Differential Mode Coils, SHBC Series (Fe-Si-Al)

Overview

The KEMET SHBC coils are normal mode chokes with a wide variety of characteristics. These coils are designed with Fe-Si-Al dust cores and are useful in various fields such as DC/DC converters and differential noise countermeasures.

Applications

- Switching power supply outlet
- DC-DC converter
- Phase compensation
- Boost converter

Benefits

- Fe-Si-Al dust core material
- Available for smoothing and converting
- Low core loss
- High frequency drive
- Wide variety of sizes and specifications
- Operating temperature range from −40°C to +125°C

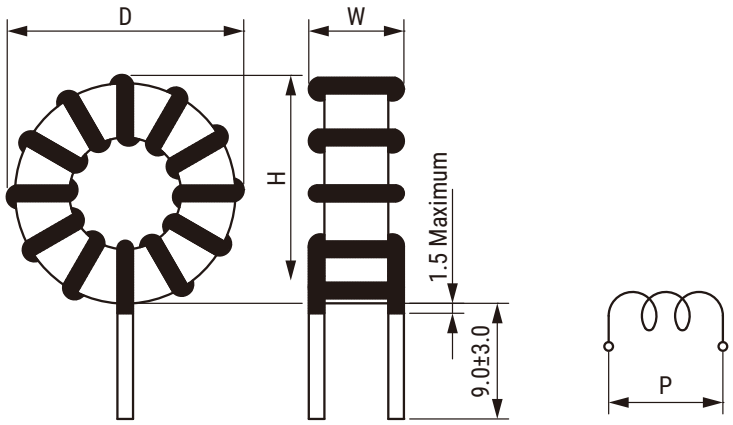


Part Number System

SHBC	8S-	0R6	A	0024	V
Series	Dimension Code (See Dimensions)	Wire Diameter (mm)	Windings	Inductance (µH) at 0 A ±20%	Core Orientation
SHBC	8S 10 12 13 14 20 24N 24W	R = Decimal point Examples: 0R6 = 0.6 mm 1R0 = 1.0 mm	A = Single B = Double	00xx = xx µH 0xxx = xxx µH Examples: 0024 = 24 µH 0107 = 107 µH	V = Vertical

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Dimensions – Millimeters



Part Number	Dimensions (mm)			
	D Maximum	W Maximum	H Maximum	P[1] Typical
SHBC8S-0R6A0024V	16.0	8.8	16.0	7.0
SHBC8S-0R6A0043V	17.0	9.1	17.0	7.0
SHBC8S-0R6A0067V	17.0	9.6	17.0	7.5
SHBC10-0R8A0038V	21.5	11.7	21.5	8.0
SHBC10-0R8A0068V	21.5	12.3	21.5	8.0
SHBC10-0R8A0107V	22.0	12.1	22.0	9.0
SHBC12-1R0A0028V	26.0	12.1	26.0	9.0
SHBC12-1R0A0051V	26.0	12.4	26.0	9.0
SHBC12-1R0A0080V	26.4	13.3	26.4	9.5
SHBC13-1R2A0045V	30.0	14.9	30.0	11.0
SHBC13-1R2A0081V	30.0	15.7	30.0	11.0
SHBC13-1R2A0127V	30.0	16.2	30.0	12.0
SHBC14-1R2A0067V	33.5	17.1	33.5	14.0
SHBC14-1R2A0120V	34.0	18.6	34.0	15.0
SHBC14-1R2A0187V	34.0	19.4	34.0	15.0
SHBC20-1R7A0054V	41.2	19.5	41.2	14.0
SHBC20-1R7A0097V	41.2	20.3	41.2	14.0
SHBC20-1R7A0152V	41.2	20.4	41.2	15.0
SHBC24N-2R0A0219V	50.5	26.5	50.5	19.0
SHBC24W-2R1A0311V	57.6	30.5	57.6	24.0
SHBC24N-2R3A0104V	49.5	25.8	49.5	22.0
SHBC24W-2R4A0174V	57.6	30.9	57.6	24.0
SHBC24N-2R1B0039V	50.1	25.7	50.1	20.0
SHBC24W-2R1B0065V	57.6	31.2	57.6	23.0

[1] *p listed above for reference only. Values not guaranteed.*

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Environmental Compliance

All KEMET AC Line Filters are RoHS Compliant.

Performance Characteristics

Item	Performance Characteristics
Rated Current Range	2 – 30 A
Rated Inductance Range	24 – 311 µH at 0 A ±20%
Inductance Measurement Condition	100 kHz, 1 mA
Wire Type	1 UEW and 1 PEW
Operating Temperature Range	–40°C to +125°C (include self temperature rise)

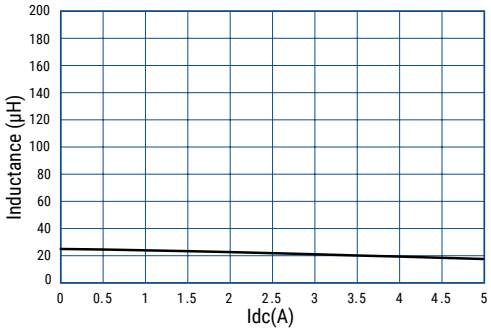
Table 1 – Ratings & Part Number Reference

