Leading the world in electrical measurement

A leading company in electrical measurement, LEM engineers the best solutions for energy and mobility, ensuring that our customers’ systems are optimized, reliable and safe.

Our 1,500 employees in more than 15 countries transform technology potential into powerful answers. We develop and recruit the best global talents, working at the forefront of mega trends such as renewable energy, mobility, automation and digitization.

With innovative electrical solutions, we are helping our customers and society accelerate the transition to a sustainable future.
LEM partners with leading vehicle manufacturers and Tier 1 suppliers on powertrain electrification and autonomous driving applications by providing sensors that meet high standards of functional safety (ASIL).

LEM offers its customers a broad portfolio of products tailored to a wide range of technical requirements. LEM also prides itself on providing leading engineering services for customer-specific solutions.

Battery management
For start-stop vehicle architectures, we offer intelligent battery sensors combining a unique expertise in current sensing with more than 20 years experience in lead acid battery technologies.

In high voltage battery management (BMS HV), the CAB series brings the LEM expertise of the fluxgate technology to our customers. The CAB series offer best-in-class accuracy and a high level of functional safety (ASIL) which avoids the installation of a redundant sensor.

We offer a broad range of single-phase Hall open loop sensors for high compactness, fitted with an integrated busbar for cost effectiveness. LEM developed dual range sensors with a dedicated low range to drastically improve offset performance while delivering very high accuracy.
Motor control
The LEM sensors dedicated to power inverter applications provide flexible design to Original Equipment Manufacturers (OEMs) and Tier 1 suppliers as well as solutions compatible with various subsystems: printed circuit design (PCD) boards, power modules, integrated busbars, and standard busbar mountings.

Charging systems
LEM’s newest product range brings technologies tailored to power management systems from AC to DC and DC to DC for high and low voltage applications. Future solutions dedicated to current leakage detection will meet the technical requirements for bi-directional on-board charging (OBC) and vehicle-to-grid/load (V2G & V2L). Our solutions will be ranging from 5mA to 300mA and guarantee high levels of safety for end-users, sanctioned by the ISO26262 ASIL certification, and the option to increase power density by removing reinforced insulation.
LEM is committed to retaining technology leadership, continuously investing in R&D to deliver innovative products and solutions to customers, leveraging proven and cutting-edge technologies.

**LEM sensors**
Our current and voltage sensors are used in a wide range of applications: battery management and start-stop applications for conventional cars, electrical motor controls, battery pack management and charging systems for hybrid and electric vehicles.

**Surface-mounted IC sensors**
Power density is a critical factor for increasing performance, as space constraints are prevalent in virtually every automotive application. Ever increasing power densities are driving the emergence of new current sensing technologies. Surface-mounted integrated circuit (IC) sensors measure high currents in a very compact footprint and therefore have become the technology of choice.

**Smarter sensors**
Smart grid and autonomous driving are major disruptions caused by the digital revolution leading to smarter, greener and more efficient ecosystems. LEM is at the forefront of these megatrends, developing smart sensors equipped with data processing capabilities that insure higher safety levels thanks to self-diagnostic features. The LEM sensors feature embedded software that provides real time information to the on-board system, offering customers high-value and versatile solutions.
Open loop technology

Open loop sensors use a Hall effect integrated circuit. The magnetic density, contributing to the rise of the Hall voltage, is generated by the primary current to be measured, which is supplied by a current source such as a battery or generator. HEV and EV include battery monitoring, starter generators, converters, electrical power steering, and motor drive applications.

Shunt technology

LEM shunt sensors, based on Ohm’s Law with voltage drop across the shunt proportional to its current flow, measure both alternating currents (AC) and direct currents (DC). Low cost and high reliability, low resistance shunt sensors are a popular choice for current measurement. Smart shunt technology offers mechanical and electrical design suitable for both light and heavy duty applications with multiple batteries.

