Honeywell

Installation Instructions for the High Sensitivity Latching Digital Hall-effect Sensor ICs: SS360NT, SS360ST, SS360ST-10K, SS460S, SS460S-T2, SS460S-LP

50074541
Issue D

GENERAL INFORMATION

CAUTION
ELECTROSTATIC DISCHARGE DAMAGE
Ensure proper ESD precautions are followed when handling this product.
Failure to comply with these instructions may result in product damage.



SOLDERING AND ASSEMBLY

CAUTION
IMPROPER SOLDERING
- Ensure leads are adequately supported during any forming/shearing operation so that they are not stressed inside the plastic case.
- Limit exposure to high temperatures.

Failure to comply with these instructions may result in product damage

- **Surface mount (SS360NT, SS360ST, SS360ST-10K):** Use infrared reflow process with active flux, lead-free solder. Do not exceed peak temperature of 245°C [473°F] for a maximum of 10 seconds.
- **Through-hole leads (SS460S, SS460S-T2, SS460S-LP):** Wave solder at 250°C to 260°C [482°F to 500°F] for a maximum of three seconds. Burrs are allowed only if full lead length will pass through a 0,68 mm [0.027 in] dia. hole.

CLEANING

CAUTION
IMPROPER CLEANING
- Do not use pressure wash. High-pressure stream could force contaminants into the package.

Failure to comply with these instructions may result in product damage.

Table 1. Electrical and Environmental Specifications
(At V_s = 3.0 Vdc to 24.0 Vdc, 20 mA load, T_A = –40°C to 150°C [–40°F to 302°F] except where otherwise specified.

Characteristic	Condition	Min.	Typ.	Max.	Unit
Supply voltage: SS360NT, SS360ST, SS360ST-10K SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2, SS460S-LP	 -40°C to 125°C [-40°F to 257°F] 150°C [302°F] —	 3.0 3.0 3.0	 — — —	 24.0 12.0 24.0	Vdc
Supply current	V_{supply} = 3.0 Vdc at 25°C [77°F] —	— —	3.5 —	6.0 8.0	mA
Output current	—	—	—	20	mA
V_{sat}: SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2, SS460S-LP	 Gauss > 55 15 mA, Gauss > 55	 — —	 — —	 0.6 0.6	V
Output leakage current	Gauss < -55	—	—	10.0	µA
Rise/fall time	25°C [77°F]	—	—	1.5	µs
Thermal resistance: SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2, SS460S-LP	 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]	—	150 [302]	°C [°F]
Storage temperature: SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2, SS460S-LP	 — —	 -40 [-40] -40 [-40]	 — —	 150 [302] 165 [329]	°C [°F]
Soldering temperature and time: SS360NT, SS360ST, SS360ST-10K SS460S, SS460S-T2, SS460S-LP	 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.				

High Sensitivity Latching Digital Hall-effect Sensor ICs:
SS360NT, SS360ST, SS360ST-10K, SS460S, SS460S-T2, SS460S-LP

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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 (SS360NT, SS360ST, SS360ST-10K) or 3 V (SS460S, SS460S-T2, SS460S-LP) 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	-26.0	—	26.0	V
Applied output voltage	-0.5	—	26.0	V
Output current	—	—	25	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 rated voltage and/or currents are exceeded, nor will the device necessarily operate at absolute maximum ratings.

Figure 1. Sensor IC Block Diagram

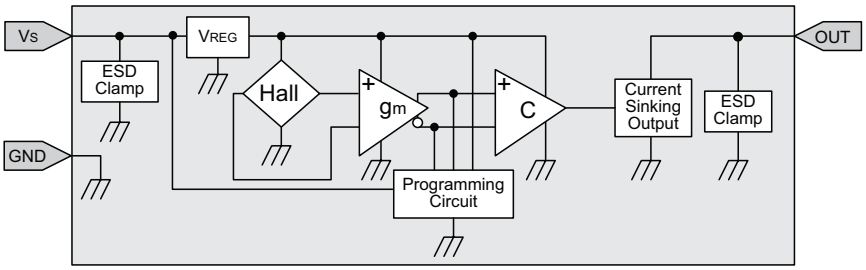


Figure 2. Typical Magnetic Characteristics vs Ambient Temperature at Supply Voltages

