

## Overview

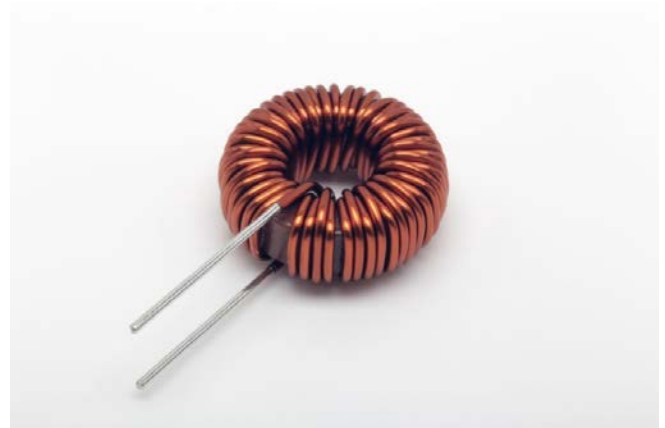
The KEMET HHBC coils are normal mode chokes with a wide variety of characteristics. These coils are designed with Fe-Si dust cores and are useful in various fields, such as DC/DC converters and differential noise countermeasures.

## Applications

- Switching power supply outlet
- DC-DC converter
- Phase compensation
- Boost converter
- Normal mode noise countermeasure

## Benefits

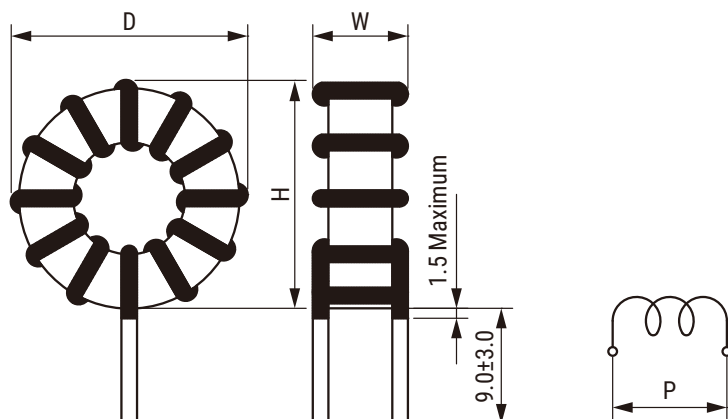
- Fe-Si dust core material
- Available for noise countermeasure as well as general use
- Good balance of core loss and DC superposition characteristics
- Wide variety of sizes and specifications
- Operating temperature range from  $-40^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$



## Part Number System

| HHBC   | 8S-  | OR6  | A                        | 0024  | V                |
|--------|--|--|--------------------------|---|------------------|
| Series | Dimension Code<br>(See Dimensions)             | Wire Diameter<br>(mm)  | Windings                 | Inductance ( $\mu\text{H}$ )<br>at 0 A $\pm 20\%$   | Core Orientation |
| HHBC   | 8S<br>10<br>12<br>13<br>14<br>20<br>24N<br>24W | R = Decimal point<br><br>Examples:<br>OR6 = 0.6 mm<br>1R0 = 1.0 mm | A = Single<br>B = Double | 00xx = xx $\mu\text{H}$<br>0xxx = xxx $\mu\text{H}$<br><br>Examples:<br>0024 = 24 $\mu\text{H}$<br>0107 = 107 $\mu\text{H}$ | V = Vertical     |

## Dimensions – Millimeters



| Part Number       | Dimensions (mm) |              |              |                           |
|-------------------|-----------------|--------------|--------------|---------------------------|
|                   | D<br>Maximum    | W<br>Maximum | H<br>Maximum | P <sup>1</sup><br>Typical |
| HHBC8S-0R6A0024V  | 16.0            | 8.8          | 16.0         | 7.0                       |
| HHBC8S-0R6A0043V  | 17.0            | 9.1          | 17.0         | 7.0                       |
| HHBC8S-0R6A0067V  | 17.0            | 9.6          | 17.0         | 7.5                       |
| HHBC10-0R8A0038V  | 21.5            | 11.7         | 21.5         | 8.0                       |
| HHBC10-0R8A0068V  | 21.5            | 12.3         | 21.5         | 8.0                       |
| HHBC10-0R8A0107V  | 22.0            | 12.1         | 22.0         | 9.0                       |
| HHBC12-1R0A0028V  | 26.0            | 12.1         | 26.0         | 9.0                       |
| HHBC12-1R0A0051V  | 26.0            | 12.4         | 26.0         | 9.0                       |
| HHBC12-1R0A0080V  | 26.4            | 13.3         | 26.4         | 9.5                       |
| HHBC13-1R2A0045V  | 30.0            | 14.9         | 30.0         | 11.0                      |
| HHBC13-1R2A0081V  | 30.0            | 15.7         | 30.0         | 11.0                      |
| HHBC13-1R2A0127V  | 30.0            | 16.2         | 30.0         | 12.0                      |
| HHBC14-1R2A0067V  | 33.5            | 17.1         | 33.5         | 14.0                      |
| HHBC14-1R2A0120V  | 34.0            | 18.6         | 34.0         | 15.0                      |
| HHBC14-1R2A0187V  | 34.0            | 19.4         | 34.0         | 15.0                      |
| HHBC20-1R7A0054V  | 41.2            | 19.5         | 41.2         | 14.0                      |
| HHBC20-1R7A0097V  | 41.2            | 20.3         | 41.2         | 14.0                      |
| HHBC20-1R7A0152V  | 41.2            | 20.4         | 41.2         | 15.0                      |
| HHBC24N-2R0A0219V | 50.5            | 26.5         | 50.5         | 19.0                      |
| HHBC24W-2R1A0311V | 57.6            | 30.5         | 57.6         | 24.0                      |
| HHBC24N-2R3A0104V | 49.5            | 25.8         | 49.5         | 22.0                      |
| HHBC24W-2R4A0174V | 57.6            | 30.9         | 57.6         | 24.0                      |
| HHBC24N-2R1B0039V | 50.1            | 25.7         | 50.1         | 20.0                      |
| HHBC24W-2R1B0065V | 57.6            | 31.2         | 57.6         | 23.0                      |

<sup>1</sup> p listed above for reference only. Values not guaranteed.

## Environmental Compliance

All KEMET AC Line Filters are RoHS Compliant.



