

● **INNOVATIVE
CURRENT SENSOR ICs**



Innovative Current Sensor ICs

Allegro MicroSystems has been driving innovation in the current sensor industry for more than 17 years, with a history of first-to-market products that give our customers a competitive edge. Our advanced ICs help you achieve higher efficiency and power density in your designs.

We're leading the market in main traction motor and auxiliary inverters for electric vehicles, and OEMs trust Allegro for applications like DC-to-DC converters and on-board chargers.

We also shine at high voltage with industry-leading galvanic isolation ratings of up to 1100 Vrms—ideal for residential and industrial solar inverter applications.

Wherever current sensing is needed, an Allegro sensor IC can provide a solution.

SIP and TSSOP Packages 0 to >1000 A Sensor ICs

- Industry-leading offset and sensitivity accuracy from -40°C to +150°C
- Customer programmable for both offset and sensitivity
- Packaged in a 1 mm thick SIP or TSSOP package for an easy assembly with a ferromagnetic core
- High bandwidth (up to 240 kHz) for short circuit and overcurrent detection
- Multiple diagnostics for safety-critical applications
- User-programmable over current fault output



See figure 1 illustration on back cover.

| Type | Part Number | Typical Sensitivity (mV/G) | Quiescent Output (V) | Bandwidth (kHz) | Supply Voltage (V) | Temperature Ranges | Packages |
|-------------------------------|----------------------|----------------------------|-------------------------------|-----------------|--------------------|--------------------|----------|
| Bidirectional, Unidirectional | A1363 | 0.6 to 14 | 50% VCC (Bi) 10% VCC (Uni) | 120 | 5 | L | TSSOP |
| Bidirectional | A1365 ⁽¹⁾ | 0.6 to 14 | 50% VCC (Bi) | 120 | 5 | L | SIP |
| Bidirectional, Unidirectional | ACS70310 | 1, 2.5, 5, 10 | 50% VCC (Bi) 10% VCC (Uni) | 240 | 5 | L | SIP |

⁽¹⁾ A1365 has an integrated over-current fault output and self-test diagnostics

The current sensor IC families are innovative, monolithic, isolated Hall-effect-based devices that provide a fully-integrated solution in industry-leading, small-sized packages.

50 to 400 A Integrated Conductor Sensor ICs

- High current sensor IC packages are fully integrated current sensor solutions providing high accuracy and reliability
- Automotive-grade devices deliver highly accurate open-loop current sensing
- CB package conductor resistance is 100 $\mu\Omega$ for ultralow power loss when sensing current up to 200 A (continuous) and 400 A (in-rush)
- CB package provides 4800 VRMS galvanic isolation for use in line-side or high-voltage applications
- LR package surface mount coreless sensor can handle up to 100 A continuous current in a small 6.4 x 6.4 mm footprint
- LR package resistance is only 200 $\mu\Omega$ and provides up to 120 VDC galvanic isolation
- Allegro current sensors are much smaller than bulky current transformers and have the added advantage of sensing both AC and DC currents



See figures 2 and 5 illustrations on back cover

| Type | Part Number | Measurement Range (A) | Isolation Voltage (VRMS) | Bandwidth (kHz) | Vcc | Temperature Ranges | Packages |
|-------------------------------|-------------|--|--------------------------|-----------------|-------|--------------------|----------|
| Bidirectional, Unidirectional | ACS772 | $\pm 50, \pm 100, \pm 150, \pm 200, \pm 400, 50, 100, 150, 200, 250$ | 4800 | 200 | 5 | E,K,L | CB |
| Bidirectional, Unidirectional | ACS773 | $\pm 50, \pm 100, \pm 150, \pm 200, 250$ | 4800 | 200 | 3.3 | E,K,L | CB |
| Bidirectional, Unidirectional | ACS72981 | $\pm 50, \pm 100, \pm 150, 50, 100, 150$ | 120 | 250 | 3.3,5 | K,L | LR |

0 to 50 A Integrated Conductor Sensor ICs

- Excellent magnetic coupling in a core-less package design providing best-in-class SNR and up to 4800 VRMS of galvanic isolation
- Low-profile, small form packaging
- Low resistance internal conductor allows for sensing up to 50 A continuous current
- Factory programmed to maximize device accuracy over temperature, providing typical output error <1%
- New family of 1 Mhz bandwidth automotive-grade current sensors provides an ideal replacement to current transformers
- New Voltage, Current and Power sensor IC (ACS71020), enables isolated power monitoring with a reduced BOM
- New family of GMR-based sensors (ACS70331x), with 20 times lower noise than Hall, provides an ideal solution for accurate sensing of <5 A
- User-programmable over current fault output