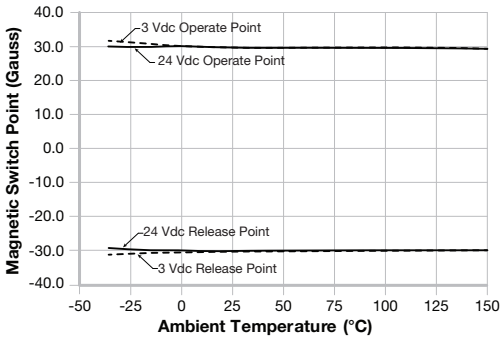


Figure 3. SS360NT, SS360ST, SS360ST-10K Maximum Rated Supply Voltage vs Temperature

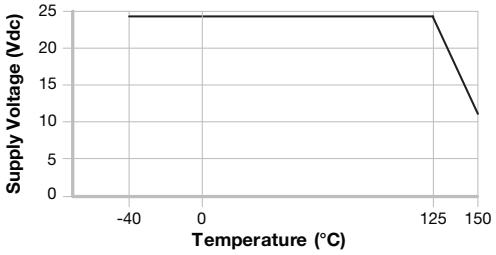


Figure 4. Magnetic Activation

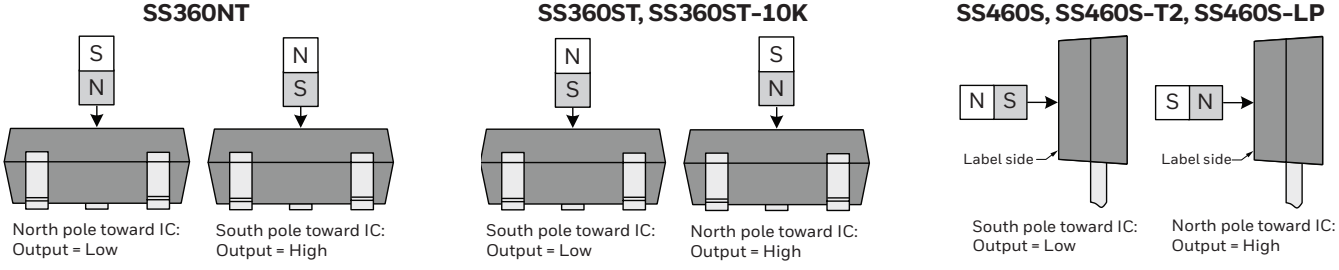
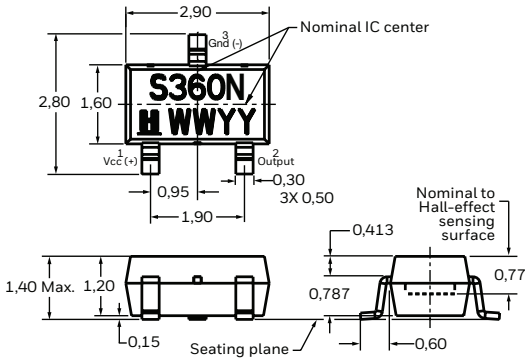
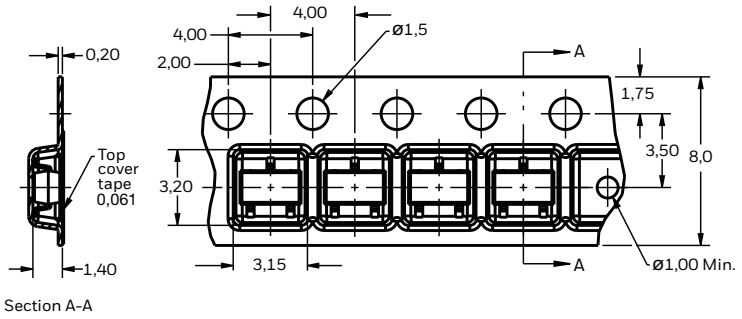


Figure 5. SS360NT, SS360ST and SS360ST-10K Sensor IC, Tape and Reel Mounting Dimensions (For reference only. mm)

