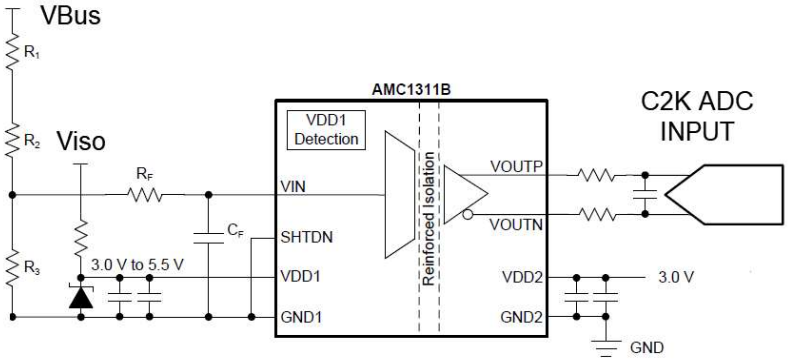
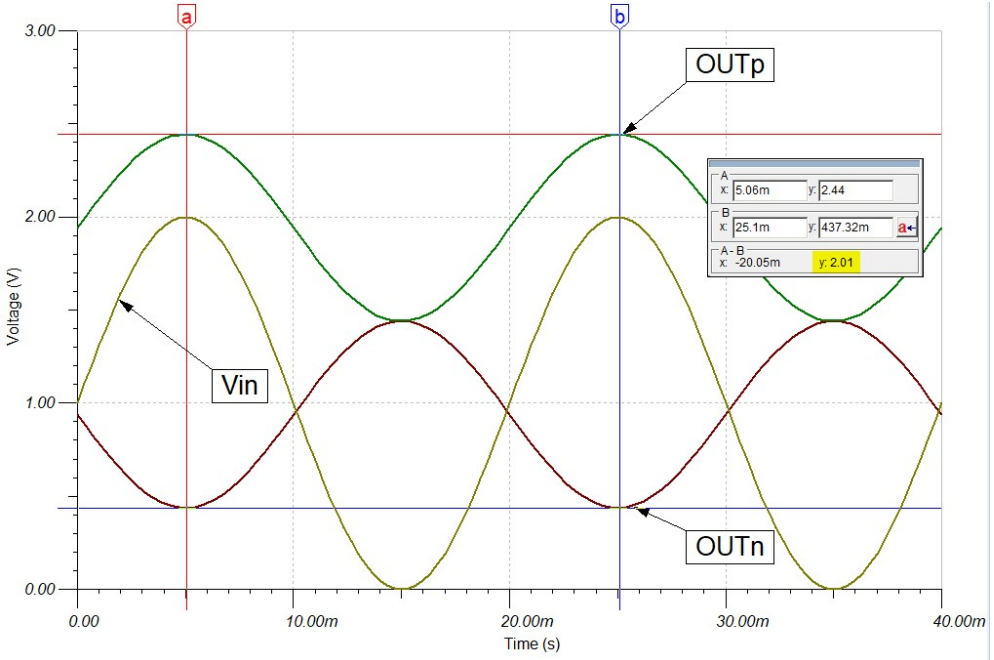
AMC1311 with C2000

Diff output of AMC1311 to Diff Input of C2000

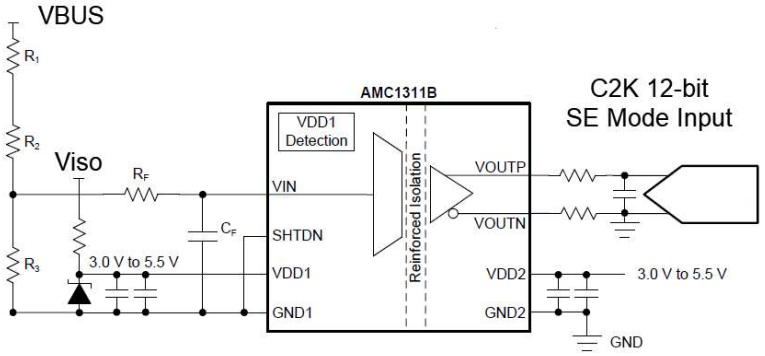
- **AMC1311 Input is 0-2V, differential output is 0-2V**
- **TMS320F28377 as an example**
  - 16-bit mode offers up to 12 differential input channels.
  - ADC Input range from V_{REFHI} to V_{REFLO}
  - Typical input range is 0-2.5V
- **AMC1311 Output**
  - 0-2V differential with VCM of 1.44
  - VOUTp swings from 1.44 to 2.44
  - VOUTn swings from 1.44 to 0.44

