B-20 Series Bead Cores

Overview

KEMET B-20 Series bead cores are designed for use on round cable. The wide range of Manganese Zinc (MnZn) and Nickel Zinc (NiZn) options allows for targeting of specific frequency ranges. EMI cores are part of a family of passive components which address the issues of noise or electromagnetic interference (EMI) in circuits or systems.

Benefits

- MnZn ≤ 100 MHz (AM band range) and NiZn ≤ 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

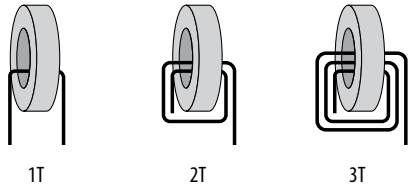
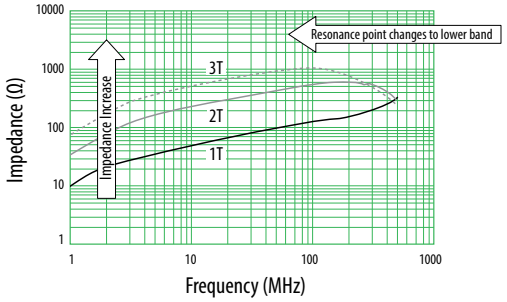


Figure 2 – Relationship between impedance and turn count. (Representative example: ESD-R-16C)



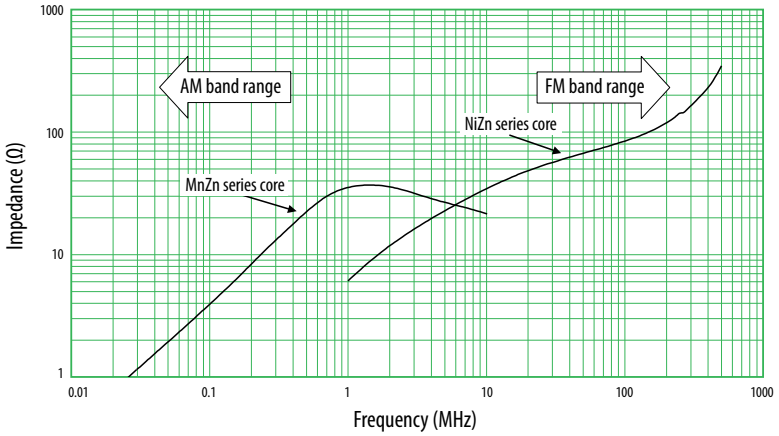
Core Material and Effective Frequency Range

There are two ferrite material options for KEMET EMI Cores: Nickel Zinc (NiZn) and Manganese Zinc (MnZn). Each core material has a different resistance and effective frequency range. The MnZn core material has a lower resistance compared to the NiZn; therefore, adequate insulation is required before use.

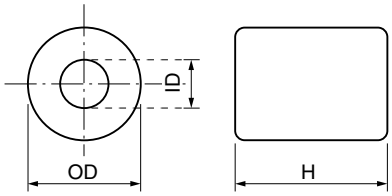
The NiZn core material is typically effective for frequencies in the MHz band range such as the FM-band, while the MnZn core material is typically effective for the kHz band range such as the AM-band. See Figure 3.

It is recommended to measure the actual frequency range effectiveness in the target application.

Figure 3 – Effective band range of MnZn and NiZn 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.

Table 1 – Ratings & Part Number Reference

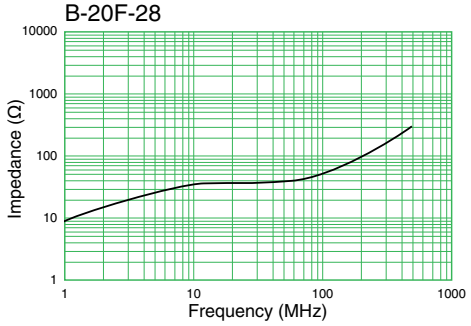
Part Number	Dimensions (mm)			Frequency Range[1]	
	OD	ID	H	≤ 100 MHz (AM band range)	≤ 300 MHz (FM band range)
B-20F-28	2.8	1.3	3.0	X	
B-20F-38	3.8	1.5	4.3	X	
B-20F-46	4.6	1.5	4.3	X	
B-20F-57	5.7	1.5	8.0	X	
B-20L-25	2.5	1.0	1.2		X
B-20L-34	3.4	0.8	4.4		X
B-20L-44	4.4	1.6	7.0		X
B-20L-48B	4.8	2.4	4.8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

