

ESD-R-H Series Toroidal Cores for Round Cables with High Heat Resistance and Cable Holding Mechanism

Overview

The KEMET ESD-R-H Series split toroidal cores feature high heat resistance and a cable holding mechanism designed specifically for round cable. KEMET's unique core material enables high performance in low frequency range.

Benefits

- Improved maximum allowable temperature (increased from up to 60°C to up to 120°C)
- Cable holding mechanisms provided (enables installation with two M4 screws, holding of cables with bands)
- Unique core material enables high performance in low frequency range
- Split construction

Applications

- Consumer electronics (air conditioners, refrigerators, etc.)
- Industrial equipment (INV, robots, etc.)



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.

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 1 – How to count turns

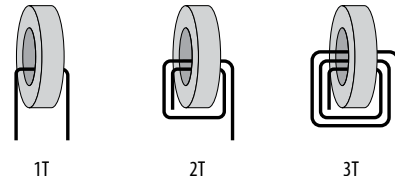


Figure 2 – Relationship between impedance and turn count. (Representative example: ESD-R-16C)

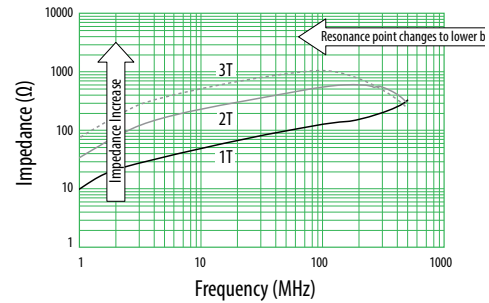
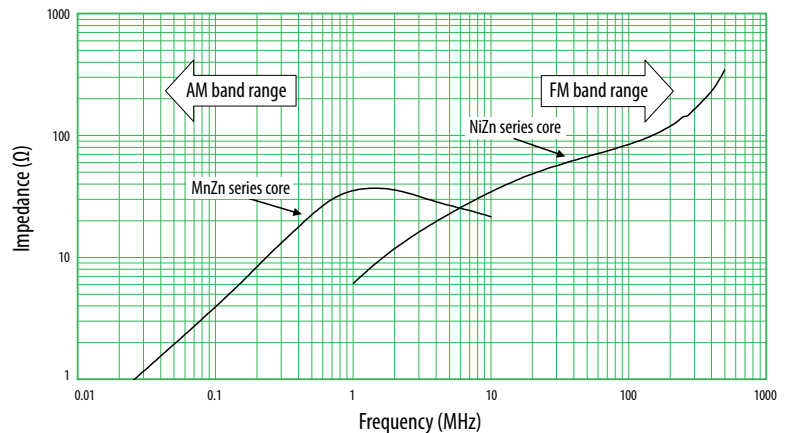
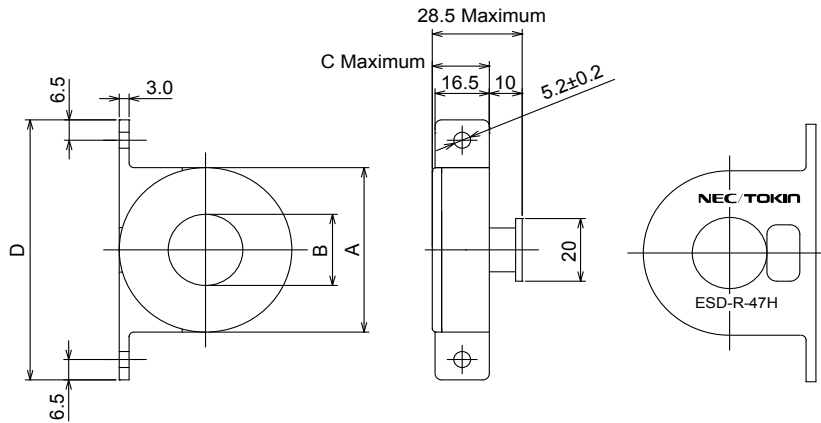


Figure 3 – Effective band range of Mn-Zn and Ni-Zn ferrite core material. (Representative example, measured with same-dimension ring core)



Dimensions – Millimeters



See Table 1 for dimensions

Installation Example



Environmental Compliance

All KEMET EMI cores are RoHS Compliant.



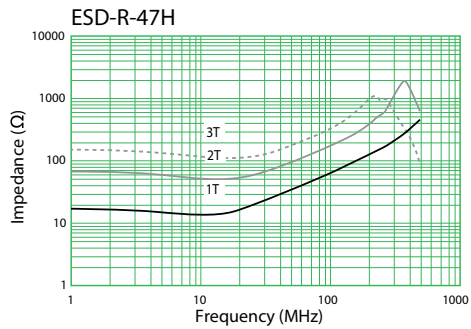
RoHS Compliant

Table 1 – Ratings & Part Number Reference

Part Number	Dimensions (mm)				Frequency Range ¹		Case Color	Compatible Toroidal Core (Bare Type)
	A	B	C	D	≤ 100 MHz (AM band range)	≤ 300 MHz (FM band range)		
ESD-R-47H	52.5	22.7	18.5	83	X		White	–

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

Impedance vs. Frequency



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