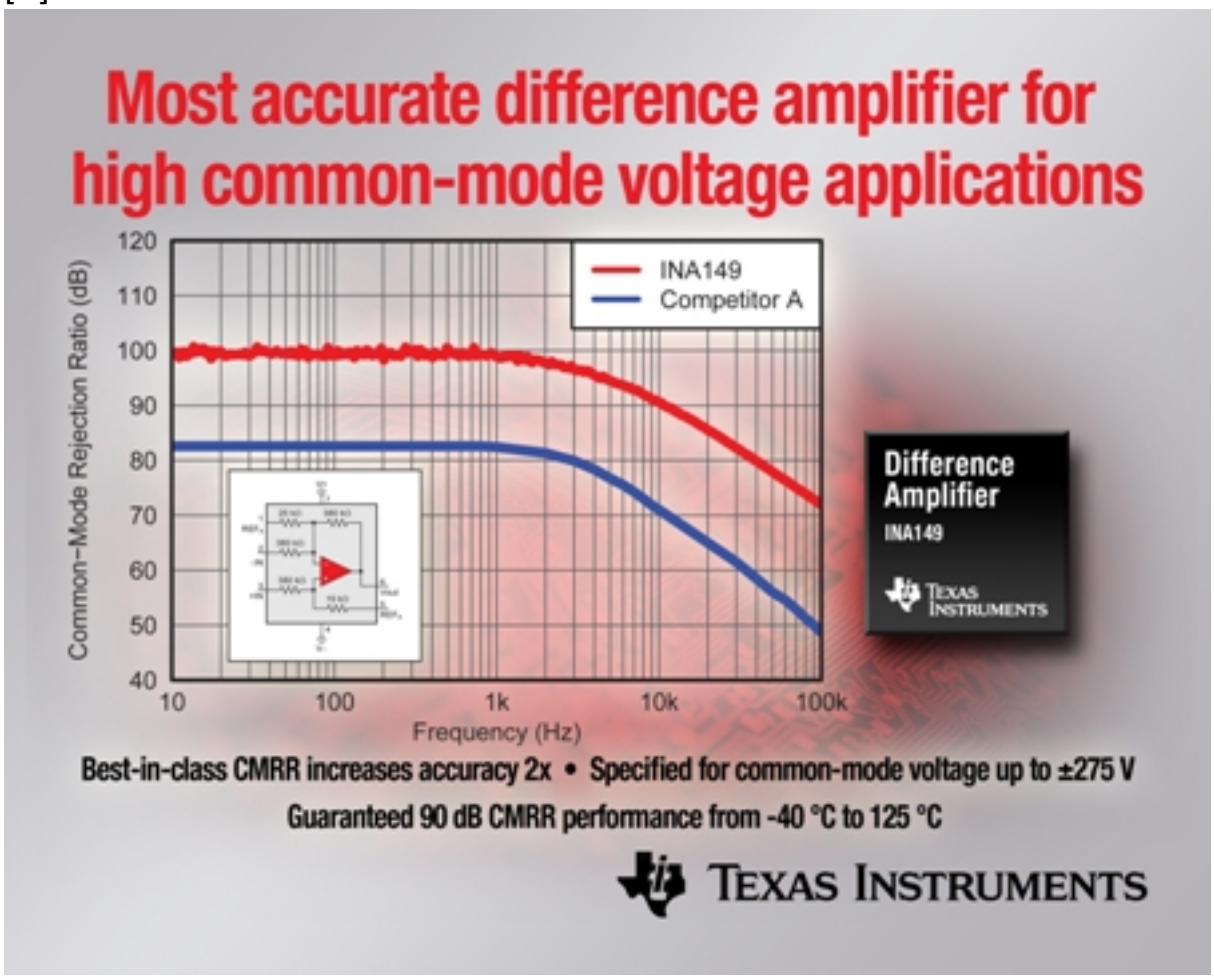
Amplifier for High Common-Mode Voltage Applications Touts Accuracy

With a best-in-class common-mode rejection ratio (CMRR) of 100 dB, the INA149 from Texas Instruments is presented as the most accurate difference amplifier for high common-mode voltage applications up to ±275 V, and is the first high-voltage difference amplifier with a specified minimum 90-dB CMRR performance in harsh, high-temperature environments up to 125 degrees C. The amplifier also lowers initial gain error by 33 percent compared to the competition, while providing twice the slew rate to increase response time and overall system performance. For more information and to order samples or evaluation modules, visit www.ti.com/ina149-pr [1].



