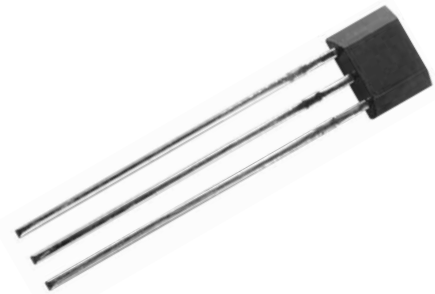


## Magnetic Sensors Line Guide



**You know us as a leader**, whether you've known us as MICRO SWITCH™ or Honeywell Sensing and Control (S&C). In 1968, we revolutionized the industry with the first solid-state keyboard combining Hall-effect sensing and associated electronics in a single circuit. Today, the Honeywell S&C family of magnetic position sensors includes digital and analog Hall-effect position, magnetoresistive digital, Hall-effect vane, gear-tooth, and Hall-effect basic switches and magnets. These high-speed, extended life sensors are often directly compatible with other electronic

circuits, responding to the presence or the interruption of a magnetic field by producing a proportional output. Gear-tooth and other packaged Hall-effect speed and direction sensors sense movements of a ferrous metal target. Digital and analog "sensor-only" devices are operated by a permanent magnet or electromagnet, while actuation mode depends on the type of magnets used. A vane passing through a gap or a magnet mounted on a plastic plunger operates integral magnet position sensors.

### FEATURES

#### LOW POWER HALL-EFFECT SENSOR ICS - DIGITAL SL353 Series.

**Features:** Energy efficient • Push-pull output • Non-chopper stabilized design • Omnipolar magnetics • Thermally balanced integrated circuit • Subminiature package size • Simple activation from a North pole or a South pole • Tape and reel packaging

**Benefits:** Supply voltage as low as 2.2 Vdc, combined with very low average current of 1.8  $\mu$ A typ., reduces power consumption, provides extended battery life, and promotes energy efficiency. Push-pull output does not require external pull-up resistor, simplifying interface with common electrical circuits and potentially reducing PC board space and costs to the customer. Does not utilize chopper stabilization, eliminating the noise generated by products using this technique, meaning that customers do not need filters to compensate for the noise. Omnipolar capability with high and low duty cycle options allows for use in a variety of potential applications with low power requirements and/or battery operation. Thermally balanced integrated circuit provides for stable operation over a wide

temperature range, of -40° to 85 °C [-40° to 185 °F]. SOT-23 subminiature package requires less PCB space, allowing for use in smaller assemblies. North pole or South pole operation does not require the magnet polarity to be identified, making installation easier and potentially reducing system costs. Supplied on tape and reel which allows for a compact design with automated component placement, helping to reduce manufacturing costs. Potential applications include motion control, lid closure detection, presence-absence, metering, and displacement sensing on battery-operated, mobile equipment such as computer notebooks, scanners, hand-held industrial computers, instrumentation and appliances.

#### HALL-EFFECT SENSOR ICS - DIGITAL SS30AT, SS40A, SS50AT.

**Features:** Bipolar magnetics • Sinking output • High output current capability • High speed capability • Reverse polarity protection • Small through-hole and surface mount (SOT-23 and SOT-89B) packages • Tape and reel available

**Benefits:** Integrated circuitry provides enhanced temperature stability in a robust

design. Thermally balanced integrated circuit over full temperature range. Built-in regulator provides stable operation over supply voltage range. Open-collector sinking output voltage easily interfaces with wide variety of electronic circuits. Internal circuitry prevents sensor damage in case supply voltage polarity is accidentally reversed. Potential applications include speed and RPM sensing, brushless dc motor commutation, motor and fan control, magnetic encoding, disc speed, tape rotation, and flow-rate sensing.

