

## ICS601-21 Demo Board

The ICS601-21 demo board provides a way to quickly evaluate the performance of the ICS601-21 Low Phase Noise Clock Multiplier.

## Power

Connect either 3.3 volts across the VDD and GND header pins.

## Frequency Selection

The output frequency can be changed by setting S0, S1 and S2 on SW1 according to the information in the Multiplier Select Table on page 2 of the datasheet. Alternatively, shunts can be soldered to the appropriate 0604 device landings underneath SW1. Turning on a switch or stuffing a shunt will pull that particular input low. Opening the switch or removing the shunt will allow the on-chip pull-up resistors to take the input high.

## Input Options

The ICS601-21 Demo board supports either a thru hole or an SMT crystal or a single ended clock input.

Component	Crystal Input	50 ohm Clock Input
CN1	open	SMA connector
R1	open	short
C2	open	50 ohm
Y1/Y2	stuff only one	open

## Crystal Tuning

In order to achieve 0 PPM frequency synthesis, the ICS601-21 supports external tuning capacitors (C1 and C2). For exact tuning when using a crystal, capacitors should be connected from pins X1 to ground and X2 to ground. The value of these capacitors is given by the following equation, where  $C_L$  is the specified crystal load capacitance in pF:

$$C1 \text{ and } C2 \text{ (pF)} = (C_L - 5) \times 2.$$

So, for a crystal with 16 pF load capacitance, use two 22 pF caps.

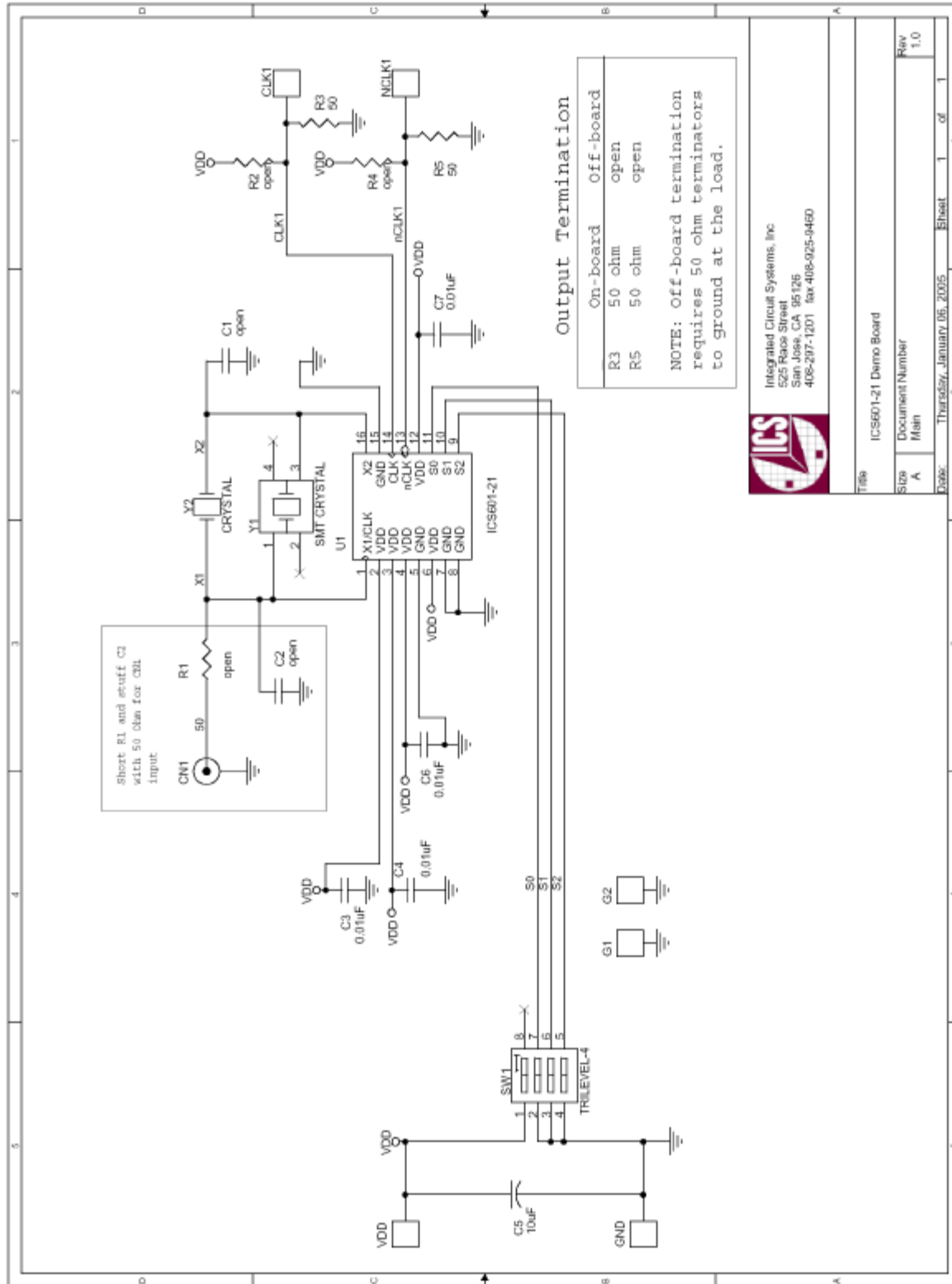
## Output Termination

The 50 ohm resistors R3 and R5 as serve as termination resistors to ground. These values match the PCB's trace impedance. Component locations R2 and R4 are provided to allow for user experimentation. This "on-board" termination allows the clock outputs to be measured directly with a high impedance oscilloscope probe. To use "off-board" termination, remove R3 and R5, connect 50 ohm coax cables between the clock connectors and the oscilloscope and terminate with 50 ohms in the oscilloscope.