Fluxgate technology

LEM’s fluxgate sensing head is made of an induction coil with particular characteristics. The core material has very high permeability and low remanence (Hc), enabling very fast transition between linear and saturated state. Energizing the coil with an alternative voltage makes the core go through a complete hysteresis loop. With a primary current flowing through the coil, the hysteresis loop is shifted. The measurement of this shift represents the primary current.
LEM develops galvanically-isolated current sensors dedicated to 12V battery management for standard internal combustion engines (ICE) and smart BMS for start-stop powertrains.

**Solutions for ICE vehicles**
LEM brings more than two decades of experience in 12V BMS for lead acid batteries and offers a leading product portfolio for standard ICE powertrains.

**Solutions for start-stop vehicles**
LEM offers a range of intelligent battery sensors that combine unique expertise in current sensing technologies with the experience acquired over the years in lead acid battery technologies.

**12V battery sensor in vehicles**
12V BMS sensor portfolio

**Features**

**BMS standard ICE**

- HAB
  - Analog Hall effect

**BMS start-stop**

- HABT
  - Analog Hall + temp
  - +/- 120A
  - Temperature at 1%

- HBCT
  - Analog Hall + temp
  - +/- 250A
  - Temperature at 1%

- SSVT
  - Smart shunts
  - SoX status
  - CAN/LIN transceiver

**Applications**

12V BMS specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HAB</th>
<th>HABT</th>
<th>HBCT</th>
<th>SSVT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td>Open loop</td>
<td>Open loop + temp</td>
<td>Open loop + temp</td>
<td>Smart shunt</td>
</tr>
<tr>
<td><strong>Current range max</strong></td>
<td>+/- 400A</td>
<td>+/- 120A</td>
<td>+/- 250A</td>
<td>+/- 1500A</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>Voltage/PWM</td>
<td>Voltage/PWM</td>
<td>Voltage</td>
<td>CAN/LIN SoX status</td>
</tr>
<tr>
<td><strong>Global error @25°C</strong></td>
<td>0,8%</td>
<td>0,8%</td>
<td>0,8%</td>
<td>0,5%</td>
</tr>
<tr>
<td><strong>Overall accuracy (over T°C)</strong></td>
<td>3,75%</td>
<td>3,6%</td>
<td>3,75%</td>
<td>1,5%</td>
</tr>
<tr>
<td><strong>Offset current</strong></td>
<td>+/- 200 mA</td>
<td>+/- 200 mA</td>
<td>+/- 350 mA</td>
<td>+/- 20 mA</td>
</tr>
<tr>
<td><strong>Bandwidth (programmable)</strong></td>
<td>1.1 kHz</td>
<td>1.1 kHz</td>
<td>1.1 kHz</td>
<td>1.1 kHz</td>
</tr>
<tr>
<td><strong>Mounting type</strong></td>
<td>Cable</td>
<td>Cable</td>
<td>Clamp</td>
<td>Clamp</td>
</tr>
<tr>
<td><strong>Input voltage</strong></td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+12V/+24V</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td>7 mA</td>
<td>7 mA</td>
<td>10 mA</td>
<td>12 mA</td>
</tr>
</tbody>
</table>
LEM high voltage battery pack BMS for hybrid and electric vehicles

Fluxgate technology
LEM brings a unique capability in fluxgate, the leading technology for high performance battery management that offers contactless solutions. The CAB series offers best-in-class accuracy (up to 0.1% and at \( I_{\text{max}} \)), an offset at OA measurement as well as ASIL readiness which avoids the installation of a redundant sensor. The CAB fluxgate products are embedded in the battery disconnection unit (BDU) or the battery pack of vehicles with electrified powertrains (xEV).

Hall open loop technology
LEM’s broad portfolio of single range sensors combines high compactness and an integrated busbar design for cost effectiveness. LEM developed a high accuracy dual range sensor with a dedicated low range to drastically improve offset performances. The LEM Hall-based products are suitable for the electronic measure of current in high power and low voltage applications with galvanic separation between the primary circuit (high power) and the secondary circuit (electronic circuit). LEM offers the choice between different ranges of current measure in the same housing while providing excellent accuracy and very good linearity, with low thermal offset and thermal sensitivity drifts.
Battery disconnecting unit architecture

* In case of ASIL ready sensor
LEM high voltage battery pack BMS for hybrid and electric vehicles

From mid power to ASIL ready performance
LEM provides a portfolio of solutions featuring a wide range of power levels that complies with the highest requirements of performance and safety.

