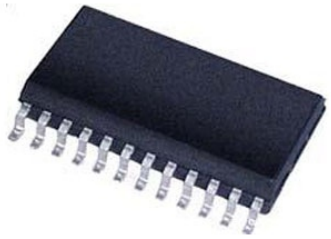
AD604ARZ

Data Sheet

ANALOG DEVICES AD604ARZ Programmable/variable gain amplifier, 1 amplifier, 2 amplifiers, 40 MHz, -40 °C, 85 °C

Manufacturers	Analog Devices, Inc
Package/Case	SOIC-24
Product Type	Amplifier ICs
RoHS	Pb-free Halide free
Lifecycle	



Images are for reference only

Please submit RFQ for AD604ARZ or Email to us: sales@ovaga.com We will contact you in 12 hours. RFQ

General Description

The AD604 is an ultralow noise, very accurate, dual-channel, linear-in-dB variable gain amplifier (VGA) optimized for time-based variable gain control in ultrasound applications; however, it supports any application requiring low noise, wide bandwidth, variable gain control. Each channel of the AD604 provides a 300 kΩ input resistance and unipolar gain control for ease of use. User determined gain ranges, gain scaling (dB/V), and dc level shifting of output further optimize performance.

Each channel of the AD604 utilizes a high performance preamplifier that provides an input referred noise voltage of 0.8 nV/√Hz. The very accurate linear-in-dB response of the AD604 is achieved with the differential input exponential amplifier (DSX-AMP) architecture. Each of the DSX-AMPs comprise a variable attenuator of 0 dB to 48.36 dB followed by a high speed fixed gain amplifier. The attenuator is a 7-stage R-1.5R ladder network. The attenuation between tap points is 6.908 dB and 48.36 dB for the ladder network.

The equation for the linear-in-dB gain response>

+ (Preamp Gain (dB) – 19 dB)

Preamplifier gains between 5 and 10 (14 dB and 20 dB) provide overall gain ranges per channel of 0 dB through 48 dB and 6 dB through 54 dB. The two channels of the AD604 can be cascaded to provide greater levels of gain range by bypassing the second channel's preamplifier. However, in multiple channel systems, cascading the AD604 with other devices in the AD60x VGA family that do not include a preamplifier may provide a more efficient solution. The AD604 provides access to the output of the preamplifier, allowing for external filtering between the preamplifier and the differential attenuator stage.

Note that scale factors up to 40 dB/V are achievable with reduced accuracy for scales above 30 dB/V. The gain scales linearly-in-dB with control voltages of 0.4 V to 2.4 V with the 20 dB/V scale. Below and above this gain control range, the gain begins to deviate from the ideal linear-in-dB control law. The gain control region below 0.1 V is not used for gain control. In fact when the gain control voltage is <50 mV, the amplifier channel is powered down to 1.9 mA.

The AD604 is available in 24-lead SSOP, SOIC, and PDIP packages and is guaranteed for operation over the −40°C to +85°C temperature range.

Features

Ultralow input noise at maximum gain: 0.80 nV/√Hz, 3.0 pA/√Hz

Two independent linear-in-dB channels

Absolute gain range per channel programmable: 0 dB to 48 dB (preamp = 20 dB)

Bandwidth: 40 MHz (−3 dB)

300 kΩ input resistance

Variable gain scaling: 20 dB/V through 40 dB/V

Stable gain with temperature and supply variations

Single-ended unipolar gain control

Power shutdown at lower end of gain control

Drive ADCs directly

Application

Ultrasound and sonar time gain control

High performance AGC systems

Signal measurement

Related Products

AD8418BRMZ-RL

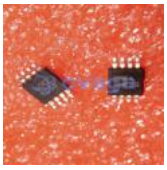
Analog Devices, Inc

MSOP-8

ADA4528-2ARMZ-R7

Analog Devices, Inc

MSOP-8



ADA4084-2ARMZ

Analog Devices, Inc

MSOP-8

AD8062ARMZ

Analog Devices, Inc

MSOP8

AD8567ARUZ

Analog Devices, Inc

TSSOP-14

AD8628AUJZ

Analog Devices, Inc

SOP23

AD8022ARMZ

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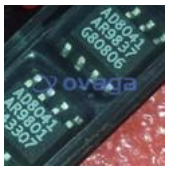
MSOP-8



AD8041AR

Analog Devices, Inc

SOP-8