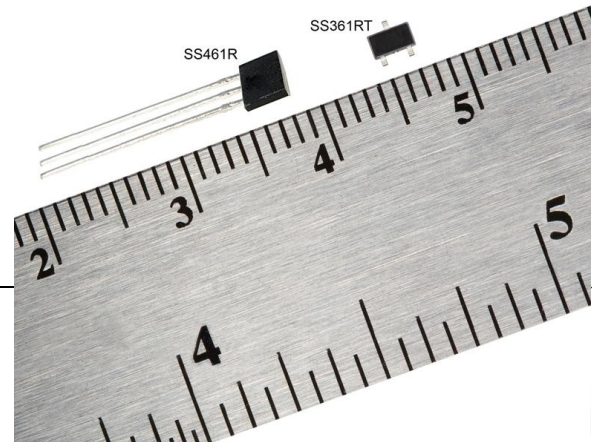


SS361RT/SS461R

Bipolar Latching, Hall-Effect Digital Sensor ICs



DESCRIPTION

The SS361RT and SS461R are small, versatile digital Hall-effect devices that are operated by the magnetic field from a permanent magnet or an electromagnet, designed to respond to alternating North and South poles.

These bipolar latching sensor ICs have enhanced sensitivity which often allows for the use of less expensive magnets.

These sensor ICs are available in two package styles, the SS361RT in the subminiature SOT-23 surface mount package and the SS461R in the leaded, flat TO-92-style package.

FEATURES

- Enhanced sensitivity: will operate from only 50 Gauss typical, at 25°C [77 °F] allowing the use of smaller, potentially lower-cost magnets or wider air gaps
- Subminiature, SOT-23 surface mount package (SS361RT) supplied on tape and reel allows for a compact design with automated component placement, helping to reduce manufacturing costs
- Small, leaded, flat, TO-92-style package (SS461R) allows for a compact PCB layout
- Bipolar latching magnetics respond to alternating North and South poles, making these products well-suited for accurate speed sensing and RPM (revolutions per minute) measurement
- Wide operating voltage range of 3 Vdc to 24 Vdc makes these sensors useable in a wide range of applications
- Built-in reverse voltage capability enhances the protection of the sensor and the circuits with which it is used
- Robust design: will operate up to 150 °C [302 °F]
- RoHS-compliant materials meet Directive 2002/95/EC

The SS361RT's small size requires less PC board space, allowing it to be used in smaller assemblies. Its 3 Vdc capability allows for use in low voltage applications, promoting energy efficiency.

The SS361RT is available on tape and reel; the SS461R is available in a bulk package (1000 units per bag).

POTENTIAL APPLICATIONS

Transportation

- Speed and RPM (revolutions per minute) sensing
- Tachometer, counter pickup
- Motor and fan control
- Electric window lift
- Convertible roof position
- Automotive transmission position

Industrial

- Speed and RPM sensing
- Tachometer, counter pickup
- Flow-rate sensing
- Brushless dc (direct current) motor commutation
- Motor and fan control
- Robotics control

Medical

- Motor assemblies
- Medication dispense control

SS361RT/SS461R

Table 1. SS361RT/SS461R Performance Specifications (At 3 Vdc to 24 Vdc supply, 20 mA load, $T_A = -40\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$ [$-40\text{ }^{\circ}\text{F}$ to $302\text{ }^{\circ}\text{F}$] except where otherwise specified.