## Performance Characteristics

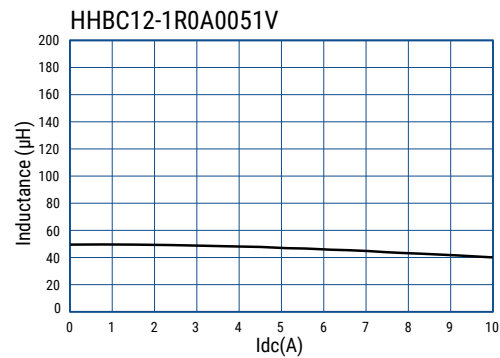
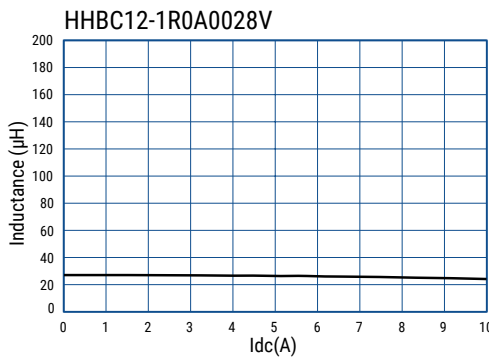
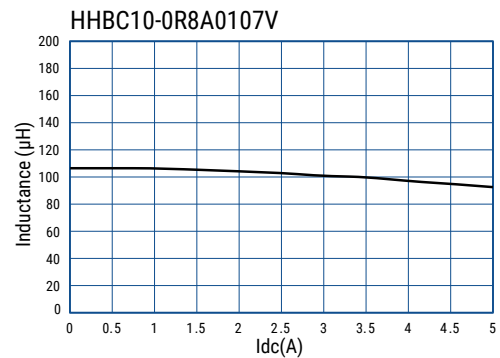
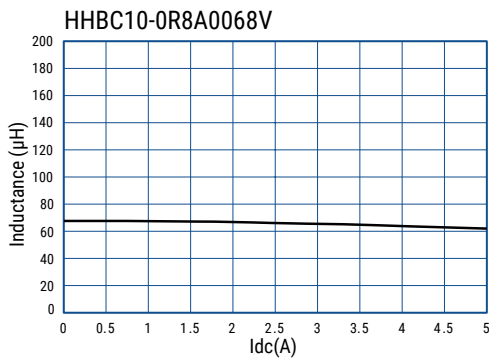
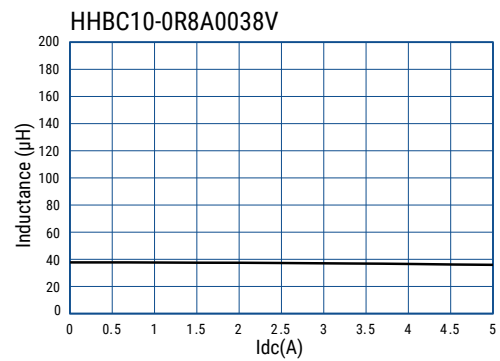
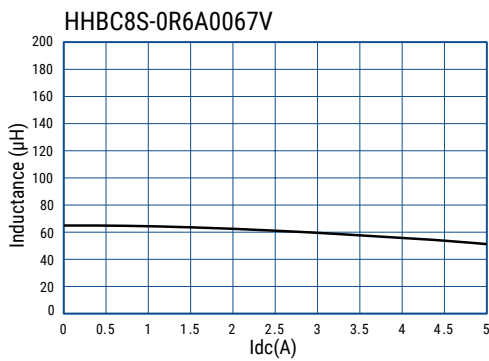
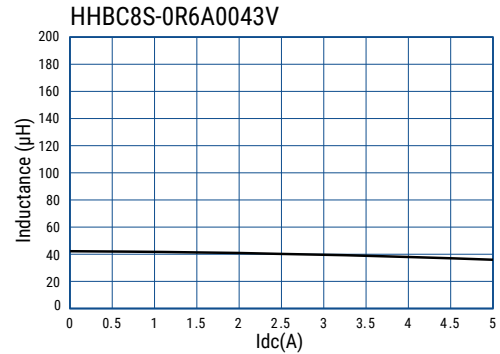
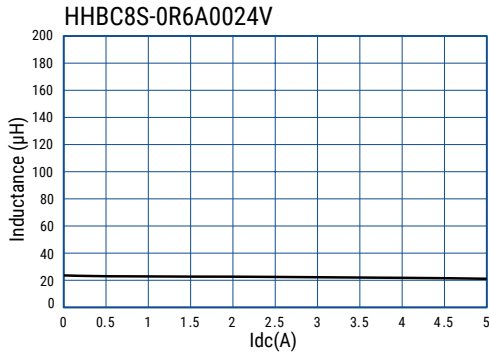
| Item                             | Performance Characteristics                     |
|----------------------------------|---|
| Rated Current Range              | 2 – 30 A  |
| Rated Inductance Range           | 24 – 311 $\mu$ H at 0 A $\pm$ 20%               |
| Inductance Measurement Condition | 100 kHz, 1 mA                                   |
| Wire Type                        | 1 UEW & 1 PEW                                   |
| Operating Temperature Range      | -40°C to +125°C (include self temperature rise) |

