

New method to characterize magnetic hysteresis in soft ferrites up to high frequencies

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Abstract-

Characterization of magnetic cores is an indispensable task in order to securely accomplish the requirements of a power electronic design and prevent failures. The hysteresis cycle of the material is one of the more complex features to characterize due to the well-known nonlinear and memory effects; moreover, there is a less known but noticeable dependence of the B-H relationship with time. This curve is easily obtained at low frequencies (up to 10 kHz) by means of a well-known traditional method. However, there is a major obstacle when trying to operate at higher frequencies in this manner due to the cost and difficulty of operation of high-frequency–high-voltage generators. In this paper, a new method for measuring hysteresis based on a quasisinusoidal generator that allows us to reach much higher values in frequency with a simple setup is presented.

Index Terms- Ferrites, ferromagnetic materials, frequency response, magnetic field measurement, magnetic hysteresis

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