Part Number	Rated Current (A)	Inductance (µH)		DC Resistance/ Line (mΩ) Maximum	Temperature Rise[1] (K) Maximum	Wire Diameter (mm)	Weight (g) Approximate
		at 0 A ±20%	Rated current ±25%				
SHBC8S-0R6A0024V	2	24	22.1	41.1	15	0.6	4
SHBC8S-0R6A0043V	2	43	36.9	54.1	20	0.6	4
SHBC8S-0R6A0067V	2	67	55.0	67.8	25	0.6	4
SHBC10-0R8A0038V	3	38	32.5	31.2	15	0.8	9
SHBC10-0R8A0068V	3	68	58.4	42.3	20	0.8	10
SHBC10-0R8A0107V	3	107	85.2	53.0	25	0.8	11
SHBC12-1R0A0028V	5	28	24.9	21.1	25	1.0	13
SHBC12-1R0A0051V	5	51	40.7	28.0	25	1.0	14
SHBC12-1R0A0080V	5	80	58.5	35.6	40	1.0	16
SHBC13-1R2A0045V	6	45	37.3	18.3	25	1.2	23
SHBC13-1R2A0081V	6	81	60.5	24.7	30	1.2	26
SHBC13-1R2A0127V	6	127	84.8	31.7	35	1.2	30
SHBC14-1R2A0067V	8	67	53.3	22.2	40	1.2	37
SHBC14-1R2A0120V	8	120	84.3	29.9	50	1.2	41
SHBC14-1R2A0187V	8	187	113.5	37.6	60	1.2	45
SHBC20-1R7A0054V	12	54	40.4	11.5	35	1.7	56
SHBC20-1R7A0097V	12	97	61.5	16.0	45	1.7	65
SHBC20-1R7A0152V	12	152	80.0	20.4	60	1.7	72
SHBC24N-2R0A0219V	15	219	102.6	19.5	65	2.0	137
SHBC24W-2R1A0311V	15	311	182.5	20.1	55	2.1	224
SHBC24N-2R3A0104V	20	104	53.4	10.4	55	2.3	133
SHBC24W-2R4A0174V	20	174	102.7	11.8	50	2.4	222
SHBC24N-2R1B0039V	30	39	21.2	6.8	50	2.1 x 2 Parallel	135
SHBC24W-2R1B0065V	30	65	40.7	6.2	50	2.1 x 2 Parallel	217

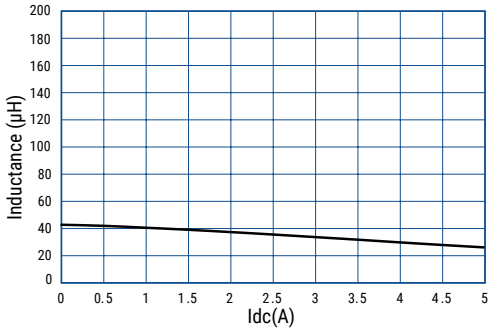
[1] The temperature rise during mounting is affected by the mounted coil and the harmonic components of the electric current. When selecting a product, please make sure that the coil temperature will not exceed the listed operating temperature range under planned operating conditions.

DC-Superposed Characteristics

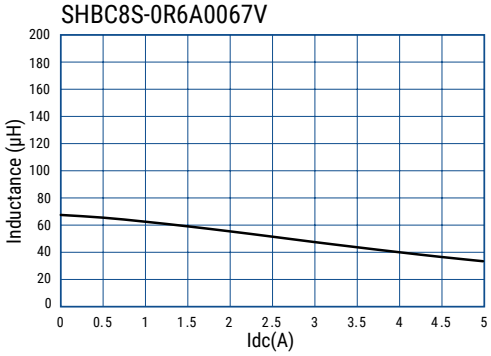
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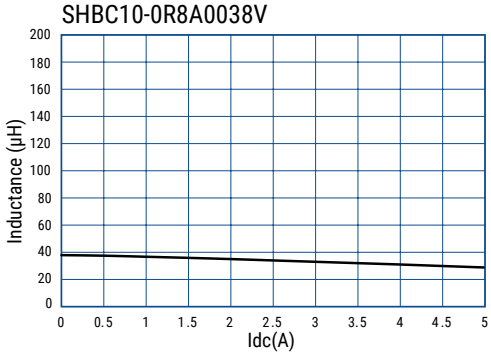
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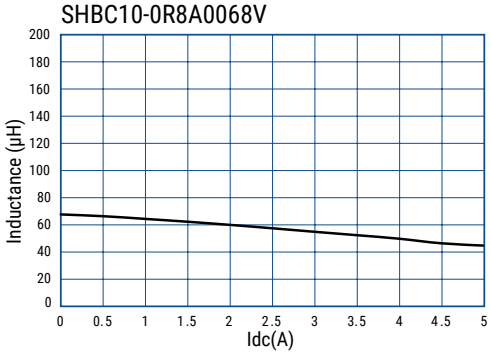
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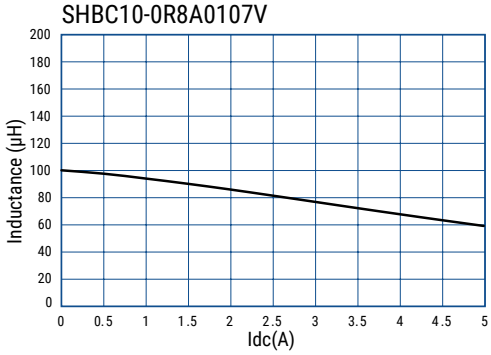
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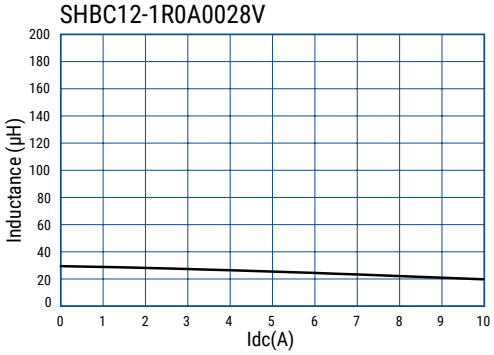
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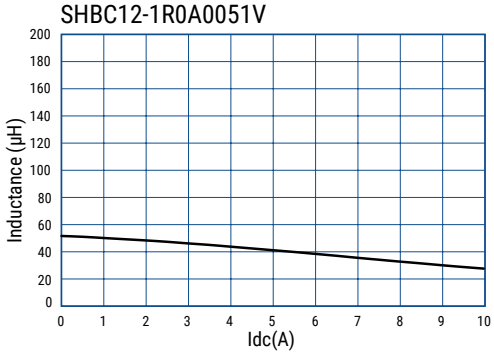
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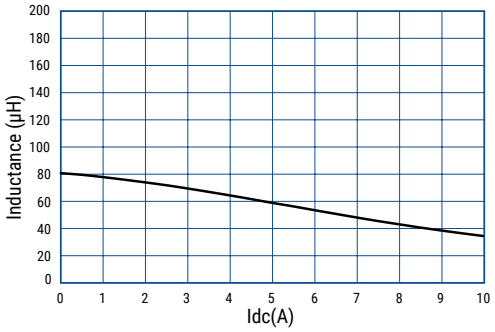
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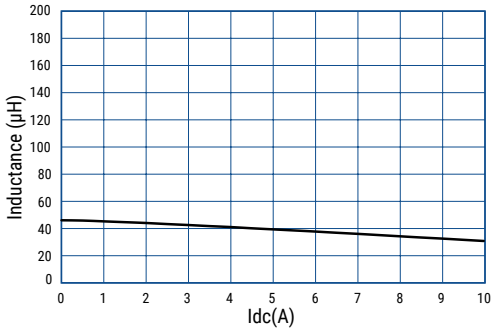
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DC-Superposed Characteristics cont.

