TP199

Zero-Drift, Bi-directional Current Sense Amplifier

Features

- VOLTAGE OFFSET: **±100uV (MAX)**
- WIDE COMMON MODE VOLTAGE: **-0.3V to +36V**
- SUPPLY VOLTAGE: **2.7V to +36V**
- ACCURACY and ZERO-DRIFT PERFORMANCE
  - **±1% Gain Error (Max over temperature)**
  - **0.5μV/°C Offset Drift (Max)**
  - **10ppm/°C Gain Drift (Max)**
- TWO GAIN OPTIONS for VOLTAGE OUTPUT
  - TP199A1: 50V/V
  - TP199A2: 100V/V
- LOW SUPPLY CURRENT: 120uA (TYP)
- **Rail-to-Rail Output**
- PACKAGE: SC70-6
- Industrial –40°C to 125°C Operation Range
- ESD Rating: Robust 3KV – HBM, 2KV – CDM
- Higher performance Drop-In Compatible With INA213, INA214, INA199, NCS199 Products

Applications

- CURRENT SENSING (High−Side/Low−Side)
- BATTERY CHARGERS
- POWER MANAGEMENT
- CELL PHONE CHARGER
- ELECTRICAL CIGIRATE
- WIRELESS CHARGER
- TELECOM EQUIPMENT

Description

The TP199 series of zero-drift, bi-directional current sense amplifier can sense voltage drops across shunts at common-mode voltages from –0.3V to 36V, independent of the supply voltage. Two fixed gains are available: 50V/V, and 100V/V. The low offset of the zero-drift architecture enables current sensing with maximum drops across the shunt as low as **10mV** full-scale.

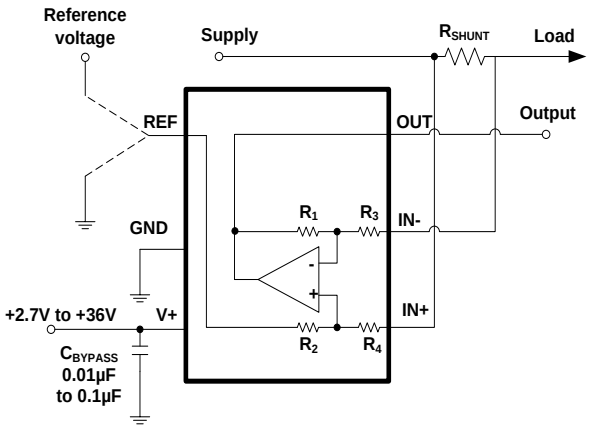
TP199 devices operate from a single +2.7V to 36V power supply, with drawing a typical of 120uA of supply current. All versions are specified from –40°C +125°C, and offered in SC70-6 packages.

GAIN OPTIONS TABLE

PRODUCT	GAIN	R3 and R4	R1 and R2
TP199A1	50	20kΩ	1MΩ
TP199A2	100	10kΩ	1MΩ

$$V_{OUT} = (I_{LOAD} \times R_{SHUNT})GAIN + V_{REF}$$

Application schematic



Pin Configuration