



ACS758 - Hall Effect-Based Linear Current Sensor IC

General Description:

The Allegro® ACS758 family of current sensor ICs provides economical and precise solutions for AC or DC current sensing. Typical applications include motor control, load detection and management, power supply and DC-to-DC converter control, inverter control, and overcurrent fault detection.

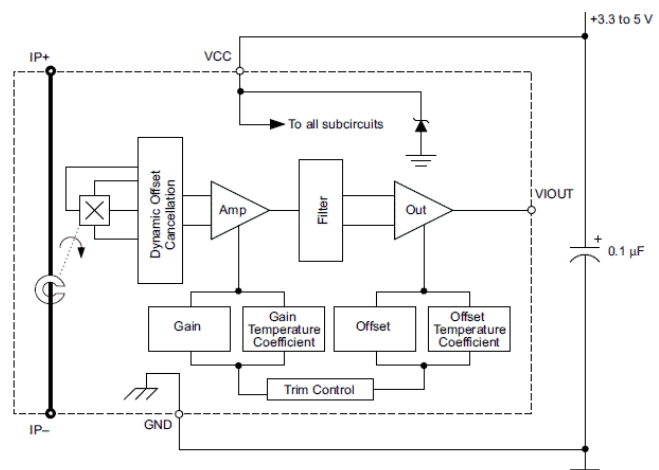
The device consists of a precision, low-offset linear Hall circuit with a copper conduction path located near the die. Applied current flowing through this copper conduction path generates a magnetic field which the Hall IC converts into a proportional voltage. Device accuracy is optimized through the close proximity of the magnetic signal to the Hall transducer. A precise, proportional output voltage is provided by the low-offset, chopper-stabilized BiCMOS Hall IC, which is programmed for accuracy at the factory. High level immunity to current conductor dV/dt and stray electric fields, offered by Allegro proprietary integrated shield technology, guarantees low output voltage ripple and low offset drift in high-side, high voltage applications. The output of the device has a positive slope ($>VCC / 2$) when an increasing current flows through the primary copper conduction path (from terminal 4 to terminal 5), which is the path used for current sampling. The internal resistance of this conductive path is $100 \mu\Omega$ typical, providing low power loss.



The thickness of the copper conductor allows survival of the device at high overcurrent conditions. The terminals of the conductive path are electrically isolated from the signal leads (pins 1 through 3). This allows the ACS758 family of sensor ICs to be used in applications requiring electrical isolation without the use of opto-isolators or other costly isolation techniques. The device is fully calibrated prior to shipment from the factory. The ACS758 family is lead (Pb) free. All leads are plated with 100% matte tin, and there is no Pb inside the package. The heavy gauge leadframe is made of oxygen-free copper.

Key Features:

- Industry-leading noise performance through proprietary amplifier and filter design techniques
- Integrated shield greatly reduces capacitive coupling from current conductor to die due to high dV/dt



signals, and prevents offset drift in high-side, high voltage applications

- Total output error improvement through gain and offset trim over temperature
- Small package size, with easy mounting capability
- Monolithic Hall IC for high reliability
- Ultra-low power loss: 100 $\mu\Omega$ internal conductor resistance
- Galvanic isolation allows use in economical, high-side current sensing in high voltage systems
- 3.0 to 5.5 V, single supply operation
- 120 kHz typical bandwidth
- 3 μs output rise time in response to step input current
- Output voltage proportional to AC or DC currents
- Factory-trimmed for accuracy
- Extremely stable output offset voltage
- Nearly zero magnetic hysteresis

Applications:

- Motor control,
- Load detection and management,
- DC-to-DC converter control,
- Inverter control,
- Power supplies, and
- Overcurrent fault protection

Related Products Information:

Mfr Part #	Farnell #	Newark #	Description
ACS758ECB-200B-PFF-T	1791391	04R7127	Hall Effect-Based Linear Current Sensor IC, 3-lead CB
ACS758ECB-200B-PSS-T	1718994	04R7128	Hall Effect-Based Linear Current Sensor IC, 3-lead CB
ACS758KCB-150B-PFF-T	1718995	04R7129	Hall Effect-Based Linear Current Sensor IC, 3-lead CB
ACS758KCB-150B-PSS-T	1718996	04R7130	Hall Effect-Based Linear Current Sensor IC, 3-lead CB
ACS758LCB-050B-PFF-T	1791392	04R7131	Hall Effect-Based Linear Current Sensor IC, 3-lead CB
ACS758LCB-100B-PFF-T	1791393	04R7132	Hall Effect-Based Linear Current Sensor IC, 3-lead CB