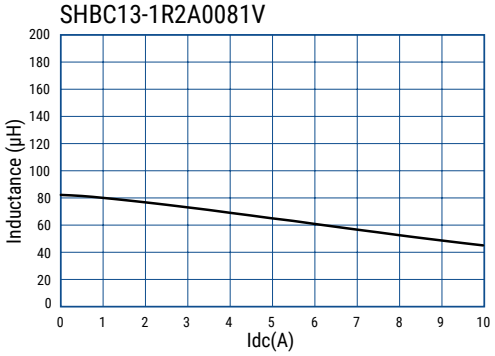
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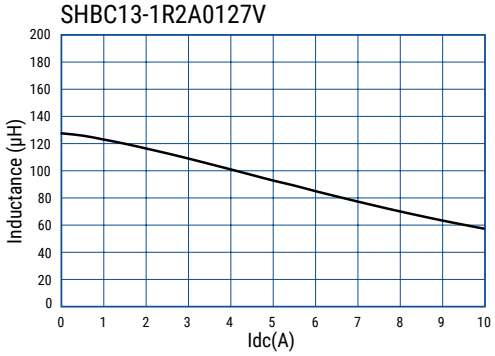
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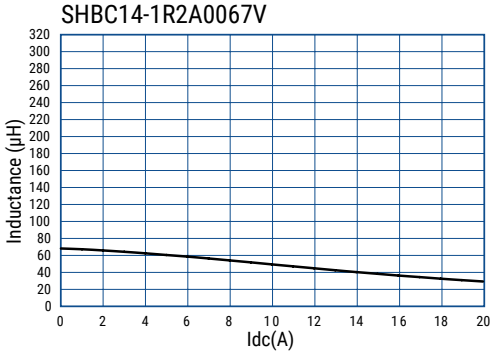
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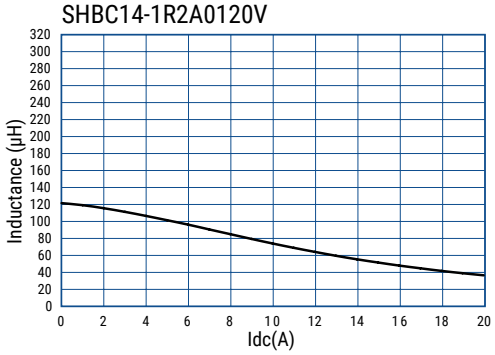
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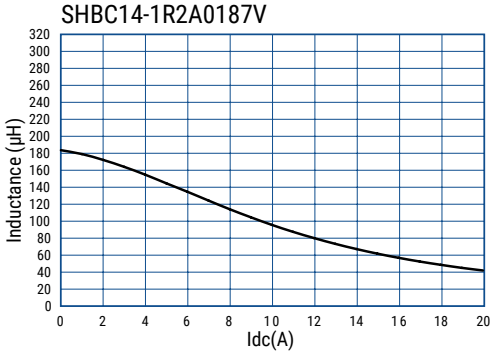
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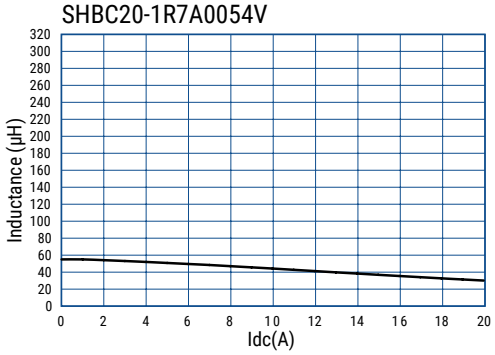
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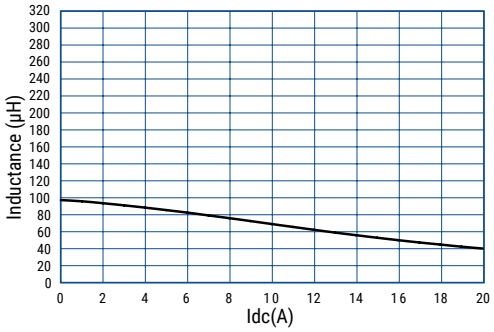


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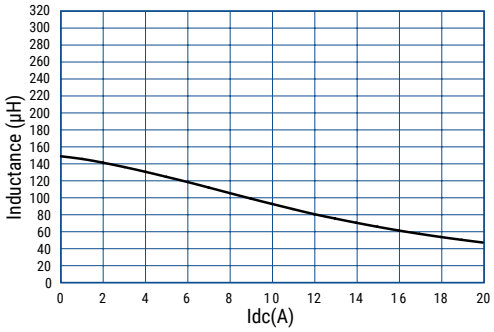


DC-Superposed Characteristics cont.

