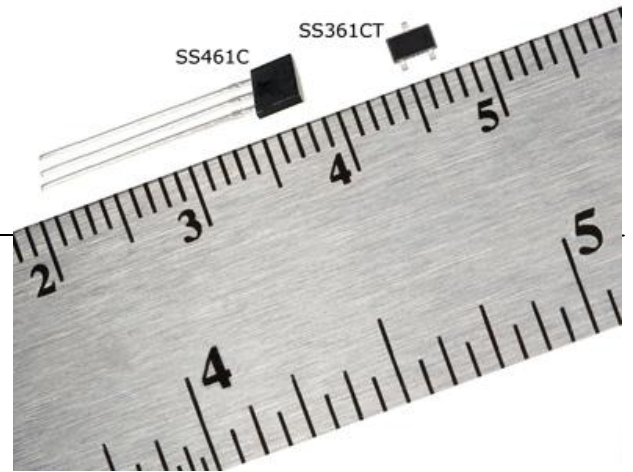


SS361CT/SS461C

High Sensitivity Bipolar Latching, Hall-Effect Digital Sensor ICs



DESCRIPTION

The SS361CT/SS461C latches are small, sensitive and versatile digital Hall-effect 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.

These bipolar sensor ICs have enhanced sensitivity which often allows for the use of less expensive magnets. They offer reverse polarity protection and deliver a stable output over a -40 °C to 125 °C [-40 °F to 257 °F] temperature range. Operation from any dc supply voltage from 4 Vdc to 24 Vdc is acceptable.

FEATURES AND BENEFITS

- Enhanced sensitivity: will operate from only 50 Gauss typical, at 25°C [77 °F], 80 G max. at -40 °C to 85 °C [-40 °F to 185 °F], and 95 Gauss over the full temperature range, allowing the use of smaller, potentially lower-cost magnets or wider air gaps
- Subminiature, SOT-23 surface mount package (SS361CT) supplied on tape and reel allows for a compact design with automated component placement, helping to reduce manufacturing costs
- Small, leaded, flat TO-92 package (SS461C) 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 4 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 125 °C [257 °F]
- RoHS-compliant materials meet Directive 2002/95/EC

These Hall-effect devices are available in two package styles: the SS361CT in the miniature SOT-23 surface mount package and the SS461C in the leaded, flat TO-92-style package.

The SS361CT's small size requires less PCB (printed circuit board) space, allowing it to be used in smaller assemblies.

The SS361CT is available on tape and reel (3000 units per reel). The SS461C is available in a bulk package (1000 units per bag).

POTENTIAL APPLICATIONS

Transportation

- Speed and RPM sensing
- Tachometer, counter pickup
- Motor and fan control
- Electronic window lift
- Convertible roof position

Industrial and Commercial

- Flow-rate sensing for appliances
- Speed and RPM sensing
- Tachometer, counter pickup
- Brushless dc motor commutation
- Motor and fan control
- Robotics control

Medical

- Medical equipment using electric motors

SS361CT/SS461C

Table 1. SS361CT/SS461C Performance Specifications (At 4 Vdc to 24 Vdc supply, 20 mA load, $T_A = -40\text{ }^\circ\text{C}$ to $125\text{ }^\circ\text{C}$ [-40 $^\circ\text{F}$ to 257 $^\circ\text{F}$] except where otherwise specified.

| Characteristic | Condition | Min. | Typ. | Max. | Unit |
|------------------------|--|-----------|------|-----------|---------------------------------------|
| Supply voltage | -40 $^\circ\text{C}$ to 125 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 257 $^\circ\text{F}$] | 4 | – | 24 | Vdc |
| Supply current | $V_{\text{supply}} = 5\text{ V}$ at 25 $^\circ\text{C}$ [77 $^\circ\text{F}$] | – | 4 | 6 | mA |
| V_{sat} | Gauss >95 | – | – | 0.4 | V |
| Output leakage current | Gauss >95 | – | – | 10 | μA |
| Rise/fall time | $V_{\text{supply}} = 12\text{ V}$ at 25 $^\circ\text{C}$ [77 $^\circ\text{F}$] | – | – | 1.5 | μs |
| Operate | -40 $^\circ\text{C}$ to 85 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 185 $^\circ\text{F}$] | 5 | 50 | 80 | Gauss |
| | -40 $^\circ\text{C}$ to 125 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 257 $^\circ\text{F}$] | 5 | 50 | 95 | |
| Release | -40 $^\circ\text{C}$ to 85 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 185 $^\circ\text{F}$] | -80 | -50 | -5 | Gauss |
| | -40 $^\circ\text{C}$ to 125 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 257 $^\circ\text{F}$] | -95 | -50 | -5 | |
| Differential | -40 $^\circ\text{C}$ to 85 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 185 $^\circ\text{F}$] | 50 | 100 | 160 | Gauss |
| | -40 $^\circ\text{C}$ to 125 $^\circ\text{C}$ [-40 $^\circ\text{F}$ to 257 $^\circ\text{F}$] | 50 | 100 | 190 | |
| Operating temperature | $V_{\text{supply}} = 4\text{ Vdc}$ to 24 Vdc | -40 [-40] | – | 125 [257] | $^\circ\text{C}$ [$^\circ\text{F}$] |
| Storage temperature | – | -40 [-40] | – | 150 [302] | $^\circ\text{C}$ [$^\circ\text{F}$] |

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 $>B_{rp}$ and $<B_{op}$). Honeywell recommends allowing 10 μs for output voltage to stabilize after supply voltage has reached 5 V.

