

## Overview

The KEMET B-20 Series bead cores are designed for use on round cable. The wide range of MnZn and NiZn options allows for targeting of specific frequency ranges.

## Benefits

- MnZn ( $\leq 100$  MHz, AM band range) and NiZn ( $\leq 300$  MHz, FM band range) options available
- Solid construction

## Applications

- Consumer electronics



## Turns and Impedance Characteristics

When the desired performance of an EMI core cannot be obtained with a single pass through the core, the impedance characteristics can be changed with multiple turns.

A turn is counted by the number of lead-wire windings which pass through the inner hole of the core. Windings on the outside of the core do not count. See Figure 1 for examples of one, two, and three turns.

Adding turns will result in higher impedance while also lowering the effective frequency range. See Figure 2 for an example.

Figure 1 – How to count turns

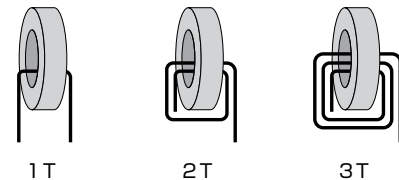
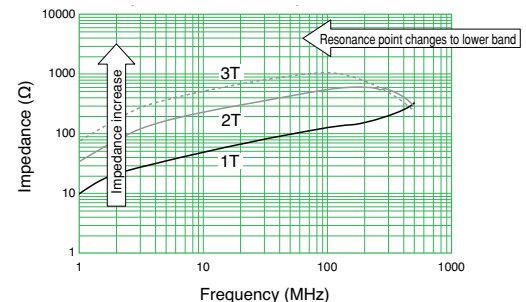


Figure 2 – Relationship between impedance and turn count. (Representative example: ESD-R-16C)



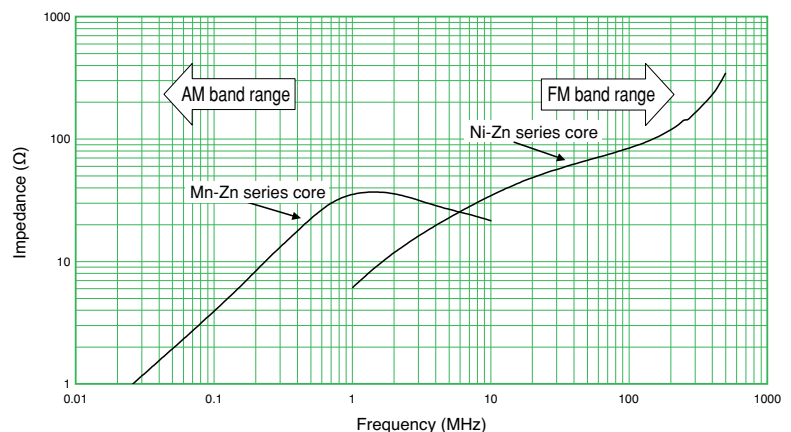
## Core Material and Effective Frequency Range

There are two ferrite material options for KEMET EMI Cores: Nickel-Zinc (Ni-Zn) and Manganese-Zinc (Mn-Zn). Each core material has a different resistance and effective frequency range. The Mn-Zn core material has lower resistance compared to the Ni-Zn; therefore, be sure to provide adequate insulation before use.

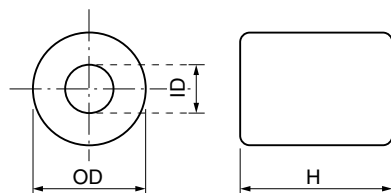
For reference, the Ni-Zn core material is typically effective for the frequencies in the MHz band range such as the FM-band, while the Mn-Zn core material is typically effective for the kHz band range such as the AM-band. See Figure 3.

It is recommended to verify actual effectiveness in the target application with measurements.

Figure 3 – Effective band range of Mn-Zn and Ni-Zn ferrite core material. (Representative example, measured with same-dimension ring core)



## Dimensions – Millimeters



See Table 1 for dimensions

## Environmental Compliance

All KEMET EMI cores are RoHS Compliant.