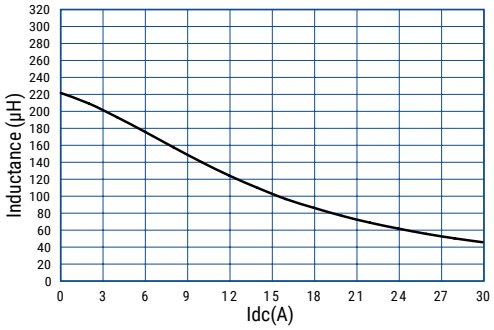
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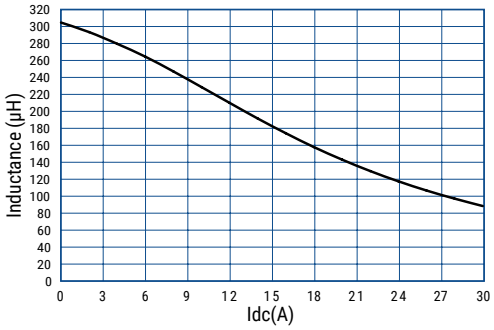
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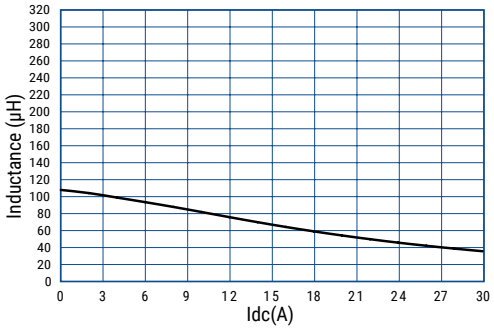
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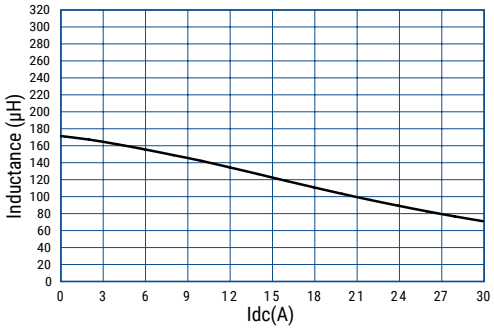
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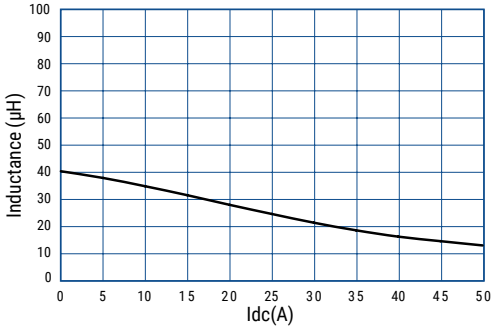
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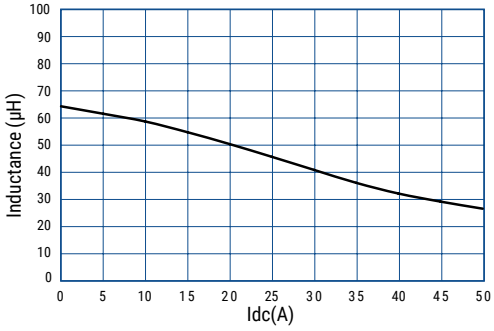
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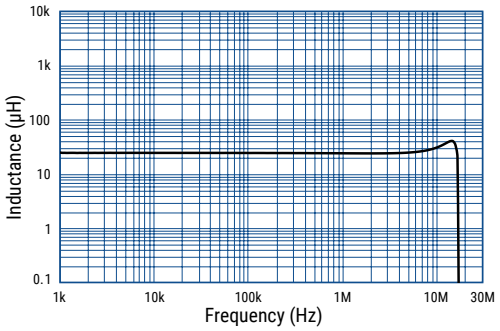


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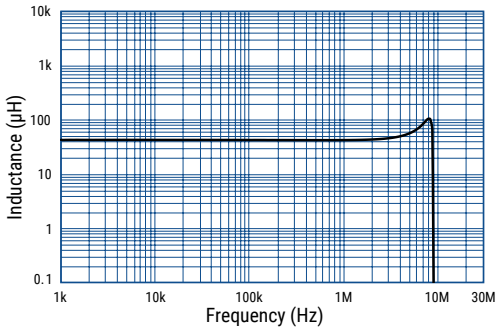


Inductance Characteristics

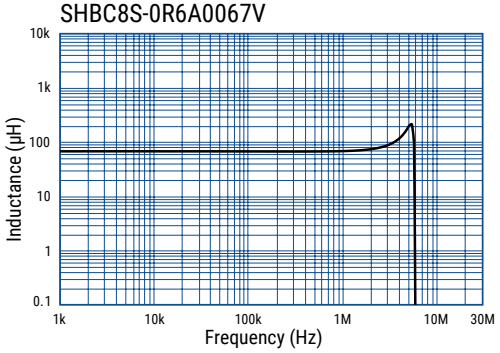
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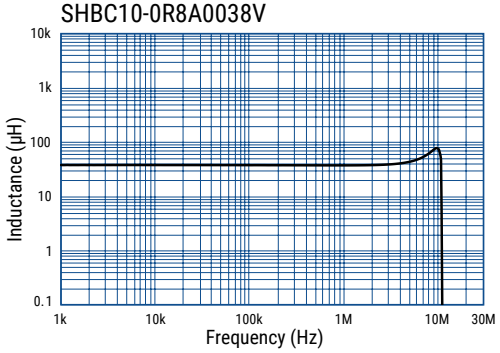
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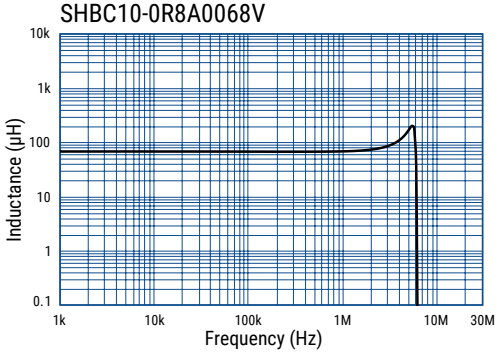
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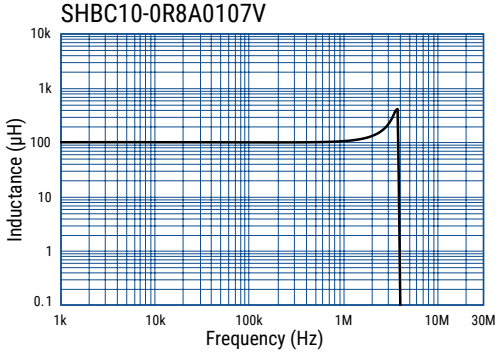
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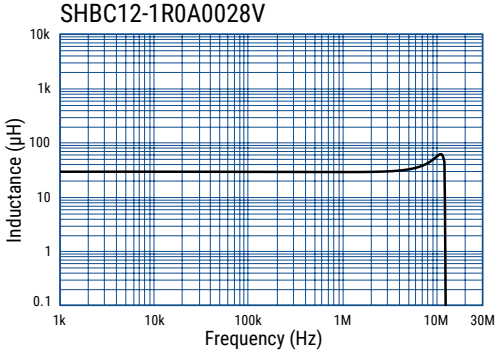
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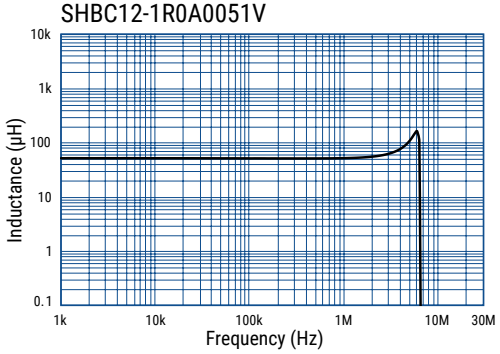
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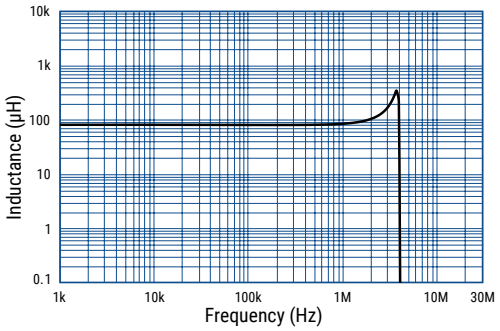


