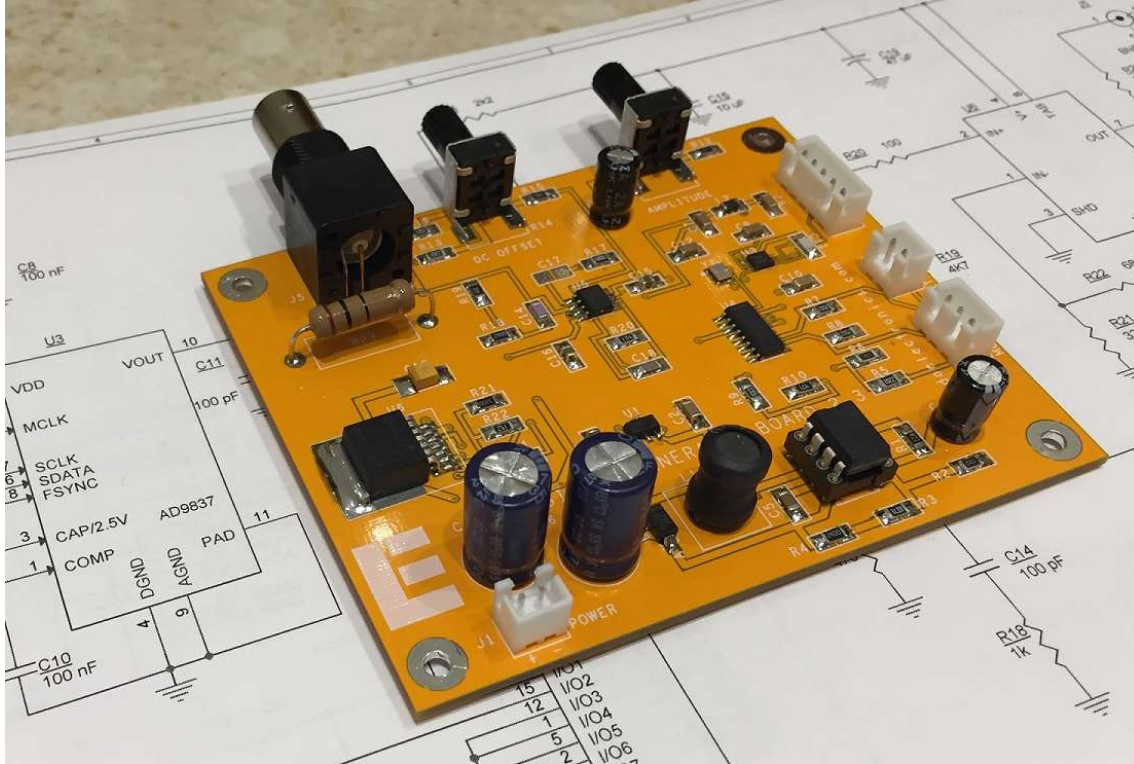


POWER SIGNAL GENERATOR BOARD



- **Selectable Sine, Triangle, Square or PWM Wave Output**
- **Based on AD9837 Programmable Waveform Generator**
- **On Board LT1210 High Frequency Power Amplifier. Up to 500 mA Output current**
- **12V DC Single Power Supply. On Board Negative Regulator**
- **0...18V Vpp Output for Sine, Triangle and Square Waves**
- **0...20V Vpp Output for PWM Wave**
- **Output Frequency programmable at 0.06 Hz up to 1 MHz with 28 bits Resolution**
- **Output Overload Protection**
- **Universal Tree Wires SPI Interface**

