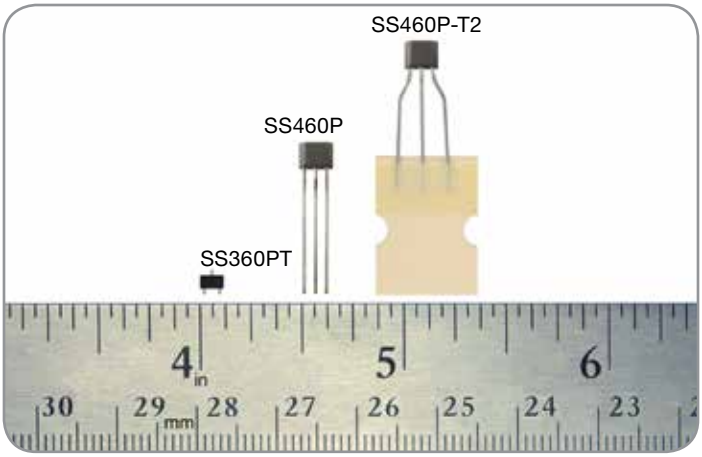
Honeywell

High Sensitivity Latching Digital Hall-effect Sensor ICs with Built-in Pull-up Resistors: SS360PT, SS460P, SS460P-T2

32314080
Issue A

Datasheet



DESCRIPTION

The SS360PT, SS460P and SS460P-T2 High Sensitivity Latching Hall-effect Sensor ICs with Built-in Pull-up Resistors 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 SS360PT is turned on by a North pole while the SS460P and SS460P-T2 are turned on by a South pole.

These products offer reliable switching points with a high magnetic sensitivity of 30 Gauss typ. (55 Gauss max.). They do 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 latching sensor ICs that do use chopper stabilization.

The internal pull-up resistor often eliminates the need for external components, helping to reduce the system cost. These high-performance yet economical sensor ICs are well suited for demanding, cost-sensitive high-volume applications. These products offer reverse polarity protection, deliver a stable output over a wide temperature range, and can operate from a dc supply voltage from 3 Vdc to 24 Vdc.

For brushless dc motor manufacturers who need latching sensors with reliable, consistent performance for more efficient and smaller designs, this product responds to low magnetic fields and offers consistent repeatability while delivering faster response times to a change in magnetic field for better motor efficiency.

These product are available in three package styles:

- **SS360PT:** Miniature SOT-23 surface-mount package supplied on pocket tape and reel which allows for compact design with automated component placement.
- **SS460P**: Flat TO-92-style package with straight leads in bulk packaging which allows for a compact PC board layout.
- **SS460P-T2:** Flat TO-92-style package with formed leads in ammopack tape-in-box.

FEATURES

- Fastest response time in its class
- High sensitivity
- Internal pull-up Hall IC design
- Latching magnetics
- Built-in reverse voltage capability
- Robust design
- No chopper stabilization
- No additional electronic noise generated by sensor
- RoHS-compliant material meets directive 2002/95

POTENTIAL APPLICATIONS

- Medical infusion pumps
- Ambulatory noninvasive pump pressure
- Occulsion detection
- Kidney dialysis machines
- Load and compression sensing
- Variable tensions control

PORTFOLIO

The SS360PT, SS460P and SS460P-T2 are part of Honeywell's family of Latching Digital Hall-effect Sensor ICs, including:

- SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2
- SS361RT, SS461R
- SS361CT, SS461C
- SS46
- SS461A, SS466A

High Sensitivity Latching Digital Hall-effect Sensor ICs with Built-in Pull-up Resistors: SS360PT, SS460P, SS460P-T2

Table 1. Electrical and Environmental Specifications
(At Vs = 3.0 Vdc to 24.0 Vdc, 20 mA load, T_A = -40 ºC to 125 ºC [-40 ºF to 257 ºF] except where otherwise specified.

Characteristic	Condition	Min.	Typ.	Max.	Unit
Supply voltage SS360PT SS360PT SS460P, SS460P-T2	-40 °C to 110 °C [-40 °F to 230 °F] 125 °C [257 °F] —	3.0 3.0 3.0	— — —	24.0 16.0 24.0	Vdc
Supply current	V_{supply} = 3 Vdc at 25 °C [77 °F] —	— —	3.5 —	6.0 10.0	mA
Output current	—	—	—	20	mA
V_{sat}	Gauss > 55	—	—	0.6	V
Output leakage current[1]	Gauss < -55	—	—	10.0	uA
Internal pull-up resistor	—	7.5	10.0	12.5	kOhm
Rise/fall time	25 °C [77 °F]	—	—	1.5	us
Thermal resistance: SS360PT SS460P, SS460P-T2	single layer, single sided PCB —	— —	303 233	— —	°C/W
Magnetic characteristics: Operate (Bop) Release (Brp) Differential	— — —	5 -55 40	30 -30 60	55 -5 80	Gauss
Operating temperature	—	-40 [-40]	—	125 [257]	°C [°F]
Storage temperature: SS360PT SS460P, SS460P-T2	— —	-40 [-40] -40 [-40]	— —	150 [302] 165 [329]	°C [°F]
Soldering temperatures and times: SS360PT SS460P, SS460P-T2	infrared reflow process: peak temperature 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.				

