Common Mode SC Coils, SC-D Series, High Frequency Type

Overview

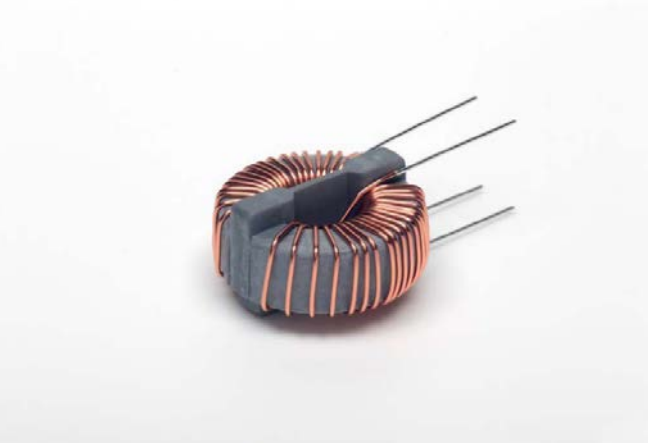
The KEMET SC-D coils are common mode chokes with a wide variety of characteristics. These toroidal coils are designed with our proprietary ferrite cores and are useful in various noise countermeasure fields.

Applications

- Audio-visual equipment
- Home appliances
- Power supplies

Benefits

- Proprietary 700L ferrite material and equivalents
- High frequency
- Wide variety of sizes and specifications
- Operating temperature range from −25°C to +105°C or +120°C
- UL 94 V–2 or V–0 flame retardant rated cap



Part Number System

SC-	10-	D	050	
Series	Rated Current (A)	Core Type	Inductance (µH) Minimum	Core Orientation
SC	0x = x A xx = xx A Examples: 05 = 5 A 10 = 10 A	D = Ni-Zn ferrite, high frequency	xxx = xxx µH 0xx = xx µH Examples: 100 = 100 µH 060 = 60 µH Note: With exceptions, see Table 1 for details.	Blank = (≤ 7A) Vertical type (≥ 8A) Horizontal type H = Horizontal type Note: With exceptions, see Dimensions for details.

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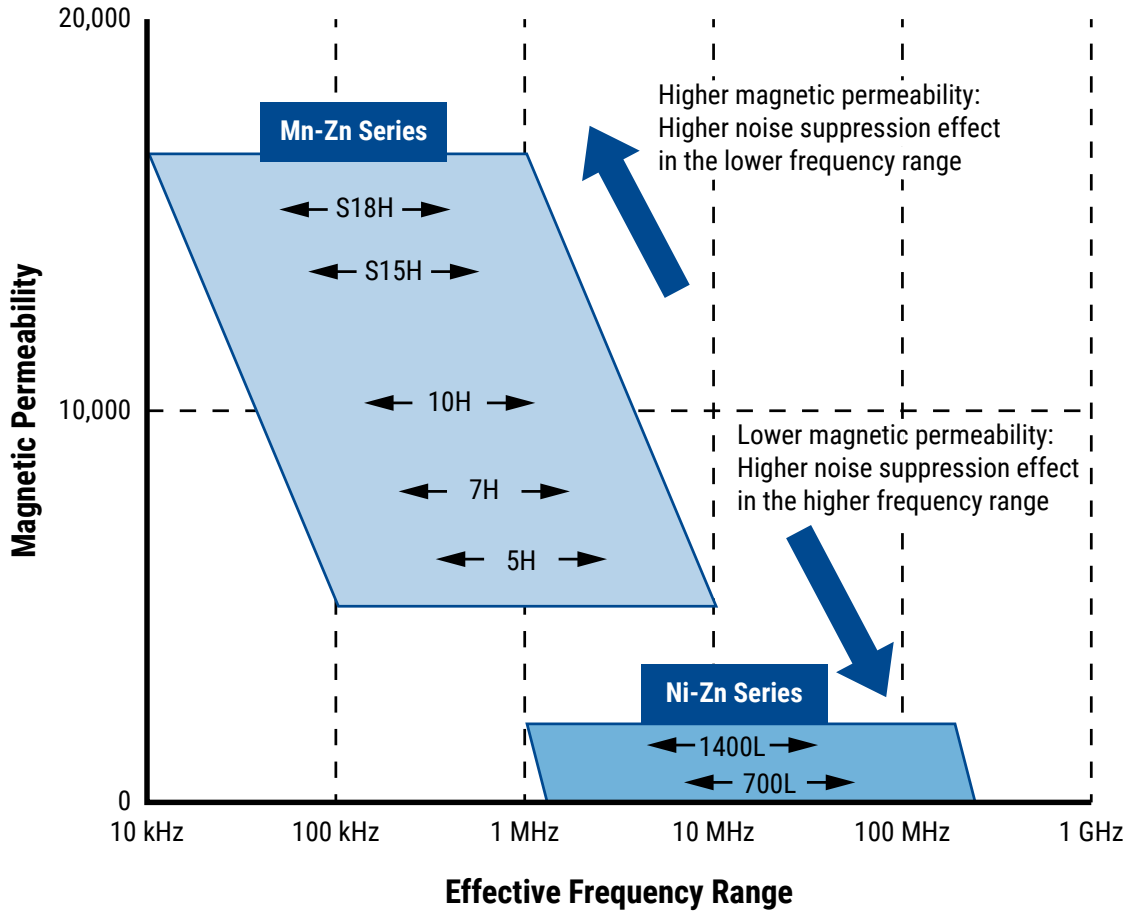
Magnetic Permeability of Ferrite Material

