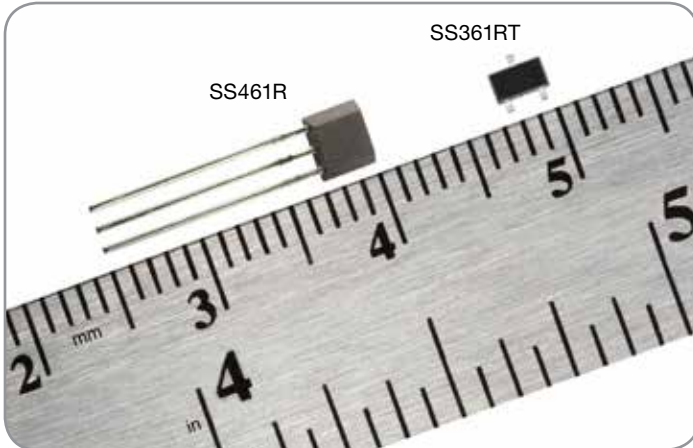


Latching Digital Hall-effect Sensor ICs: SS361RT, SS461R

005902
Issue 3

Datasheet



FEATURES

- Latching magnetics
- Enhanced sensitivity
- Wide operating voltage range
- Built-in reverse voltage capability
- Robust design
-

DESCRIPTION

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

These latching digital Hall-effect sensor ICs have enhanced sensitivity of only 50 G typical, at 25°C [77 °F] that often allows for the use of less expensive magnets or wider air gaps. They offer a robust IC design with reverse polarity protection and 150 °C [302 °F] capability.

These product are available in two package styles:

- **SS361RT:** Subminiature SOT-23 surface-mount package on pocket tape and reel which allows for compact design with automated component placement.
- **SS461R:** Flat TO-92-style package with straight leads in bulk packaging which allows for a compact PC board layout.



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Table 1. Electrical and Environmental Specifications

(At $V_s = 3.0 \text{ Vdc}$ to 24.0 Vdc , 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	Min.	Typ.	Max.	Unit
Supply voltage: SS361RT SS361RT SS461RT	150 °C [302 °F] -40 °C to 125 °C [-40 °F to 257 °F] —	3.0 3.0 3.0	— — —	12.0 24.0 24.0	Vdc
Supply current	$V_{\text{supply}} = 3 \text{ Vdc}$ at 25 °C [77 °F] $V_{\text{supply}} = 5 \text{ Vdc}$ at 25 °C [77 °F] —	— — —	3.5 4.0 —	5.0 6.0 8.0	mA
Output current	—	—	—	20.0	mA
V_{sat}	Gauss > 120	—	—	0.4	V
Output leakage current	Gauss < -120	—	—	10.0	μA
Rise/fall time	25 °C [77 °F]	—	—	1.5	μs
Thermal resistance: SS361RT SS461R	single layer, single sided PCB —	— —	303 233	— —	°C/W
Magnetic characteristics: Operate (Bop) Release (Brp) Differential	— — —	5 -120 50	50 -50 100	120 -5 170	Gauss
Operating temperature	—	-40 [-40]	—	150 [302]	°C [°F]
Storage temperature	—	-40 [-40]	—	150 [302]	°C [°F]
Soldering temperature and time: SS361RT SS461RT	infrared reflow process: 245 °C [473 °F] for 10 s max. wave soldering process: 250 °C to 260 °C [482 °F to 500 °F] for 3 s max.				

NOTICE

These 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 after supply voltage has reached 5 V (SS361RT) or 3 V (SS461R) for the output voltage to stabilize.

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 limits, the switch must be placed in a uniform magnetic field.



Table 2. Absolute Maximum Specifications

Characteristic	Min.	Typ.	Max.	Unit
Supply voltage	-28.0	—	28.0	V
Applied output voltage	-0.5	—	28.0	V
Output current	—	—	20.0	mA
Magnetic flux	—	—	no limit	Gauss

NOTICE

Absolute maximum ratings are the extreme limits the device will momentarily withstand without damage to the device. Electrical and mechanical characteristics are not guaranteed if the specified voltage and/or currents are exceeded, nor will the device necessarily operate at absolute maximum ratings.

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Figure 1. Typical Magnetic Characteristics vs Ambient Temperature at $V_{supply} = 12\text{ Vdc}$.