[1]Applies to SS460P and SS460P-T2 only.

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 3 V 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[1]

Characteristic	Min.	Typ.	Max.	Unit
Supply voltage	-26.0	—	26.0	V
Applied output voltage[1]	-0.5	—	26.0	V
Output current	—	—	20	mA
Magnetic flux	—	—	no limit	Gauss

[1]Applies to SS460P and SS460P-T2 only.

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 rated voltage and/or currents are exceeded, nor will the device necessarily operate at absolute maximum ratings.

High Sensitivity Latching Digital Hall-effect Sensor ICs with Built-in Pull-up Resistors: SS360PT, SS460P, SS460P-T2

Figure 1. Sensor IC Block Diagram

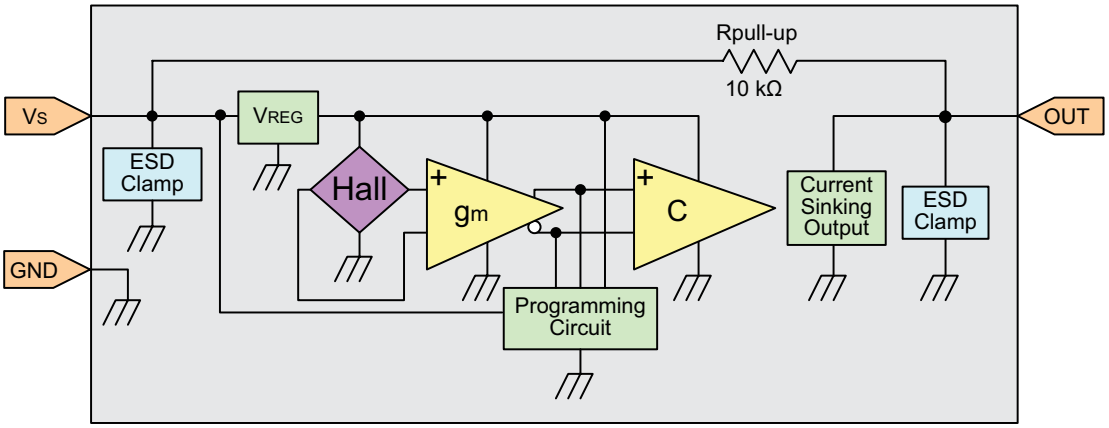


Figure 2. Typical Magnetic Characteristics vs Ambient Temperature at Supply Voltages