**Table 1 – Ratings & Part Number Reference**

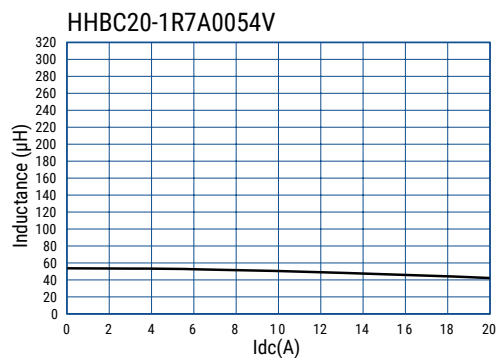
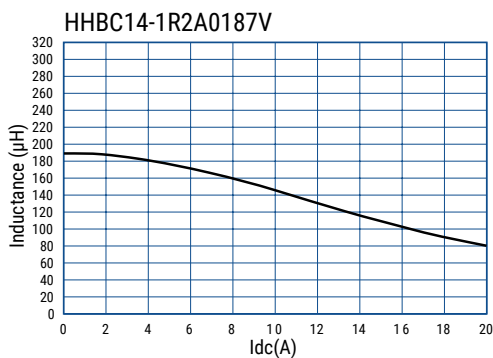
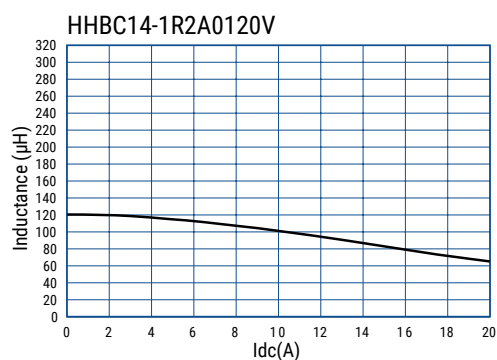
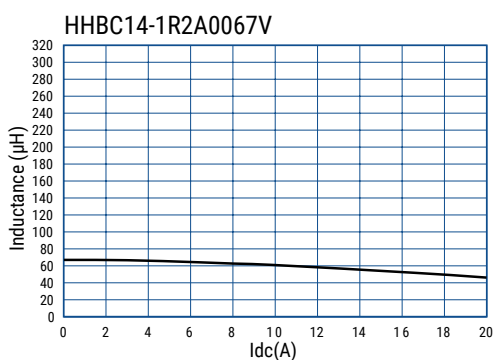
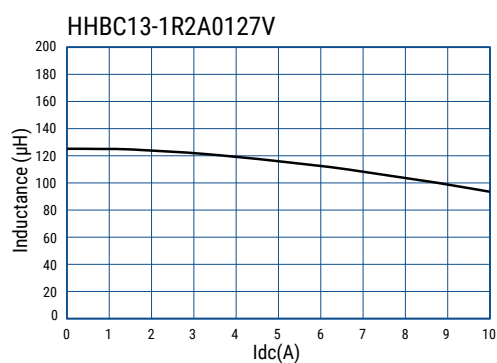
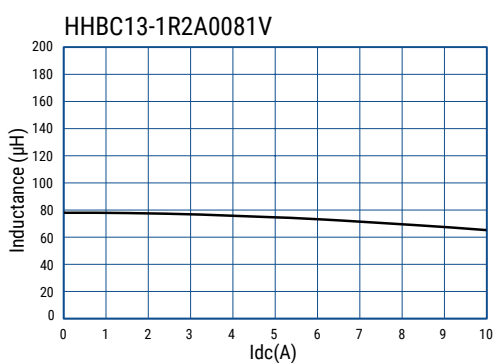
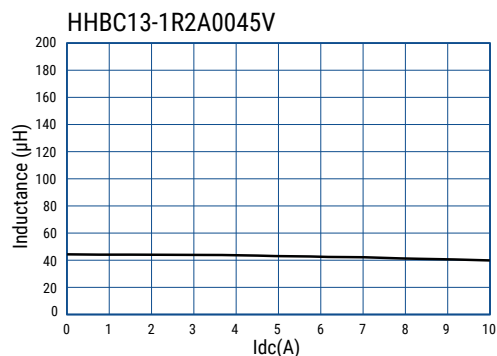
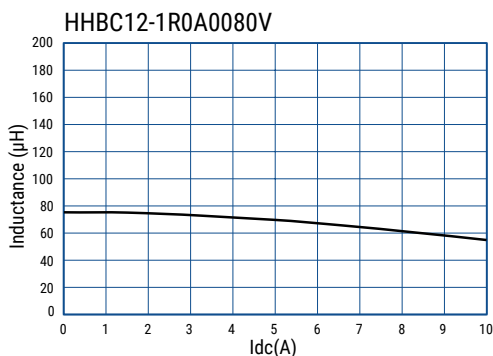
| Part Number       | Rated Current (A) | Inductance ( $\mu$ H) |                         | DC Resistance/ Line ( $m\Omega$ ) Maximum | Temperature Rise <sup>1</sup> (K) Maximum | Wire Diameter (mm) | Weight (g) Approximate |
|-------------------|-------------------|-----------------------|-------------------------|---|---|--------------------|------------------------|
|                   |                   | at 0 A $\pm$ 20%      | Rated current $\pm$ 25% |   |   |                    |                        |
| HHBC8S-0R6A0024V  | 2                 | 24                    | 22.9                    | 41.1                                      | 15  | 0.6                | 4                      |
| HHBC8S-0R6A0043V  | 2                 | 43                    | 41.1                    | 54.1                                      | 20  | 0.6                | 4                      |
| HHBC8S-0R6A0067V  | 2                 | 67                    | 62.6                    | 67.8                                      | 25  | 0.6                | 4                      |
| HHBC10-0R8A0038V  | 3                 | 38                    | 37.0                    | 31.2                                      | 15  | 0.8                | 9                      |
| HHBC10-0R8A0068V  | 3                 | 68                    | 64.5                    | 42.3                                      | 20  | 0.8                | 10                     |
| HHBC10-0R8A0107V  | 3                 | 107                   | 98.5                    | 53.0                                      | 25  | 0.8                | 11                     |
| HHBC12-1R0A0028V  | 5                 | 28                    | 26.5                    | 21.1                                      | 25  | 1.0                | 13                     |
| HHBC12-1R0A0051V  | 5                 | 51                    | 47.2                    | 28.0                                      | 25  | 1.0                | 14                     |
| HHBC12-1R0A0080V  | 5                 | 80                    | 69.7                    | 35.6                                      | 40  | 1.0                | 16                     |
| HHBC13-1R2A0045V  | 6                 | 45                    | 42.7                    | 18.3                                      | 25  | 1.2                | 23                     |
| HHBC13-1R2A0081V  | 6                 | 81                    | 73.2                    | 24.7                                      | 30  | 1.2                | 26                     |
| HHBC13-1R2A0127V  | 6                 | 127                   | 112.6                   | 31.7                                      | 35  | 1.2                | 30                     |
| HHBC14-1R2A0067V  | 8                 | 67                    | 63.0                    | 22.2                                      | 40  | 1.2                | 37                     |
| HHBC14-1R2A0120V  | 8                 | 120                   | 107.6                   | 29.9                                      | 50  | 1.2                | 41                     |
| HHBC14-1R2A0187V  | 8                 | 187                   | 159.7                   | 37.6                                      | 60  | 1.2                | 45                     |
| HHBC20-1R7A0054V  | 12                | 54                    | 49.2                    | 11.5                                      | 35  | 1.7                | 56                     |
| HHBC20-1R7A0097V  | 12                | 97                    | 81.9                    | 16.0                                      | 45  | 1.7                | 65                     |
| HHBC20-1R7A0152V  | 12                | 152                   | 117.0                   | 20.4                                      | 60  | 1.7                | 72                     |
| HHBC24N-2R0A0219V | 15                | 219                   | 173.0                   | 19.5                                      | 65  | 2.0                | 149                    |
| HHBC24W-2R1A0311V | 15                | 311                   | 247.7                   | 20.1                                      | 55  | 2.1                | 248                    |
| HHBC24N-2R3A0104V | 20                | 104                   | 85.7                    | 10.4                                      | 55  | 2.3                | 143                    |
| HHBC24W-2R4A0174V | 20                | 174                   | 140.4                   | 11.8                                      | 50  | 2.4                | 245                    |
| HHBC24N-2R1B0039V | 30                | 39                    | 33.1                    | 6.8                                       | 50  | 2.1 x 2 Parallel   | 147                    |
| HHBC24W-2R1B0065V | 30                | 65                    | 53.9                    | 6.2                                       | 50  | 2.1 x 2 Parallel   | 241                    |

<sup>1</sup> 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.

