Abstracts

20dB Efficiency Increment of Surface Acoustic Wave Elastic Convolver Using Actively Controlled Nonlinear Piezoelectric Effect

Y. Cho, S.-I. Haitsuka and M. Kadota. "20dB Efficiency Increment of Surface Acoustic Wave Elastic Convolver Using Actively Controlled Nonlinear Piezoelectric Effect." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 1217-1220.

The newly discovered effect concerning the enhancement of the nonlinear piezoelectricity of lead zirconate titanate (PZT) ceramics by applying a bias electric field to the substrate has enabled more than 20dB efficiency enlargement in a surface acoustic wave (SAW) elastic convolver. Next, the new novel biasing method for stabilizing the time variation of convolution output signal with static field and for obtaining more efficient convolver is proposed. Finally, the temperature characteristic of PZT convolver is also investigated. These results suggest the possibility of producing a SAW elastic convolver with higher efficiency than that of a SAW monolithic convolver.

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