

FEATURES AND BENEFITS

- Vertical Hall technology for sensing parallel to package surface, ideal for U-core applications
- Contactless, noninvasive current sensing
- Eliminates the need for C-cores for easy assembly
- Suited for applications where current flows through a busbar or printed circuit board (PCB)
- Factory-programmed temperature compensation (TC) provides low thermal drift
 - Sensitivity $\pm 0.7\%$ (typical)
 - Offset ± 5 mV (typical)
- Fast response time of 1.6 μ s (typical)
- High operating bandwidth up to 250 kHz
- Low-bandwidth mode (50 kHz) for reduced output noise
- Wide sensitivity range factory-programmable from 1 mV/G to 8.8 mV/G (10 mV/mT to 88 mV/mT)
- Wide measurement range up to 2000 G (200 mT)
- Analog ratiometric output
- Wide ambient operating temperature: -40°C to 150°C
- Monolithic Hall integrated circuit (IC) for high reliability
- Surface-mount, small-footprint, low-profile, 8-pin small-outline integrated circuit (SOIC8) package
- AEC-Q100 Grade 0, automotive qualified

PACKAGE: 8-Pin SOIC (Suffix OL)



OL Package

DESCRIPTION

The ACS37630 is a contactless current sensor designed for applications where current flows through a busbar or PCB. When used with a U-core concentrator (Figure 1), high immunity to stray fields can be achieved, as well as simplified mechanical assembly relative to a traditional C-core current sensor. For high-frequency applications, laminated U-cores should be used.

The sensor uses the Allegro high-precision vertical Hall technology (VHT) to detect magnetic fields parallel to the package surface (Figure 2), while maintaining a monolithic die for high robustness in harsh automotive environments.

The ACS37630 is factory-trimmed over temperature. Sensitivity, offset, bandwidth (250 kHz or 50 kHz), output-voltage clamping, and reaction of the sensor to overvoltage and undervoltage events are configurable. If end-of-line offset and/or sensitivity trimming is required, contact an Allegro representative for guidance.

TYPICAL APPLICATIONS

- High-voltage traction motor inverter for extended electric vehicles (xEVs)
- 48 V/12 V auxiliary inverter
- Power-distribution unit (PDU)
- Battery-disconnect unit (BDU)
- Heterogeneous redundant battery monitoring
- Smart-fuse applications
- Green energy
- Power supply

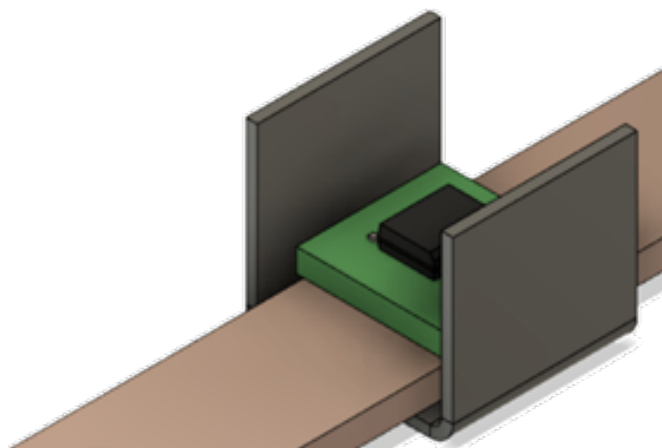


Figure 1: U-Core Application Schematic

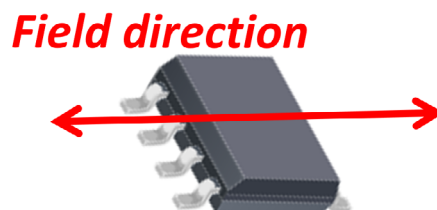
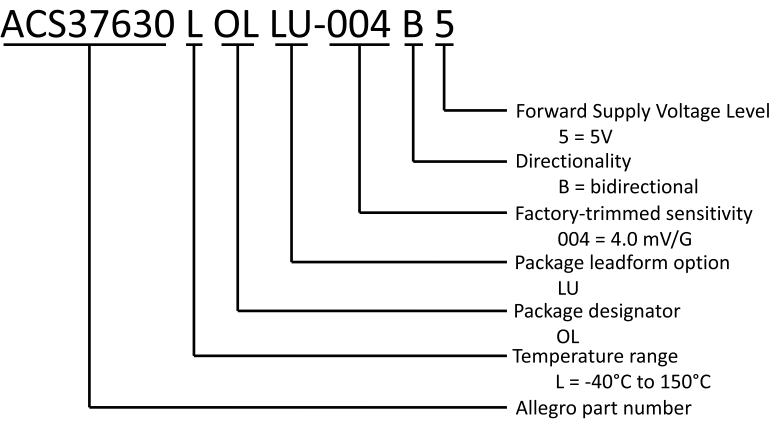


Figure 2: Sensed Field Direction

SELECTION GUIDE

| Part Number | Factory-Programmed Sensitivity (mV/G) | Magnetic Field Range (G) |
|---------------------|---------------------------------------|--------------------------|
| ACS37630LOLLU-004B5 | 4 | ±500 |



PACKAGE OUTLINE DRAWING

For Reference Only; not for tooling use (reference Allegro DWG-0000385, Rev. 2 or JEDEC MS-012AA)

