Life Energy Motion

SPS 2019
Hall 3A – Stand 400

PRESS INFORMATION

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LEM completes its surface mounted high isolated current sensors range with an included current conductor

Key points:

- **Open-loop Hall effect ASIC-based current sensors to measure from 6 A up to 30 A DC, AC or pulsed**
- **Cost effective, SMD automatic assembly**
- **Excellent immunity to external fields**
- **Good offset and gain drifts**
- **Wide operating temperature range from -40 to +125ºC**
- **Up to 4950V_{RMS} isolation test voltage**

LEM has expanded its range of miniature, integrated circuit sensors range for AC and DC isolated-current measurement with the introduction of the HMSR series. Despite their small size, the components can handle overload current bursts of up to 20 kA (8-20 us surge test profile), such as those that occur in photovoltaics applications while still providing a reinforced isolation. Products in the series are designed to measure currents of up to 2.5 times their nominal ratings of 6 A, 8 A, 10 A, 15 A, 20 A or 30 A.

Packaged as SO16 surface-mount devices with a height of just 6 mm, the sensors can be mounted directly onto a printed circuit board in the same process as other board-level components. This helps to reduce manufacturing costs and decrease the overall footprint, vital for space-constrained applications. As a result, HMSR sensors can be readily built into small form-factor intelligent power modules (IPMs).

The HMSR series uses a proprietary Open Loop Hall effect ASIC associated with a unique low-resistance primary conductor to minimise power losses allowing direct current measurement and high transient overload currents to pass without damage. The use of a ferrite for the magnetic element is a key factor in achieving a high frequency bandwidth of

270 kHz (-3dB) and to provide good rejection against external fields. The unique mechanical design for the sensor leads to creepage and clearance distances of 8 mm using materials with comparative tracking index (CTI) of 600, the whole to meet reinforced isolation according to the IEC 60950-1 standard.

An integrated EEPROM is used for programmable internal temperature compensation to counter offset and gain drifts and perform gain stress compensation. These measures ensure high-performance overall accuracy over the full range of temperature, from -40 to +125°C with a typical value of 0.5 % of I_{PN} for the HMSR 20-SMS model, a significant improvement over the previous generation. The HMSR series achieves a shorter response time: 2 µs typical.

The output signal from the sensor is an analogue voltage. The sensitivity levels are determined by the models. For the 5V power-supply versions, the output voltage is of 800 mV @ I_{PN}. As standard, devices in the HMSR range provide two different over-current detection (OCD) warning levels on 2 dedicated pins: one threshold is set during manufacturing at 2.93 x I_{PN}; the other can be adjusted by the user using external resistors.

The HMSR is ideal for demanding applications such as photovoltaics, which require high insulation levels together with stringent controls on price and product size. Similarly, the small size benefits applications such as drives for white-goods, window shutters and air-conditioning systems. The HMSR's ability to support high frequency currents thanks to the use of a ferrite as magnetic circuit with low losses suits drives that operate with higher switching frequencies.

Additionally, the low cost of the HMSR series makes the device competitive against shunts with the added benefits of high insulation and OCD features.

The HMSR series conform to the latest industrial standards and devices are covered by LEM's five-year warranty.

LEM – Life Energy Motion

Leading the world in electrical measurement, LEM engineers the best solutions in energy and mobility, ensuring that customers' solutions are optimized, reliable and safe. Our 1,500 people in over 15 countries transform technology potential into powerful answers. We develop and recruit the best global talent, 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.

Its core products - current and voltage sensors - are used in a broad range of applications in drives & welding, renewable energies & power supplies, traction, high precision, Smart-Grid, conventional and green car businesses.

LEM is a mid-size, global company with production plants in Geneva (Switzerland), Sofia (Bulgaria), Beijing (China) and Machida (Japan). With its regional sales offices close to its clients' locations, the company offers seamless service around the globe.

Listed on the SIX Swiss Exchange since 1986, the company's ticker symbol is LEHN.

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