HV BMS sensor specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HSW</th>
<th>HAH1BVW</th>
<th>HSNBV</th>
<th>DHAB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Open loop</td>
<td>Open loop</td>
<td>Open loop dual range</td>
<td>Open loop dual range</td>
</tr>
<tr>
<td>Current range max</td>
<td>+/- 1000A</td>
<td>+/- 1200A</td>
<td>+/- xODA</td>
<td>+/- xODA</td>
</tr>
<tr>
<td>ASIL readiness</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>ASIL B</td>
</tr>
<tr>
<td>Output</td>
<td>Voltage single</td>
<td>Voltage single/dual</td>
<td>Voltage single/dual</td>
<td>Voltage dual</td>
</tr>
<tr>
<td>Global error @25°C</td>
<td>0,5%</td>
<td>0,8%</td>
<td>0,5% (single)</td>
<td>0,8% (single)</td>
</tr>
<tr>
<td>Overall accuracy (over T°C)</td>
<td>2,0%</td>
<td>2,0%</td>
<td>2,0%</td>
<td>2,8%</td>
</tr>
<tr>
<td>Bandwidth (programmable)</td>
<td>1,1 kHz</td>
<td>1,1 kHz</td>
<td>1,1 kHz</td>
<td>1,1 kHz</td>
</tr>
<tr>
<td>Mounting type</td>
<td>Busbar</td>
<td>Busbar</td>
<td>Integrated busbar</td>
<td>Cable/Busbar</td>
</tr>
<tr>
<td>Input voltage</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
</tr>
<tr>
<td>Consumption</td>
<td>7 mA</td>
<td>8/16 mA</td>
<td>Single 7 mA Dual 14 mA</td>
<td>16 mA</td>
</tr>
</tbody>
</table>
**HV BMS sensor portfolio**

### Performance/Power

- **1500A**
  - **1000A high**
  - **100A low**
  - **1200A peak**
  - **250A rms**
  - **1000A peak**

### Hall open loop

- **Single core**
- **Dual core**

<table>
<thead>
<tr>
<th>Performance/Power</th>
<th>Hall open loop</th>
<th>Fluxgate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1500A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1000A high</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>100A low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1200A peak</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>250A rms</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>1000A peak</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Mid power xEV**
  - High performance BMS
- **High performance BMS**

- **Mid power xEV**
  - High range, low range channel
  - Suitable for redundancy
  - Low offset

- **High power xEV**
  - High range, low range channel
  - Coulomb counting
  - Very low offset

- **High power**
  - Very high performance
  - Coulomb counting
  - ASIL level/CAN bus output
  - Zero offset

### Applications

- **HAH1BVW**
  - Busbar mounting
  - Mid power xEV
  - High range, low range channel
  - Suitable for redundancy
  - Low offset

- **DHAB**
  - Cable/Busbar mounting
  - High power xEV
  - High range, low range channel
  - Coulomb counting
  - Very low offset

- **HSW**
  - Busbar mounting
  - High power
  - Very high performance
  - Coulomb counting
  - ASIL level/CAN bus output
  - Zero offset

- **HSNBV**
  - Integrated busbar

### Technology

- **Open loop**
- **Fluxgate**

### Current range max

- **HAH1BVW**
  - +/- 1000A
  - +/- 1200A
  - +/- x00A

- **DHAB**
  - +/- 1000A
  - +/- 1500A
  - +/- 500A
  - +/- 1500A

### ASIL readiness

- **CAB 500**
  - ASIL B
  - ASIL C

- **CAB 1500**
  - ASIL B
  - ASIL C

### Output

- **CAB 500**
  - Voltage single

- **CAB 1500**
  - Voltage single/dual

### Global error @25°C

- **HSW**
  - 0.5%
  - 0.8%
  - 0.5% (single)
  - 0.8% (single)