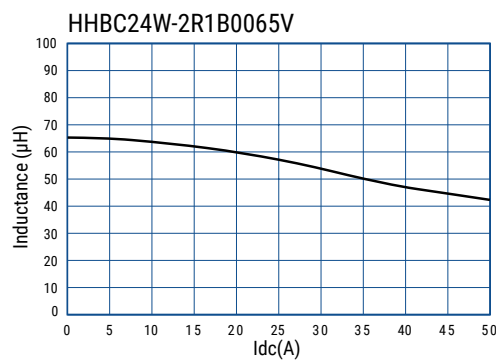
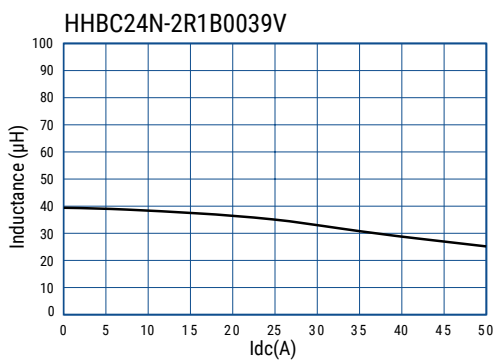
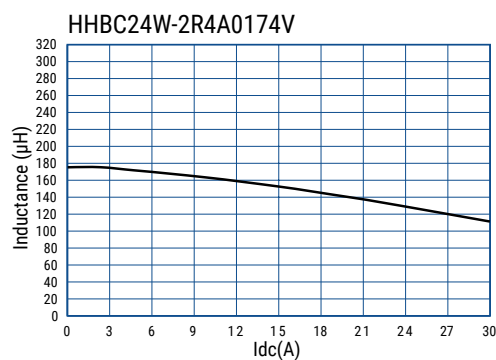
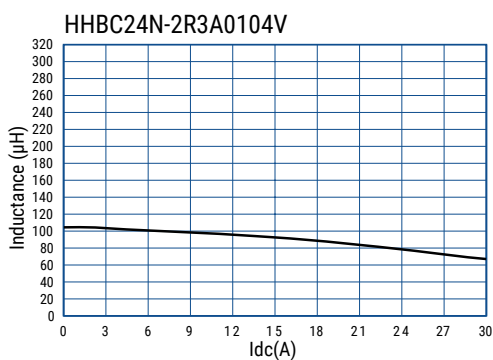
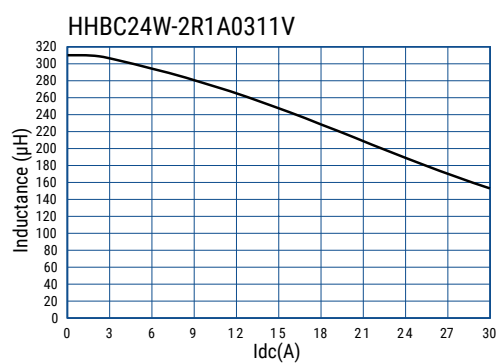
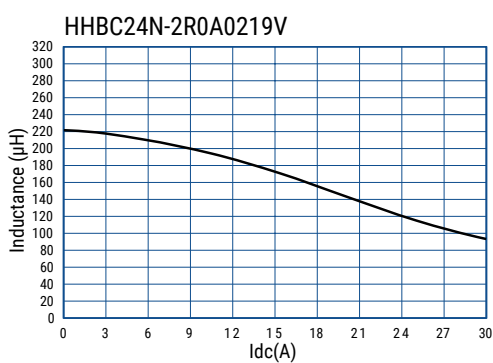
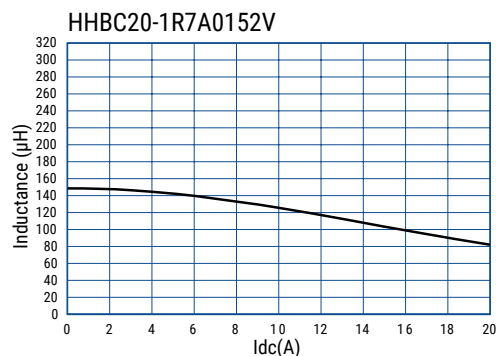
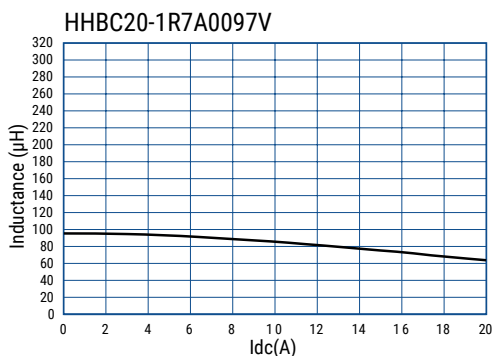
## DC-Superposed Characteristics



