Magnetic Sensors

**TDK announces the ASIL B upgrade of its Hall switch family HAL 15xy**

* HAL 15xy Hall switch family is compliant with ISO 26262
* Different package versions in SMD (SOT23) or leaded (TO92-UA) with various lead forms
* High robustness and safety performance

April 5, 2022

TDK Corporation (TSE:6762) has upgraded its Micronas Hall-effect switch family, HAL 15xy, for automotive and industrial applications – All now defined as SEooC (Safety Element out of Context) ASIL B-ready, according to ISO 26262. Modules equipped with HAL 15xy can more easily fulfill higher safety criteria in automotive applications such as brake fluid level sensing, seat belt detection, and brake light switch.\* HAL 15xy family’s production is already ongoing; samples are available at any time.

The AEC-Q100 qualified HAL 15xy provides many diagnostic features, enabling deployment in ASIL A and ASIL B classified automotive applications. For more stringent security requirements, the HAL 15xy features an additional, unique power-on self-test. Customers can enable a full functional test of the sensors’ signal processing path and output before starting standard operation, in order to increase diagnostic coverage.

With a sensor designed for fault-free operation in most demanding environments, HAL 15xy provides a wide supply voltage range from 24 V down to 2.7 V for reliable measurements during voltage drops and an extended robustness against voltage peaks as load dump pulses up to 40 V under ambient temperature conditions from −40 °C up to 150 °C. Furthermore, the HAL 15xy family meets high ESD levels up to ±8 kV (HBM).

Customers can choose from various temperature compensated constant switching points in a 3-wire version with short-circuit protected open drain output and a 2-wire version with a current source interface. In addition to the small SOT23 SMD package compliant with JEDEC standards, HAL 15xy is available in TO92-UA package with various lead forms.

Relevant documentation, like safety manuals and safety report are available on request.

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**Glossary**

* Safety Manual: Describes how to correctly use the devices in functional safety applications

**Main applications\***

* Brake fluid level sensing
* Seat belt detection
* Brake light switch

**Main features and benefits\*\***

* Operates with supply voltages from 2.7 V to 24 V
* High ESD performance of ±8 kV (HBM)
* SOT23-3L JEDEC TO236-compliant package
* Short-circuit protected open-drain output or 2-wire current modulation
* Thermal shutdown
* Diagnostic features including power-on self-test
* SEooC according to ISO 26262 (ASIL B ready) to support functional safety applications
* Suitable for automotive applications, thanks to a wide ambient temperature range from -40 °C up to max. 150 °C

**Key data**

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| Type | HAL 15xy |
| Package | SOT23, TO92-UA |
| Output formats | open-drain or current output |
| Supply Voltage | 2.7 V to 24 V |
| ESD performance | ±8 kV (HBM) |
| Functional Safety | ISO 26262 ASIL B ready |

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| \* | Any mention of target applications for our products are made without a claim for fit for purpose, as this has to be checked at system level. |
| \*\* | All operating parameters must be validated for each customer application by customers’ technical experts. |

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**About TDK Corporation**

TDK Corporation is a world leader in electronic solutions for the smart society based in Tokyo, Japan. Built on a foundation of material sciences mastery, TDK welcomes societal transformation by resolutely remaining at the forefront of technological evolution and deliberately “Attracting Tomorrow.” It was established in 1935 to commercialize ferrite, a key material in electronic and magnetic products. TDK's comprehensive, innovation-driven portfolio features passive components such as ceramic, aluminum electrolytic and film capacitors, as well as magnetics, high-frequency, and piezo and protection devices. The product spectrum also includes sensors and sensor systems such as temperature and pressure, magnetic, and MEMS sensors. In addition, TDK provides power supplies and energy devices, magnetic heads and more. These products are marketed under the product brands TDK, EPCOS, InvenSense, Micronas, Tronics and TDK-Lambda. TDK focuses on demanding markets in automotive, industrial and consumer electronics, and information and communication technology. The company has a network of design and manufacturing locations and sales offices in Asia, Europe, and in North and South America. In fiscal 2021, TDK posted total sales of USD 13.3 billion and employed about 129,000 people worldwide.

**About TDK-Micronas**  
TDK-Micronas is the center of competence for magnetic-field sensors and CMOS integration within the TDK group. TDK-Micronas has gained operational excellence for sensors and actuators production in over 25 years of in-house manufacturing. It has been the first company to integrate a Hall-effect based sensor into CMOS technology in 1993. Since then, TDK-Micronas has shipped over five billion Hall sensors to the automotive and industrial market. The operational headquarters are located in Freiburg im Breisgau (Germany). Currently, TDK-Micronas employs around 1,000 people.

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You can download this text and associated images from

<https://www.micronas.tdk.com/en/tradenews/pr2202>.

Further information on the products can be found under <https://www.micronas.tdk.com/en/products/hall-switches/hal-15xy>.

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