### Overall accuracy (over T°C)

- **HSW**
  - 2.0%
  - 2.0%
  - 2.0%
  - 2.8%

### Bandwidth (programmable)

- **HSW**
  - 1.1 kHz
  - 1.1 kHz
  - 1.1 kHz
  - 1.1 kHz

### Mounting type

- **Busbar**
- **Cable/Busbar**

### Input voltage

- **CAB 500**
  - +5V

- **CAB 1500**
  - +12V

### Consumption

- **CAB 500**
  - 7 mA
  - 8/16 mA

- **CAB 1500**
  - 14 mA
  - 40 mA (0A)
  - 500 mA (@500A)

### CAB 500 SF

- **CAB 500 SF**
  - 40 mA (0A)
  - 130 mA (@500A)

### CAB 1500 SF

- **CAB 1500 SF**
  - 40 mA (0A)
  - 130 mA (@500A)
**Maximum flexibility for power inverter applications**

LEM provides a broad, versatile range of sensors that enable flexible design for various systems: gate driver boards, power modules, integrated busbar and standard busbar mounting.

Electric and hybrid vehicle power motors (few kW to hundreds kW) use multiphase inverters to drive the traction and generator motors with a high degree of precision and reliability. LEM offers standard and customized solutions to fit specific mechatronic requirements.
For low to high power inverters (MHEV to BEV)
• Integrated current sensing technologies and PCB mounted sensors

For mid to high power inverters (HEV to BEV)
• Single busbar mounted sensor legacy family
• Integrated busbar sensor for compactness, improved performance and easy assembly

For high power inverters (BEV)
• Multiphase sensors to improve system integration
• ASIL ready features

Motor control sensor portfolio

<table>
<thead>
<tr>
<th>Performance/Power</th>
<th>Single-phase</th>
<th>Multiphase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500A</td>
<td></td>
<td>HAH3DR series</td>
</tr>
<tr>
<td>1000A</td>
<td>HAH2DR</td>
<td></td>
</tr>
<tr>
<td>800A</td>
<td>HAH1DRW</td>
<td></td>
</tr>
<tr>
<td>250A</td>
<td>HC6 F/H</td>
<td>HSNDR</td>
</tr>
<tr>
<td></td>
<td>HC5FW</td>
<td>HC16FW</td>
</tr>
<tr>
<td></td>
<td>HC2 F/H</td>
<td></td>
</tr>
</tbody>
</table>

Applications
- Low power mild hybrid
- Mid power xEV
- High power xEV
- High power multiphase sensor
Single-phase and multiphase sensors

LEM offers a wide range of solutions for all inverters
- PCB mounted sensors
- Busbar mounted
- Integrated busbar
- Multiphase sensors
- Reference design sensors *

