

ABSTRACT

INTEGRATED MOSFET
RESISTANCE AND OSCILLATOR FREQUENCY CONTROL
AND
TRIM METHODS AND APPARATUS

For use in integrated circuit systems wherein both filter time constants and oscillator frequency each need a suitable reference, both the filter and the oscillator are referenced to common reference circuitry through a suitable control loop. Because the fundamental control parameters of the oscillator and the filter are time-period and time-constant respectively, the oscillator and the filter are implemented in a manner where the monolithic passive elements setting the fundamental control parameters (time-period and time-constant) are of the same type. This has the advantage of close tracking through process and ambient variations. Monolithic capacitors on the same chip are used as one of the common passive elements between the oscillator and the filter to set the time-period and time-constants, respectively, adjustable through adjustment of control currents. The monolithic implementation of the Control Block is such that by tuning the oscillator frequency to the appropriate value through setting of the respective control current, the filter time-constants also are appropriately set to satisfy the Nyquist criteria for a sampling rate referenced to the oscillator frequency. Trimming and tuning are accomplished by digital control to control the summing of appropriate current components after manufacture, such as by the programming of on-chip storage cells provided for this purpose.