Characteristic	Condition	Minimum	Typical	Maximum	Unit
Supply voltage: ¹					
SS461R	$-40\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$ [$-40\text{ }^{\circ}\text{F}$ to $302\text{ }^{\circ}\text{F}$]	3	—	24	Vdc
SS361RT	$-40\text{ }^{\circ}\text{C}$ to $125\text{ }^{\circ}\text{C}$ [$-40\text{ }^{\circ}\text{F}$ to $257\text{ }^{\circ}\text{F}$]	3	—	24	
SS361RT	$150\text{ }^{\circ}\text{C}$ [$302\text{ }^{\circ}\text{F}$]	3	—	12	
Supply current	Vsupply = 5 Vdc at $25\text{ }^{\circ}\text{C}$ [$77\text{ }^{\circ}\text{F}$] Vsupply = 3 Vdc at $25\text{ }^{\circ}\text{C}$ [$77\text{ }^{\circ}\text{F}$]	— — —	4 3.5 —	6 5 8	mA
Vsat	at 15 mA, Gauss >120	—	—	0.4	V
Output leakage current	Gauss >120	—	—	10	μA
Output switching time: rise fall	Vsupply = 12 Vdc at $25\text{ }^{\circ}\text{C}$ [$77\text{ }^{\circ}\text{F}$], $R_L = 1.6\text{ K}\Omega$, $C_L = 20\text{ pF}$	— — —	— — —	1.5 1.5	μs
Operate	—	5	50	120	Gauss
Release	—	-120	-50	5	Gauss
Differential	—	50	100	170	Gauss
Operating temperature:					
SS461R	3 Vdc to 24 Vdc	-40 [-40]	—	150 [302]	$^{\circ}\text{C}$ [$^{\circ}\text{F}$]
SS361RT	3 Vdc to 12 Vdc				
Storage temperature	—	-40 [-40]	—	150 [302]	$^{\circ}\text{C}$ [$^{\circ}\text{F}$]

Note 1: See Figure 2.

NOTICE

Bipolar Hall-effect sensor ICs may have an initial output in either the ON or OFF state if powered up with an applied magnetic field in the differential zone (applied magnetic field >Brp and <Bop). Honeywell recommends allowing 10 μs for output voltage to stabilize after supply voltage has reached 5 Vdc.

NOTICE

The magnetic field strength (Gauss) required to cause the switch to change state (operate and release) will be as specified in the magnetic characteristics. To test the switch against the specified magnetic characteristics, the switch must be placed in a uniform magnetic field.



Table 2. SS361RT/SS461R Absolute Maximum Ratings¹

Characteristic	Minimum	Typical	Maximum	Unit
Supply voltage	-26.0	—	28.0	Vdc
Applied output voltage	-0.5	—	28.0	V
Output current	—	—	20	mA
Magnetic flux	—	—	no limit	Gauss

Note 1: Absolute maximum ratings are the extreme limits that the device will withstand without damage to the device. However, the electrical and mechanical characteristics are not guaranteed as the maximum limits (above recommended operating conditions) are approached, nor will the device necessarily operate at absolute maximum ratings.

Figure 1. Typical Magnetic Characteristics

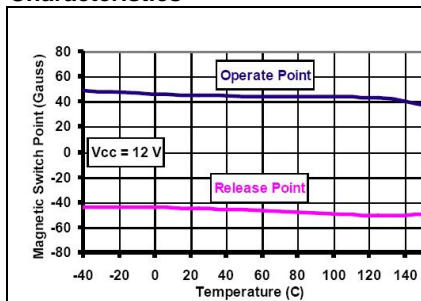


Figure 2. SS361RT Rated Supply Voltage

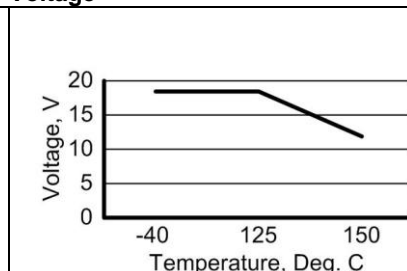
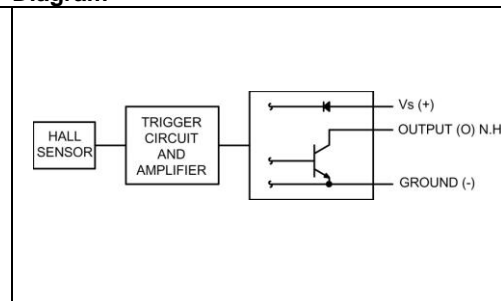