* Infineon hybrid pack HAH3DR S07 Series

### Single-phase sensor specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HC2F/H</th>
<th>HC6F/H</th>
<th>HC5FW</th>
<th>HC16FW</th>
<th>HSNDR</th>
<th>HAH1DRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current range max</td>
<td>1 phase +/- 250A</td>
<td>1 phase +/- 800A</td>
<td>1 phase +/- 900A</td>
<td>1 phase +/- 1600A</td>
<td>1 phase +/- 1200A</td>
<td>1 phase +/- 1500A</td>
</tr>
<tr>
<td>Aperture type (size, compatibility)</td>
<td>Busbar (7,2 x 2,5 mm) ø 4,6 mm</td>
<td>Busbar (10,5 x 4,2 mm) ø 7,5 mm</td>
<td>Busbar ø 12,5 mm</td>
<td>Busbar (20,5 x 6 mm)</td>
<td>Integrated busbar (customization)</td>
<td>Busbar (20,5 x 6 mm)</td>
</tr>
<tr>
<td>Output type</td>
<td>Through-hole PCB voltage</td>
<td>Through-hole PCB voltage</td>
<td>Through-hole PCB voltage</td>
<td>SMD or Through-hole PCB Voltage</td>
<td>Molex connector voltage</td>
<td>Tyco connector voltage</td>
</tr>
<tr>
<td>Accuracy @25°C</td>
<td>1,2%</td>
<td>1,2%</td>
<td>1,2%</td>
<td>1,2%</td>
<td>1,25%</td>
<td>2%</td>
</tr>
<tr>
<td>Overall accuracy (over T°C)</td>
<td>3,25%</td>
<td>3,25%</td>
<td>3,25%</td>
<td>3,25%</td>
<td>3,2%</td>
<td>3,75%</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
</tr>
<tr>
<td>Input voltage</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
</tr>
<tr>
<td>Consumption typical</td>
<td>15 mA</td>
<td>15 mA</td>
<td>15 mA</td>
<td>30 mA</td>
<td>15 mA</td>
<td>15 mA</td>
</tr>
</tbody>
</table>
# Multiphase sensor specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HAH2DR</th>
<th>HAH3DR S00</th>
<th>HAH3DR S03 SPx</th>
<th>HAH3DR S06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current range max</td>
<td>2 phases +/- 650A</td>
<td>3 phases +/- 900A</td>
<td>3 phases +/- 900A</td>
<td>3 phases +/- 900A</td>
</tr>
<tr>
<td>Aperture type</td>
<td>Busbar (13,8 x 2,3 mm) Pitch 44 mm</td>
<td>Busbar (14,5 x 5,5 mm) Pitch 30 mm</td>
<td>Busbar (15,5 x 7,5 mm) Pitch 38,5 mm</td>
<td>Busbar (15,5 x 5,5 mm) Pitch 38,5 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>Voltage JAM connector</td>
<td>Voltage PCB mounted</td>
<td>Voltage Hirose connector</td>
<td>Voltage Molex connector</td>
</tr>
<tr>
<td>Accuracy @25°C</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
<td>2,5%</td>
</tr>
<tr>
<td>Overall accuracy (over T°C)</td>
<td>3,2%</td>
<td>3,5%</td>
<td>3,5%</td>
<td>4,25%</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
</tr>
<tr>
<td>Input voltage</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
</tr>
<tr>
<td>Consumption typical</td>
<td>15 mA/phase</td>
<td>15 mA/phase</td>
<td>15 mA/phase</td>
<td>15 mA/phase</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HAH3DR S07 SPx</th>
<th>HAH3DR S0A</th>
<th>HAH3DR S0C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current range max</td>
<td>3 phases +/- 1200A</td>
<td>3 phases +/- 1500A</td>
<td>2-3 phases +/- 800A</td>
</tr>
<tr>
<td>ASIL readiness</td>
<td>ASIL B/C</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Aperture type</td>
<td>Infineon hybrid pack long/short tab (14,5 x 7,5 mm) Pitch 47 mm</td>
<td>Busbar (14,5 mm) Pitch 34 mm</td>
<td>Busbar (14,5 x 5,5 mm) Pitch 30 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>Voltage pressfit</td>
<td>Voltage Molex connector</td>
<td>Voltage pin soldering</td>
</tr>
<tr>
<td>Accuracy @25°C</td>
<td>2%</td>
<td>1,2%</td>
<td>1,25%</td>
</tr>
<tr>
<td>Overall accuracy (over T°C)</td>
<td>3,2%</td>
<td>3,25%</td>
<td>3,25%</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
</tr>
<tr>
<td>Input voltage</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
</tr>
<tr>
<td>Consumption typical</td>
<td>15 mA/phase</td>
<td>15 mA/phase</td>
<td>15 mA/phase</td>
</tr>
</tbody>
</table>
Charging systems

LEM offers dedicated technologies for charging systems to support transfer energy subsystems from AC to DC and DC to DC with high and low voltage applications.

**Low current applications**
LEM has semiconductor based solutions for low current applications from 10A to 200A_{rms}. Developed with cutting edge coreless technology, these products offer isolated high performance sensing in semiconductor packages. Easy to use and integrate, they are convenient for applications requiring high power density or very low footprint on current sensing function such as OBC, DCDC, EPS, BSG.
Charging systems sensor portfolio

Power/Current

- 250-1000A
- 200-500A
- 10-200A
- 6 mA

Applications

- Leakage current
- Residual current detection
- On-board charger
- On-board charger
- Power DCDC fuel cell
- DC/DC primary
- DC/DC secondary
- DC/DC secondary

Bidirectional on-board charger architecture

Current measurement PFC

Current measurement LLC tank

Totem pole PFC

Bi-directional LLC

Battery vehicle

Grid

AC
High efficiency power management is key to more efficient systems and longer driving range.

