



STAND-ALONE CORELESS, DIFFERENTIAL CURRENT SENSING

Accurately Measure 100A to >4000A without a Core or a U-Shaped Magnetic Shield

Contactless, lossless current sensing for busbar and PCB applications.

Allegro's Coreless Current Sensing Technology provides a highly accurate method of measuring hundreds or thousands of amps flowing through a busbar or a PCB without needing a concentrator core or U-Shaped Magnetic Shield. Leveraging 30 years of experience making Hall-effect sensors, Allegro's family of coreless current sensor ICs use two Hall elements to measure the difference in the magnetic field generated by the current flowing through a busbar or a PCB. The differential measurement provides excellent immunity to stray magnetic fields without the need for a magnetic shield that often slows down the response time and adds non-linearity error.

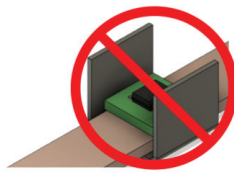
While not mandatory, a notch to the busbar or PCB copper trace increases the current density which provides further improvements to the system's signal-to-noise ratio (SNR). This enables a level of accuracy and resolution comparable with core-based systems with virtually no compromise to thermal performance. Offering a reduction in system complexity, these ICs allow for smaller system size, cost, and weight.

The industry's first truly coreless current sensing solution, the ACS37612 provides a highly accurate analog output signal with high resolution at high bandwidth. The ACS37610, Allegro's latest member of the coreless family, offers a 2x reduction in noise, a 2.5x improvement in SNR and higher accuracy with a 250 kHz bandwidth.

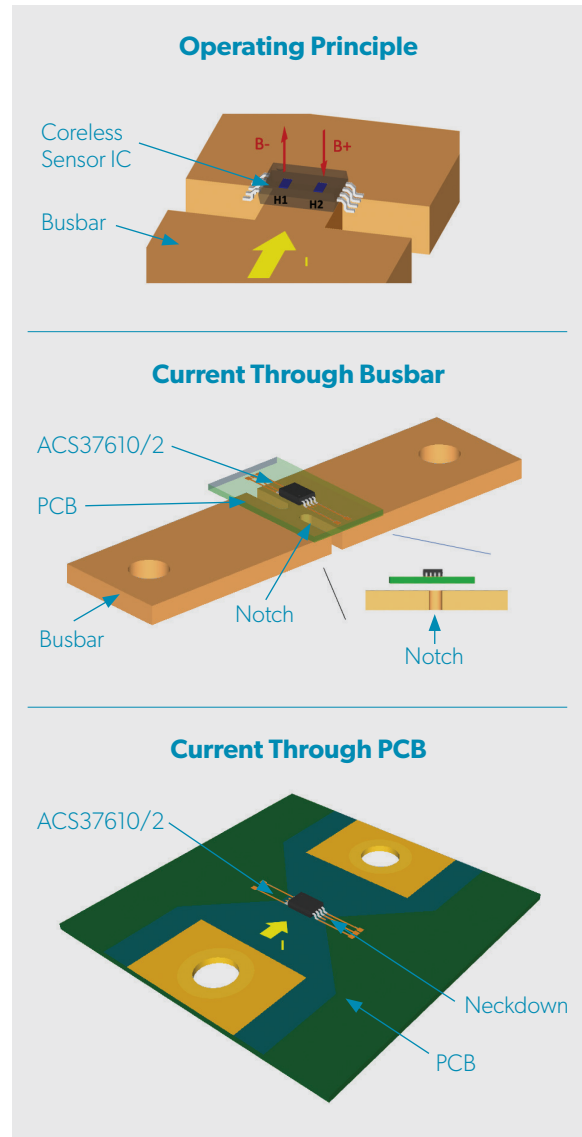
A dedicated overcurrent and overtemperature Fault pin reduces a system's bill-of-materials (BOM) and increases safety. The ACS37610's gain, offset, overcurrent, and overtemperature can be programmed after assembly, providing customers with industry-leading current sensing accuracy. Presented in an ultra-compact TSSOP8 package, these ICs deliver precise current measurements for 100 A to >4000 A with a typical accuracy of 1%. Multiple busbar configurations are available for a simplified mechanical assembly and ease of use.