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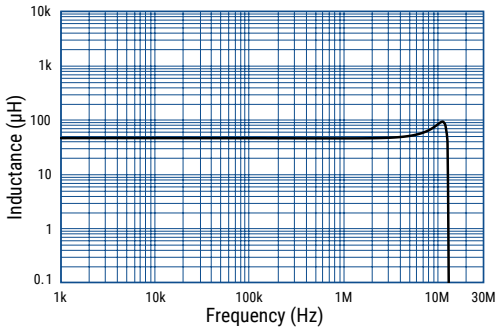


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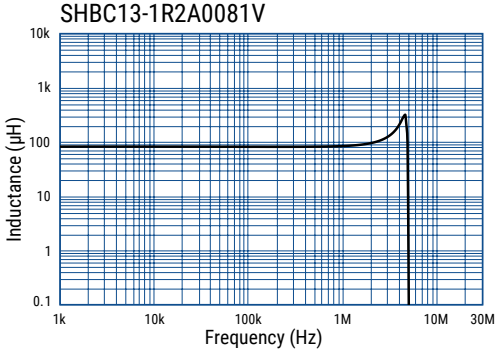
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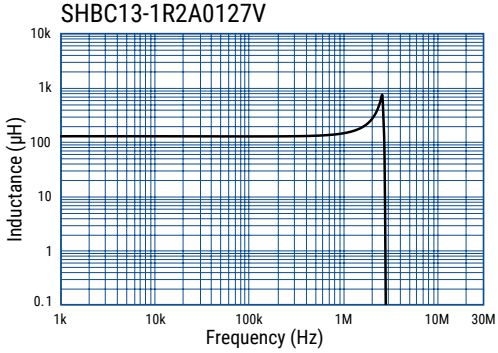
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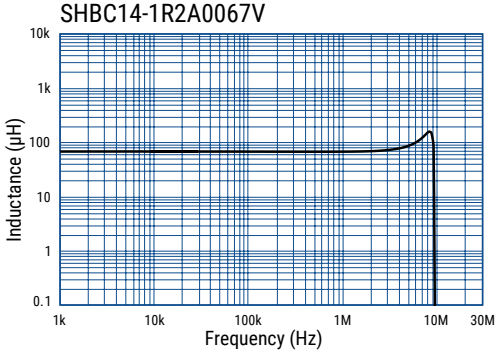
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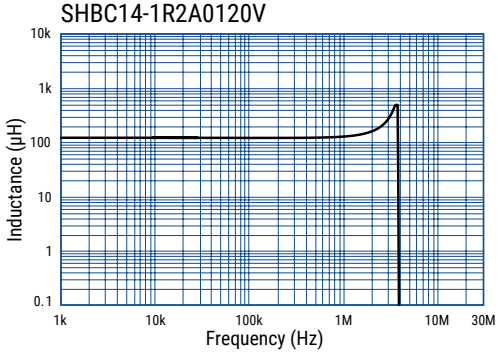
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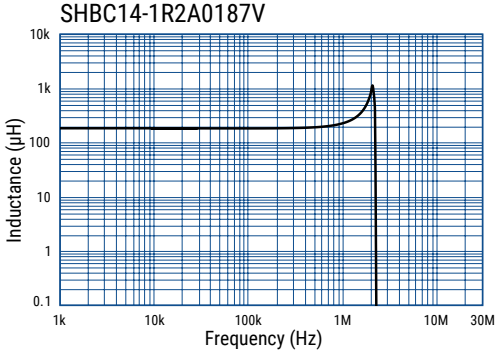
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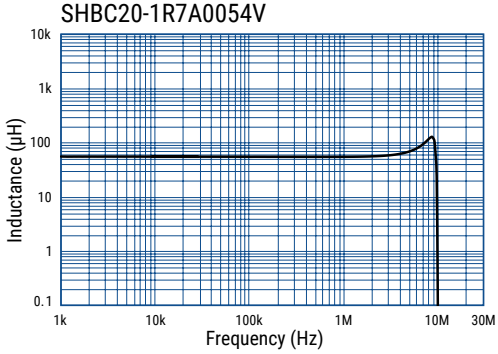
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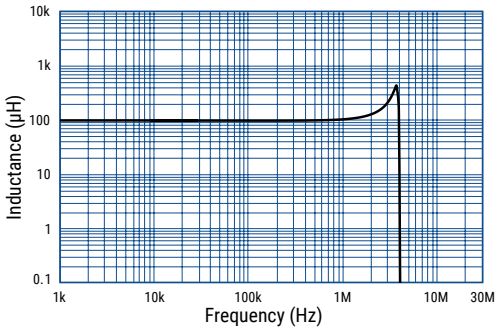


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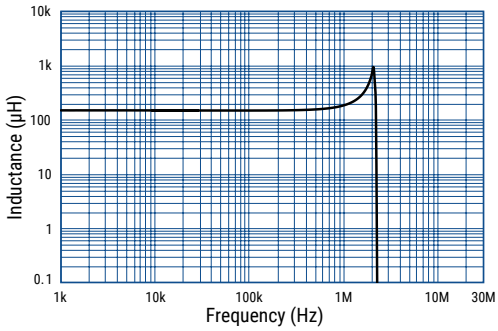


Inductance Characteristics cont.