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. SS361CT/SS461C Absolute Maximum Ratings¹

| Characteristic | Min. | Typ. | Max. | Unit |
|------------------------|-------|------|----------|-------|
| Supply voltage | -26.0 | – | 28.0 | V |
| 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

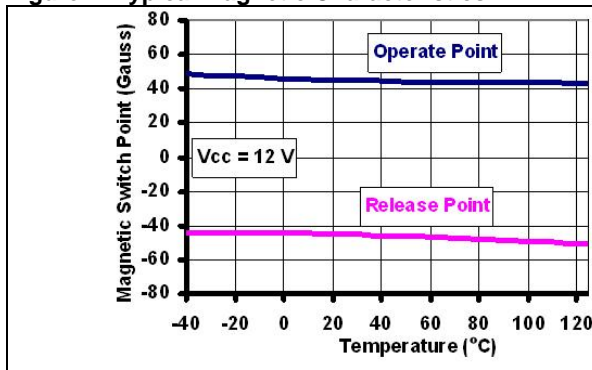
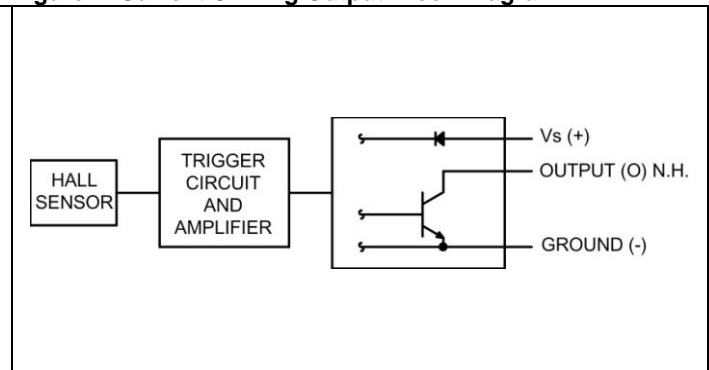


Figure 2. Current Sinking Output Block Diagram



High Sensitivity Bipolar Latching, Hall-Effect Digital Sensor ICs

Figure 3. SS361CT Mounting and Tape/Reel Dimensions (For reference only. mm/[in].)