RoHS Compliant

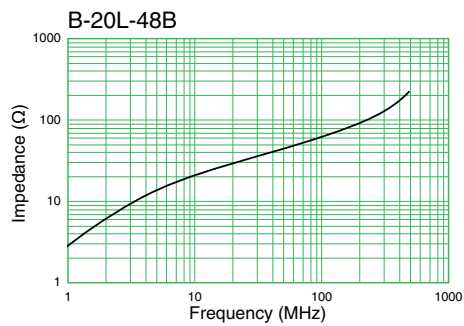
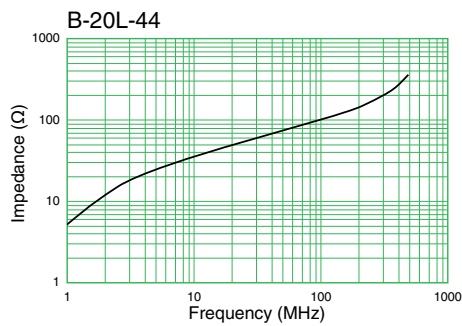
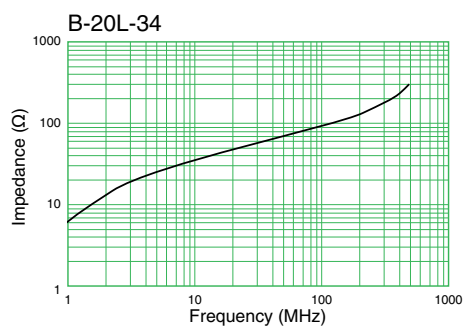
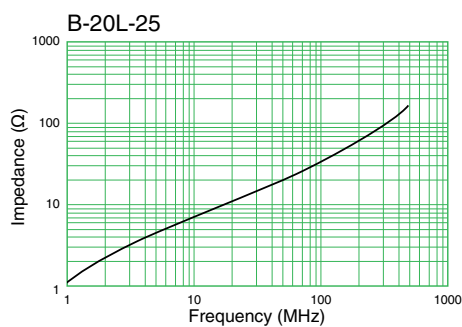
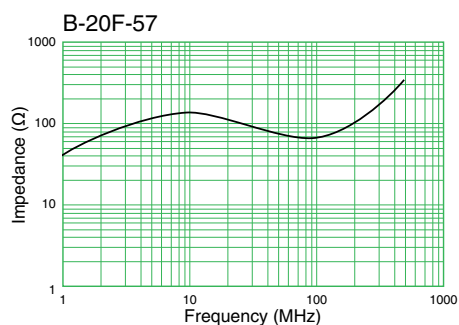
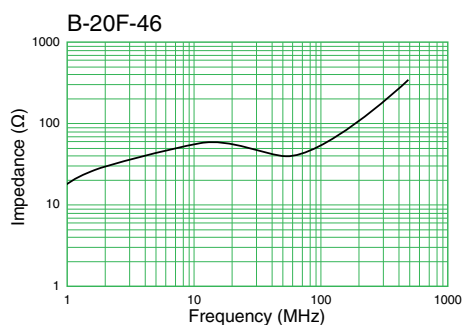
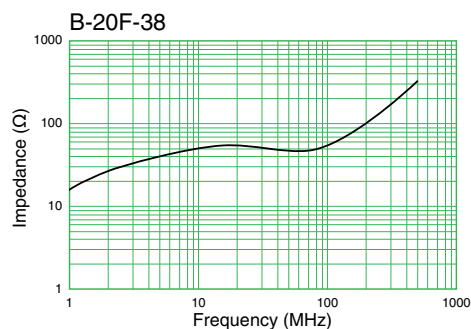
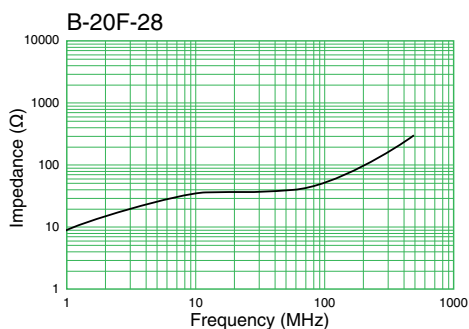
**Table 1 – Ratings & Part Number Reference**

| Part Number            | Dimensions (mm) |     |     | Frequency Range <sup>1</sup> |                              |
|------------------------|-----------------|-----|-----|------------------------------|------------------------------|
|                        | OD              | ID  | H   | ≤ 100 MHz<br>(AM band range) | ≤ 300 MHz<br>(FM band range) |
| B-20F-28               | 2.8             | 1.3 | 3.0 | X                            |                              |
| B-20F-38               | 3.8             | 1.5 | 4.3 | X                            |                              |
| B-20F-46               | 4.6             | 1.5 | 4.3 | X                            |                              |
| B-20F-57               | 5.7             | 1.5 | 8.0 | X                            |                              |
| B-20L-25               | 2.5             | 1.0 | 1.2 |                              | X                            |
| B-20L-34               | 3.4             | 0.8 | 4.4 |                              | X                            |
| B-20L-44               | 4.4             | 1.6 | 7.0 |                              | X                            |
| B-20L-48B              | 4.8             | 2.4 | 4.8 |                              | X                            |
| B-20L-95B <sup>2</sup> | 9.7             | 4.8 | 4.2 |                              | X                            |

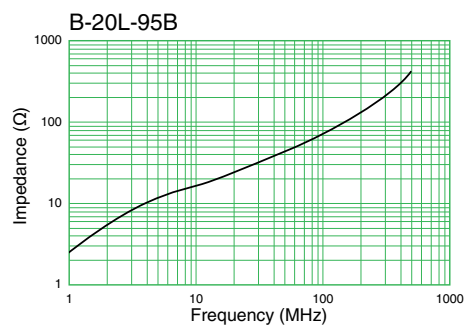
<sup>1</sup> Above frequency range is for reference only. Please test with actual device before use.

<sup>2</sup> Coated

## Impedance vs. Frequency



## Impedance vs. Frequency Cont'd



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