Dimensions in millimeters

Dimensions exclusive of mold flash, gate burrs, and dambar protrusions

Exact case and lead configuration at supplier discretion within limits shown

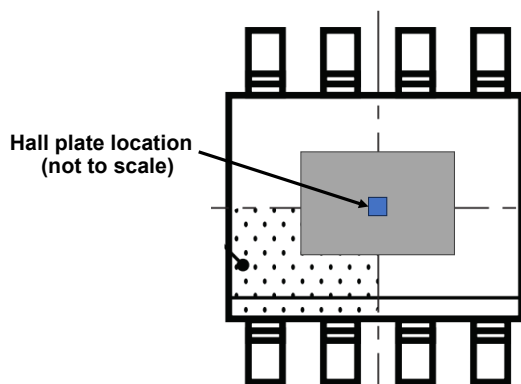
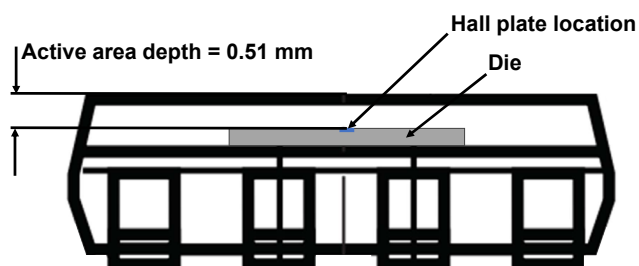
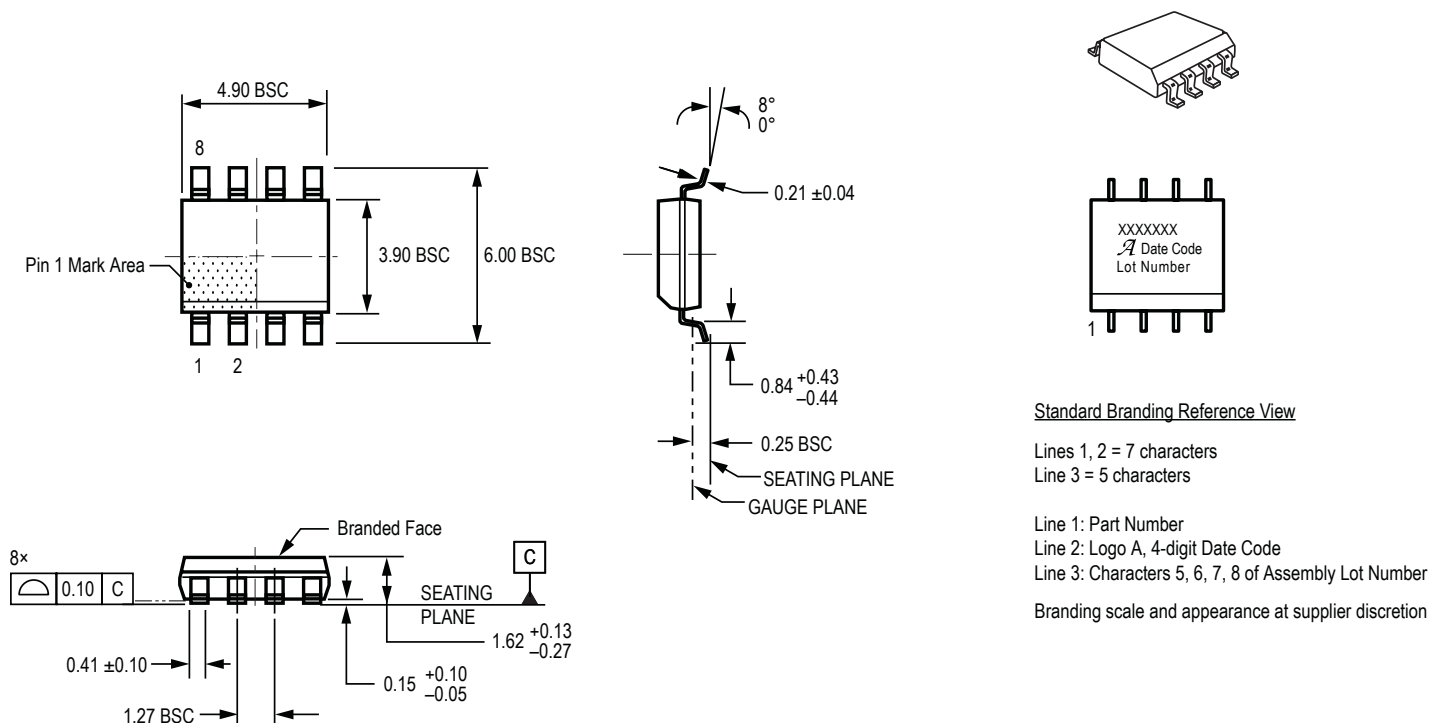


Figure 4: Location and Depth of Hall Elements in ACS37630

Revision History

| Number | Date | Description |
|--------|----------------|---|
| – | March 13, 2025 | Initial release |
| 1 | April 17, 2025 | Changed long-form datasheet to limited release and created short-form datasheet |

Copyright 2025, Allegro MicroSystems.

Allegro MicroSystems reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the performance, reliability, or manufacturability of its products. Before placing an order, the user is cautioned to verify that the information being relied upon is current.

Allegro's products are not to be used in any devices or systems, including but not limited to life support devices or systems, in which a failure of Allegro's product can reasonably be expected to cause bodily harm.

The information included herein is believed to be accurate and reliable. However, Allegro MicroSystems assumes no responsibility for its use; nor for any infringement of patents or other rights of third parties which may result from its use.

Copies of this document are considered uncontrolled documents.

For the latest version of this document, visit:

www.allegromicro.com