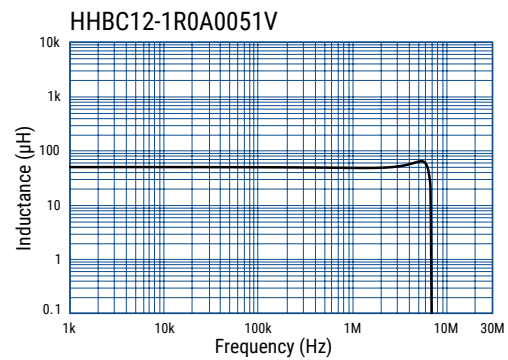
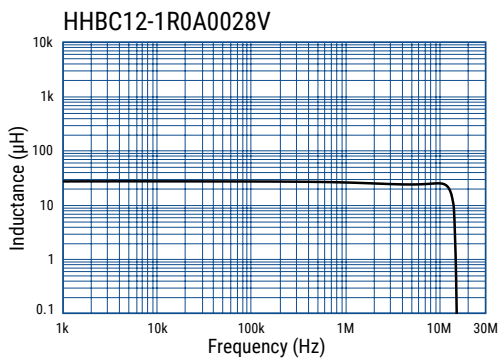
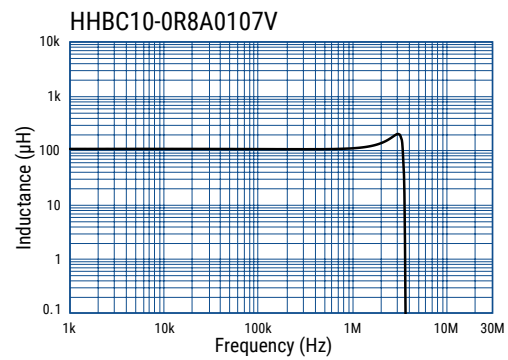
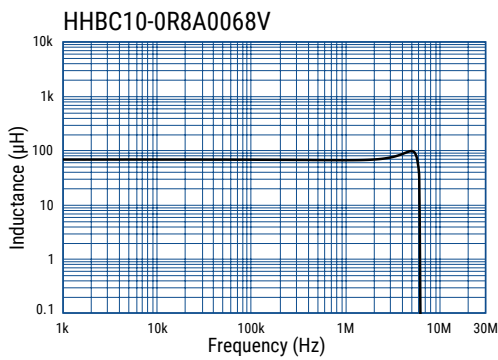
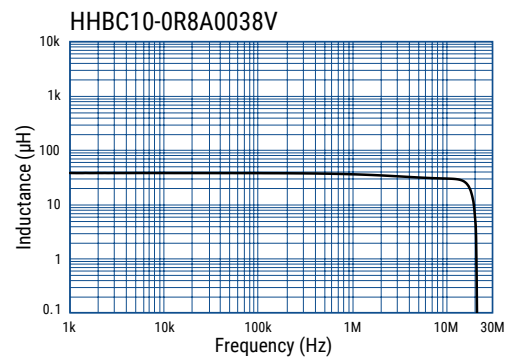
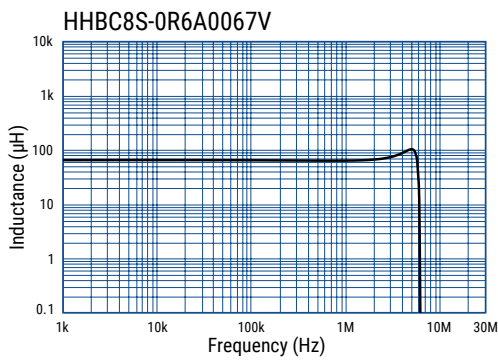
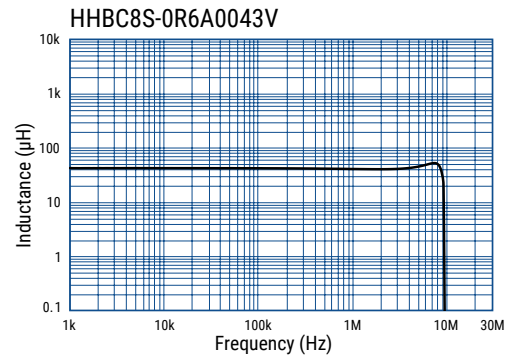
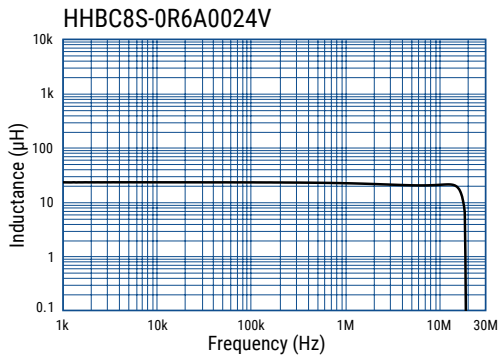
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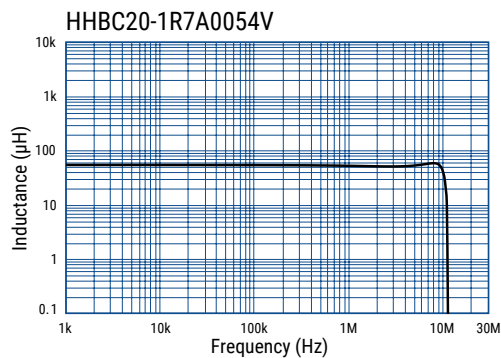
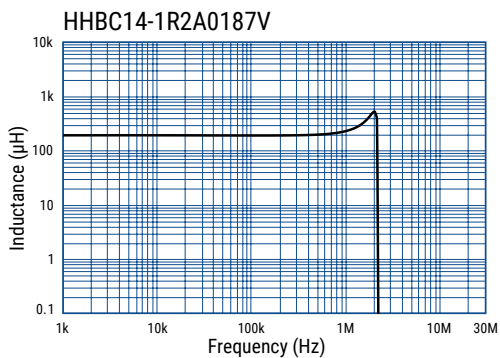
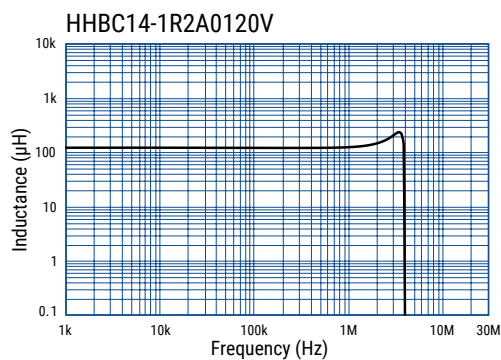
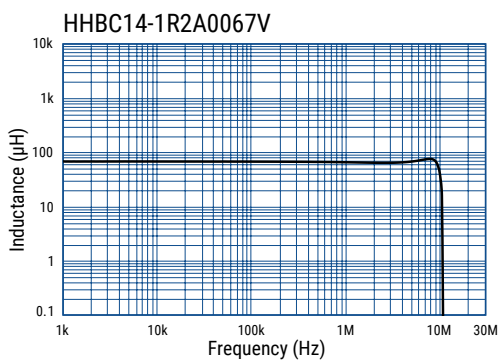
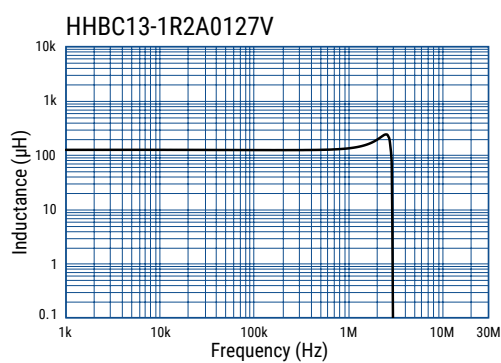
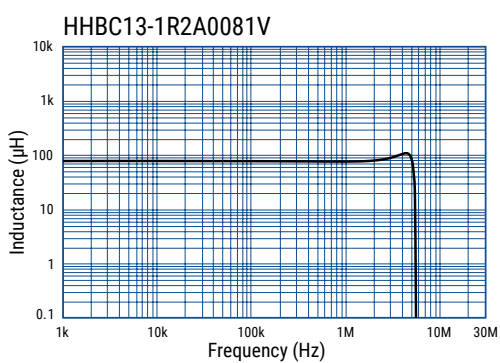
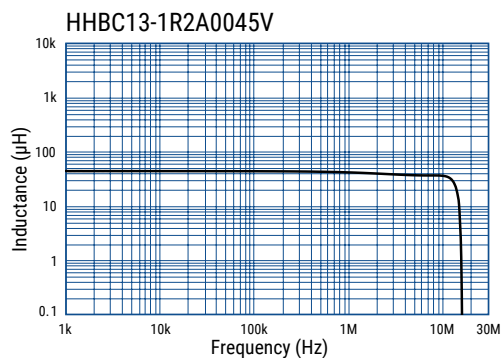
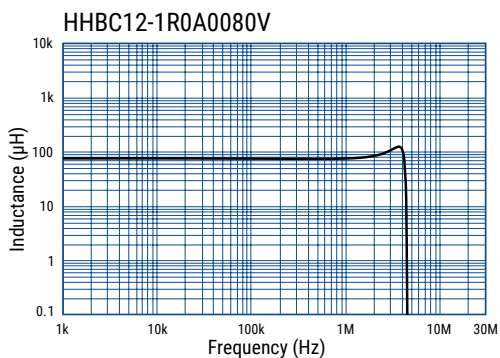
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## Inductance Characteristics