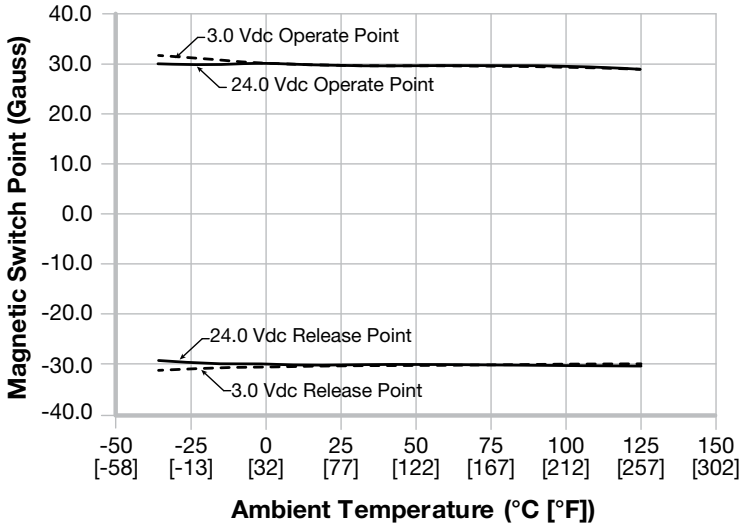


Figure 3. SS360PT Maximum Rated Supply Voltage vs Temperature

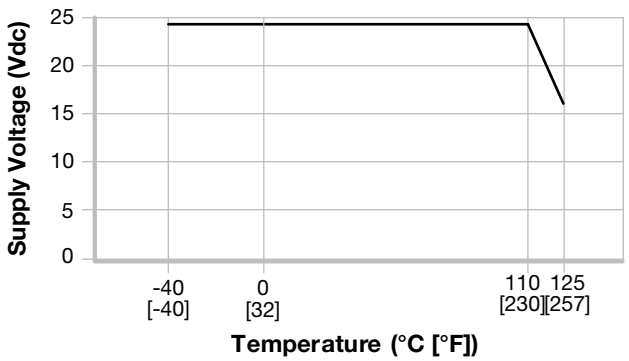
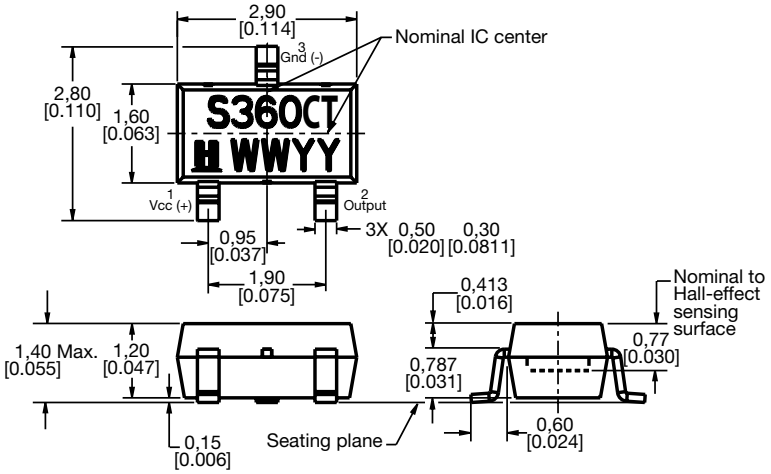


Figure 4. Magnetic Activation

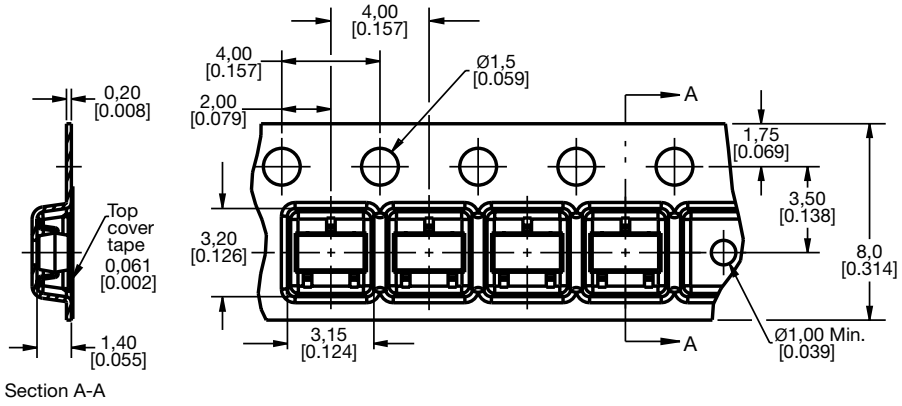


Figure 5. SS360PT Sensor IC, Tape and Reel Mounting Dimensions (For reference only. mm/in.)

