

Abstracts

SAW Bandpass Filter Design for 1.6-GHz PCM Timing Tank Applications

J. Temmyo and S. Yoshikawa. "SAW Bandpass Filter Design for 1.6-GHz PCM Timing Tank Applications." 1980 *Transactions on Microwave Theory and Techniques* 28.8 (Aug. 1980 [T-MTT]): 846-851.

A 1.6-GHz surface acoustic wave (SAW) timing tank for a self-timed regenerative repeater for an ultrahigh-speed PCM optical fiber transmission system is described. A SAW narrow bandpass filter with 0.74- μ m linewidth interdigital transducers with double electrode geometry and 20-nm aluminum metallization on AT-quartz substrate is realized by conventional optical photolithography. Typical performance obtained is as follows: center frequency $f_{\text{sub 0}}$ is 1.5993 GHz; insertion loss is 22 dB; stopband attenuation is above 23 dB with respect to the passband; stability is $|2Q_{\text{sub L}}/\Delta f| < 0.1$, where $Q_{\text{sub L}}$ is loaded Q value and Δf is mistuning due to temperature effects. It is demonstrated that SAW quartz transversal filters can be made into new practical filters which have both high Q value and high stability in the GHz range and are satisfactory from the standpoints of precise design, fabrication technique, and performance.

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