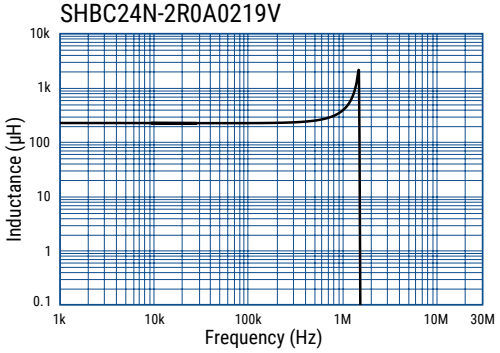
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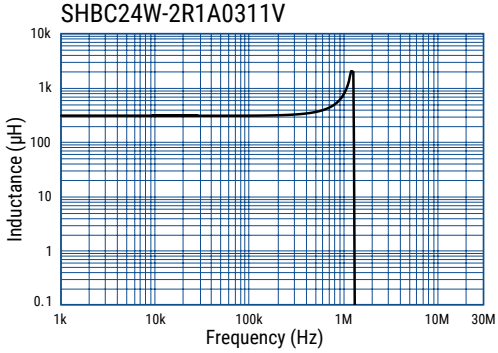
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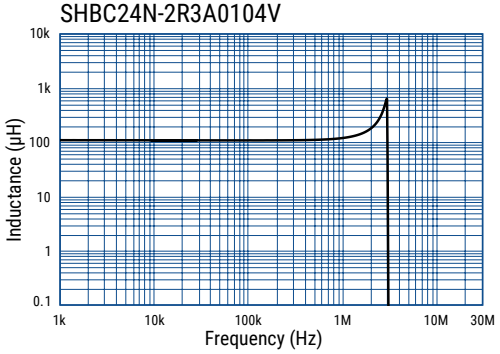
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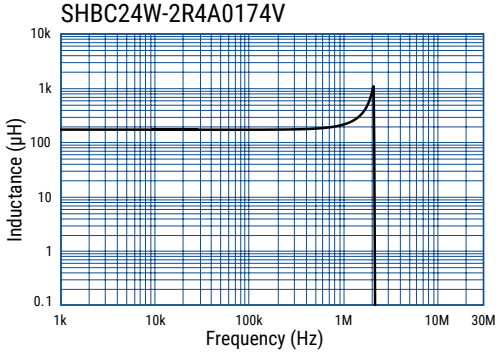
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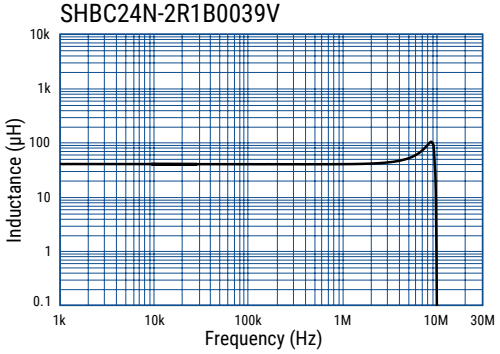
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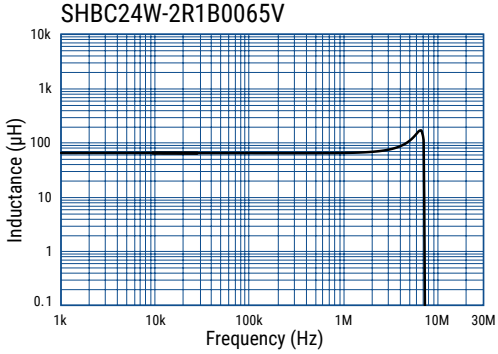
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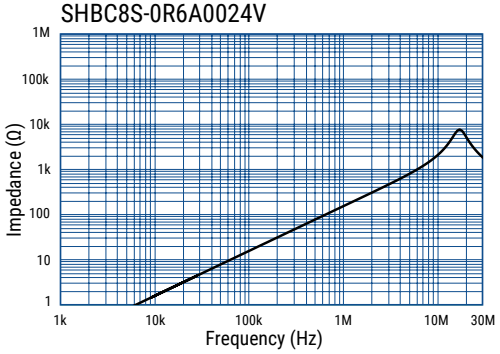
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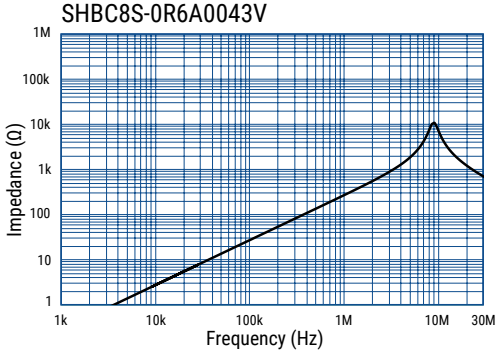
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Frequency Characteristics

