Category: Oscillators **CIRCUIT IDEAS FOR DESIGNERS** Schematic no. osc_42008.0

Nanopower LC (Colpitts) Oscillator Circuit

Description

This is an ultra low-voltage LC (Colpitts) oscillator circuit using EPAD MOSFETs with passive resistor load and output buffer operating on a single 0.17V power supply. This circuit is similar in configuration to a classic LC oscillator circuit in 5V circuits. A dual EPAD MOSFET is connected in parallel to provide more low voltage drive current as necessary. The output buffer is powered by R_{OUT}, which can be selected to optimize the output voltage swing levels as well as providing adequate output drive currents.

Some performance figures: V+=0.17V, I+= 5μA, P_D=800nW, Crystal frequency = 1 MHz.
VL is an output voltage level that can be equal to, higher than or lower than V+, depending on desired output voltage swing levels. R_{OUT} must be selected for a selected VL and at the same time minimize current drain. An example: VL= 0.1V, IL= 17μA, Pd= 1.7μW, V_{OH}=59mV, V_{OL}=48mV.

For full schematic diagram and notes, please register and login at aldinc.com