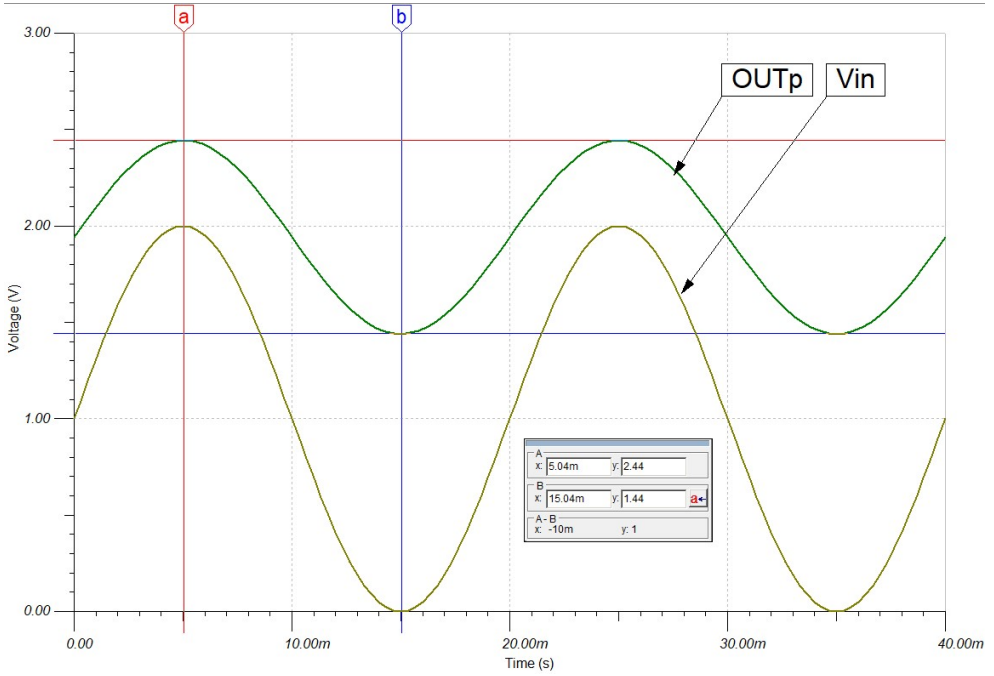




Diff output of AMC1311 to SE input of C2000

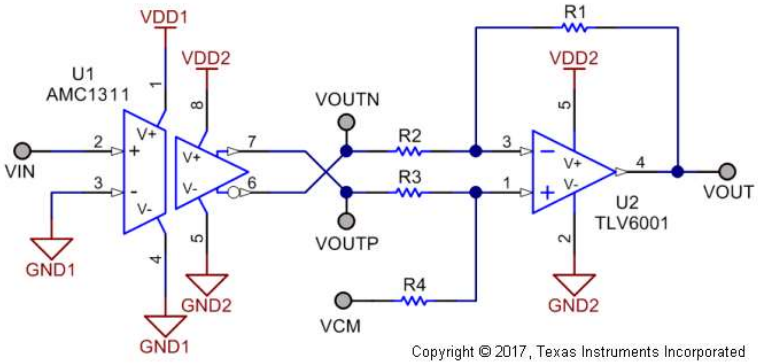
- **AMC1311 Input is 0-2V, ‘single ended’ output is only 1.44 to 2.44V (or 1.44 to 0.44)**
- **TMS320F28377**
  - **12-bit** mode for single ended input channels.
  - Typical input range is 0-2.5V
- **AMC1311 Output**
  - Utilizes half the normal output voltage swing
  - VOUTp swings 1.44 to 2.44
  - VOUTn float or tie to GND via 10K
  - 50mV variance in VCM will cause initial offset error