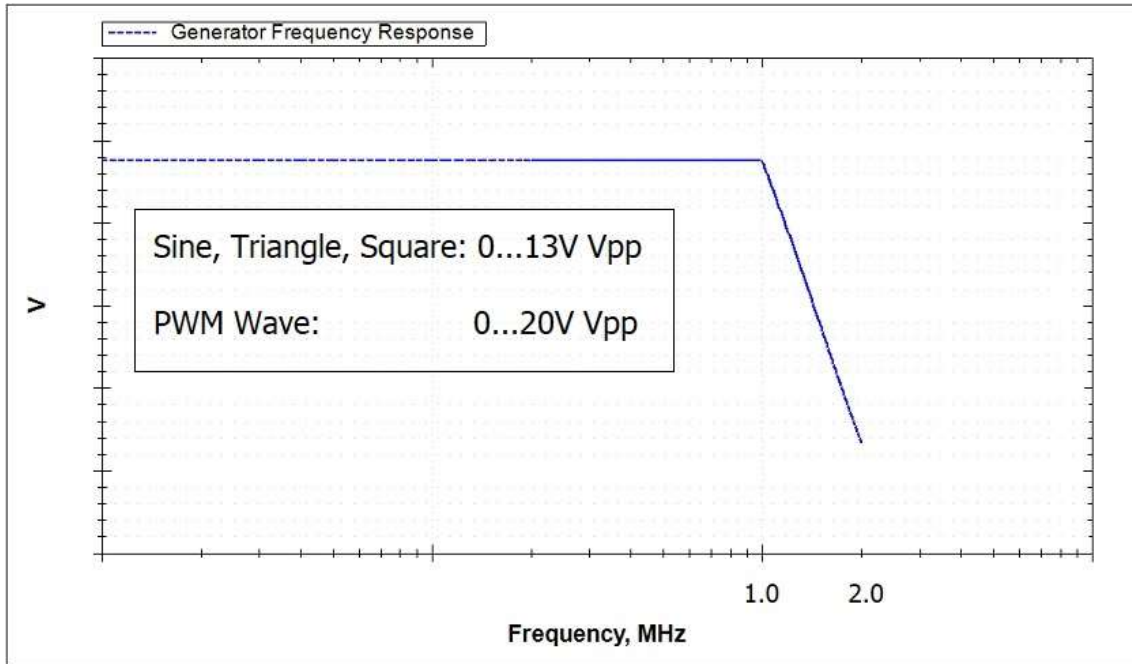
Digital Input Control Signals Needed for Optimal Operation

SIGNAL	CONNECTOR	DESCRIPTION
SPI CLK	J2-4	SPI Interface Clock Signal (1.8—3.3V)
SPI CS	J2-1	SPI Interface Chip Select Signal (1.8—3.3V)
SPI MOSI	J2-3	SPI Interface Data Out Signal (1.8—3.3V)
SPI_GND	J2-5	GND
PWM Input Signal	J3-1 J3.2 GND	(Optional) Microcontroller Timer Output in waveform generation mode.
MUX_0	J4-1	Wave Selection Multiplexor Input 0
MUX_1	J4-2	Wave Selection Multiplexor Input 1
MUX_GND	J4-3	GND

Generator Board is based on popular programmable function generator AD9837 IC, powered from a 16 MHz Crystal Oscillator. The Output frequency:

$$F_{OUT} = \frac{16 \text{ MHz} \times REG_VAL}{2^{28}} \quad [\text{Hz}]$$

From the formula we have that the minimum output frequency is 0.06 Hz. The maximum output frequency, according to the datasheet, is 8 MHz, however, in our case it is limited to 2 MHz by the analog circuitry bandwidth.



The Generator Module is pin to pin compatible with the Ledoelectronics Application Board "**Le-Xmega256_TFT2.8 Touch**" but can be driven by any Microcontroller Board from Arduino, Espressif, Microchip, Raspberry-pi, AVR etc. using standard libraries.

The board is practically a finished Power Signal Generator, with BNC Signal Output Connector, and two potentiometers for amplitude and offset control.

The LT1210 High Frequency Amplifier has internal protection against short circuit and overload, and can supply an output current of up to 1.1A. This makes possible to use the module to drive pulse transformers, as well as MOSFETs and IGBTs. Note that the maximal output signal Vpp is 20V in PWM Wave mode.

