A GM-C LOW-PASS FILTER WITH AUTOMATIC TUNING IN 100KHz TO 3MHz RANGE FOR ZERO-IF RECEIVERS

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ABSTRACT

A third order low-pass Butterworth Gm-c filter is used to maximize the tuning range is described. This filter is used as a channel-Selection/anti-aliasing filter in the base-band of a Zero-IF receiver architecture. The cutoff frequency of this filter is from 92KHz to 3.5MHz.In the worst-case the power consumption reaches 2.16mw.

The technology used in this structure is a 0.35 standard CMOS. Low working voltage and low power consumption and economical aspects are reasons to choose CMOS technology.

The linear transconductor is on the basis of Drain voltage changes of the biased input Transistor in the Triode region.

Total Distortion of filter in 92KHz cutoff frequency, and with input frequency of 100KHz reaches 1% and this filter works with 3.3 input voltage.

KEYWORDS: Base-Band Filter, Gm-C Filter, Index Terms Butterworth Filter, Wide Tuning Range, Zero-IF Receiver