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 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. 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.

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 and it should be tested on the actual device to determine its effectiveness.

S18H, S15H, 10H, 7H, 5H, 1400L and 700L are KEMET's proprietary ferrite material names. Other materials can also be available on request.

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



Dimensions – Millimeters

Figure 1

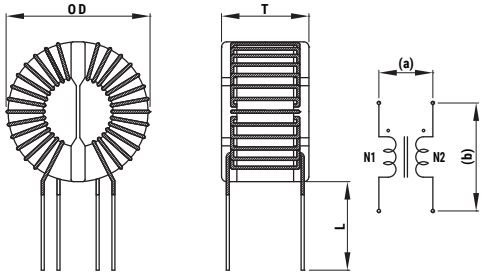


Figure 2

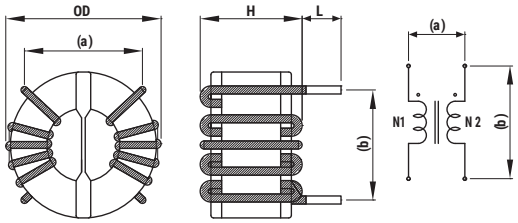
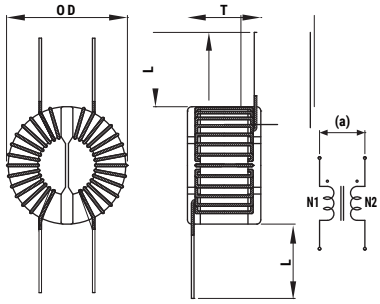


