

New additions to high-accuracy current sensor family

Allegro Microsystems Europe has introduced a number of new devices to its ACS75x Series of Hall-effect current sensors.

These devices provide a smaller, lower-cost alternative to toroid-based sensors, and offer economical and precise current sensing in industrial, consumer, communications and automotive systems. Typical applications include motor control, load detection and management, power supplies, and over-current fault protection.

The new ACS755 Series, which is available in 50, 100, 130, 150 and 200 A versions, is a high-accuracy range of devices which combine single-direction sensing with an integrated current path in a lead-free (Pb-free) package. Each sensor consists of a precision linear Hall-effect integrated circuit optimised to an internal magnetic circuit to increase device sensitivity. Applied current flowing in this circuit generates a magnetic field which is sensed by the integrated Hall IC and converted into a proportional voltage.

Device accuracy is optimised through the close proximity of the magnetic signal to the Hall transducer. A precise, proportional voltage is provided by the low-offset, chopper-stabilised BiCMOS Hall IC, which is programmed for accuracy at the factory.

The combination of a precisely controlled self-aligning assembly process (patents pending) and the factory-programmed precision of the linear Hall-effect sensors results in high-level performance and product uniformity. The power lead frames are designed for extremely low power loss, and are electrically isolated from the sensor signal leads. This isolation allows the devices to be used in applications requiring electrical isolation without the addition of other isolating components. In addition, the integrated current path means that there is no need for the user to design the magnetic circuit or thread the conductor through the device in manufacturing.

Accuracy at 25°C is better than 1%, and the worst-case accuracy over the devices' whole measurement and temperature ranges is 5-6% in industrial applications and 7-10% in extended temperature automotive applications. The sensors provide 3 kV isolation and single ± 5 V supply operation while placing only 100 microhms of resistance in the current path.

The ACS755 Series is lead (Pb) free. All leads are coated with 100% matt tin, and there is no lead inside the package. The heavy gauge leadframe is made of oxygen-free copper. The PC-mountable package measures only 14 × 22 × 7 mm overall.