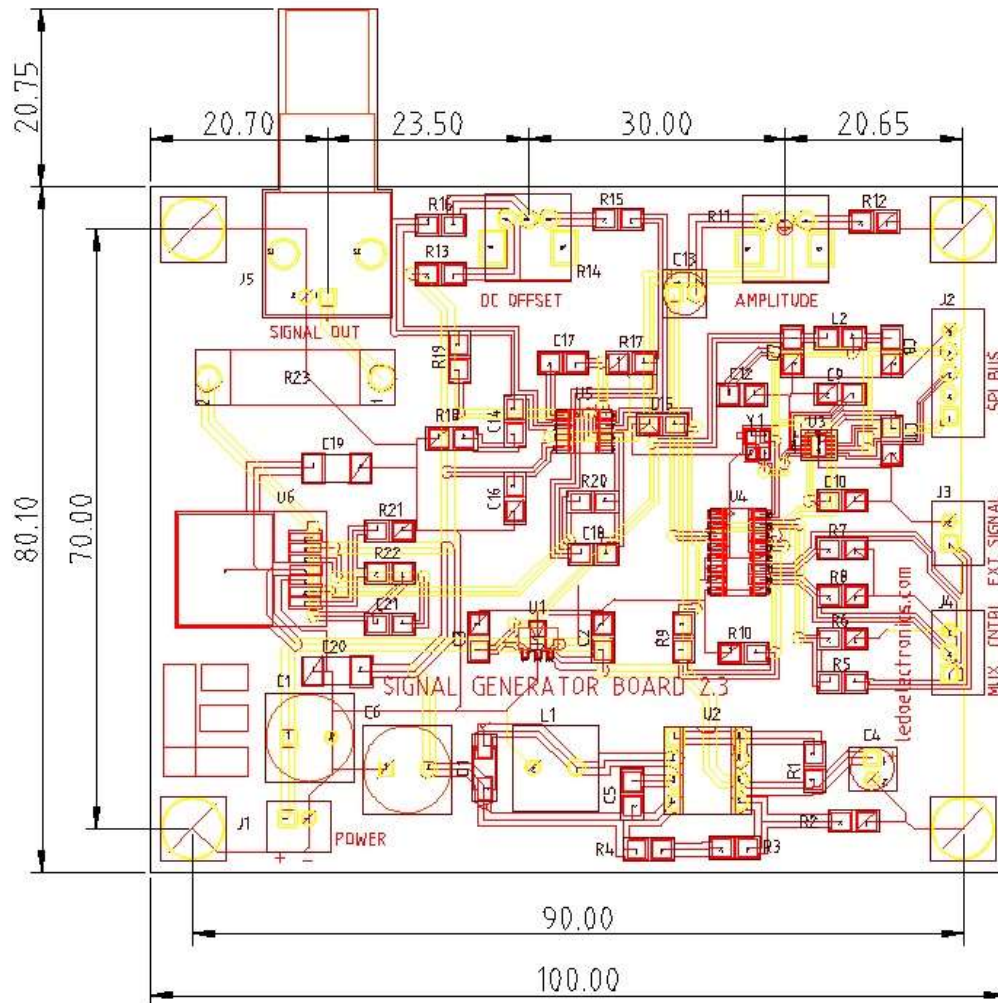


Fig.1. Generator Board Outlines.

Generator Board Schematics

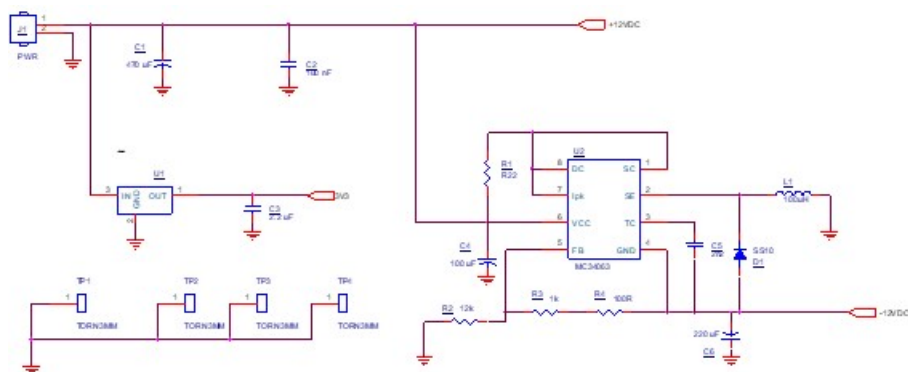


Fig.2. Power Supply Regulators.

