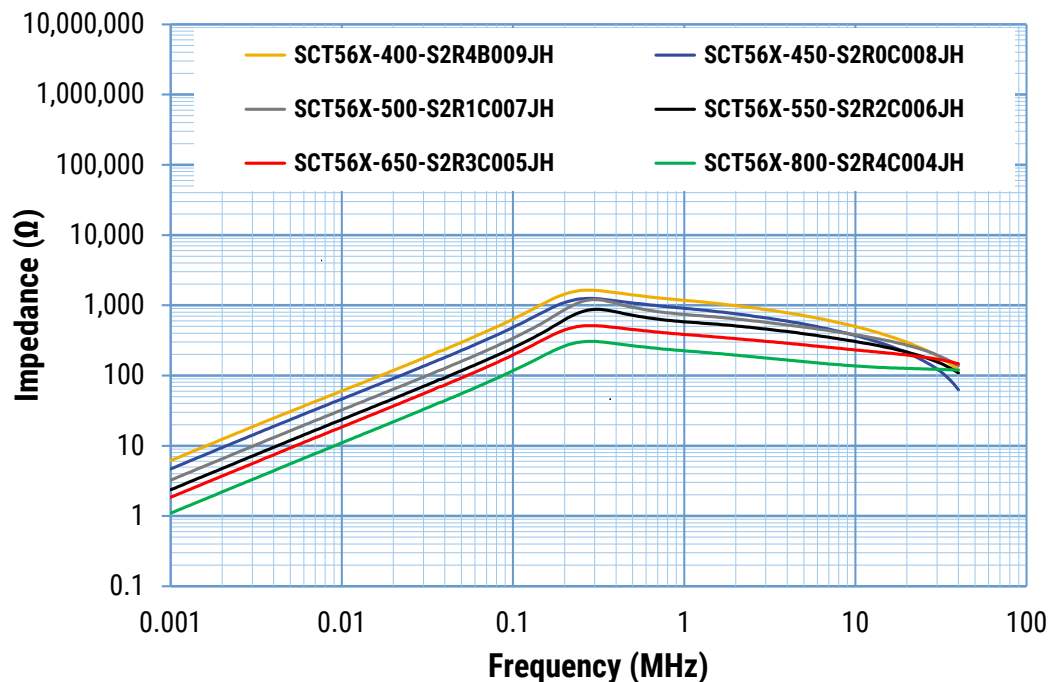
Table 1 – Ratings & Part Number Reference

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
SCF56X-400-S2R4B009JV	500	40	1.72	1.84	65	2.4 x 2 Parallel	413
SCF56X-450-S2R0C008JV	500	45	1.36	1.59	70	2.0 x 3 Parallel	381
SCF56X-500-S2R1C007JV	500	50	1.04	1.21	60	2.1 x 3 Parallel	395
SCF56X-550-S2R2C006JV	500	55	0.76	0.98	60	2.2 x 3 Parallel	367
SCF56X-650-S2R3C005JV	500	65	0.53	0.78	60	2.3 x 3 Parallel	365
SCF56X-800-S2R4C004JV	500	80	0.34	0.55	65	2.4 x 3 Parallel	349
SCF56X-400-S2R4B009JH	500	40	1.72	1.84	65	2.4 x 2 Parallel	407
SCF56X-450-S2R0C008JH	500	45	1.36	1.59	70	2.0 x 3 Parallel	370
SCF56X-500-S2R1C007JH	500	50	1.04	1.21	60	2.1 x 3 Parallel	384
SCF56X-550-S2R2C006JH	500	55	0.76	0.98	60	2.2 x 3 Parallel	361
SCF56X-650-S2R3C005JH	500	65	0.53	0.78	60	2.3 x 3 Parallel	352
SCF56X-800-S2R4C004JH	500	80	0.34	0.55	65	2.4 x 3 Parallel	338
SCT56X-400-S2R4B009JV	500	40	0.70	1.84	65	2.4 x 2 Parallel	387
SCT56X-450-S2R0C008JV	500	45	0.56	1.59	70	2.0 x 3 Parallel	377
SCT56X-500-S2R1C007JV	500	50	0.42	1.21	60	2.1 x 3 Parallel	373
SCT56X-550-S2R2C006JV	500	55	0.31	0.98	60	2.2 x 3 Parallel	365
SCT56X-650-S2R3C005JV	500	65	0.21	0.78	60	2.3 x 3 Parallel	350
SCT56X-800-S2R4C004JV	500	80	0.13	0.55	65	2.4 x 3 Parallel	330
SCT56X-400-S2R4B009JH	500	40	0.70	1.84	65	2.4 x 2 Parallel	381
SCT56X-450-S2R0C008JH	500	45	0.56	1.59	70	2.0 x 3 Parallel	366
SCT56X-500-S2R1C007JH	500	50	0.42	1.21	60	2.1 x 3 Parallel	362
SCT56X-550-S2R2C006JH	500	55	0.31	0.98	60	2.2 x 3 Parallel	360
SCT56X-650-S2R3C005JH	500	65	0.21	0.78	60	2.3 x 3 Parallel	337
SCT56X-800-S2R4C004JH	500	80	0.13	0.55	65	2.4 x 3 Parallel	320

Frequency Characteristics



Frequency Characteristics cont.



Packaging

Type	Packaging Type	Pieces Per Box
SCF56X-JV	Tray	18
SCF56X-JH		
SCT56X-JV		
SCT56X-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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