



Category: FET

CIRCUIT IDEAS FOR DESIGNERS

Schematic no. fet_11123.0

Low Voltage Micropower LC (Colpitts) Oscillator Circuit with Active Load

Description

This is an ultra low-voltage LC (Colpitts) oscillator circuit using EPAD MOSFETs with active load and output buffer. This circuit is similar to a standard LC oscillator circuit used to power 5V circuits. However, at low operating voltages, the values of the resistors and the impedance of the inverter MOSFET are selected to optimize oscillation stability and at the same time minimize power consumption. An active load device using, for example, an ALD114804 replaces a passive load at the inverter. Using the appropriate component values, an oscillator circuit can be configured to operate in the range of supply voltages of $V_+ = 5V$ to $0.2V$, with oscillating frequency ranges of 1 MHz to 4 MHz. The active-load reduces the minimum operating voltage to $0.2V$, and produces a figure of merit of 1MHz oscillating frequency at $3 \mu W$ of power consumption. At higher frequencies in excess of 1 MHz, a dual EPAD MOSFET can be connected in parallel to provide more low voltage drive current necessary.

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