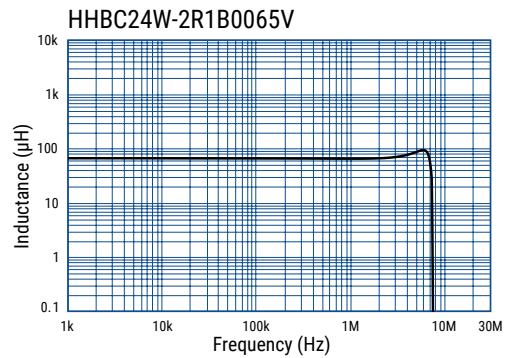
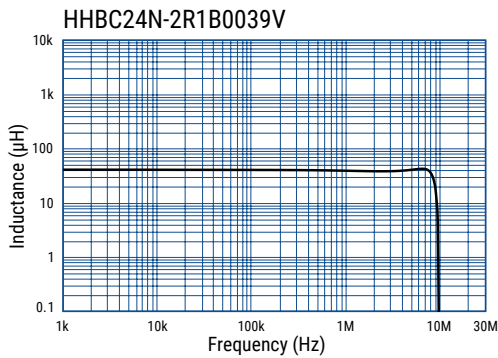
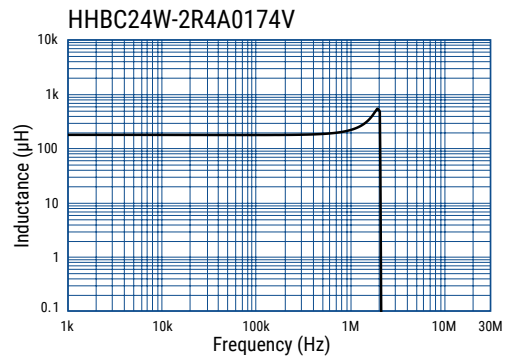
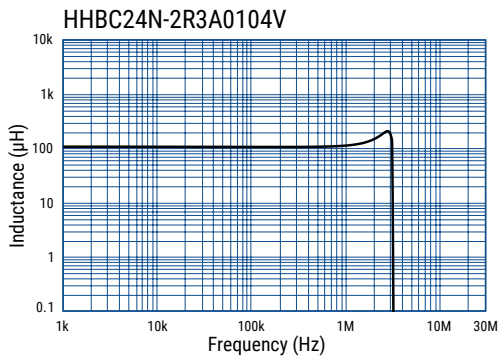
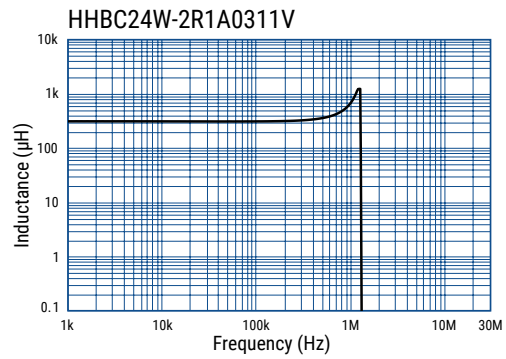
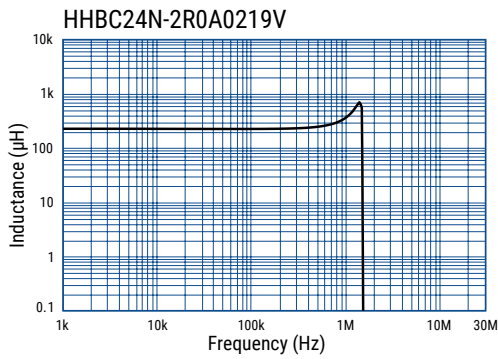
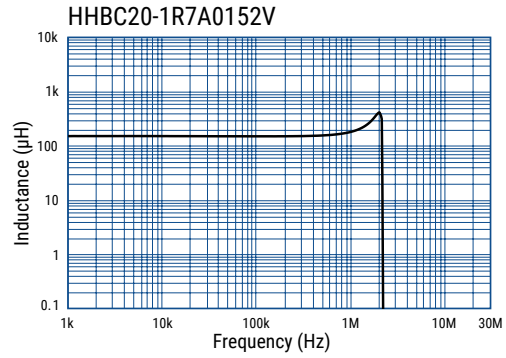
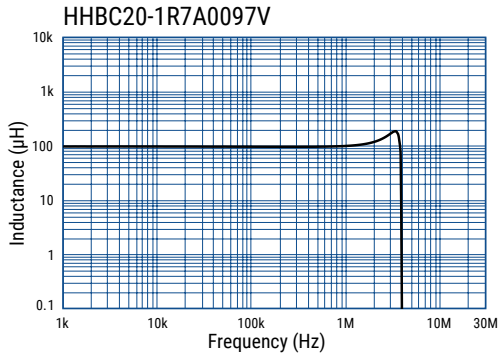


