

# GIVERNyLABS

## Frequency Oscillator with 200kHz to 250 MHz CMOS Output

### DESCRIPTION

You have always wanted an accurate, ultra low jitter, I2C programmable CMOS clock generator?

The frequency oscillator utilizes Silicon Laboratories' Si564 Ultra Series advanced 4th generation DSPLL® technology to provide an ultra-low jitter (200 fs), low phase noise clock at any output frequency. The device is user-programmed via simple I2C commands to provide any frequency from 0.2 to 250 MHz with <1 ppb resolution and maintains exceptionally low jitter for both integer and fractional frequencies across its operating range. The frequency oscillator offers excellent reliability and frequency stability as well as guaranteed aging performance.

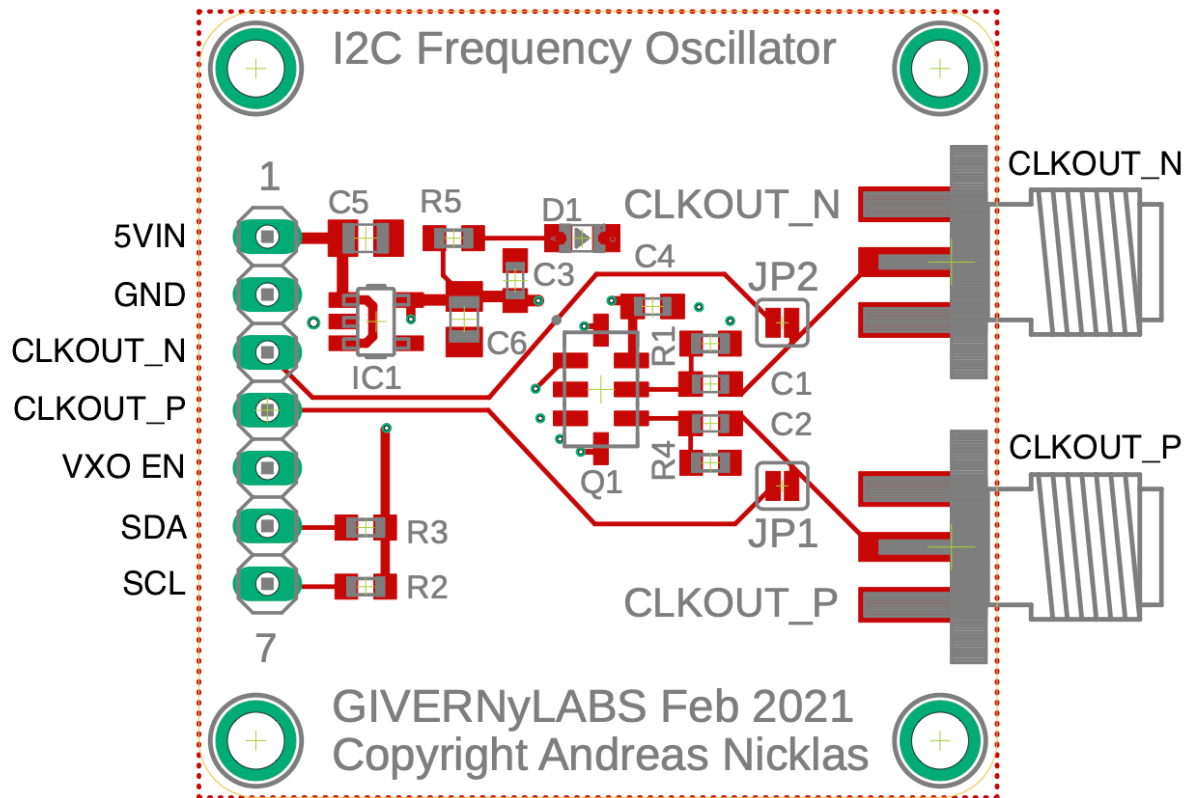
You can use the frequency oscillator as an I2C appliance to front end any microcomputer, e.g. the Arduino or the raspberry with frequency clock capabilities.

- I2C programmable to any frequency from 0.2 to 250 MHz with < 1 ppb resolution
- Ultra low jitter: 200fs (RMS, 12 kHz – 20 MHz), 10 MHz ≤ FCLK < 250 MHz
- Temperature stability ±20 ppm (-40 to 85 °C)
- Total stability ±50 ppm (includes temperature stability, initial accuracy, load pulling, VDD variation and 20 year aging at 70 °C)
- 10 MHz startup frequency
- Output Enable Pin, active high, includes a 50 kΩ pull-up to VDD
- I2C interface supports 100 kbps, 400 kbps, and 1 Mbps (Fast Mode Plus)
- Excellent PSNR and supply noise immunity: – 80 dBc Typ
- 3.3V logic, 5V supply operation
- Dual CMOS output (complementary)
- Fast frequency adjustments on the fly over a range of +/- 950 ppm (parts-per-million) with 0.0001164 ppm resolution (continuous glitchless output)
- Supply Current typical 95mA, max. 145mA
- Product Dimensions: 35mm x 34.5mm / 1.38" x 1.36"

### Configuring Output Frequency via I2C

The frequency oscillator contains a fixed frequency crystal and a frequency synthesis IC using Silicon Labs patented DSPLL™ technology, enclosed in a standard hermetically sealed crystal oscillator package. The crystal provides the reference frequency used by the DSPLL frequency synthesis IC. The output frequency of the frequency oscillator can be dynamically set via I2C register settings in the DSPLL frequency synthesis IC. DSPLL technology provides unmatched frequency flexibility with superior output jitter/ phase noise performance and part per trillion frequency accuracy.

## PINOUTS



### Power Pins

- **5VIN** - power input, connect to 4-5VDC. It's important to connect to a clean and quiet power supply. Don't connect to a switching supply if you can avoid it, an LDO will be less noisy!
- **GND** - power and signal ground. Connect to your power supply and microcontroller ground.

### Logic Pins

- **All logic is 3.3V.**
- **VXO EN** - the Oscillator (VXO) output enable pin. It is pulled high with a 50K resistor. This function is useful if the frequency is to be programmed first when the oscillator is started and the factory-programmed standard frequency (10 MHz) is not to be output.
- **CLKOUT\_P** - clock output. The frequency is output via the SMA connector as standard. Output via the SMA connector is preferable for high frequencies. If the frequency is to be output additionally via the pin header connector, the jumper JP1 must be closed with a solder bridge.
- **CLKOUT\_N** - complementary clock output. The frequency is output via the SMA connector as standard. Output via the SMA connector is preferable for high frequencies. If the frequency is to be output additionally via the pin header connector, the jumper JP2 must be closed with a solder bridge.
- **SDA** - the I2C (Wire) data pin. There's a 10K pull up resistor on this pin by default. When using with I2C, you may need down to 2.2K pull up.
- **SCL** - the I2C (Wire) clock pin. There's a 10K pull up resistor on this pin by default. When using with I2C, you may need down to 2.2K pull up.

## **Consulting Services**

Based on your wishes and requirements, we will be happy to advise you on the configuration and programming of the SI569 I2C programmable CMOS clock generator or create customer-specific hardware and software solutions.

We look forward to hearing from you at:

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