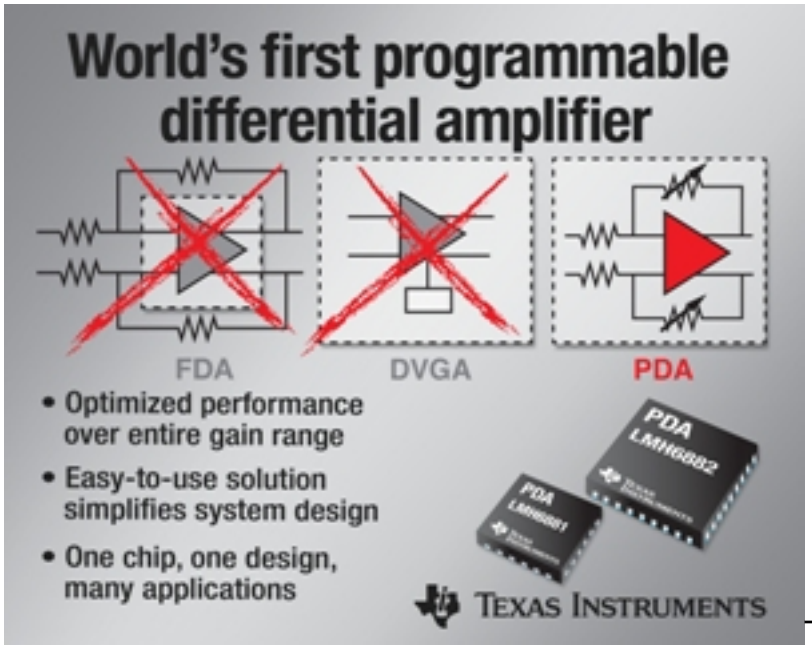
Programmable Differential Amplifiers



Texas Instruments Incorporated (TI) has introduced the world's first programmable differential amplifiers (PDAs). The 2.4-GHz LMH6881 single-channel PDA and 2.4-GHz LMH6882 dual-channel PDA provide optimized noise, distortion and bandwidth performance over a 6-dB to 26-dB gain range, simplifying the way engineers design with differential amplifiers. Designing systems with PDAs increases flexibility and significantly reduces design time, solution size and bill of materials (BOM) cost for a broad range of applications.

PDAs combine the best of fully-differential amplifiers (FDAs) and digital variable gain amplifiers (DVGAs). They allow engineers to easily modify their designs by changing gain without having to adjust external resistors, replace amplifiers, or reconfigure and optimize each gain stage. Compared to traditional DVGAs, TI's PDAs offer more consistent noise and distortion performance over the entire gain range. The programmable gain control in the LMH6881 and LMH6882 eliminates the need for gain-setting resistors and their associated mismatch errors, enabling more robust systems for applications, such as medical, test and measurement, military, wireless communications, and microwave backhaul.

Key features and benefits of the LMH6881 and LMH6882:

- Optimized performance: Both devices maintain excellent noise and distortion performance over the entire gain range. Specifications at maximum gain (26 dB) and 100-MHz input frequency are: 9.7-dB noise figure, 44-dBm OIP3, and -100 dBc HD3.
- Easy to use: Gain control can be implemented via SPI bus or dedicated pins, with no external resistors needed.
- Maximum flexibility: Support for DC/AC coupling and single-ended-to-differential conversion eliminates the need for a balun, giving designers the

flexibility to operate from DC to high frequencies with minimal external components.
- Dual-channel gain/phase matching: LMH6882's channel gain matching of 0.2 dB and phase matching of 1.5 degrees provide excellent image rejection for wideband zero IF and I/Q sampling applications.
- Drive high-performance ADCs: Drive high-speed analog-to-digital converters (ADCs), such as the 8-bit, single-channel ADC083000; 10-bit, dual-channel ADC10D1500; 12-bit, dual-channel ADC12D1800RF; and 14-bit, single-channel ADS4149.

Texas Instruments
www.ti.com [1]

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