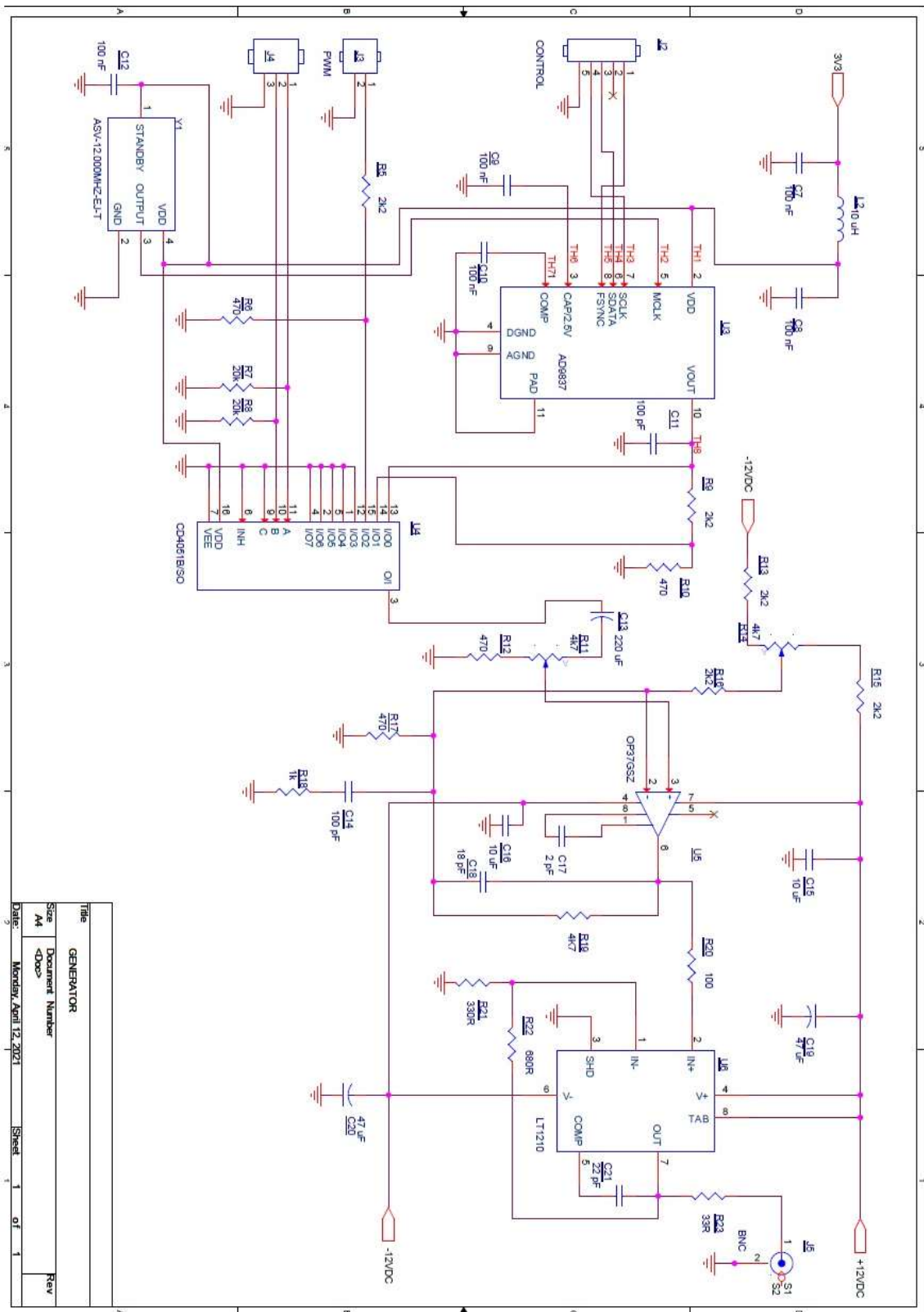


Fig.3. Generator Board. Analog and Digital Circuits.



Fig.4. Generator Board application example.