ACS711: Hall Effect Linear Current Sensor with Overcurrent Fault Output for <100 V Isolation Applications

The Allegro ACS711 provides economical and precise solutions for AC or DC current sensing in <100 V audio, communications systems, and white goods. The device package allows for easy implementation by the customer. Typical applications include circuit protection, current monitoring, and motor and inverter control.

The device consists of a linear Hall sensor circuit with a copper conduction path located near the surface of the die. Applied current flowing through this copper conduction path generates a magnetic field which is sensed by the integrated Hall IC and converted into a proportional voltage. Device accuracy is optimized through the close proximity of the magnetic signal to the Hall transducer.

The output of the device has a positive slope proportional to the current flow from IP+ to IP– (pins 1 and 2, to pins 3 and 4). The internal resistance of this conductive path is 0.6 mΩ for the EX package, and 1.2 mΩ for the LC package, providing a non-intrusive measurement interface that saves power in applications that require energy efficiency.

The ACS711 is optimized for low-side current sensing applications, although the terminals of the conductive path are electrically isolated from the sensor IC leads, providing sufficient internal creepage and clearance dimensions for a low AC or DC working voltage applications. The thickness of the copper conductor allows survival of the device at up to 5× overcurrent conditions.

The ACS711 is provided in small, surface mount packages: SOIC8 and QFN12. The leadframe is plated with 100% matte tin, which is compatible with standard lead (Pb) free printed circuit board assembly processes. Internally, the device is Pb-free, except for flip-chip high-temperature Pb-based solder balls, currently exempt from RoHS. The device is fully calibrated prior to shipment from the factory. The new package offering is an automotive grade wettable flank QFN that allows for solder inspection and provides for easy implementation by the customer. Typical applications include circuit protection, current monitoring, and motor and inverter control.

DATASHEETS

ACS711 Datasheet

ACS711 Auto Datasheet

SAMPLE & BUY

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If this is not your local representative, find your local sales rep here.

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- No external sense resistor required; single package solution
- Reduced Power Loss:
  - 0.6 mΩ internal conductor resistance on EX package
  - 1.2 mΩ internal conductor resistance on LC package
- Economical low- and high-side current sensing
- Output voltage proportional to AC or DC currents
- ±12.5 A and ±25 A full scale sensing ranges on LC package
- ±15.5 A and ±31 A full scale sensing ranges on EX package
- Overcurrent $\overline{\text{FAULT}}$ trips and latches at 100% of full-scale current
- Low-noise analog signal path
- 100 kHz bandwidth
- Small footprint, low-profile SOIC8 and QFN packages
- 3.0 to 5.5 V, single supply operation
- Integrated electrostatic shield for output stability
- Factory-trimmed for accuracy
- Extremely stable output offset voltage
- Zero magnetic hysteresis
- Ratiometric output from supply voltage

Product Image

Click the image to view larger

1 2 3 4

Part Number Specifications and Availability

Part Number	Package Type	Temperature	RoHS Compliant	Part Composition / RoHS Data	Comments	Samples	Check Distributor Stock
ACS711EEXLT-8AB-T	n/a	-20°C to 85°C	Yes	View Data	Not for new design	Contact your local sales rep	Check Stock
ACS711KEXLT-30AU-T	n/a	-20°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KLCLU-25AU-T	n/a	-20°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock

Part Number Specifications and Availability

Part Number	Package Type	Temperature	RoHS Compliant	Part Composition / RoHS Data	Comments	Samples	Check Distributor Stock
ACS711KLCTR-25AU-T	n/a	-20°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KLCTR-30AB-T	n/a	-20°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KLCTR-48AU-T	n/a	-20°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ASEK711KEX-15AB-J	n/a	-20°C to 85°C	--	View Data		Contact your local sales rep	Check Stock
ASEK711KEX-15AB-T	DEMO BOARD	-20°C to 85°C	No	--		Contact your local sales rep	Check Stock
ASEK711KEX-31AB-J	n/a	-20°C to 85°C	--	View Data		Contact your local sales rep	Check Stock
ASEK711KEX-31AB-T	DEMO BOARD	-20°C to 85°C	No	--		Contact your local sales rep	Check Stock
ACS711EEXLT-15AB-T	12-lead QFN	-40°C to 85°C	Yes	View Data	Not for new design	Contact your local sales rep	Check Stock
ACS711EEXLT-31AB-T	12-lead QFN	-40°C to 85°C	Yes	View Data	Not for new design	Contact your local sales rep	Check Stock
ACS711ELCTR-12AB-T	8-lead SOIC	-40°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711ELCTR-25AB-T	8-lead SOIC	-40°C to 85°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KEXLT-15AB-T	12-lead QFN	-40°C to 125°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KEXLT-31AB-T	12-lead QFN	-40°C to 125°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KLCTR-12AB-T	8-lead SOIC	-40°C to 125°C	Yes	View Data		Contact your local sales rep	Check Stock
ACS711KLCTR-25AB-T	8-lead SOIC	-40°C to 125°C	Yes	View Data		Contact your local sales rep	Check Stock
ASEK711KLC-12AB-T	DEMO BOARD	-40°C to 125°C	No	--		Contact your local sales rep	Check Stock
ASEK711KLC-25AB-T	DEMO BOARD	-40°C to 125°C	No	--		Contact your local sales rep	Check Stock

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.