Figure 3



Part Number	Dimensions (mm)				Pin Pitch[1] (Reference)		Figure
	OD (Maximum)	T (Maximum)	H (Maximum)	L	a	b	
SC-02-D100	23.0	13.0	-	15±2.0	10	13	Fig. 1
SC-03-D050	23.0	13.0	-	15±2.0	10	13	Fig. 1
SC-04-D050	25.0	19.0	-	15±2.0	10	19	Fig. 1
SC-05-D0065	24.5	13.5	-	10±2.0	6	10	Fig. 1
SC-05-D030	25.0	19.0	-	15±2.0	10	19	Fig. 1
SC-05-D150H	48.0	-	25.0	15±2.0	15	40	Fig. 2
SC-07-D005	24.0	13.5	-	20±2.0	6	-	Fig. 3
SC-07-D060	25.0	20.0	-	15±2.0	12	17	Fig. 1
SC-08-D060	34.0	-	23.0	15±2.0	22	21	Fig. 2
SC-10-D020H	24.0	-	20.0	10±2.0	15	15	Fig. 2
SC-10-D050	34.0	-	23.0	15±2.0	22	21	Fig. 2
SC-15-D030	34.0	-	23.0	15±2.0	22	21	Fig. 2
SC-20-D010	34.0	-	23.0	15±2.0	22	21	Fig. 2
SC-30-D010	37.0	-	24.0	15±2.0	22	21	Fig. 2

[1] *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	250 VAC/VDC
Withstanding Voltage	2,400 V (2 seconds, between lines)
Insulation Resistance	> 100 MΩ at 500 VDC (between lines)
Rated Current Range	2 – 30 A
Rated Inductance Range	6.5 – 1,500 µH minimum
Inductance Measurement Condition	100 kHz
Thermal Class	A (105°C)
Operating Temperature Range	–25°C to +105°C (include self temperature rise)

Table 1 – Ratings & Part Number Reference

Part Number	Rated Current (A)	Inductance (µH) Minimum	DC Resistance/Line (mΩ) Maximum	Temperature Rise (K) Maximum	Wire Diameter (mm)	Thermal Class	Weight (g) Approximate
SC-02-D100	2	100.0	70.0	40	0.5	A (105°C)	7.0
SC-03-D050	3	50.0	40.0	40	0.6	A (105°C)	8.0
SC-04-D050	4	50.0	25.0	40	0.7	A (105°C)	14.0
SC-05-D0065	5	6.5	10.0	25	0.8	E (120°C)	7.5
SC-05-D030	5	30.0	20.0	40	0.8	A (105°C)	14.0
SC-05-D150H	5	1500.0	90.0	60	0.9	E (120°C)	89.2
SC-07-D005	7	45.0	20.0	60	0.8	A (105°C)	9.3
SC-07-D060	7	60.0	12.0	40	1.1	A (105°C)	19.9
SC-08-D060	8	60.0	30.0	45	1.0	A (105°C)	30.0
SC-10-D020H	10	20.0	6.5	40	1.2	A (105°C)	6.0
SC-10-D050	10	50.0	16.0	45	1.2	A (105°C)	34.0
SC-15-D030	15	30.0	12.0	50	1.4	A (105°C)	34.0
SC-20-D010	20	10.0	8.0	50	1.7	A (105°C)	33.0
SC-30-D010	30	10.0	1.8	40	2.3	A (105°C)	34.0

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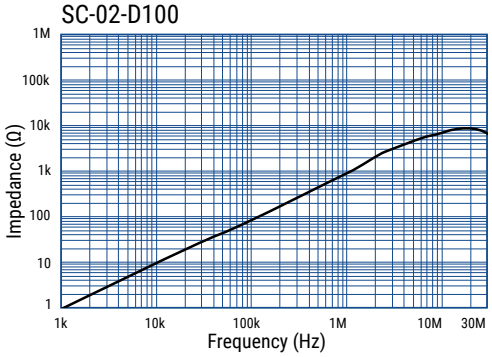
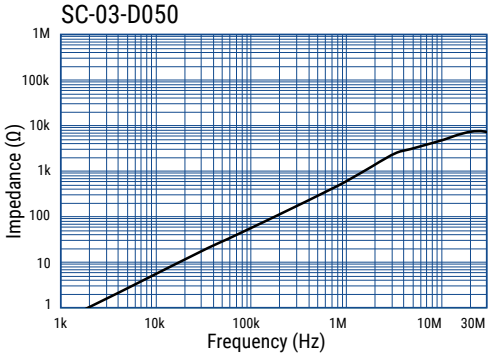
Frequency Characteristics