No more cores



No more shields



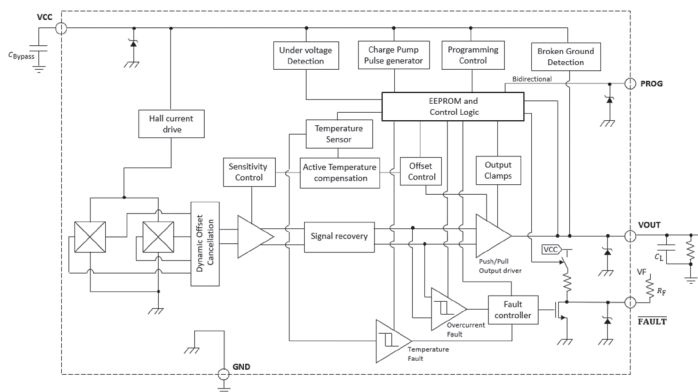
Benefits of Shield-Free Coreless Current Sensors

- Automotive-grade IC ideal for EV applications such as traction motor in-phase current sensing and battery monitoring
- Differential Hall-based sensing provides immunity to stray magnetic fields while eliminating large and expensive concentrating cores and shields
- Quick Overcurrent and Overtemperature Fault Output ideal for safety critical applications
- Wide current sensing range (100 A to >4000 A) with single busbar or PCB design
- High customer programmability and lower noise provide high accuracy (<1% typ)
- High isolation and reliability is achieved with up to 250 kHz sensor bandwidth

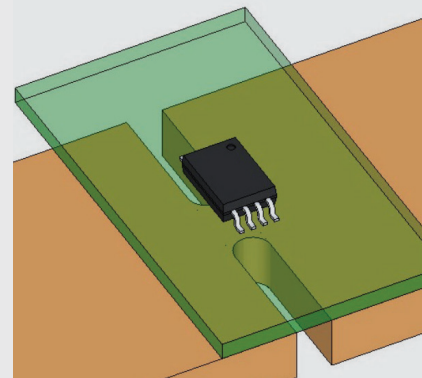
Typical Applications

- High Voltage Traction Motor Inverter
- 48 V / 12 V Auxiliary Inverter (Starter Generator)
- Heterogeneous Redundant Battery Monitoring
- Overcurrent Detection
- DC-DC Converter
- Smart Fuse
- Power Distribution Unit (PDU)
- Power Supply

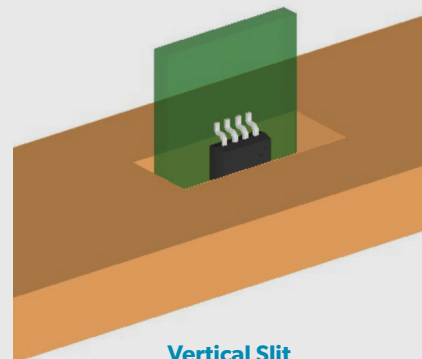
ACS37610 Block Diagram



Flexible Assembly Options



Notch



Vertical Slit

ACS37610 Selection Guide

Part Number	Nominal Supply Voltage (V)	Differential Magnetic Input Range (G)	Sensitivity Typical (mV/G)	Sensitivity Trim Range (mV/G)	TA (°C)	Packing
ACS37610LLUA-005B5	5	±400	5	2.5 to 7.5	-40 to +150	4000 pieces per 13-inch reel
ACS37610LLUA-010B5	5	±200	10	5 to 15		
ACS37610LLUA-020B5	5	±100	20	10 to 30		
ACS37610LLUA-020U5	5	0 to 200	20	10 to 30		
ACS37610LLUA-010B3	3.3	±132	10	5 to 15		

ACS37612 Selection Guide

Part Number	Nominal Supply Voltage (V)	Differential Magnetic Input Range, (G)	Sensitivity Sens (Typ.) (mV/G)	TA (°C)	Packing
ACS37612LLUATR-005B5	5	±400	5	-40 to +150	4000 pieces per 13-inch reel
ACS37612LLUATR-010B5	5	±200	10		
ACS37612LLUATR-015B5	5	±130	15		
ACS37612LLUATR-015U5	5	0 to 265	15		
ACS37612LLUATR-010B3	3.3	±135	10		