

Bandpass Sigma-Delta Modulator With Anti-Resonance Cancellation

Abstract

A bandpass sigma-delta modulator using acoustic resonators or micro-mechanical resonators. In order to improve resolution at high frequencies, acoustic resonators. In order to improve resolution at high frequencies, acoustic resonators or micro-mechanical resonators are utilized in a sigma-delta modulator instead of electronic resonators. The quantized output is fed back using a pair of D/A converters to an input summation device. In fourth order devices, the feed back is to two summation devices in series. Such a sigma-delta modulator is usable in a software defined radio cellular telephone system and in other applications where high-frequency and high-resolution A/D conversion is required. A cancellation circuit may remove the anti-resonance signal from a resonator. An anti-resonance cancellation circuit removes the anti-resonance from the output of the resonators by providing a signal which is subtracted from the output of the resonator. The cancellation circuit includes a capacitor which is matched to the static capacitance of the resonator. The loads of the resonator and cancellation network are also matched.

Figure. 3