November 1969

Brief 69-10686

NASA TECH BRIEF

Adding Calcium Improves Lithium Ferrite Core

Adding calcium increases uniformity of grain growth over a wide range of sintering temperatures and reduces porosity within the grain. Such cores demonstrate a reduced coercivity for a given grain size or a reduced switching time for a given coercivity. Ferrite cores containing calcium have square hysteresis loops and high curie temperatures, making them useful in coincident current memories of digital electronic computers and other electronic apparatus.

In general, the core has the molar composition $Li_{0.5}Me_yCa_zFe_xO_4$ where Me is at least one member of a group consisting of Mn, Zn, Cd, V, and/or Mo; y is between 0.01 and 0.10; z is between 0.01 and 0.10; and x is between 2.40 and 2.50. Form the core by first attriting, in ethyl alcohol, a batch of compounds containing ingredients in the preceding molar proportions. Then calcinate the mixture at 650C for four hours. Next, add a suitable binder and attrite the mixture in ethyl alcohol again. Dry and sieve the mixture through an 80 mesh screen. Finally, press the powder into cores and sinter at temperatures between 1075 and 1200°C in an oxygen atmosphere.

Note:

The following documentation may be obtained from:

The Clearinghouse for Federal Scientific and Technical Information
Springfield, Virginia 22151
Single document price $3.00
(or microfiche $0.65)

Reference: NASA TND-4573 (N68-24388), Low Drive Temperature Stable Memory Cores

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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