# Low-Drift Bidirectional Single-Supply Low-Side Current Sensing Reference Design

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## Key Document

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- Low-Drift Bidirectional Single-Supply Low-Side Current Sensing Reference Design (Rev. A) (PDF 839 KB)
  16 Jun 2014 447 views
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TIPD156 Test Board for Low-Drift Bi-directional Single-Supply Low-Side Current Sensing Reference Design

## Description

This Verified TI Precision Design implements a low-drift, bi-directional, low-side, single-supply current sensing solution that measures load currents from -2.5 A to +2.5 A. The output range is from 250 mV to 2.75 V, with 0 A current centered at 1.5 V. To achieve low-drift performance, the solution utilizes the INA213B and REF2030. The design's functionality and performance were verified by fabricating a PCB and measuring results over temperature from -40 °C to 125 °C.

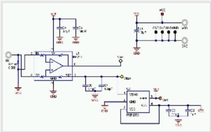
Fully assembled board (shown above) developed for testing and performance validation only, not available for sale.

## Features

- Low-side current sensing
- Measured load current: +/-2.5 A
- 250mV to 2.75V output
- 0 A centered at 1.5 V
- ±0.0522% Full-scale range error (-40 °C to 125 °C)
- Low-drift, Single-supply

## Schematic/Block Diagram

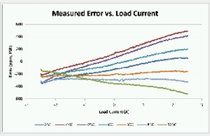
Quickly understand overall system functionality.



Download Schematic

## Test Data

Get results faster with test and simulation data that's been verified.

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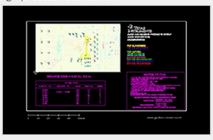
## Design Files

Download ready-to-use system files to speed your design process. Get Viewer.



Download Design File

## Bill of Materials (BOM)

Find the complete list of components in this reference design.

Download BOM

## TI Devices (5)

Order samples, get tools and find more information on the TI products in this reference design.

| Part Number | Name | Product Family | Sample & Buy | Design Kits & Evaluation Modules |
|---|---|---|---|---|
| INA213 | Voltage Output, High/Low-Side Measurement, Bi-Directional Zero-Drift Series Current Shunt Monitor | Shunt-based/Non-Isolated | Sample & Buy | View Design Kits & Evaluation Modules |
| REF2025 | Low-Drift, Low-Power, Dual-Output VREF and VREF/2 Voltage Reference | Voltage Reference | Sample & Buy | Not Available |

Show More

## CAD/CAE symbols

| Part # | Package \| Pins | CAD File (.bxl) | STEP Model (.stp) |
|---|---|---|---|
| INA213 | SOT (DCK) \| 6 | Download | Download |
| | UQFN (RSW) \| 10 | Download | - |

Texas Instruments and Accelerated Designs Inc. have collaborated together to provide TI customers with schematic symbols and PCB layout footprints for TI products.

Step 1: Download and install the Ultra Librarian software ZIP: 62MB

Step 2: Download the Symbol and Footprint .bxl file.

- read more -

## Technical Documents

### User Guides (1)

| Title | Abstract | Type | Size (KB) | Date | Views | TI Recommends |
|---|---|---|---|---|---|---|
| Low-Drift Bidirectional Single-Supply Low-Side Current Sensing Reference Design (Rev. A) | | PDF | 839 | 16 Jun 2014 | 447 | ✓ |

### Design Files (3)

| Title | Abstract | Type | Size (KB) | Date | Views |
|---|---|---|---|---|---|
| TIPD156 Gerber | | ZIP | 282 | 05 Jun 2014 | 32 |
| TIPD156 BOM | | PDF | 110 | 05 Jun 2014 | 49 |
| TIPD156 Schematic | | PDF | 92 | 05 Jun 2014 | 227 |

## Related Tools & Software

### Software (3)

- TIPD156 Simulation
  (ZIP, 693 KB) 35 views, 05 Jun 2014
- TIPD156 Test Files
  (ZIP, 674 KB) 27 views, 05 Jun 2014
- TIPD156 Design File
  (ZIP, 1230 KB) 107 views, 19 May 2014

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