Leakage Inductance Calculation for Planar Transformers with a Magnetic Shunt

The magnetic shunt is generally inserted in a planar transformer to increase the leakage inductance which can be utilized as the series inductor in resonant circuits such as the LLC resonant converter. This paper presents a calculation methodology for the leakage inductance of the transformer with a magnetic shunt by means of the stored magnetic energy in the primary and secondary sides of the transformer using the magnetomotive force (MMF) variation method, as well as the stored energy in the shunt based on the reluctance model. The detailed calculation method is described. Both the FEA simulation and the experimental results have proven the validity of the proposed calculation method for leakage inductance.

General information
State: Published
Organisations: Department of Electrical Engineering, Electronics, National University of Ireland
Contributors: Jun, Z., Ouyang, Z., Duffy, M. C., Andersen, M. A. E., Hurley, W. G.
Number of pages: 6
Pages: 643-648
Publication date: 2013

Host publication information
Title of host publication: Proceedings of ECCE USA
Publisher: IEEE
ISBN (Print): 978-1-4799-0336-8
Source: dtu
Source-ID: u::9192
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013