

Application Note

High Sensitivity Latching Digital Hall-Effect Sensor ICs: VF360NT, VF360ST, VF460S

Background

The VF360NT, VF360ST, and VF460S High Sensitivity Latching Digital Hall-Effect Sensor ICs are small, sensitive and versatile devices that are operated by the magnetic field from a permanent magnet or an electromagnet. They are designed to respond to alternating North and South poles. The VF360NT and is turned ON by a North pole, while the VF360ST and VF460S are turned ON by a South pole. This sensor IC does not use chopper stabilization on the Hall element, providing a clean output signal and a faster latch response time when compared to competitive high sensitivity Hall-effect bipolar latching sensor ICs which do use chopper stabilization.

Value to Customers

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- AEC-Q100 qualification provides enhanced reliability and quality of electronic components. Components meeting these specifications are often suitable for use in harsh automotive environments without the customer's need for additional component-level qualification testing.
- Designed to provide reliable, consistent performance and a fast response time, enhancing efficiency in brushless dc motor (BLDC) applications
- Designed to provide a wide supply voltage range and no chopper delay, allowing for potential use in a variety of applications
- Designed to provide a clean output signal without the customer having to include additional circuitry to achieve noise suppression due to chopper stabilization

Solutions

POTENTIAL TRANSPORTATION APPLICATIONS

Brushless DC (BLDC) Motor Commutation:

- In automotive applications, may be used to measure the motor's position, which is communicated to the electronic controller to spin the motor at the correct time and orientation. The sensor determines when the current should be applied to the motor coils to make the magnets rotate at the correct orientation.
- Potential automotive applications include:
 - Air input flap to engine
 - Electronic parking brakes
 - Electronic window lifts and anti-pinch power window systems
 - HVAC blower
 - Headlights
 - Power doors
 - Power mirrors
 - Power tail gate
 - Seat motors
 - Steering
 - Vehicle convertible roof position
 - Windshield washers
 - Windshield wipers

Speed and RPM Sensing:

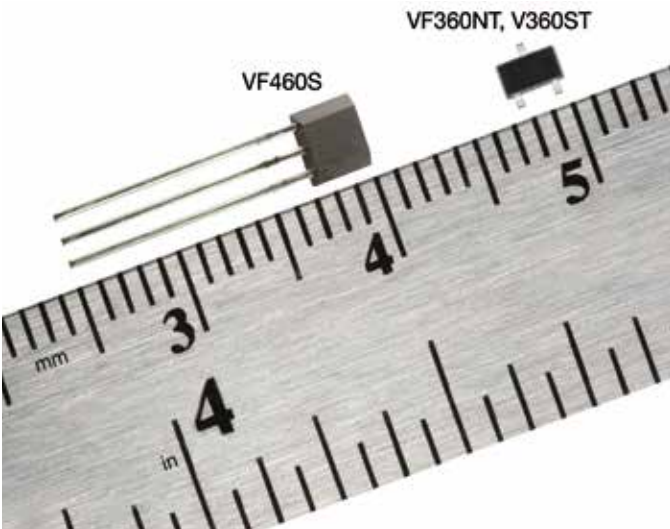
- Motors and fans: May be used with a ring magnet with alternating North and South poles to measure the speed of rotation of a motor or a fan.
- Tachometer, counter pickup: May be used with rotating magnets (one North and one South pole, minimum) as pulse pickup devices to monitor engine/motor speed.

Flow Rate Sensing:

- May be used mounted outside a sealed chamber containing magnets that are mounted on a rotating paddle or impeller to measure the liquid flow rate. Each actuation of the sensor by the rotating magnets attached to the paddle, which is turned by the liquid flow, corresponds to a measured quantity of liquid.

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| VF360NT, VF360ST, VF460S | Features |
|---|--|
|  | <ul style="list-style-type: none">• Qualified to the AEC-Q100 standard for potential use in automotive applications• Fastest response time in its class [1.5 μs]• Operate from 30 Gauss typical at 25°C [77 °F] and 55 Gauss maximum over the full -40 °C to 150 °C [-40 °F to 302 °F] temperature range• Latching magnetics• Repeatable magnetics (no jitter)• No additional electronic noise generated by sensor• Non-chopper-stabilized design• VF360NT and VF360ST subminiature SOT-23 surface mount package supplied on tape and reel (3000 units per reel)• VF460S flat TO-92-style package (1000 units per bag)• 3 Vdc to 24 Vdc• Built-in reverse polarity protection• RoHS-compliant material |

Find out more

To learn more about Honeywell Sensing and Productivity Solutions' products, call **+1-815-235-6847** or **1-800-537-6945**, visit **sensing.honeywell.com**, or e-mail inquiries to **info.sc@honeywell.com**

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