

ABSTRACT

Relaxation CCO for PLL-Based Time Constant Tuning Of G_m-C Filters

A relaxation current controlled oscillator (CCO) is provided by forming an integrator out of a transconductance amplifier and a capacitor. The output of the integrator is fed to comparators which in turn feed a bistable circuit. The outputs of the bistable circuit control either the polarity of the input signals to the transconductance amplifier or the polarity of the input signals to the comparators. Switches, controlled by the bistable circuit, in turn control the polarity of the input signals. The feedback path created by the transconductance amplifier, comparators, flip-flops, and switches produces continuous oscillations. A DC current input adjusts the g_m of the transconductance amplifier allowing the oscillation frequency of the CCO to be adjusted. Several embodiments of CCOs are described which are fully compatible with PLLs with automatic time-constant or bandwidth tuning of a gm-C filter.

(Fig. 3a)