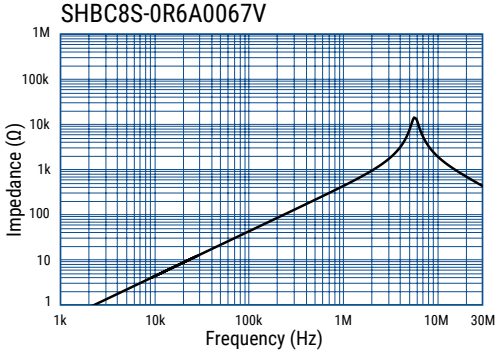
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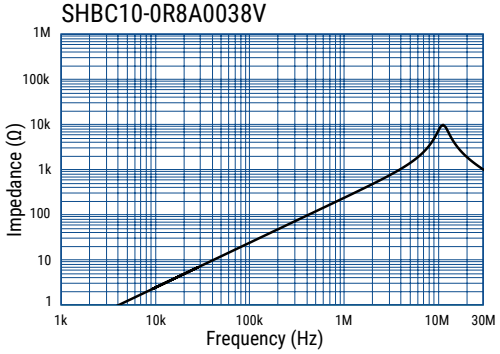
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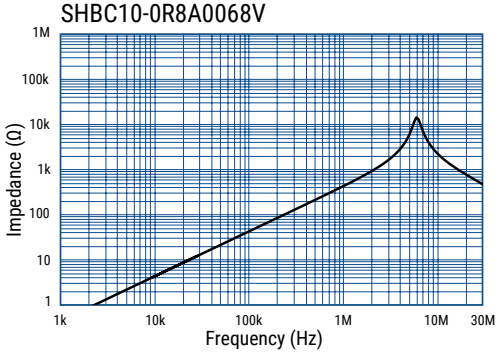
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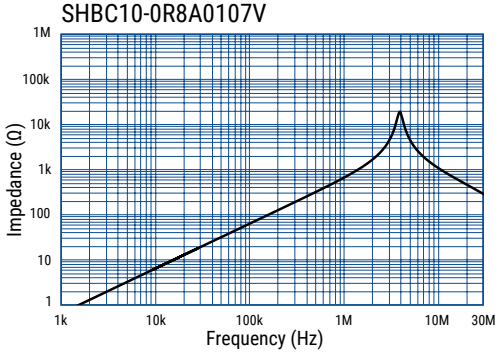
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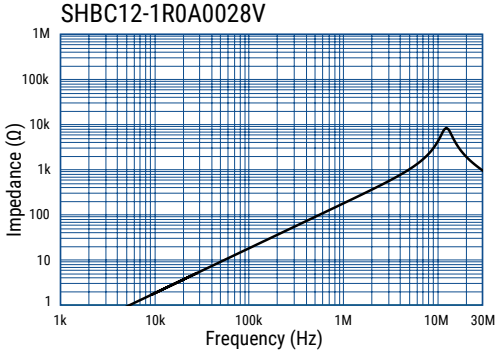
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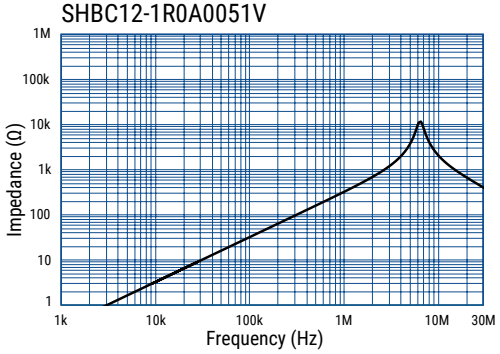
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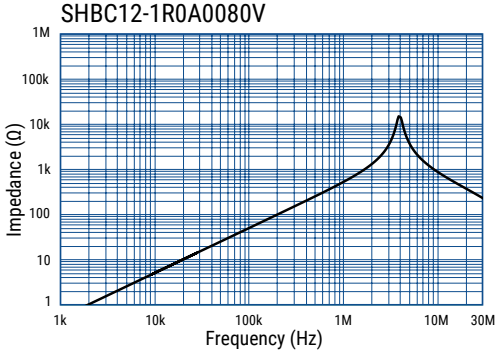
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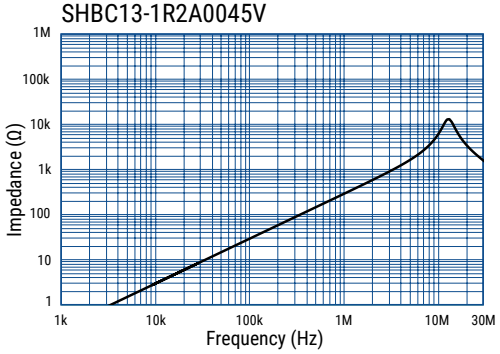
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Frequency Characteristics cont.

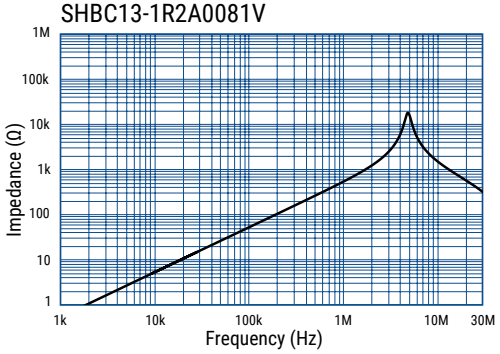
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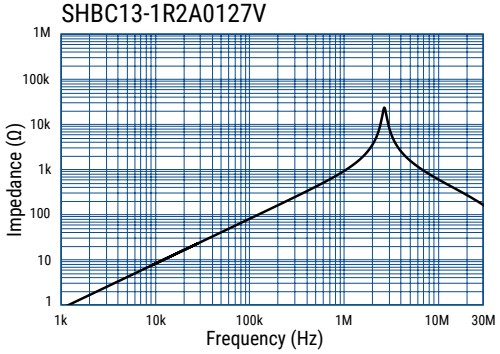
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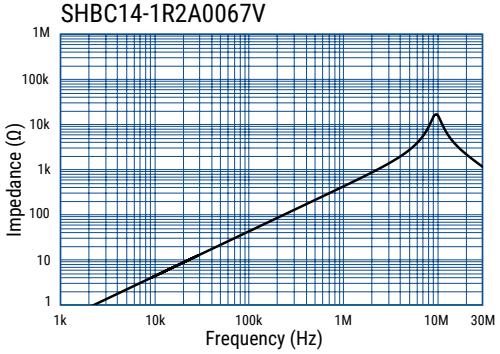
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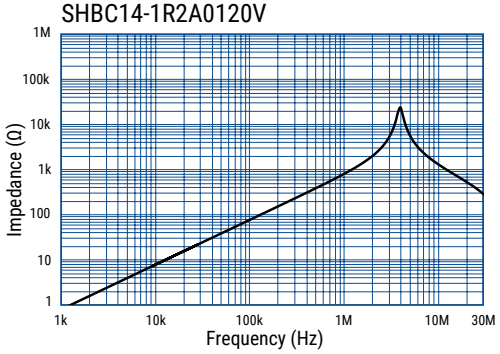
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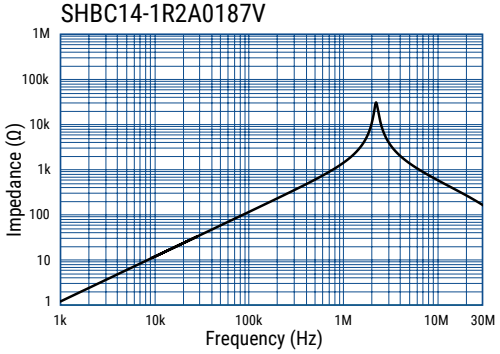
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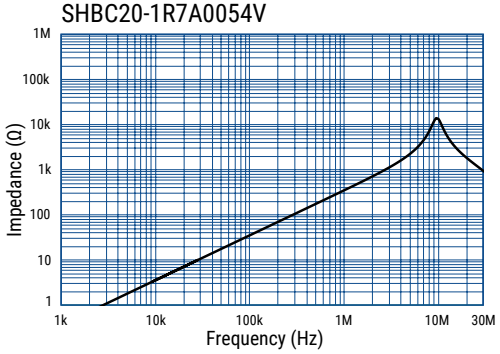
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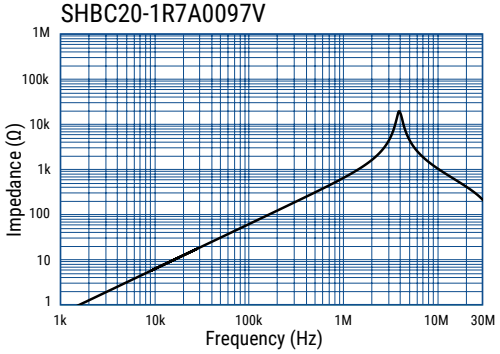


