**Overview**

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| [[http://a.pololu-files.com/picture/0J3579.250.jpg?89f4b627687b76a4049218fa68ea2ad0http://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3579)](http://www.pololu.com/picture/view/0J3579) |

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| [[http://a.pololu-files.com/picture/0J3662.225.jpg?823b2be7fdff8cdb33ceb1f0086d36e0http://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3662)](http://www.pololu.com/picture/view/0J3662) |

This current sensor is a carrier board or breakout board for Allegro’s ACS711KLCTR-25AB-T Hall effect-based linear current sensor with overcurrent fault output; we therefore recommend careful reading of the [ACS711 datasheet](http://www.pololu.com/file/download/ACS711-Datasheet.pdf?file_id=0J497) (489k pdf) before using this product. The sensor has an operating voltage of 3 – 5.5 V and an output sensitivity of 55 mV/A when Vcc is 3.3 V (or 83 mV/A when Vcc is 5 V). The following list details some of the sensor’s key features:

* Designed for bidirectional input current from -25 to 25 A (though the robust sensor IC can survive up to five times the overcurrent condition).
* Conductive path internal resistance is typically 1.2 mΩ, and the PCB is made with 2-oz copper, so very little power is lost in the board.
* Use of a Hall effect sensor means the IC is able to electrically isolate the current path from the sensor’s electronics (for applications up to 100 V), which allows the sensor to be inserted anywhere along the current path and to be used in applications that require electrical isolation.
* 100 kHz bandwith.
* Good accuracy and reliability: factory calibration results in a typical total output error of ±5% at room temperature, the output offset voltage is extremely stable, and the sensor has zero magnetic hysteresis.
* Overcurrent FAULT output latches low when current exceeds ± 25 A.
* Operating temperature range of -40°C to 125°C.

The pads are labeled on the bottom silkscreen, as shown in the picture to the right. The silkscreen also shows the direction that is interpreted as positive current flow via the **+i** arrow.

This 25 A current sensor is marked with a **orange X**. We also sell a [12.5 A version](http://www.pololu.com/catalog/product/2197) that uses the same carrier PCB; you can distinguish the versions by reading the text on the IC or by looking at the color of the X on the bottom silkscreen.

**Using the sensor**

**Electrical connections**

The sensor requires a supply voltage of 3 – 5.5 V to be connected across the Vcc and GND pads, which are labeled on the bottom silkscreen. The sensor outputs an analog voltage that is linearly proportional to the input current. The quiescent output voltage is Vcc/2 and changes by 55 mV per amp of input current (when Vcc = 3.3 V), with positive current increasing the output voltage and negative current decreasing the output voltage. For an arbitrary input current *i* (in amps), the sensor’s output voltage can be more generally represented as:

*VOUT = (0.055 V/A \* i + 1.65 V) \* Vcc / 3.3 V*

The FAULT pin is normally high and latches low when the current exceeds ±25 A. Once the FAULT pin is latched low, the only way to reset it is by toggling power on the Vcc pin.

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| |  | | --- | | [[http://b.pololu-files.com/picture/0J3588.350.jpg?36cab716ee0f732790aa77748c85069dhttp://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3588)](http://www.pololu.com/picture/view/0J3588) | | **ASC711 current sensor carrier connection and mounting dimension diagram.** | | |  | | --- | | [[http://a.pololu-files.com/picture/0J3586.225.jpg?cfa522796b68ef1e0f3dd81ab322619ehttp://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3586)](http://www.pololu.com/picture/view/0J3586) | | **ASC711 current sensor carrier with solderless ring terminal connectors (not included).** | |

The input current can be connected to the board in a variety of ways. Holes with 0.1″, 3.5 mm, and 5 mm spacing are available as shown in the diagram above for connecting [male header pins](http://www.pololu.com/catalog/product/965) or [terminal blocks](http://www.pololu.com/catalog/category/117). For high-current applications, you can solder wires directly to the through-holes that best match your wires, or you can use solderless ring terminal connectors, as shown in the picture above. The large through-holes are big enough for #6 screws.

**Warning:** This product is intended for use below 30 V. Working with higher voltages can be extremely dangerous and should only be attempted by qualified individuals with appropriate equipment and protective gear.

**Mounting information**

The board has two mounting holes on the logic side of the board. These mounting holes are 0.5" apart and are designed for [#2 screws](http://www.pololu.com/catalog/product/1955).

**Included components**

This board ships assembled with all surface mount components, and a 5×1 strip of [0.1″ header pins](http://www.pololu.com/catalog/product/965) is included but not soldered in, as shown in the picture below.

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| [[http://b.pololu-files.com/picture/0J3583.200.jpg?fc05ae28d484a01bc2dc17e78eb6abfdhttp://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3583)](http://www.pololu.com/picture/view/0J3583) |
| **ACS711 current sensor carrier with included 5 × 1 0.1″ header pins.** |

**Schematic diagram**

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| [[http://b.pololu-files.com/picture/0J3673.450.jpg?ebb968c492ba65b8525ad8cfb7dd0171http://b.pololu-files.com/assets/zoom-d0cfc0fffa825c4654893ef42b77cee3.png](http://www.pololu.com/picture/view/0J3673)](http://www.pololu.com/picture/view/0J3673) |
| **ACS711 current sensor carrier schematic diagram.** |