ADC-WB-BB / ADC-LD-BB User's Guide

Thank you for your interest in TI's ADC-WB-BB / ADC-LD-BB. "ADC-WB-BB" stands for ADC Wide-Band Balun Board and "ADC-LD-BB" stands for ADC Low-Distortion Balun Board. One each of these boards is included in the Hardware Kit with the GSPS ADC Reference Boards. Since the analog inputs to the ADC1xDxx00RB are differential and most signal sources are single-ended, these balun boards are generally used to achieve single-ended-to-differential conversion. In case both I- and Q-inputs are simultaneously driven with a similar signal, an additional balun board of the same type may be desired.

The ADC-LD-BB uses the B0430J50100AHF from Anaren, which is designed for high-performance and low cost, see Figure 1. Since the input impedance of the GSPS ADCs are 100Ω and the impedance of most signal generators are 50Ω, the 1:2 impedance ratio is very convenient. The 10pF capacitor at the input is recommended by Anaren for best performance, see Figure 2. This balun is also a very good choice for driving the GSPS ADC sampling clock (CLK+/-).

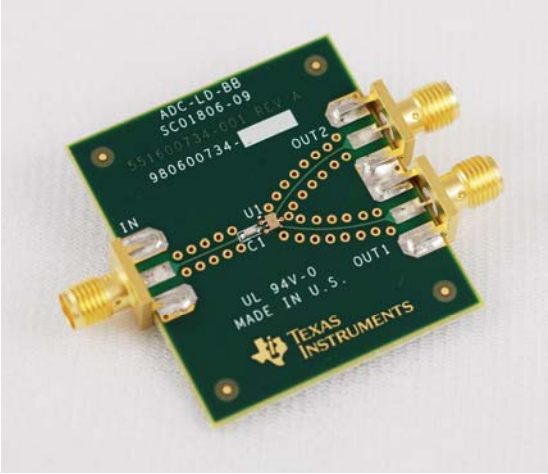


Figure 1. ADC-LD-BB

- Board: ADC-LD-BB
- Balun: B0430J50100AHF
- Balun Manufacturer: Anaren
- Frequency range: {400MHz, 3GHz}
- Impedance ratio: 1:2
- Features: multi-layer construction, low insertion loss, low distortion
- Datasheet: http://www.anaren.com/sites/default/files/B0430J50100AHF_DataSheet_RevA.pdf

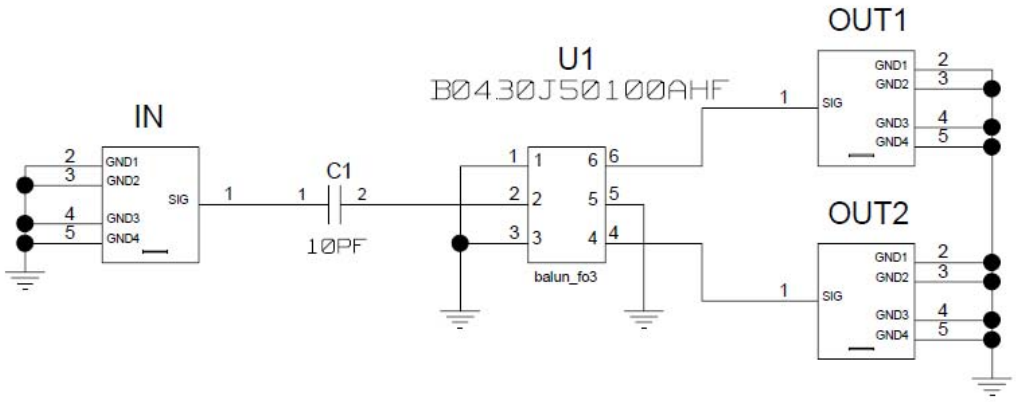
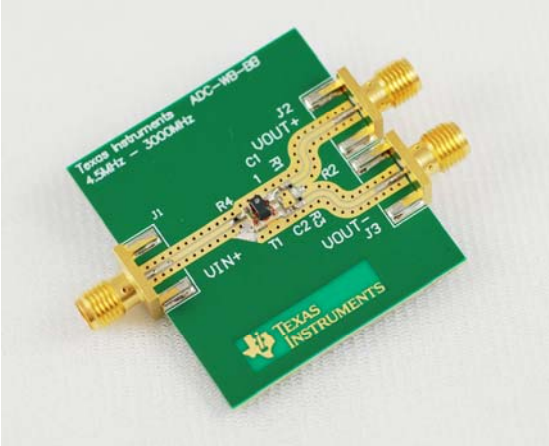


Figure 2. ADC-LD-BB Schematic

The ADC-WB-BB uses the TC1-1-13MA+ from Mini-Circuits, which is designed for wide-band functionality and low cost, see Figure 3. Since the input impedance of the GSPS ADCs are 100Ω, the impedance of most signal generators are 50Ω, and the impedance ratio of this balun is 1:1, the extra 100Ω across the output (R1 and R3) is present for impedance matching, see Figure 4. However, this does incur an additional 3dB insertion loss.



- Board: ADC-WB-BB
- Balun: TC1-1-13MA+
- Balun Manufacturer: Mini-Circuits
- Frequency range: {4.5MHz, 3GHz}
- Impedance ratio: 1:1
- Features: wire-wound construction, wide-band functionality, good return loss
- Datasheet: http://www.minicircuits.com/pdfs/TC1-1-13MA+.pdf

Figure 3. ADC-WB-BB

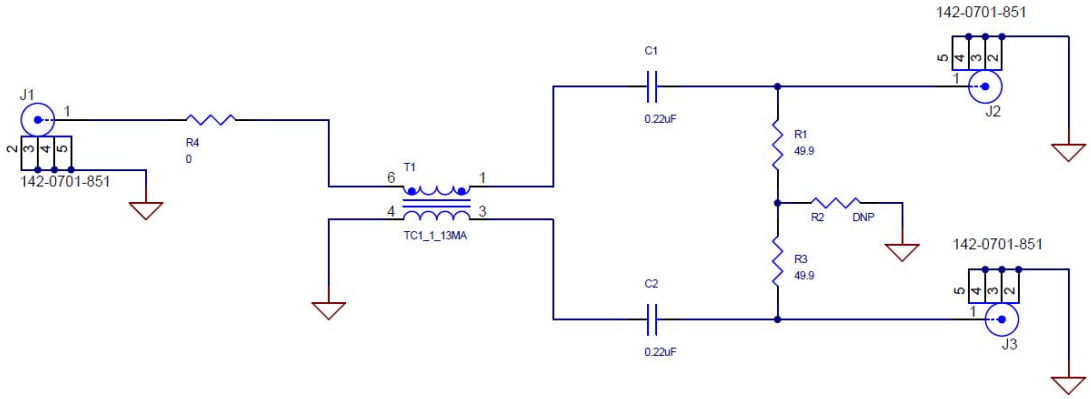


Figure 4. ADC-WB-BB Schematic

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