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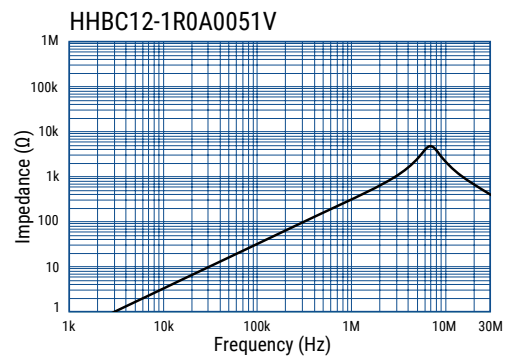
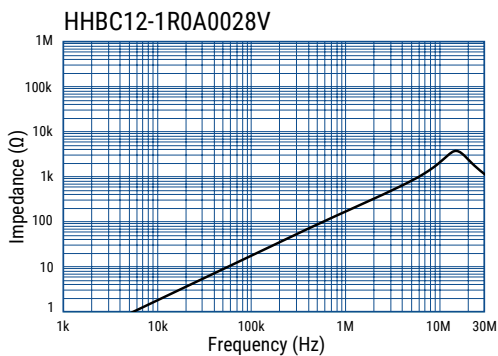
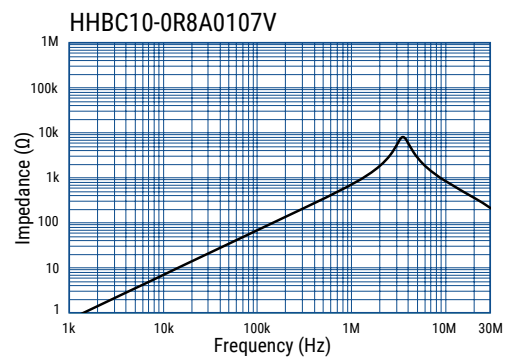
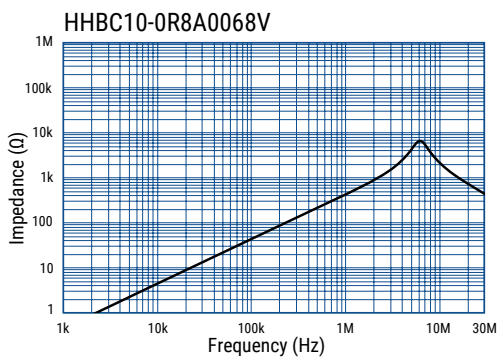
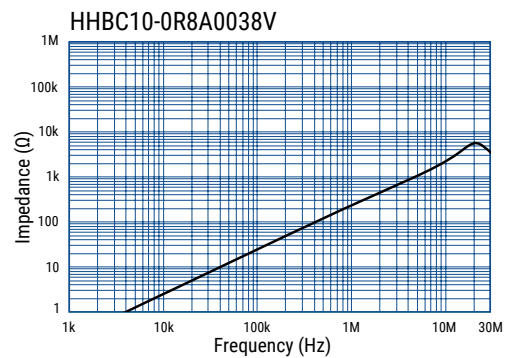
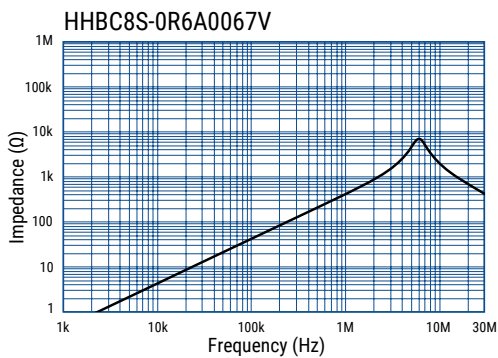
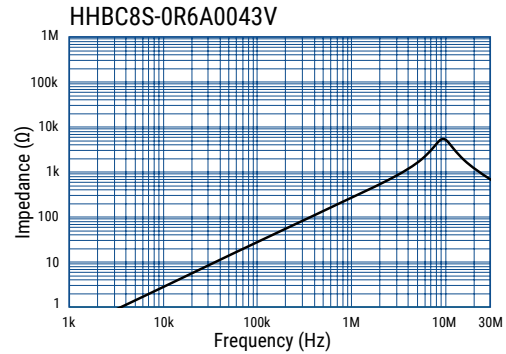
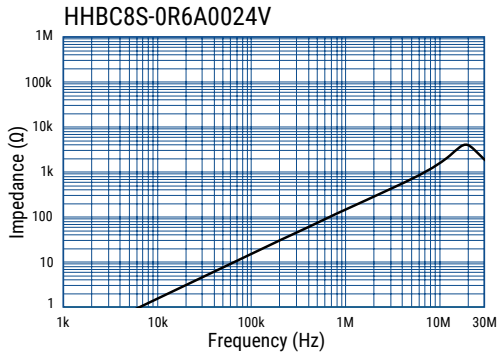




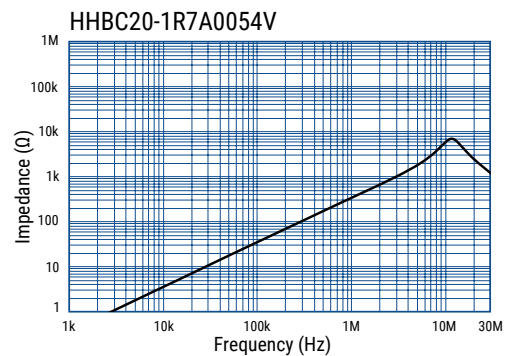
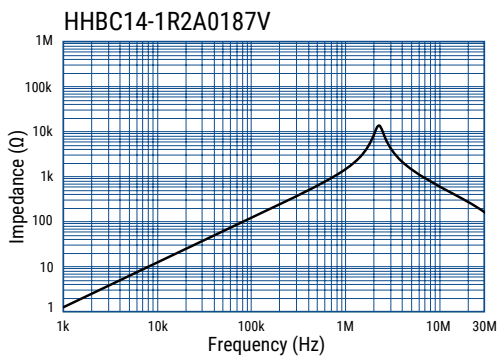
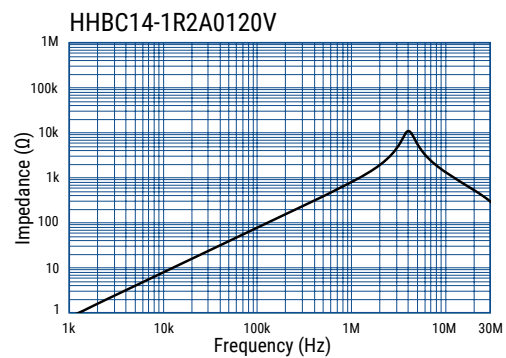
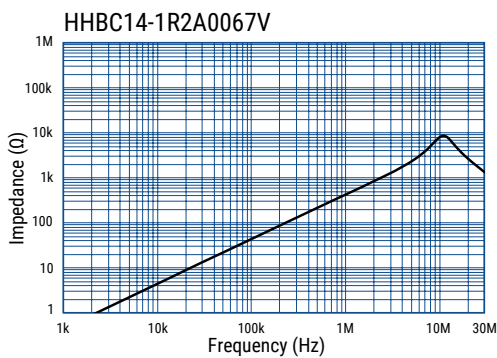
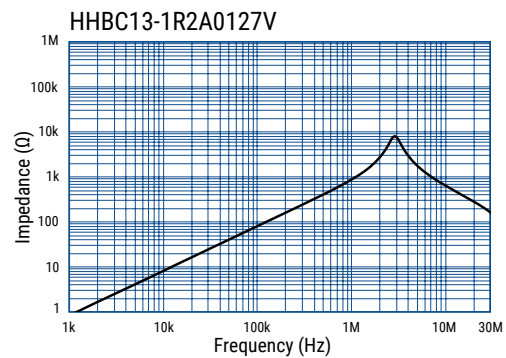
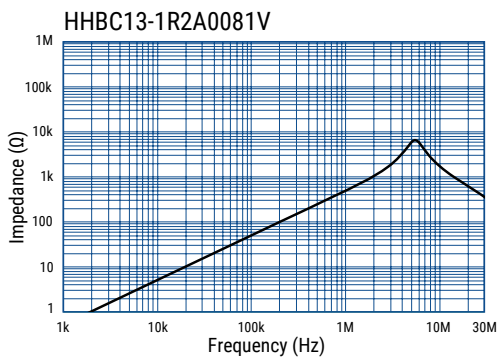
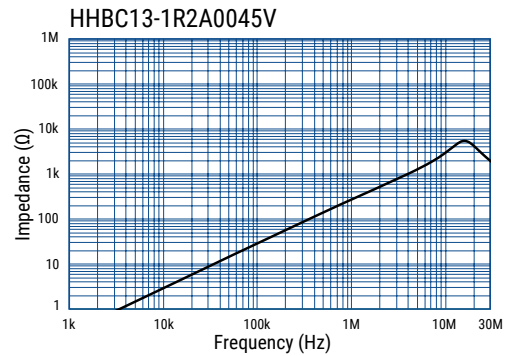
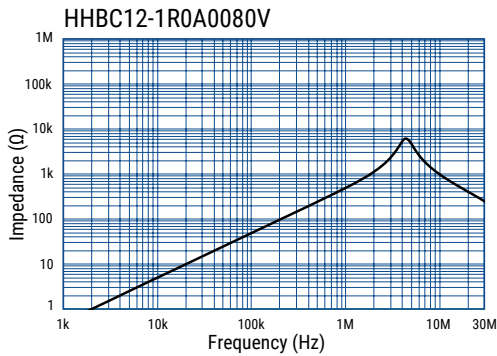
## Inductance Characteristics cont.



