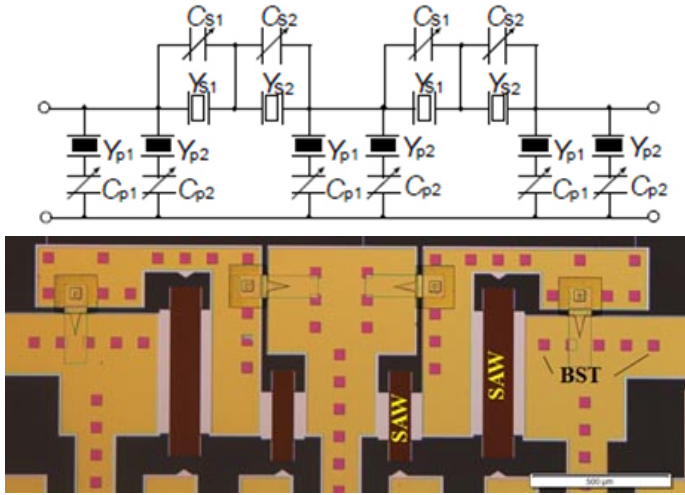
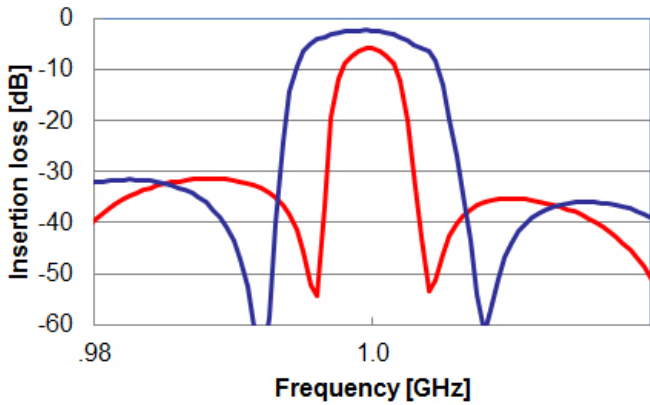
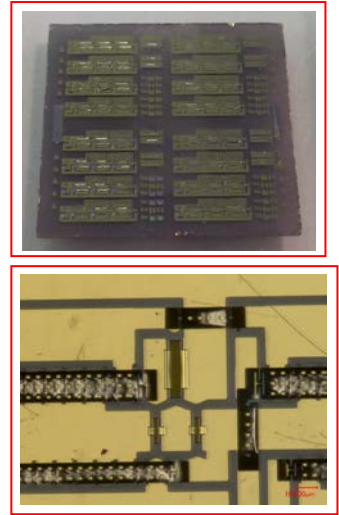
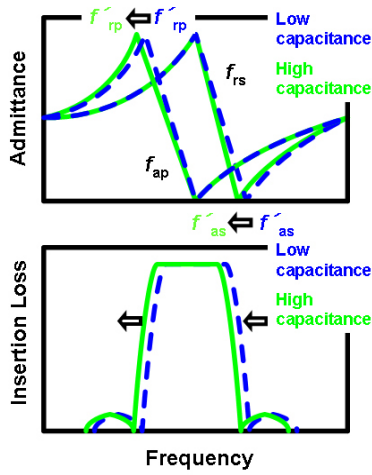


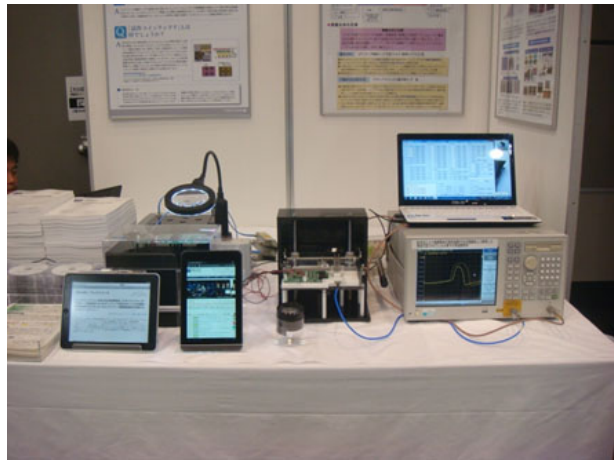
# Tunable SAW Filter Using Variable Capacitor



Principle and photograph

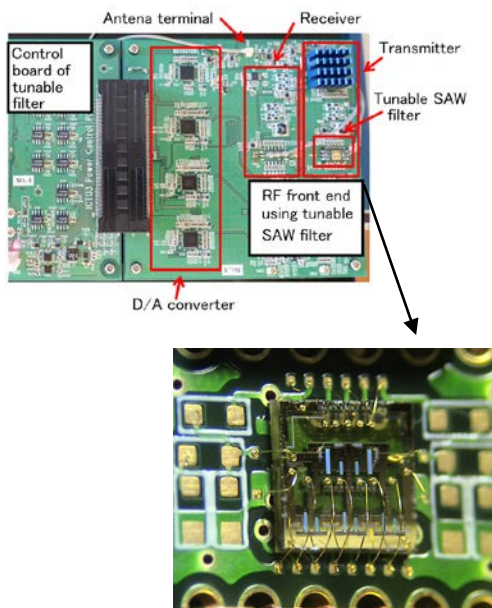


Characteristics

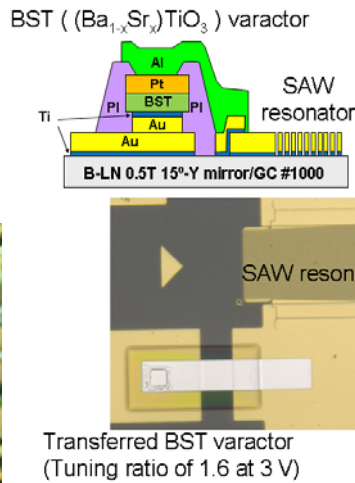


Demonstration

Reference : Hideki Hirano et.al, Bandwidth-tunable SAW Filter Based on Wafer-level Transfer-integration of BaSrTiO<sub>3</sub> Film for Wireless LAN System using TV White Space, IUS2014

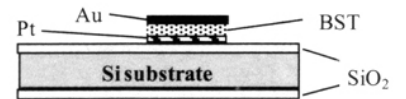


Tunable filter



Variable capacitor using ferroelectric material (BST)

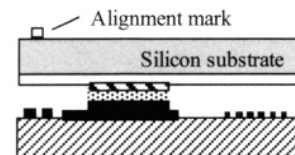
1. Deposition and patterning of Pt, BST and Au on Si



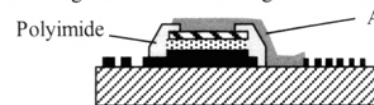
2. Fabrication of IDT and bonding pads



3. Au-Au bonding



4. Etching of Si sub. and wiring the IDT and VCs



Reference : H.Hirano, T.Kimura, I.P.Koutsaroff, M.Kodato, K.Hashimoto, M.Esashi and S.Tanaka, Integration of BST Varactors with Surface Acoustic Wave Device by Film Transfer Technology for Tunable RF Filters  
J. of Micromech. Microeng., 23, 2 (2013) 025005 (9pp)