



Category: Oscillators

**CIRCUIT IDEAS FOR DESIGNERS**

Schematic no. osc\_42009.0

**LC (Colpitts) Oscillator operates on 0.5V to 5 V Single Supply****Description**

This is a low-voltage LC (Colpitts) oscillator circuit using EPAD MOSFETs that operates on a single supply ranging from 0.5V to 5V. A dual EPAD MOSFET is connected in parallel to provide more low voltage drive current at lower supply voltages.

Oscillator Circuit Performance Data:  $V_+ = 0.5V$ ,  $I_+ = 25\mu A$ ,  $P_D = 12.5\mu W$ , Crystal frequency = 1 MHz.  
 $V_+ = 5.0V$ ,  $I_+ = 250\mu A$ ,  $P_D = 1250\mu W$ , Crystal frequency = 1 MHz.

The output buffer is powered by VL with pull up resistor  $R_{OUT}$ , which can be selected to optimize the output voltage swing levels as well as providing adequate output drive currents. 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.

Output Buffer performance Data:  $V_L = 0.5V$ ,  $I_L = 62\mu A$ ,  $P_D = 31\mu W$ ,  $V_{OH} = 350mV$ ,  $V_{OL} = 226mV$ .  
 $V_L = 5.0V$ ,  $I_L = 69\mu A$ ,  $P_D = 347\mu W$ ,  $V_{OH} = 4.78V$ ,  $V_{OL} = 1.47V$

For full schematic diagram and notes, please register and login at [aldinc.com](http://aldinc.com)