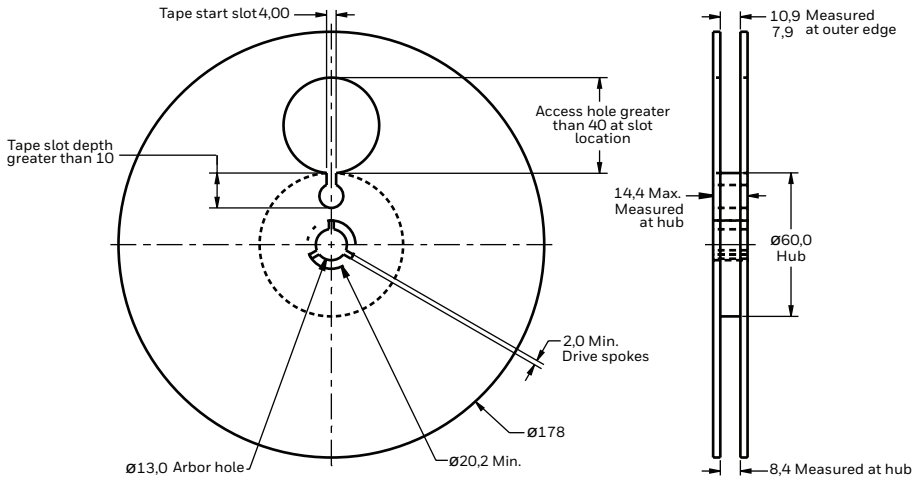
SS360NT, SS360ST, SS360ST-10K Sensor IC



SS360NT, SS360ST, SS360ST-10K Pocket Tape



SS360NT, SS360ST
178 mm Reel



SS360ST-10K
330 mm Reel

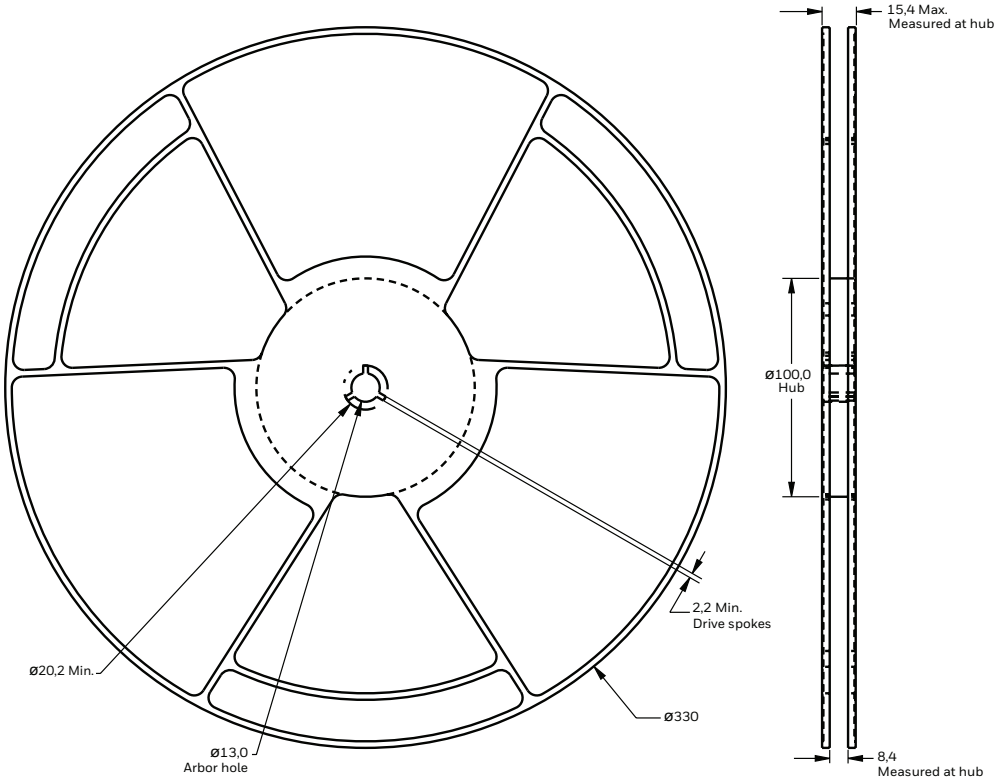
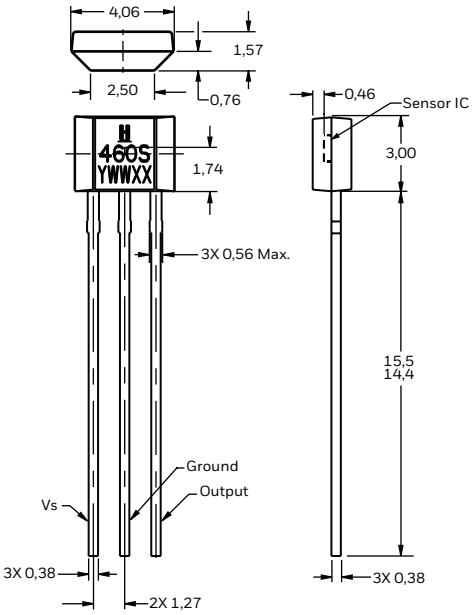
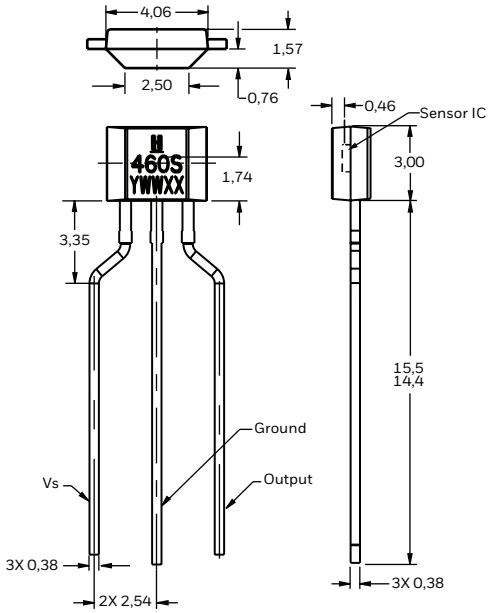