See figures 3,4 and 6 illustrations on back cover

| Type | Part Number | Measurement Range (A) | Isolation Voltage (VRMS) | Bandwidth (kHz) | Vcc | Temperature Ranges | Packages |
|-------------------------------|-------------------------|--|--------------------------|-----------------|-------|--------------------|----------|
| Bidirectional | ACS720* | $\pm 15, \pm 35, > \pm 50$ | 3600 | 120 | 5 | K | SOIC |
| Bidirectional, Unidirectional | ACS724LC | $< \pm 10, \pm 20, \pm 30, > \pm 50, 10, 20, 30, 40$ | 2400 | 120 | 5 | L | SOIC |
| Bidirectional, Unidirectional | ACS724MA | $\pm 20, \pm 30, > \pm 50, 30, 50$ | 4800 | 120 | 5 | K, L | SOIC |
| Bidirectional, Unidirectional | ACS725LC | $< \pm 10, \pm 20, \pm 30, \pm 40, > \pm 50, 10, 20, 30$ | 2400 | 120 | 3.3 | L | SOIC |
| Bidirectional, Unidirectional | ACS725MA | $\pm 20, \pm 30, > \pm 50, 30$ | 4800 | 120 | 3.3 | K, L | SOIC |
| Bidirectional, Unidirectional | ACS730 | $\pm 20, \pm 40, > \pm 50, 40, > 50$ | 2400 | 1000 | 5 | K | SOIC |
| Bidirectional, Unidirectional | ACS732LA | $\pm 20, \pm 40, > \pm 50, > 50$ | 3600 | 1000 | 5 | K | SOIC |
| Bidirectional | ACS732MA | $> \pm 50$ | 4800 | 1000 | 5 | K | SOIC |
| Bidirectional, Unidirectional | ACS733LA | $\pm 20, \pm 40, > 50, 40$ | 3600 | 1000 | 3.3 | K | SOIC |
| Bidirectional | ACS733MA | $> \pm 50$ | 4800 | 1000 | 3.3 | K | SOIC |
| Bidirectional, Unidirectional | ACS70331* | $\pm 2.5, \pm 5, 2.5, 5$ | 120 | 1000 | 3.3 | E | QFN |
| Bidirectional, Unidirectional | ACS70331OL* | $\pm 2.5, \pm 5, 2.5, 5$ | 120 | 1000 | 3.3 | E | SOIC |
| Bidirectional | ACS71020 ⁽¹⁾ | $\pm 15, \pm 30, > \pm 50$ | 4800 | 8 | 3.3,5 | K | SOIC |
| Bidirectional, Unidirectional | ACS71240EX | $< \pm 10, \pm 30, 50$ | 120 | 120 | 3.3,5 | K | QFN |
| Bidirectional, Unidirectional | ACS71240LC | $< \pm 10, \pm 30, \pm 45, 50$ | 2400 | 120 | 3.3,5 | L | SOIC |

* Commercial

⁽¹⁾ ACS71020 is a current, voltage, and power sensor IC

Small Form Factor, High Bandwidth Hall-Effect Sensor IC Solutions

Key Features

- Power dissipation much less than shunt solution
- Able to monitor both AC and DC currents
- 5 V or 3.3 V, single supply operation
- Bandwidth up to 1 MHz
- Monolithic Hall and GMR
- Differential sensing for rejection of stray magnetic fields
- Voltage isolation rating certified by UL and TUV
- Smaller form factor than shunt and current transformer solutions
- RoHS compliant

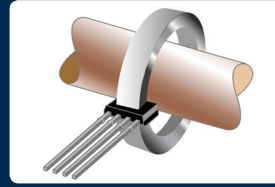


Figure 1: SIP Package

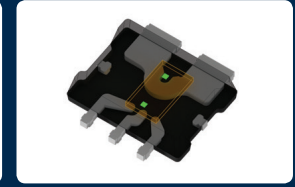


Figure 2: LR Package

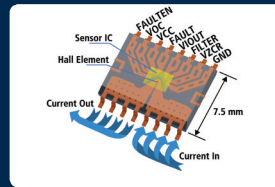


Figure 3: SOIC-16 Package

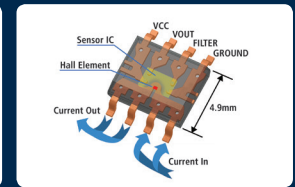


Figure 4: SOIC-8 Package

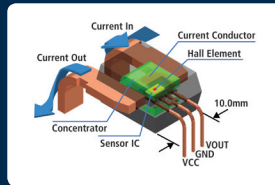


Figure 5: CB Package



Figure 6: QFN Package

SEE HOW ALLEGRO IS MOVING THE WORLD
TOWARD A SAFE AND SUSTAINABLE FUTURE