“The INA149 offers the highest precision measurement of low differential signals in industrial designs, which means higher performing, more accurate products for our customers,” said Steve Anderson, senior vice president of TI’s High Performance Analog business. “The device also eliminates the need for multiple isolators or power supplies in high common-mode voltage applications to reduce component count, improve reliability and simplify system design.”

The INA149 can be used in a variety of high common-mode-voltage applications,

such as high-voltage current sensing; battery cell voltage monitoring in photovoltaic, telecom, electric vehicles, and alternative energy applications; power-supply current monitoring; and motor control.

Key features and benefits of the INA149 [2]:

- 100-dB CMRR with a specified minimum CMRR of more than 90 dB throughout the industrial temperature range of -40 degrees C up to 125 degrees C increases overall measurement accuracy more than two-fold compared to the closest competitor.
- Extended input common-mode-voltage from -275 V to +275 V enables accurate monitoring of signals riding in high common-mode voltages, eliminating the need for multiple supply sources and analog isolation components to interface to an analog-to-digital converter (ADC).
- Twice the slew rate and full-power bandwidth of its closest competitor for applications where abrupt changes, such as short circuit conditions, are monitored and corrective actions need to be commanded quickly. The faster response and wider large-signal bandwidth of 500 kHz increases system performance.
- Lower maximum initial gain error of 0.02 percent provides better accuracy, especially in applications with lower common-mode voltage signals.

Tools and support

TI offers a variety of tools and support to speed development with the INA149, including an evaluation module (INA149EVM [3]), which can be ordered today for $49, and a TINA-TI SPICE [4] model to simulate device performance.

Availability, packaging and pricing

The INA149 [5] is available today in a 4.9-mm x 6-mm SOIC package for a suggested retail price of $2.70 in 1,000-unit quantities.

Growing instrumentation amplifier portfolio

The INA149 is the newest addition to TI’s growing family of instrumentation amplifiers, which includes:

- New INA826 [6], a low-cost instrumentation amplifier that offers extremely low power consumption and operates over a very wide single or dual supply range. It provides a 40-percent reduction in power consumption, 50-percent lower settling time, 35-percent lower noise, 60-percent lower gain drift and more than 1.5 times better CMRR than its closest competitor.
- INA333 [7], a low-power, precision instrumentation amplifier offering excellent accuracy. The versatile 3-op amp design, small size and low power make it suitable for a wide range of portable applications.
- PGA280 [8], a high-precision instrumentation amplifier with digitally

controllable gain and signal integrity test capability. This device offers low offset voltage, near-zero offset and gain drift, excellent linearity, and nearly no 1/f noise with superior common-mode and supply rejection to support high-resolution precision measurement.

Learn more about TI's precision amplifier **[9] portfolio by visiting the links below:**

- Order INA149 samples: www.ti.com/ina149s-pr [5].
- Download the data sheet: www.ti.com/ina149ds-pr [10].
- Watch the video: www.ti.com/ina149v-pr [11].

Ask questions, help solve problems in the Precision Amplifier Forum in the TI E2E Community: www.ti.com/e2epa-pr [12].

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Links:
[1] http://www.ti.com/ina149-pr
[2] http://www.ti.com/ina149pf-pr
[3] http://www.ti.com/ina149evm-pr
[4] http://www.ti.com/ina149spice-pr
[5] http://www.ti.com/ina149s-pr
[6] http://www.ti.com/ina826-pr
[7] http://www.ti.com/ina333-pr
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[10] http://www.ti.com/ina149ds-pr
[11] http://www.ti.com/ina149v-pr
[12] http://www.ti.com/e2epa-pr