Figure 6. SS460S Sensor IC, SS460S-T2 and SS460S-T3 Sensor IC and Ammopack Tape-in-Box Mounting Dimensions (For reference only. mm)

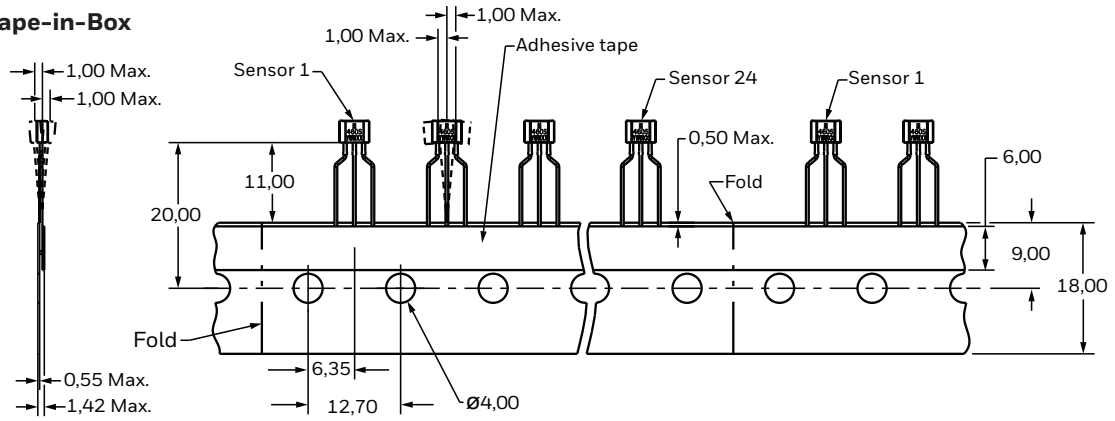
SS460S, SS460S-T3 Sensor IC



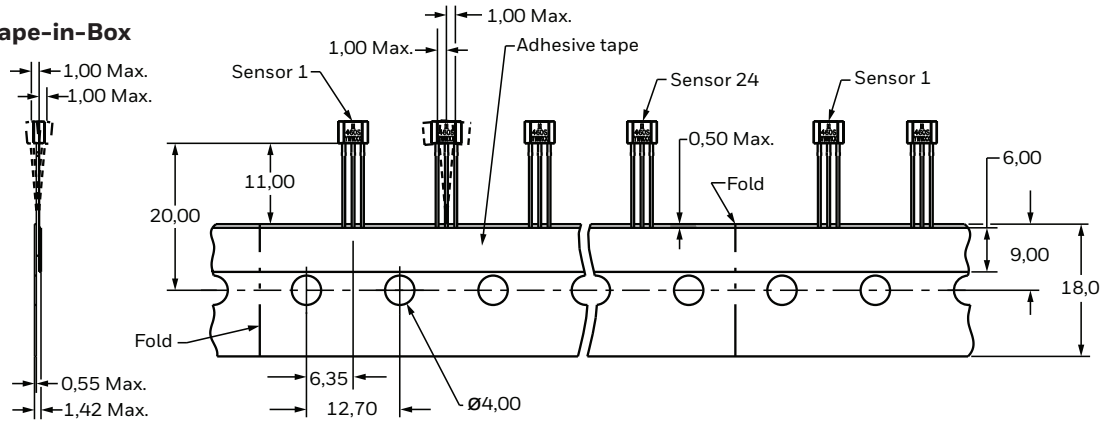
SS460S-T2 Sensor IC



SS460S-T2
Ammopack Tape-in-Box



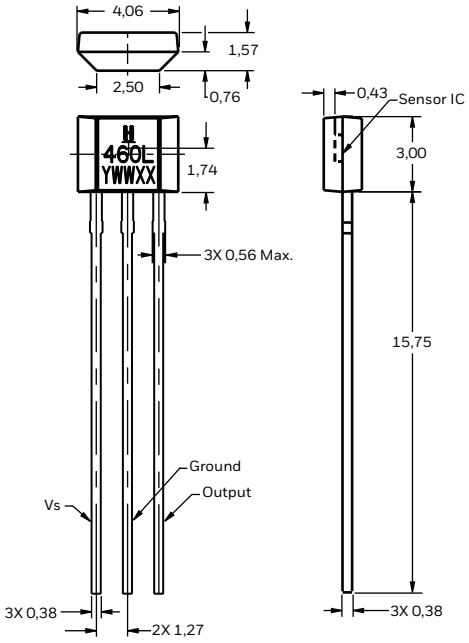
SS460S-T3
Ammopack Tape-in-Box



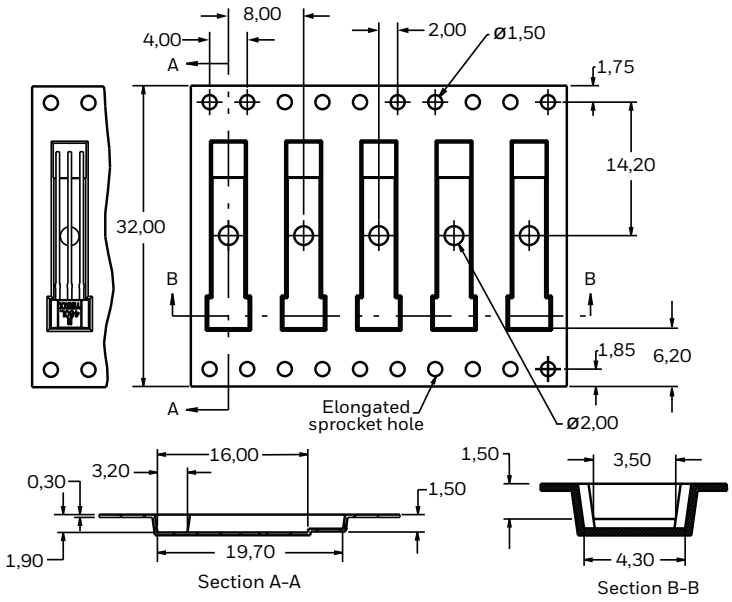
Note: Ensure the minimum hole size in the PCB is 0,68 mm dia. based on the IPC 2222 Level B standard.

Figure 7. SS460-LP Sensor IC, Tape and Reel Mounting Dimensions (For reference only. mm)

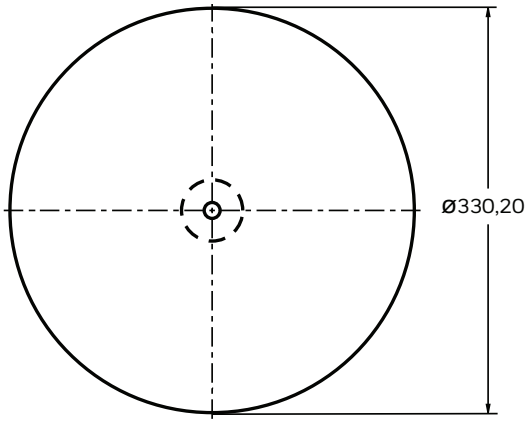
SS460-LP Sensor IC



SS460-LP Pocket Tape



SS460-LP
330 mm Reel



⚠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 during the applicable warranty period. 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 that Honeywell, in its sole discretion, 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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50074541-D-EN | D | 04/19
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