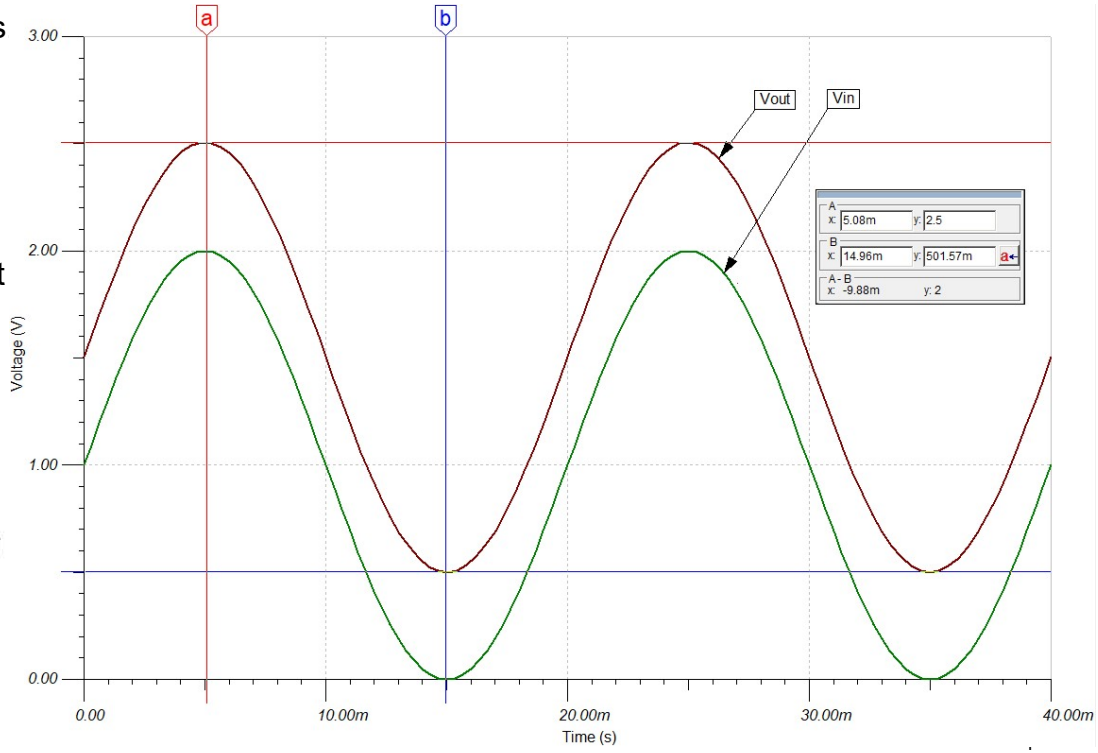




Diff to SE output of AMC1311 to SE input of C2000

- **AMC1311 Input is 0-2V, single ended output is 0-2V**
- **TMS320F28377**
  - **12-bit** mode for single ended input channels
  - ADC Input range from V_{REFHI} to V_{REFLO}
- **AMC1311 Diff to SE Output**
  - Recover the Original Signal
  - Low cost SOT-23 OPA
  - Gain/offset configurable to match ADC input
  - Refer to SBAA229 for more details





Conclusion's

- **Differential Output to Differential Input**
  - **16-bit** mode for differential input channels means better overall accuracy.
  - Utilizes the full output voltage span of the AMC1311
  - Better Signal to Noise Ratio
  - No need for extra intermediate circuitry other than filtering ahead of the ADC
- **Differential Output to Single Ended Input**
  - Only **12-bit** resolution for single ended input channels means lower overall accuracy.
  - Only utilizes the half of the AMC1311 output voltage and less than half of the ADC's input voltage range
  - Signal to Noise Ratio suffers
  - Variations in common mode output voltage requires calibration
- **Differential to Single Ended Conversion to Single Ended Input**
  - Provides the ability to fully recover the original input signal
  - Low cost OPA like the TLV6001
  - Gain/offset configurable to match ADC input voltage
  - Refer to SBAA229 for more details on specifics on how to configure