

半導体技術を用いた薄膜キャパシタ受動部品の作製

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Fabrication of Passive Thin Film Capacitor by Using Semiconductor Technology

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Abstract

Recently, there has been a strong demand for smaller electronic devices with improved. About 60% of the area is occupied by the passive components for packaging. To overcome this limitation, an embedded capacitor was prepared using semiconductor technologies and the process technology of ferroelectric random access memories. Eight micro capacitors were prepared in a 2 mm² area. Two types of high dielectric constant material were used. The first one is Barium Strontium Titanium oxide (BST) for focusing high capacitance with high loss, and the other is Strontium Bismath Tantalum oxide (SBT) for focusing low loss with medium capacitance. The micro capacitor with BST, whose dielectric constant (ϵ) was 350, showed about 3200 pF at 0 bias and its loss, $\tan \delta$, was a little lower than 0.01. The one with SBT, whose ϵ was 51, showed 470 pF, and its $\tan \delta$ was about 0.001. It is concluded that micro capacitors with the requested characteristics were prepared.

Key Words: *Thin Film Capacitor, Passive, Semiconductor Process Technology, Barium Strontium Titanium Oxide (BST), Strontium Bismath Tantalum Oxide (SBT)*