Sensor IC



Pocket Tape



Reel

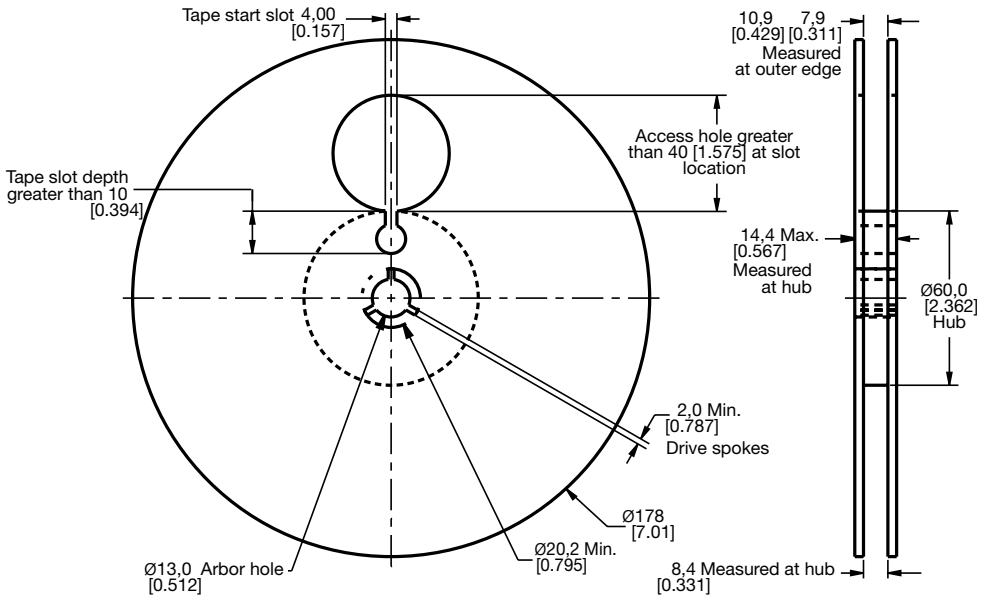
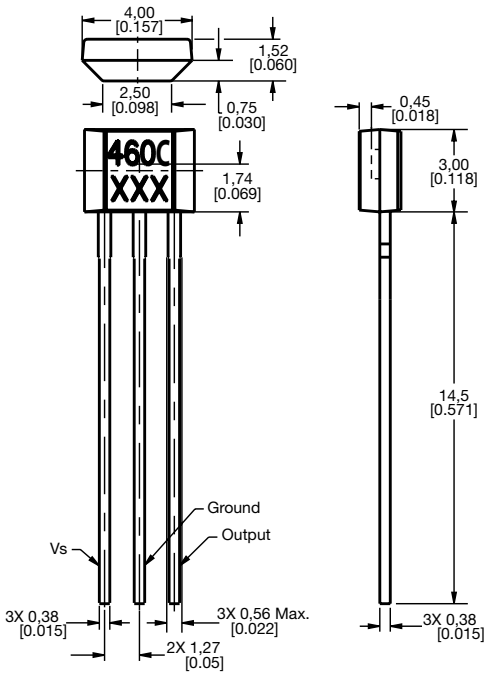
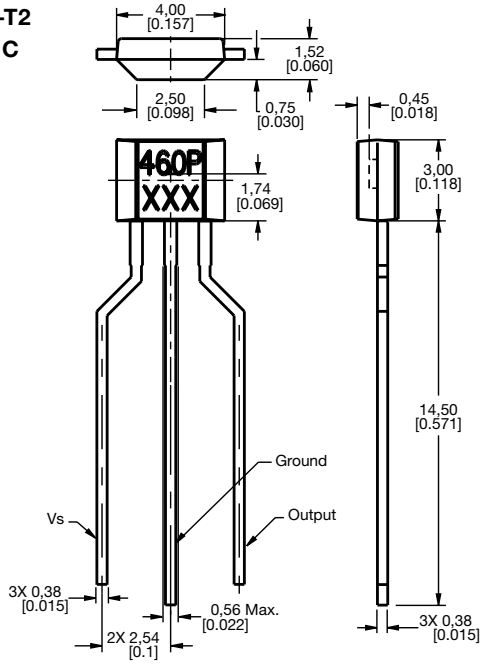


Figure 6. SS460P Sensor IC, SS460P-T2 Sensor IC and Ammopack Tape-in-Box Mounting Dimensions (For reference only. mm/in.)

SS460P Sensor IC



SS460P-T2 Sensor IC



SS460P-T2 Ammopack Tape-in-Box

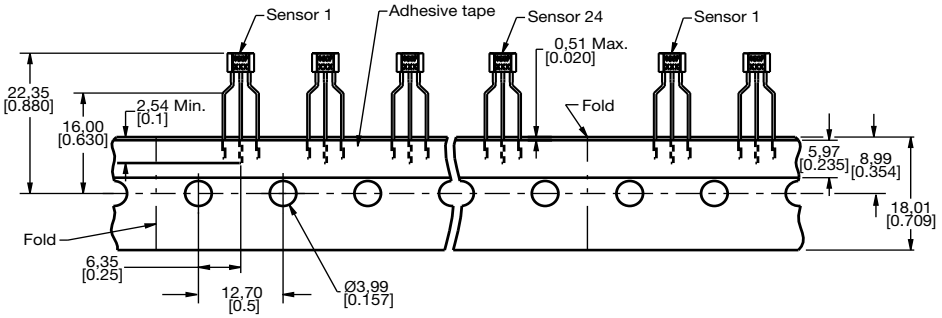
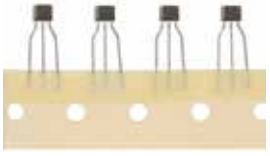


Table 3. Order Guide

Catalog Listing	Description	
SS360PT	High sensitivity latching digital Hall-effect sensor IC with built-in pull-up resistor, North pole activated, SOT-23 package, pocket tape and 178 mm [7 in] reel packaging (3000 units per reel)	
SS460P	High sensitivity latching digital Hall-effect sensor IC with built-in pull-up resistor, South pole activated, flat TO-92-style package, straight leads, bulk packaging (1000 units per bag)	
SS460P-T2	High sensitivity latching digital Hall-effect sensor IC with built-in pull-up resistor, South pole activated, flat TO-92-style package, formed leads, ammopack tape-in-box packaging (5000 units per box)	

ADDITIONAL INFORMATION

The following associated literature is available on the Honeywell web site at sensing.honeywell.com:

- Product Range Guide
- Product Line Guide
- Product Installation Instructions
- Technical Information

⚠ 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.**

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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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