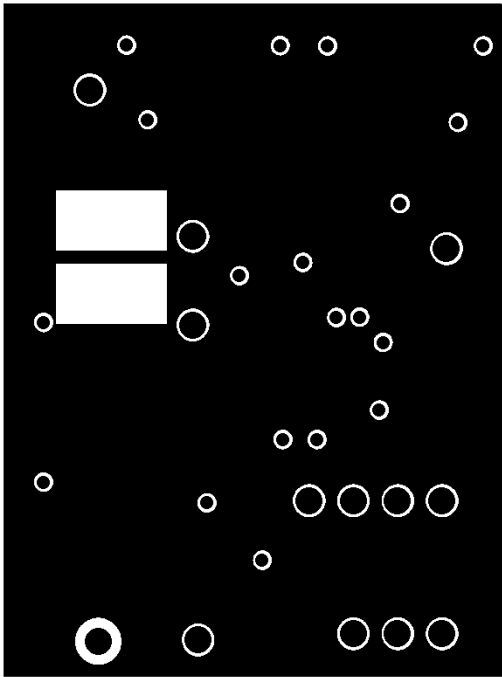
## Trace Impedance

The ICS601-21 board has controlled impedance traces of 50 ohms for all clock inputs and outputs.

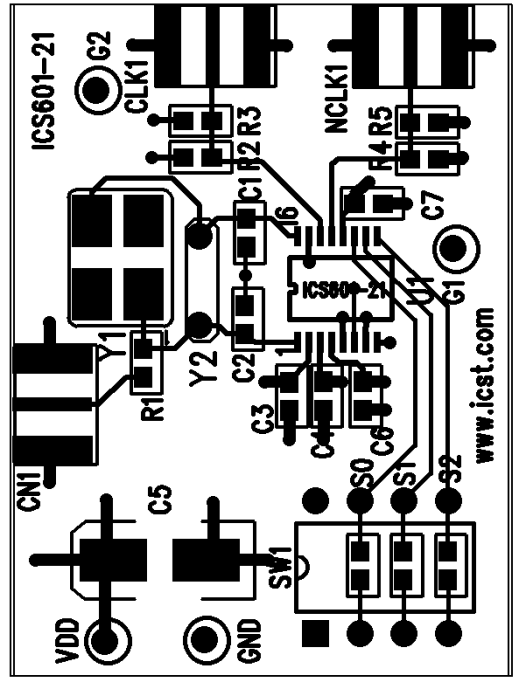
Demo Board Schematics



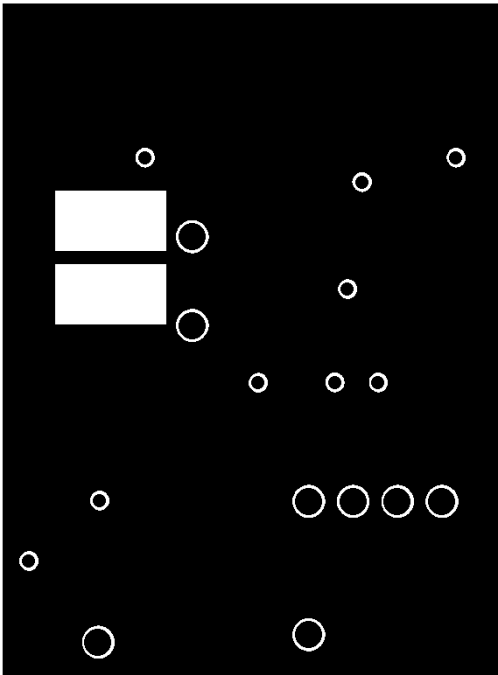
PCB Power Plane



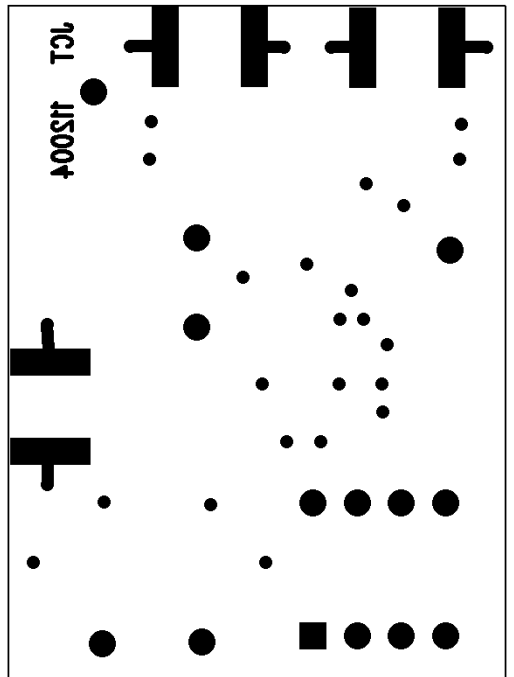
PCB Top



PCB Ground Plane



PCB Bottom



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