With increase of accuracy and bandwidth lead by system power density increase, LEM supports a wide range of sensors for all applications:

**Integrated Current Sensors (ICS)**  
Hall based SMD sensors for low to mid current (below 200A peak)

**PCB mounted sensors**  
For busbar current measurements for mid to high current (200A to 2000A peak)

**Busbar mounted sensors**  
For high power applications
### PCB and busbar mounted sensor specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>HC2 F/H</th>
<th>HC5FW</th>
<th>HSNSDR</th>
<th>HAH1DRW</th>
<th>HAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Open loop</td>
<td>Open loop</td>
<td>Open loop</td>
<td>Open loop</td>
<td>Open loop</td>
</tr>
<tr>
<td>Current range max</td>
<td>+/- 250A</td>
<td>+/- 900A</td>
<td>+/- 1200A</td>
<td>+/- 1500A</td>
<td>+/- 300A</td>
</tr>
<tr>
<td>Output</td>
<td>Voltage</td>
<td>Voltage</td>
<td>Voltage</td>
<td>Voltage</td>
<td>Voltage</td>
</tr>
<tr>
<td>Accuracy @25°C</td>
<td>1,2%</td>
<td>1,2%</td>
<td>1,25%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Overall accuracy (over T°C)</td>
<td>3,25%</td>
<td>3,25%</td>
<td>3,25%</td>
<td>3,75%</td>
<td>3,2%</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>50 kHz</td>
<td>500 kHz</td>
</tr>
<tr>
<td>Mounting type</td>
<td>Through-hole PCB</td>
<td>Through-hole PCB</td>
<td>Integrated busbar</td>
<td>Busbar</td>
<td>Integrated busbar</td>
</tr>
<tr>
<td>Input voltage</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
<td>+5V</td>
</tr>
<tr>
<td>Consumption</td>
<td>15 mA</td>
<td>15 mA</td>
<td>15 mA</td>
<td>15 mA</td>
<td>15 mA</td>
</tr>
</tbody>
</table>

### Integrated current sensor specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>GO SME</th>
<th>GO SMS</th>
<th>HMSR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current range RMS</td>
<td>10-20A rms</td>
<td>10-30A rms</td>
<td>10-30A rms</td>
</tr>
<tr>
<td>Peak current</td>
<td>50A peak</td>
<td>75A peak</td>
<td>75A peak</td>
</tr>
<tr>
<td>Isolation</td>
<td>2,5kV</td>
<td>3kV</td>
<td>4,9kV</td>
</tr>
<tr>
<td>Accuracy (25°C - over T°C)</td>
<td>1,3% - 3%</td>
<td>1,3% - 3%</td>
<td>1% - 2%</td>
</tr>
<tr>
<td>Output type</td>
<td>Analog</td>
<td>Analog</td>
<td>Analog</td>
</tr>
<tr>
<td>Vref/Ratiometric</td>
<td>Vref</td>
<td>Vref</td>
<td>Ratio/Vref</td>
</tr>
<tr>
<td>Temp. range</td>
<td>-40°C to 125°C</td>
<td>-40°C to 125°C</td>
<td>-40°C to 150°C</td>
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<tr>
<td>Bandwidth</td>
<td>300 kHz</td>
<td>300 kHz</td>
<td>300 kHz</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>3,3V/5V</td>
<td>3,3V/5V</td>
<td>3,3V/5V</td>
</tr>
<tr>
<td>AECQ100</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Target applications</td>
<td>OBC primary, DCDC</td>
<td>OBC primary, DCDC</td>
<td>OBC, DCDC</td>
</tr>
<tr>
<td>Package</td>
<td>SOIC 8</td>
<td>SOIC 16</td>
<td>SOIC 16 (footprint compatible)</td>
</tr>
</tbody>
</table>
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