CMOS Linear Differential Distributed Amplifier and Distributed Active Balun

Tech ID: 21589 / UC Case 2011-218-0

PATENT STATUS

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<th>Country</th>
<th>Type</th>
<th>Number</th>
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<tr>
<td>United States Of America</td>
<td>Issued Patent</td>
<td>8,742,851</td>
<td>06/03/2014</td>
<td>2011-218</td>
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BRIEF DESCRIPTION

The technology is a distributed amplifier (and distributed balun) that can be used in broadband communication links. It features a two-stage transconductance stage with single input and dual-output. With this technology, users will see improved overall gain without degrading bandwidth, improving the overall gain-bandwidth product.

FULL DESCRIPTION

The invention is a distributed amplifier (as well as a distributed balun) that can be used in broadband wireless/wired communication links. A novel transconductance (gm) stage is used as the gain stage, with the distributed architecture that is capable of improving voltage gain and linearity without degrading bandwidth, power consumption, and physical area. The gm stage includes one input and two output terminals, which leads to two input/output signal paths. It also includes a parallel-RL bandwidth compensation circuit that prevents bandwidth degradation without affecting gain and power consumption.

Distributed amplifiers (DAs) are extensively used for amplification of broadband wired/wireless signals. Techniques have been proposed to improve DA performance by altering parameters such as gain, bandwidth and power. One method to improve voltage gain in DAs is to use a multi-stage transconductance (gm) stage. Previous implementations of this method involve using only the output of the last gm stage as an output. In this invention, UCI researchers have altered the gm stage such that the output nodes of all stages in the gm cell are connected, improving the overall voltage gain without degrading bandwidth or sacrificing power.

SUGGESTED USES

Broadband wireless/wired transceiver design, multi-purpose broadband test/measurement equipment.

ADVANTAGES

Improves overall voltage gain and linearity without degrading bandwidth, power consumption, or sacrificing chip area.

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OTHER INFORMATION

KEYWORDS

CMOS, amplifier, balun, broadband, wireless communication, wired communication

CATEGORIZED AS

» Communications
  » Internet
  » Networking
  » Wireless
  » Computer
  » Hardware
PUBLICATIONS


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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

▶ Signal Statistics Compression-Based Quantization Method in an ADC
▶ Phased-Locked Loop Coupled Array for Phased Array Applications