#### SS311PT, SS411P.

**Features:** Bipolar magnetics • Enhanced sensitivity • Built-in pull-up resistor • Low voltage: 2.7 Vdc to 7 Vdc • Subminiature package size (SS311PT) • Through-hole and surface-mount (SOT-23 and SOT-89B) packages • Cost effective

**Benefits:** Enhanced sensitivity often allows for use of smaller, less expensive magnets. Built-in pull-up resistor easily interfaces with common electronic circuits without adding external components, helping to reduce total system cost. 2.7 Vdc to 7 Vdc supply voltage range allows use in low voltage applications, promoting energy efficiency.

# Magnetic Sensors Line Guide

## Precision. Repeatability. Ruggedness.

Each Honeywell S&PS magnetic sensor IC is engineered to provide top performance:

**Hall-effect sensor ICs** are constructed from a thin sheet of conductive material with output connections perpendicular to the direction of current flow.

**Magnetoresistive sensor ICs** have a built-in magnetoresistive bridge integrated on silicon, encapsulated in a plastic package. The sensitive integrated circuit responds to low (25 G max.) fields at distances up to 1 inch.

**Hall-effect vane sensor ICs** consist of a magnet and a Hall-effect sensor inside a rugged plastic housing. Different package styles provide mounting flexibility.

**Gear tooth sensors** use a magnetically biased Hall-effect IC to sense movement of ferrous metal targets. The specially designed IC is sealed in a durable plastic probe-type package.

**Additional built-in benefits:** true solid state, extended life (30 billion operations in a module test program), high speed operation (over 100 kHz), stationary input (zero speed), no moving parts, logic compatible output, and broad temperature range (-40 °C to 150 °C [-40 °F to 302 °F]).

## Low power Hall-effect sensor ICs - digital



### SL353 Series

<b>Description</b>	micropower omnipolar digital Hall-effect sensor IC
<b>Magnetic actuation type</b>	omnipolar
<b>Package style (packaging)</b>	SOT-23 (pocket tape and reel)
<b>Supply voltage range</b>	2.2 Vdc to 5.5 Vdc
<b>Supply current</b>	SL353LT: 1.8 µA typ. at 2.8 Vdc SL353HT: 0.33 mA typ. at 2.8 Vdc
<b>Output type</b>	digital
<b>Operating temperature range</b>	-40 °C to 85 °C [-40 °F to 185 °F]



### SS30AT, SS40A, SS50AT



### SS340RT, SS440R Series

<b>Description</b>	low-cost bipolar digital Hall-effect sensor IC	unipolar Hall-effect digital sensor IC
<b>Magnetic actuation type</b>	bipolar	<b>SS340RT:</b> North pole <b>SS440R:</b> South pole
<b>Package style (packaging)</b>	<b>SS30AT:</b> SOT-23 (pocket tape and reel) <b>SS40A:</b> flat TO-92-style, standard straight leads (bulk) <b>SS50AT:</b> SOT-89B (pocket tape and reel)	<b>SS340RT:</b> SOT-23 (pocket tape and reel) <b>SS440R:</b> flat TO-92-style, standard straight leads (bulk)
<b>Supply voltage range</b>	4.5 Vdc to 24 Vdc	3 Vdc to 24 Vdc, except SS340RT >125 °C [257 °F]: 3 Vdc to 12 Vdc
<b>Supply current</b>	10 mA max.	8 mA
<b>Output type</b>	digital sinking	digital sinking
<b>Operating temp. range</b>	<b>SS40A:</b> -40 °C to 125 °C [-40 °F to 257 °F] <b>SS30AT, SS50AT:</b> -40 °C to 125 °C [-40 °F to 257 °F]	<b>SS440R</b> (3 Vdc to 24 Vdc): -40 °C to 150 °C [-40 °F to 302 °F] <b>SS340RT</b> (3 Vdc to 24 Vdc): -40 °C to 125 °C [-40 °F to 257 °F] <b>SS340RT</b> (3 Vdc to 12 Vdc): -40 °C to 150 °C [-40 °C to 302 °F]