

High Frequency Absorbers and Inductors

Introduction

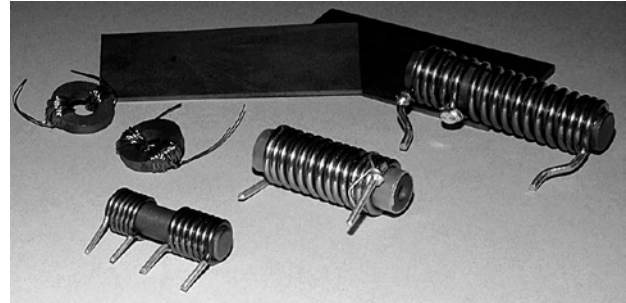
Trans-Tech, Inc. (TTI) ferrite materials can be used as either absorbers or inductors in the Ultra High Frequency (UHF) and microwave region. Ferrite materials with $4\pi M_s$ values of up to 5000 Gauss (G) absorb microwaves up to $Y \times 4\pi M_s$ MHz, where Y is 2.8MHz /Oe (i.e., up to 14 GHz). By combining lossy dielectric properties with magnetic losses, this absorption can be enhanced. These materials become absorptive at frequencies approaching their Snoek limit, which for spinel ferrites are usually much less than 200 MHz .

Ferrites that operate well below their Snoek limit are useful as inductors or as high permeability substrates for Very High Frequency (VHF)/UHF circuits and antennas. The “Inductors/Absorbers” section provides some examples of spinel-based absorbers and inductors from TTI’s large range.

Because hexagonal ferrites have Snoek limits that extend well into the microwave region, they can be used as:

- Inductors or circuit elements into the low end of the microwave region.
- Absorbers at higher frequencies into the millimetric region as the permeability and Quality factor (Q) fall.

TTI makes a range of hexagonal ferrites, one of which is included in Figure 1.



TTI Examples

Absorbers

- >200 MHz to <12 GHz
- TT2-111
- Ferrite 50

Inductors/Absorbers

- TT2-101
- TT2-4000
- TT2-111
- TT86-6000
- TT Hexagonal

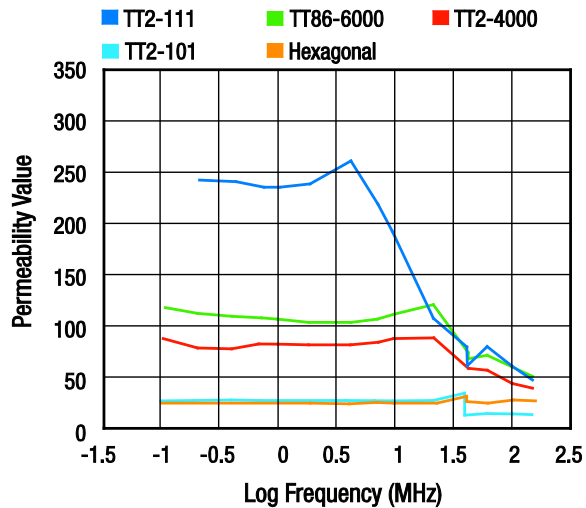


Figure 1. Permeability vs Log Fr (MHz)

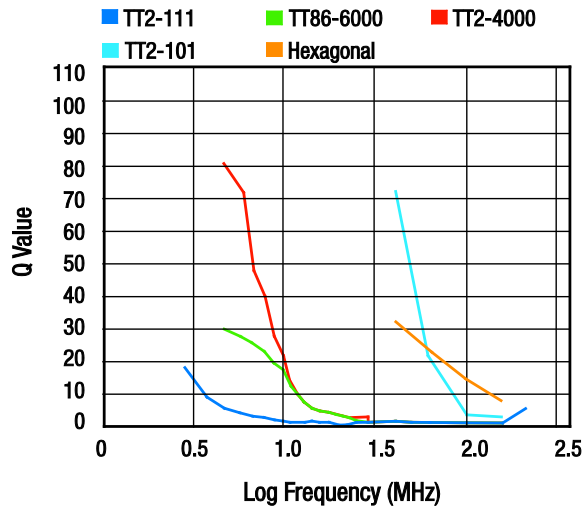


Figure 2. Q vs Log Frequency

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