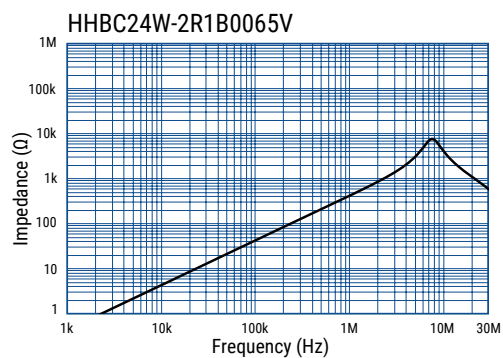
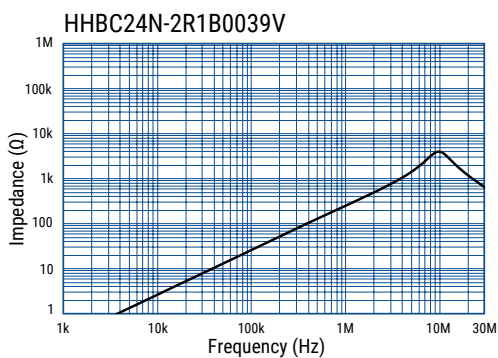
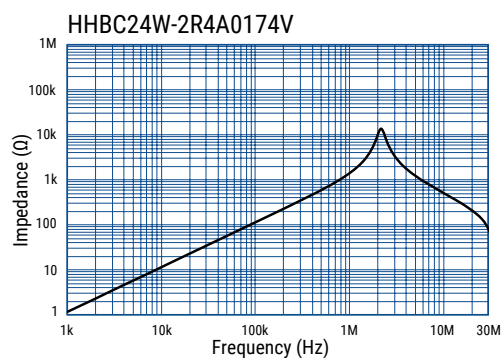
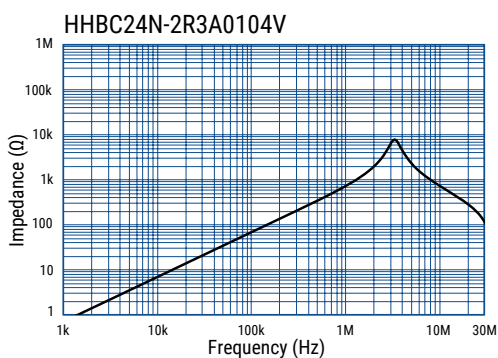
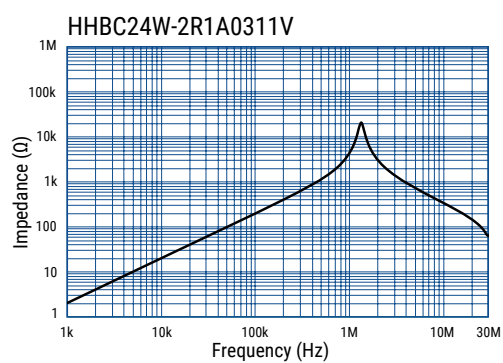
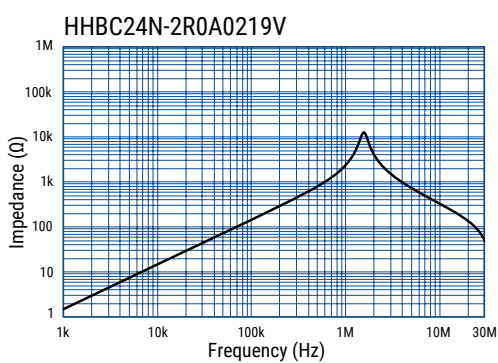
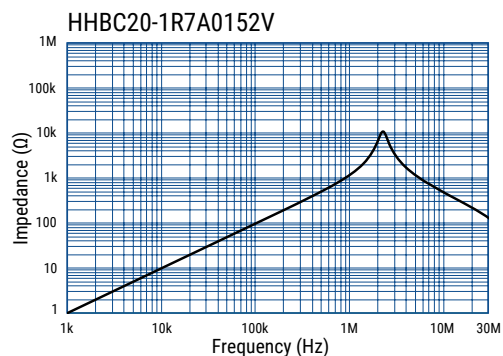
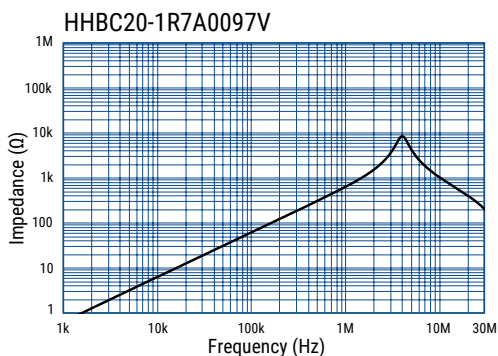
## Frequency Characteristics



## Frequency Characteristics cont.



## Frequency Characteristics cont.



## Packaging

| Type    | Packaging Type | Pieces Per Box |
|---------|----------------|----------------|
| HHBC8S  | Tray           | 700            |
| HHBC10  |                | 240            |
| HHBC12  |                | 150            |
| HHBC13  |                | 120            |
| HHBC14  |                | 80             |
| HHBC20  |                | 60             |
| HHBC24N |                | 45             |
| HHBC24W |                |                |

## 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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