

## 400 kHz Current Sensor IC with High Accuracy in Low-Resistance High-Isolation Package

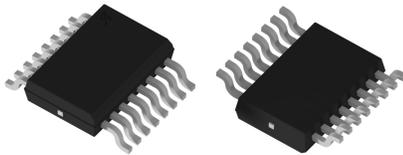
### FEATURES AND BENEFITS

- Low internal primary conductor resistance ( $265 \mu\Omega$ ) for better power efficiency and low dissipation
- High operating bandwidth for fast control loops or where high-speed currents are monitored
  - 400 kHz bandwidth
  - 1.1  $\mu\text{s}$  typical response time
- High accuracy
  - As low as 1% maximum sensitivity error over temperature
  - 8 mV maximum offset voltage over temperature
  - Non-ratiometric operation with  $V_{\text{REF}}$  output
  - Differential sensing robust against external magnetic fields
  - No magnetic hysteresis
- UL-certified to 62368-1, highly isolated compact SOIC16W surface mount package
  - 5  $\text{kV}_{\text{RMS}}$  rated isolation test voltage
  - 1144  $\text{V}_{\text{RMS}}$  / 1618  $\text{V}_{\text{DC}}$  basic isolation voltages
  - 572  $\text{V}_{\text{RMS}}$  / 809  $\text{V}_{\text{DC}}$  reinforced isolation voltages
- Wide operating temperature,  $-40^\circ\text{C}$  to  $125^\circ\text{C}$
- Maximum 70  $\text{A}_{\text{RMS}}$  continuous operating current at  $85^\circ\text{C}$

### PACKAGE:

16-pin SOICW  
(suffix MC)

*Not to scale*



### DESCRIPTION

The ACS37003 is a fully integrated current sensor IC that senses current flowing through the custom SOICW16 package. The current conductor has a very low ( $265 \mu\Omega$ ) resistance, ideal for low power dissipation. The sensor is factory-trimmed to provide high accuracy over the entire operating range without the need for customer programming or calibration.

The internal construction provides high isolation by magnetically coupling the field generated by current flow in the conductor to the fully monolithic Hall sensor IC. The current is sensed differentially by two Hall plates that subtract out interfering common-mode magnetic fields. The IC has no physical connection to the integrated current conductor and provides 5  $\text{kV}_{\text{RMS}}$  isolation between the primary and secondary signal leads of the package. This high rating provides an industry-leading basic working voltage of 1140  $\text{V}_{\text{RMS}}$  and a reinforced working voltage of 572  $\text{V}_{\text{RMS}}$ .

The ACS37003KMC is provided in a custom SOICW16 surface mount package. The pin pitch is the same as a standard SOIC16, but the lead-frame is 2.5 times as thick to reduce the resistance. The package body is sized to achieve greater than 8.2 mm of creepage and clearance. 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, making the device RoHS compliant.

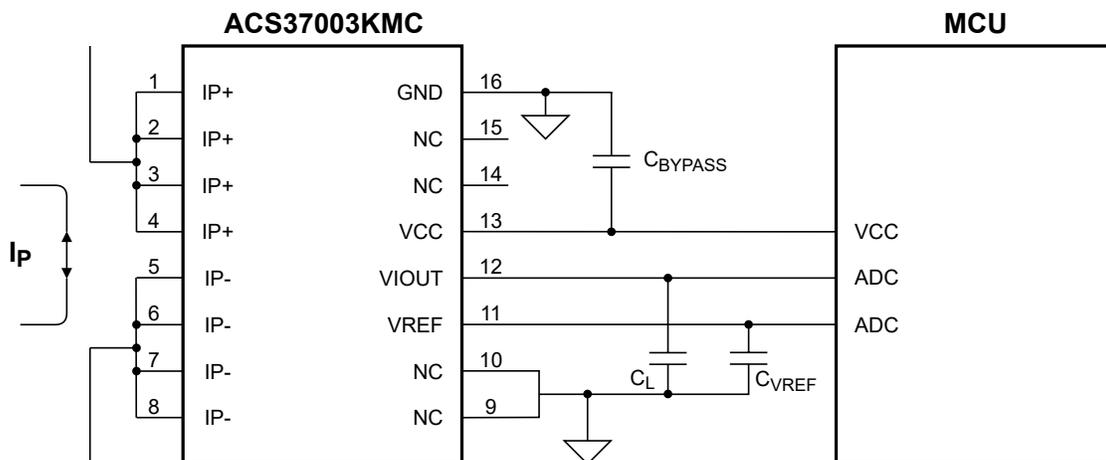


Figure 1: Typical Application Circuit