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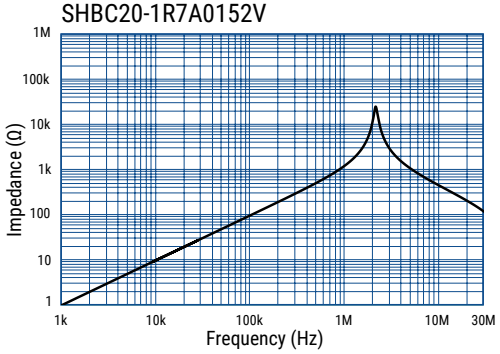


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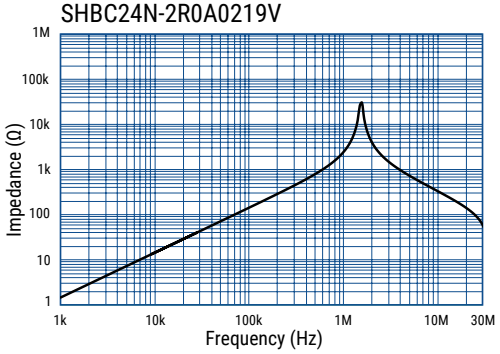
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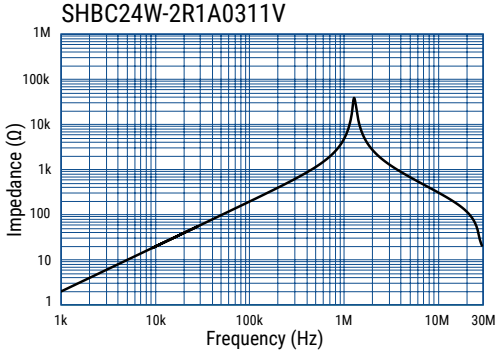
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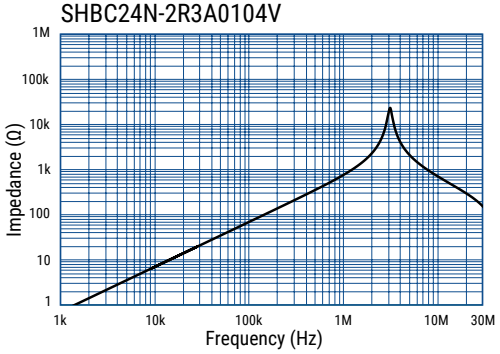
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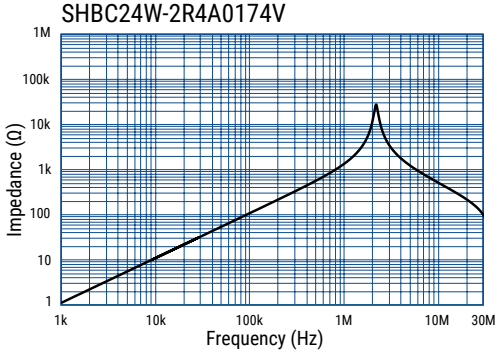
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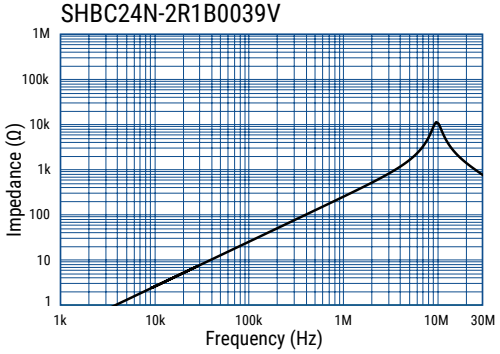
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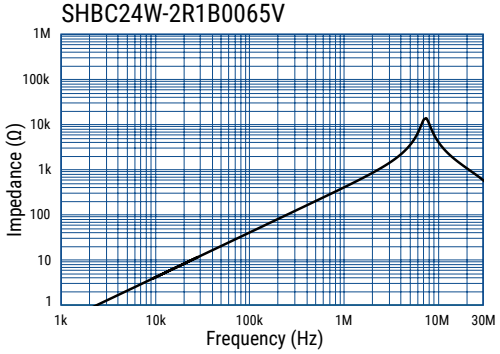
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SHBC24W-2R1B0065V



Packaging

Type	Packaging Type	Pieces Per Box
SHBC8S	Tray	700
SHBC10		240
SHBC12		
SHBC13		150
SHBC14		120
SHBC20		80
SHBC24N		60
SHBC24W		45

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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