[1] *Frequency range is for reference only. Please test with actual device before use.*

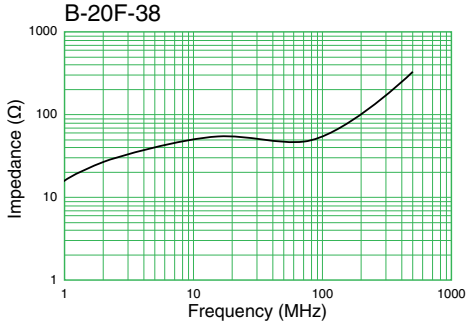
[2] *Coated*

Impedance vs. Frequency

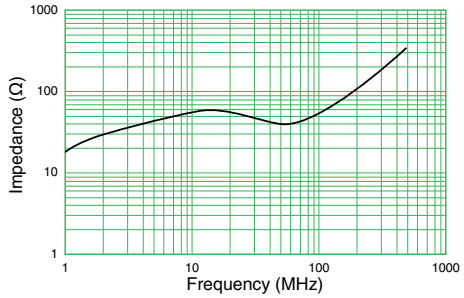
B-20F-28



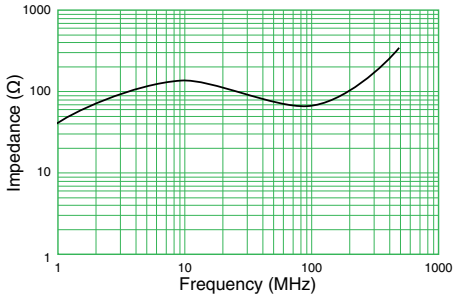
B-20F-38



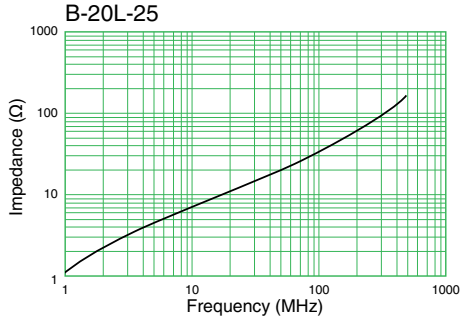
B-20F-46



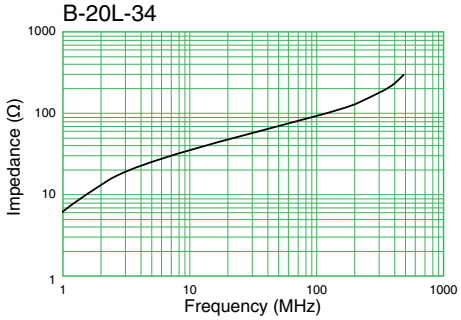
B-20F-57



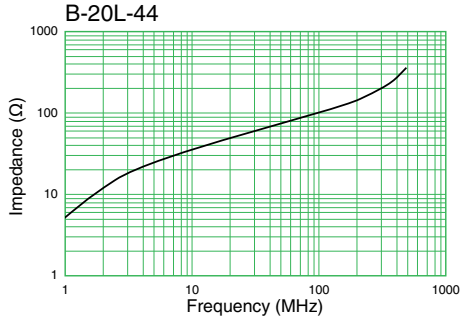
B-20L-25



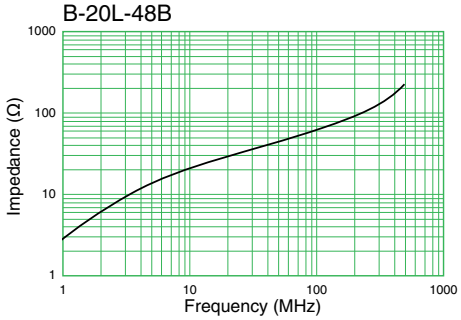
B-20L-34



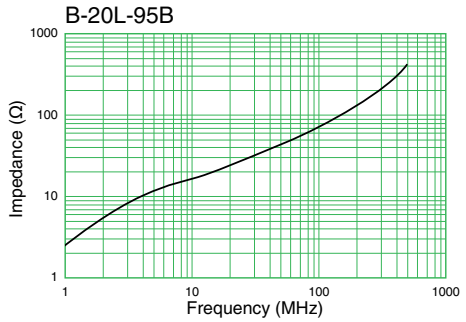
B-20L-44



B-20L-48B



Impedance vs. Frequency Cont'd



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