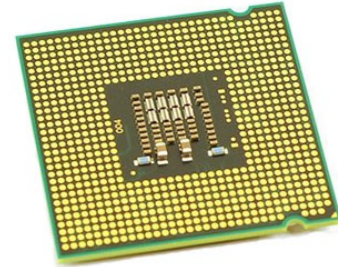


Microwave Wideband Synthesizer with Integrated VCO

Manufacturers	Analog Devices, Inc
Package/Case	48-Terminal Land Grid Array [LGA]
Product Type	RF Integrated Circuits
RoHS	
Lifecycle	



Images are for reference only

Please submit RFQ for ADF5610BCCZ or [Email to us: sales@ovaga.com](mailto:sales@ovaga.com) We will contact you in 12 hours.

[RFQ](#)

General Description

The ADF5610 allows implementation of fractional-N or Integer N phase-locked loop (PLL) frequency synthesizers when used with an external loop filter and an external reference source. The wideband microwave voltage controlled oscillator (VCO) design permits frequency operation from 7300 MHz to 14600 MHz at a single radio frequency (RF) output. A series of frequency dividers with a differential frequency output allows operation from 57 MHz to 14600 MHz. Analog and digital power supplies for the PLL circuitry range from 3.1 V to 3.5 V, and the VCO supplies are between 4.75 V and 5.25 V. The charge pump supply voltage can be extended up to 3.6 V for improved frequency band overlap and extended upper frequency range.

The ADF5610 has an integrated VCO with a fundamental frequency of 3650 MHz to 7300 MHz. These frequencies are internally doubled and routed to the RFOUT pin. An additional differential output allows the doubled VCO frequency to be divided by 1, 2, 4, 8, 16, 32, 64, or 128, allowing the user to generate RF output frequencies as low as 57 MHz. A simple 3-wire serial port interface (SPI) provides control of all on-chip registers. To conserve power, this divider block can be disabled when not needed through the SPI interface. Likewise, the output power for both the single-ended output and the differential output are programmable via the VCO register settings. The ADF5610 also contains various power-down modes for the VCO circuitry and PLL circuitry.

The integrated phase detector (PD) and delta-sigma (Δ - Σ) modulator, capable of operating at up to 100 MHz, permit wide loop bandwidths and fast frequency tuning with a typical spurious level of -100 dBc.

With phase noise levels from -115 dBc/Hz at 7.3 GHz to -109 dBc/Hz at 14.6 GHz, the ADF5610 is equipped to minimize blocker effects, and to improve receiver sensitivity and transmitter spectral purity. The low phase noise floor eliminates any contribution to modulator and mixer noise floor in transmitter applications.

The ADF5610 is a PLL with integrated VCO. The device features an innovative programmable performance technology that enables the ADF5610 to tailor current consumption and corresponding noise performance to individual applications by selecting either a low current consumption mode or a high performance mode for improved phase noise performance.

Additional features of the ADF5610 include approximately 3 dB of RFOUT gain control in 1.5 dB steps and 5 dB of control on the differential port in approximately 2.5 dB steps. Finally, the Δ - Σ modulator with exact frequency mode enables users to generate output frequencies with 0 Hz frequency error.

Features

RF output frequency range: 57 MHz to 14,600 MHz

RFOUT: 7300 MHz to 14,600 MHz

PDIV/NDIV: 57 MHz to 14,600 MHz

Fractional-N synthesizer and Integer N synthesizer modes

24-bit fractional modulus

Exact frequency mode for 0 Hz frequency error

Typical PFD spurious: <-105 dBc

Integrated rms jitter: <40 fs

Normalized inband phase noise floor FOM

High current mode: -232 dBc/Hz (integer) and -229 dBc/Hz (fractional)

Normal mode: -229 dBc/Hz (integer) and -226 dBc/Hz (fractional)

Maintains frequency lock over -40°C to $+85^{\circ}\text{C}$ (lock and leave)

Low phase noise VCO

RFOUT power: 5 dBm

Programmable divide by 1, 2, 4, 8, 16, 32, 64, or 128 output

Programmable output power level

Typical power dissipation: 815 mW

Programmable low current and power dissipation: <700 mW

Fast frequency hopping (autocalibration enabled): <40 μs

48-terminal, 7 mm \times 7 mm LGA package: 49 mm²

Application

Military and defense

Test equipment

Clock generation

Wireless infrastructure

Satellite and very small aperture terminal (VSAT)

Microwave radio

Related Products



[ADL5330ACPZ](#)

Analog Devices, Inc
LFCSP24



[ADL5240ACPZ-R7](#)

Analog Devices, Inc
LFCSP-32



AD630SD

Analog Devices, Inc
20 ld Side-BrazedCerDIP



ADRF5040BCPZ

Analog Devices, Inc
HIGH ISOLATION, SP4T, 9KHZ - 12G



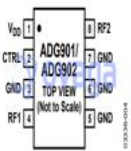
AD607ARSZ-REEL

Analog Devices, Inc
SSOP-20



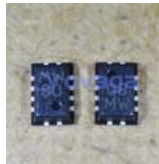
AD831AP

Analog Devices, Inc
20 ld PLCC



ADG901BRM

Analog Devices, Inc
MSOP-8



ADL5350ACPZ

Analog Devices, Inc
LFCSP-8