Abstracts

TFBAR filters for 2 GHz wireless applications

K.W. Kim, J.G. Yook, M.G. Gu, W.Y. Song, Y.J. Yoon and H.K. Park. "TFBAR filters for 2 GHz wireless applications." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 1181-1184 vol.2.

Thin film bulk acoustic resonators (TFBAR) using AlN with two electrodes have been used in the design of band pass filters at 2 GHz frequency bands. Both membrane and air-gap are used to suppress the over-mode phenomenon. Resonator modeling was performed based on measured frequency response of a single resonator with modified Butterworth-Van Dyke (MBVD) model. Electric coupling coefficient, k, is 0.2075 (4.3%) and Q is 577.18 for a single TFBAR. Additional TFBAR is used to improve out of band rejection In the conventional ladder topology and each contributes -3 dB suppression improvement at stop-band. Four different types of ladder filters were fabricated and modelled and revealed only -2 to -3 dB insertion loss for all the cases with bandwidth of around 52 MHz.

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