

# HAL 15xy

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## HAL 15xy First ISO 26262 Compliant Low-Power Hall Switch

The HAL 15xy family consists of different Hall switches containing a temperature-compensated Hall plate with active offset compensation and comparator, available optionally with open-drain or current output.

As global Hall switch supplier with long-term experience since 1993, 1.5 billion shipped automotive switches and leading expertise in high-quality Hall-effect sensor solutions, Micronas expands its large switch portfolio with the new HAL 15xy family.

All CMOS wafer processing is done in Micronas' facilities in Freiburg (Germany) to ensure best quality control and highest flexibility.

As improved successor of the well-known HAL 5xy family, the HAL 15xy is available as 3-wire version with short-circuit protected open-drain output and 2-wire version with current output. HAL 15xy is available in the smallest SOT23 as well, as TO92UA package and provides lowest power consumption, fast response times, and special safety features like a unique power-on self-test for greater customer benefit at an excellent price-performance ratio.

With different switching-point versions, the HAL 15xy switch family serves a broad variety of automotive and industrial applications under harsh temperature conditions.

HAL 15xy fulfills the latest quality and functional safety standards as AEC-Q100 qualified and ISO 26262 ASIL ready device, enabling our customers to target even the most safety-critical applications.

### Features

- ◆ Sampling and output refresh time of 2  $\mu$ s
- ◆ 3-wire version with a short-circuit protected open-drain output
- ◆ 2-wire version with current output
- ◆ Low current consumption of typ. 1.6 mA
- ◆ Wide supply voltage operation from 2.7 V to 24 V
- ◆ Overvoltage protection capability up to 40 V
- ◆ Available in the small SOT23 and TO92UA package
- ◆ High HBM ESD performance of up to  $\pm$ 8 kV

- ◆ Reverse-voltage protection at supply pin
- ◆ Operating with static and dynamic magnetic fields up to 12 kHz with low output jitter. Customized versions are possible up to 93 kHz.
- ◆ AEC-Q100 qualification
- ◆ ASIL ready device (SPFM  $\geq$ 60%)
- ◆ Additional functional safety features e.g.:
  - Power on self-test (signal path test and wire-break detection)
  - Monitoring of bias, undervoltage, and current level
  - Overtemperature protection
  - Output current limitation
  - Defined fail safe state
- ◆ Wide junction temperature range from  $-40$  °C to 170 °C, specially designed for operation in harsh environments
- ◆ High robustness of magnetic characteristics against mechanical stress
- ◆ Broad portfolio of temperature-compensated constant switching points



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