Figure 3. Current Sinking Output Block Diagram



Bipolar Latching, Hall-Effect Digital Sensor ICs

Figure 4. SS361RT Mounting/Tape and Reel Dimensions (For reference only. mm/[in])

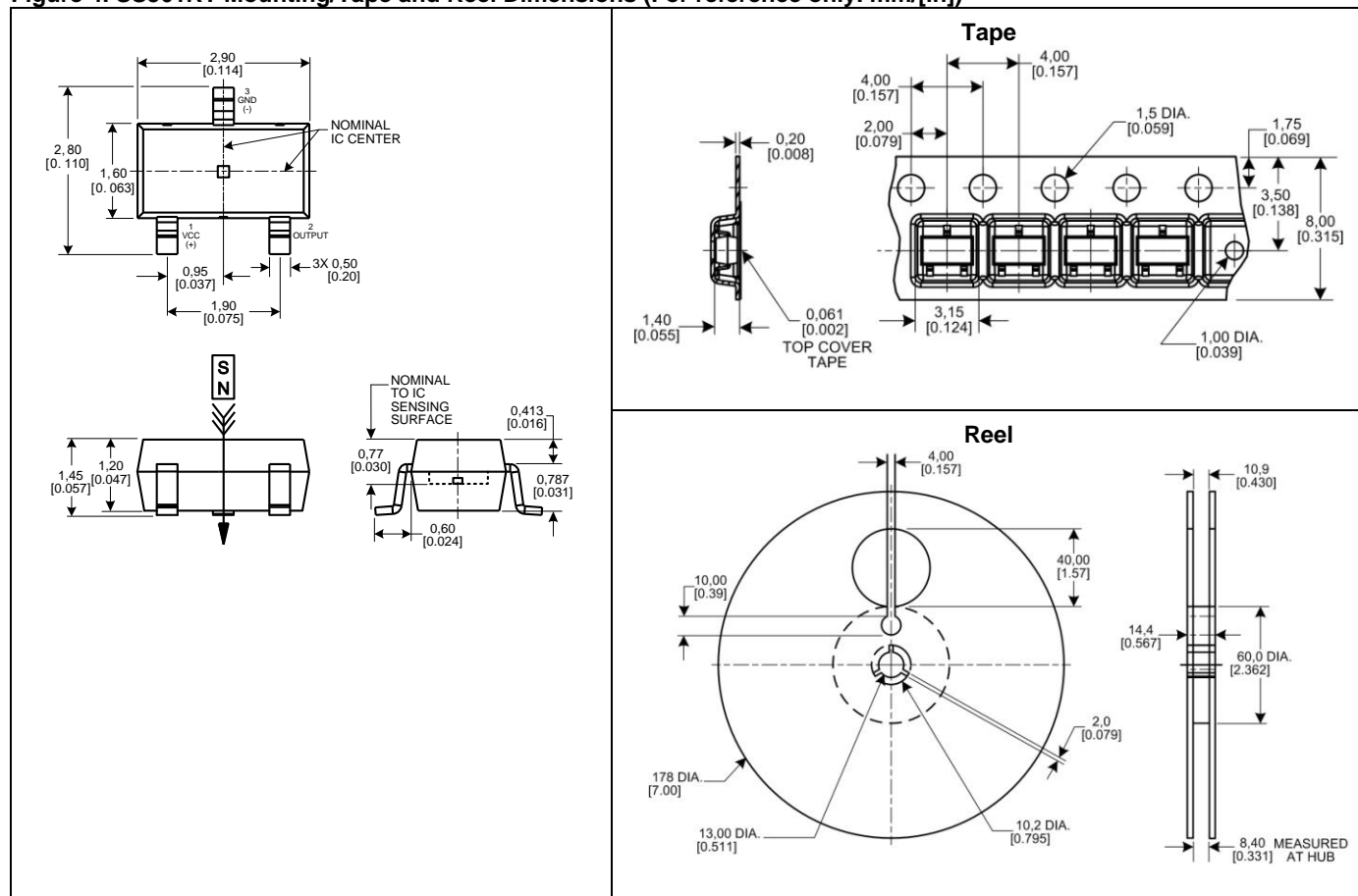
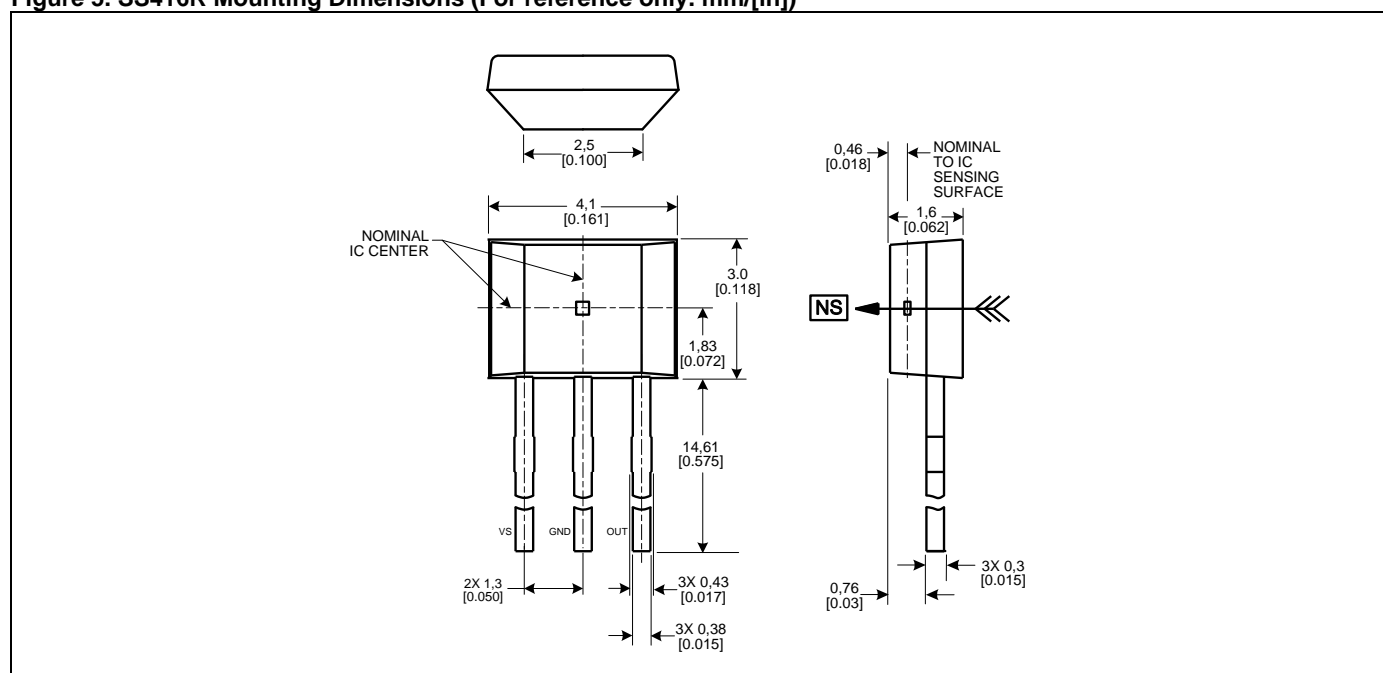


Figure 5. SS416R Mounting Dimensions (For reference only. mm/[in])



Order Guide

Catalog Listing	Description
SS361RT	Bipolar latching, Hall-effect digital sensor IC, SOT-23 package, tape and reel packaging (3000 units per reel)
SS461R	Bipolar latching, Hall-effect digital sensor IC, flat, TO-92-style package, bulk packaging (1000 units per bag)

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

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005901-2-EN IL50 GLO Printed in USA
February 2010
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