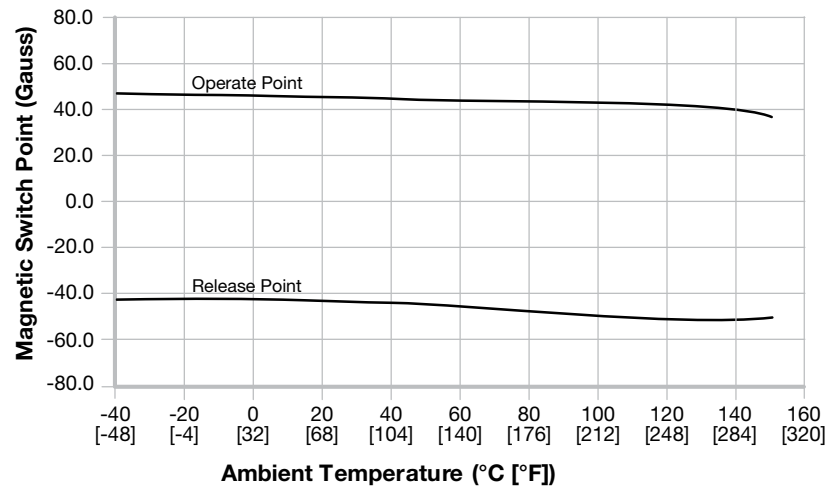


Figure 2. Current Sinking Output Block Diagram

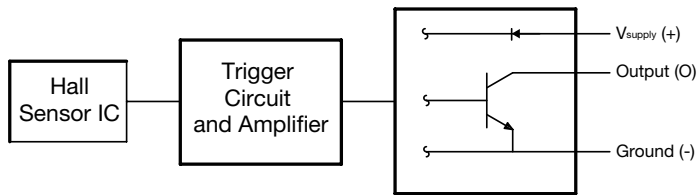


Figure 3. SS361RT Rated Supply Voltage

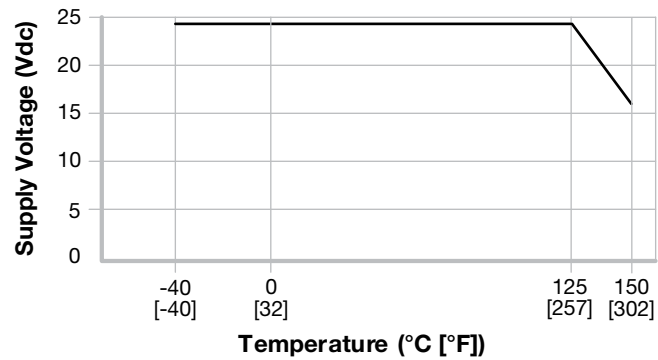


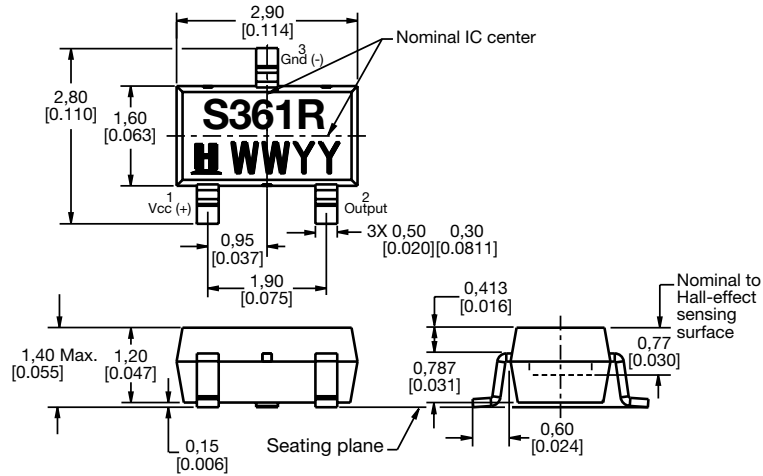
Figure 4. Magnetic Activation



Latching Digital Hall-effect Sensor ICs SS361RT, SS461R

Figure 5. SS361RT Sensor IC Tape and Reel Mounting Dimensions (For reference only. mm/in.)

Sensor IC



Latching Digital Hall-effect Sensor ICs

SS361RT, SS461R

Figure 6. SS461R Sensor IC Mounting Dimensions (For reference only. mm/in.)

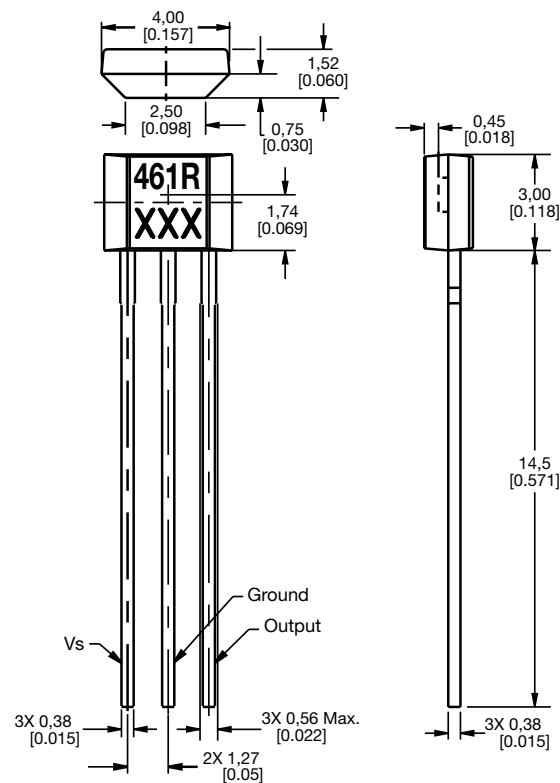


Table 3. Order Guide

Catalog Listing	Description	
SS361RT	Latching, digital Hall-effect sensor IC, North pole activated, SOT-23 package, tape and 178 mm [7 in] reel packaging (3000 units per reel)	
SS461R	Latching, digital Hall-effect sensor IC, South pole activated, flat TO-92-style package, straight leads, bulk packaging (1000 units per bag)	

⚠ 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.

⚠ WARNING
MISUSE OF DOCUMENTATION

- The information presented in this datasheet 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.

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