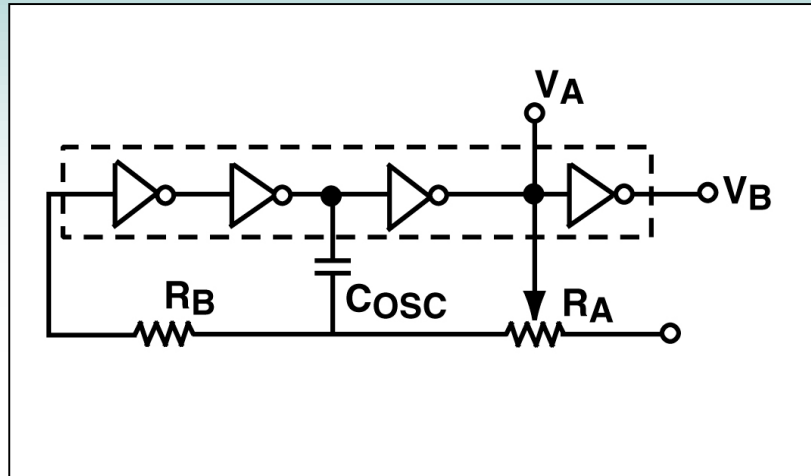




RC Oscillation Circuit



Description

This is a simple RC type of oscillator circuit. It consists of three inverter stages with a two-resistor feedback resistor network and an oscillator capacitor C_{osc} . The output of the oscillator is at V_A . Assuming V_A is at a high voltage state initially, C_{osc} charges toward a high-level voltage. When it reaches a threshold voltage at the first stage inverter, the first stage inverter inverts its output to low-level voltage. The next stage of inverter is then inverted towards a high-level voltage, which then in turn inverts the third stage towards a low-voltage level. The cycle continues by now discharging the C_{osc} capacitor towards a low-level voltage. Once the capacitor voltage crosses the threshold of the first stage inverter, the inverter output switches to low-level again. This process continues until the output voltage of the third stage again is at a high level. The circuit oscillates at a frequency determined by the RC time constant and the propagation delay of the inverters. V_A at the output is a square wave, which is then buffered through a fourth inverter stage to produce the output at V_B . Often the fourth stage inverter also acts as a voltage level translator, which now produces V_B as a square wave with output amplitude different from V_A . ALD1108xx MOSFET inverters can be built that operates this RC oscillator on 0.2V and nanowatt power dissipation.

Recommended Components

ALD1105, ALD1106, ALD110800, ALD110802

Other Related Circuit Ideas

Schematic no. osc_42004.0 Wien Bridge Oscillator (Rail-to-Rail) Sine Wave Generator