

HIGH ACCURACY 400 kHz CURRENT SENSING

ACS37002/3: Reinforced Isolation and 5 kVrms Withstand Voltage

Really cool. Really efficient. Current sensors for a brighter future.

Enable more efficient power conversion in your higher frequency switching applications with Allegro MicroSystems' family of high-accuracy 400 kHz Hall-effect current sensors. The ACS37002 and ACS37003 eliminate the need to compromise between speed, accuracy, and power density. Ideal for demanding green energy and electric vehicle applications, the ACS37002/3 offers integrated features that simplify design and reduce system size — available in three easy-to-use surface-mount packages with up to a 5 kV isolation rating.

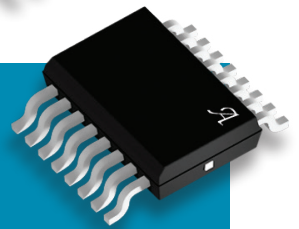
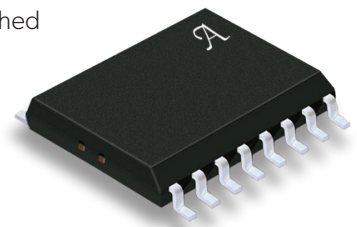
Factory-trimmed to provide high accuracy over the entire operating range, the ACS37002/3 eliminates the need for customer programming and allows designers to achieve a faster time-to-market. These current sensors have an analog output and a reference output for signal integrity in noisy environments.

The ACS37002 has several valuable integrated features, including four user-selectable gain options with two logic inputs without the need for extra components. This gives designers the flexibility to use a single IC in multiple applications, minimizing external components, and overall bill-of-material counts on platforms that need different gains.

The ACS37002 also offers a fast overcurrent fault alert with a user-configurable threshold, providing enhanced system protection.

The sensed current enters the package through a conductor with resistance as low as 0.27 milliohms for the MC package, in close proximity to the IC for high coupling of the magnetic field. The current is sensed differentially by two Hall plates that subtract out interfering external common-mode magnetic fields. Because of magnetic coupling, the current carrier does not contact the IC sensor, providing high-voltage galvanic isolation and achieving a rating of up to 5 kVrms to withstand voltage and 579 Vrms reinforced isolation.

Offered in compact, low power-loss surface mount packages, the 400 kHz family of sensors is cool under heavy workloads – keeping temperatures down which can extend a power system's life. Balancing speed, accuracy, and stability over temperature, the ACS37002/3 makes switched mode power designs greener and more efficient — leading to a more sustainable future.



Features and Benefits

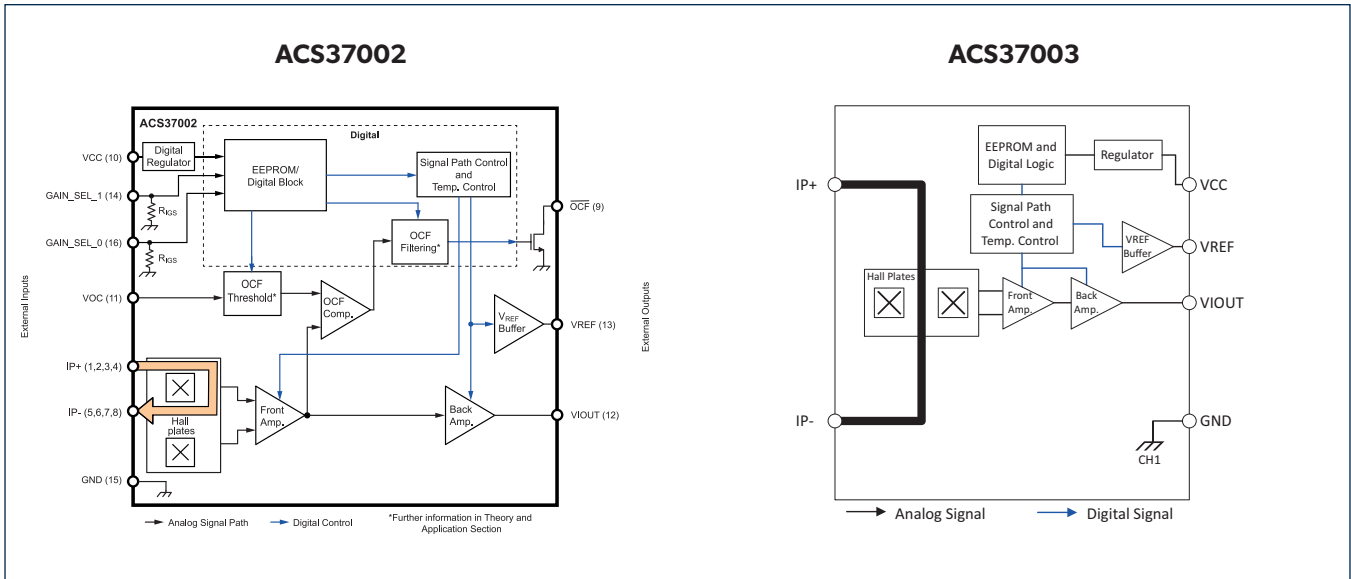
- HIGH ACCURACY
- 1% Sensitivity error from 25°C to 125°C (K version)
- 1.5% Sensitivity error from -40°C to 150°C (L version)
- Low Offset <10 mV over temperature
- HIGH SPEED
- 400 kHz Bandwidth
- 1.5 μ s max response time
- 3.3 V or 5 V operation

ACS37002 - feature rich with gain select and fast fault detection

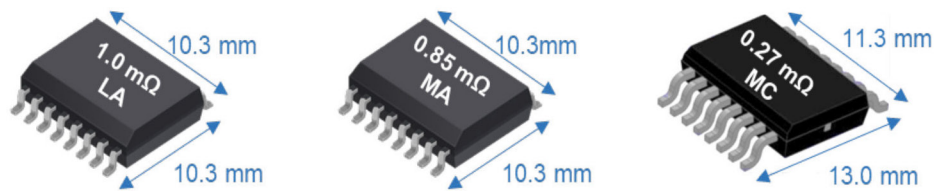
ACS37003 - simplified for cost sensitive applications

Applications

- Solar
- Industrial and automotive motor inverters
- Charging stations
- DC/DC converters
- Server power supplies



Part Number	Feature			Package		
	Gain Select	Fault	Ref Out	LA	MA	MC
ACS37002	✓	✓	✓	✓	✓	✓
ACS37003*			✓			✓



Package Comparison						
Package	Conductor Resistance	Noise @ 400kHz [mA _{RMS}]	Package Isolation			
			Basic	Reinforced	Withstand Voltage [V _{RMS}]	Creepage [mm]
LA*	1.0mΩ	155	616	-	3600	7.5
MA	0.85mΩ	350	1097	565	4800	7.9
MC	0.27mΩ	350	1140	572	5000	8.2

*Anticipated release in Spring 2021