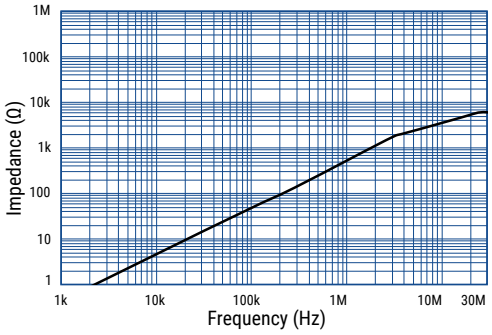
SC-02-D100



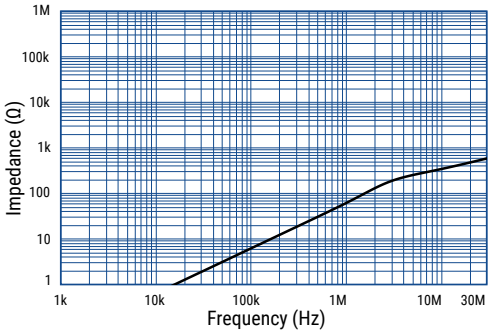
SC-03-D050



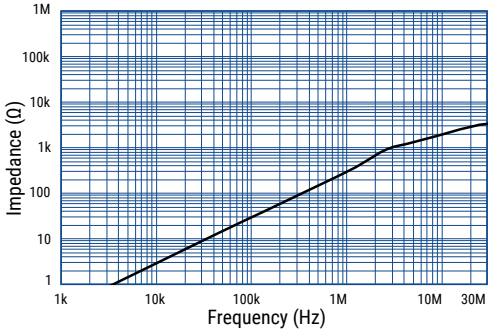
SC-04-D050



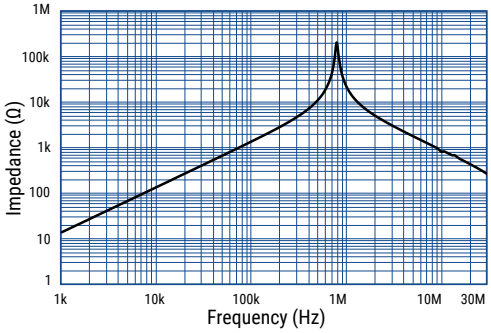
SC-05-D0065



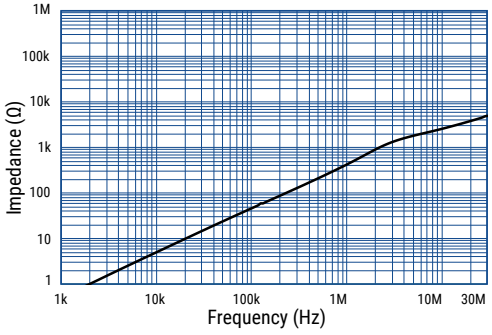
SC-05-D030



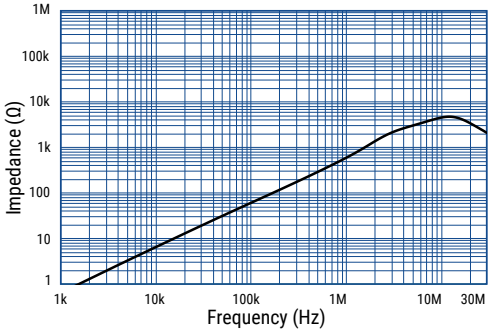
SC-05-D150H



SC-07-D005

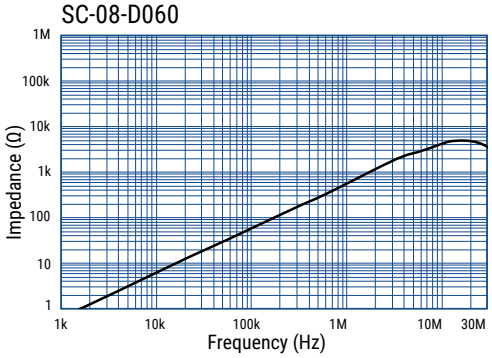


SC-07-D060

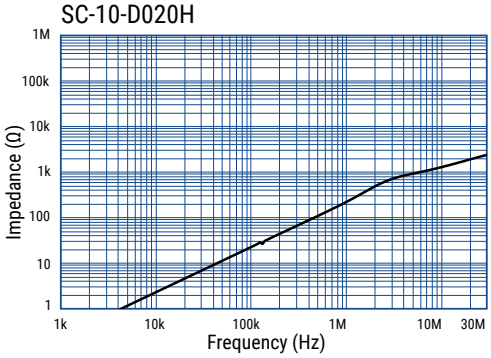


Frequency Characteristics cont.

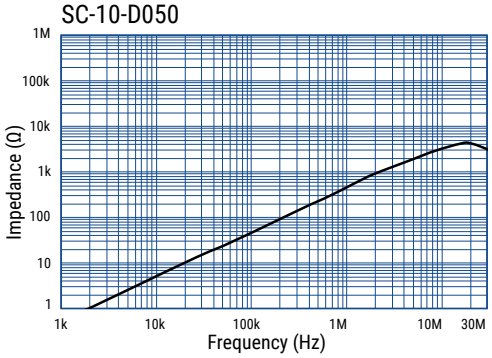
SC-08-D060



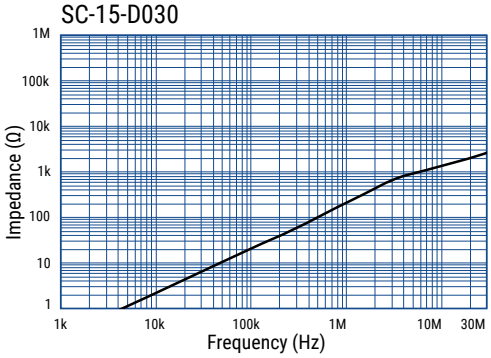
SC-10-D020H



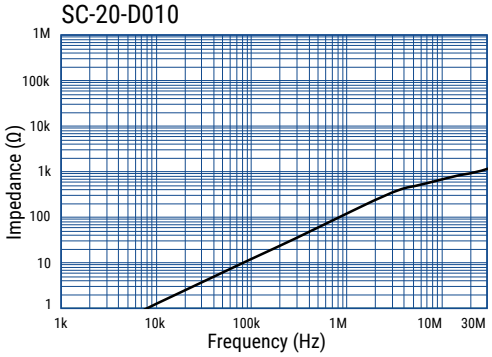
SC-10-D050



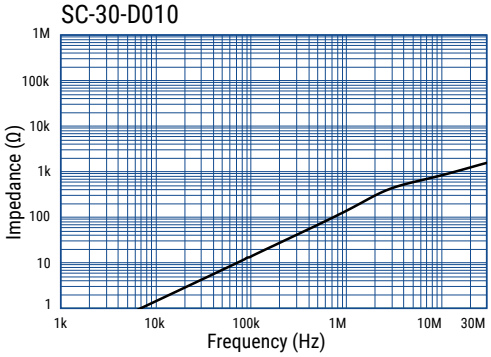
SC-15-D030



SC-20-D010



SC-30-D010



Packaging

Type	Packaging Type	Pieces Per Box
SC-02-D100	Tray	360
SC-03-D050		
SC-04-D050		300
SC-05-D0065		360
SC-05-D030		300
SC-05-D150H		90
SC-07-D005		360
SC-07-D060		300
SC-08-D060		200
SC-10-D020H		500
SC-10-D050		200
SC-15-D030		
SC-20-D010		
SC-30-D010		

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 indicted or that other measures may not be required.

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- *Подбор аналогов.*
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