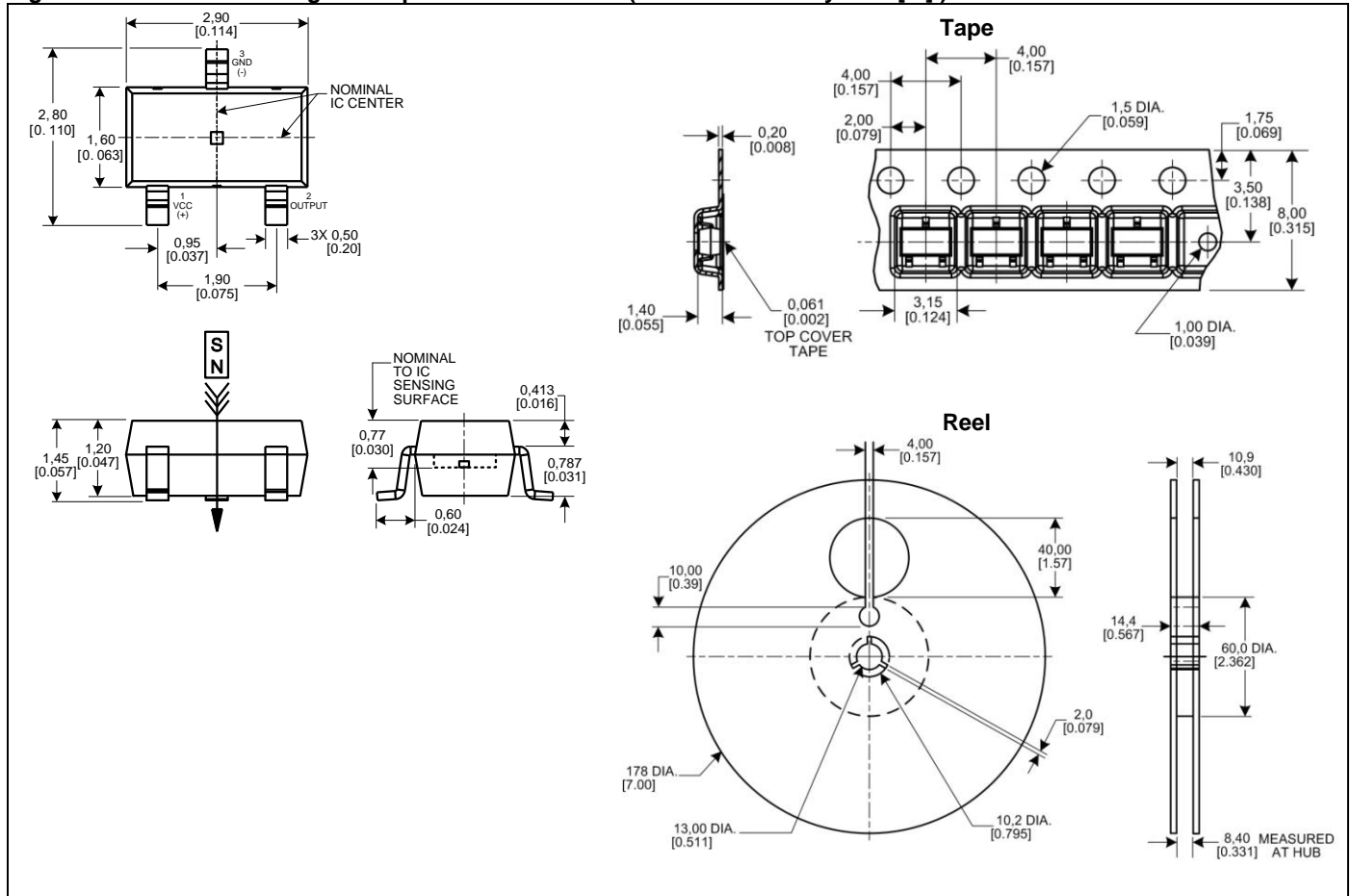
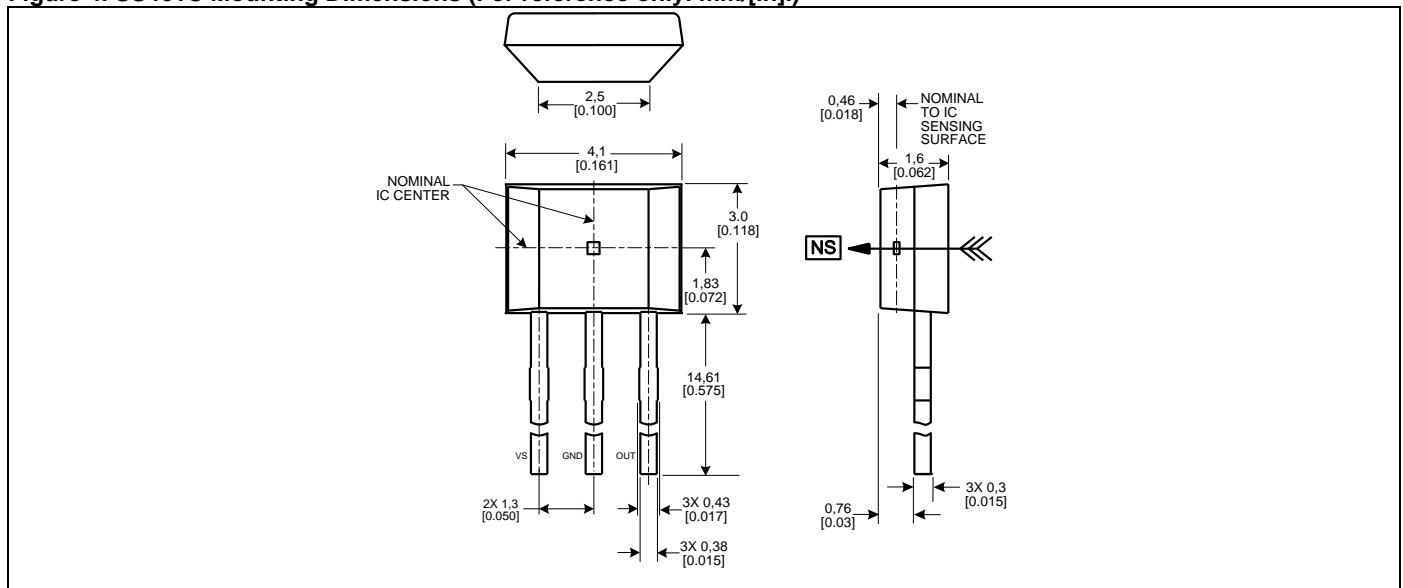


Figure 4. SS461C Mounting Dimensions (For reference only. mm/[in].)



Order Guide

| Catalog Listing | Description |
|-----------------|---|
| SS361CT | High sensitivity bipolar latching, Hall-effect digital sensor IC, SOT-23 package, tape and reel packaging (3000 units per reel) |
| SS461C | High sensitivity bipolar latching, Hall-effect digital sensor IC, flat TO-92-style package, 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.

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

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.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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