

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.



- **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.

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

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, $T_A = -40^\circ\text{C}$ to 150°C [-40°F to 302°F] except where otherwise specified.)

Characteristic	Condition	Min.	Typ.	Max.	Unit
Supply voltage:					
SS360NT, SS360ST, SS360ST-10K	-40°C to 125°C [-40°F to 257°F]	3.0	—	24.0	Vdc
SS360NT, SS360ST, SS360ST-10K	150°C [302°F]	3.0	—	12.0	
SS460S, SS460S-T2, SS460S-LP	—	3.0	—	24.0	
Supply current	$V_{\text{supply}} = 3.0$ Vdc at 25°C [77°F]	—	3.5	6.0	mA
	—	—	—	8.0	
Output current	—	—	—	20	mA
V_{sat} :					V
SS360NT, SS360ST, SS360ST-10K	Gauss > 55	—	—	0.6	
SS460S, SS460S-T2, SS460S-LP	15 mA, Gauss > 55	—	—	0.6	
Output leakage current	Gauss < -55	—	—	10.0	μA
Rise/fall time	25°C [77°F]	—	—	1.5	μs
Thermal resistance:					°C/W
SS360NT, SS360ST, SS360ST-10K	single layer, single sided PCB	—	303	—	
SS460S, SS460S-T2, SS460S-LP	—	—	233	—	
Magnetic characteristics:					Gauss
operate (Bop)	—	5	30	55	
release (Brp)	—	-55	-30	-5	
differential	—	40	60	80	
Operating temperature	—	-40 [-40]	—	150 [302]	°C [°F]
Storage temperature:					°C [°F]
SS360NT, SS360ST, SS360ST-10K	—	-40 [-40]	—	150 [302]	
SS460S, SS460S-T2, SS460S-LP	—	-40 [-40]	—	165 [329]	
Soldering temperature and time:					
SS360NT, SS360ST, SS360ST-10K	infrared reflow process: peak temperature 245°C [473°F] for 10 s max.				
SS460S, SS460S-T2, SS460S-LP	wave soldering process: 250°C to 260°C [482°F to 500°F] for 3 s max.				

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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 μ s 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

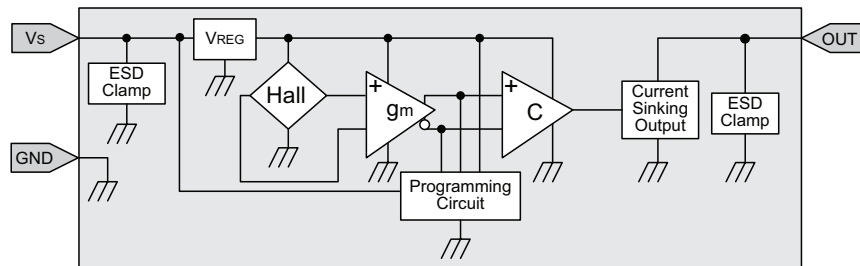


Figure 2. Typical Magnetic Characteristics vs Ambient Temperature at Supply Voltages

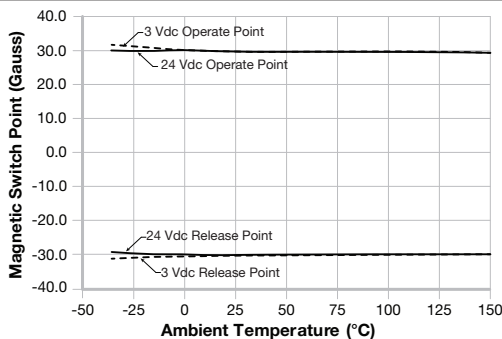


Figure 3. SS360NT, SS360ST, SS360ST-10K Maximum Rated Supply Voltage vs Temperature

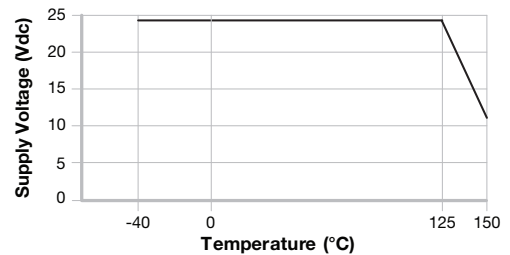
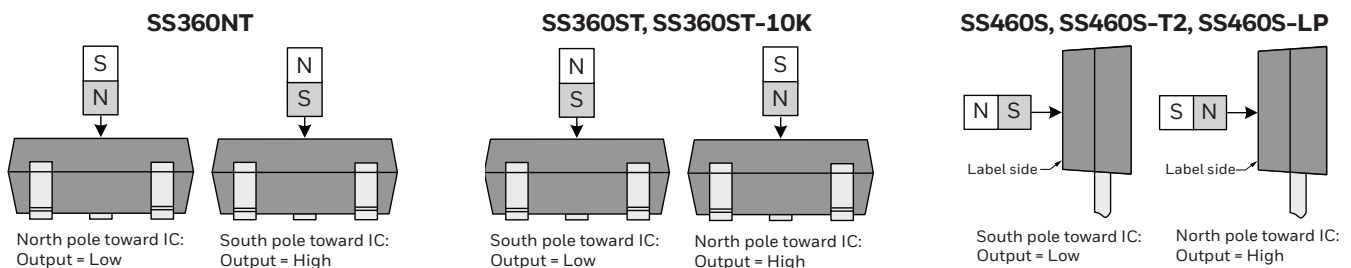


Figure 4. Magnetic Activation



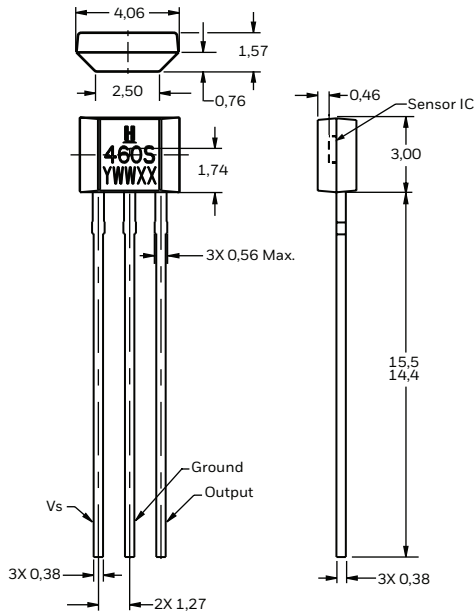
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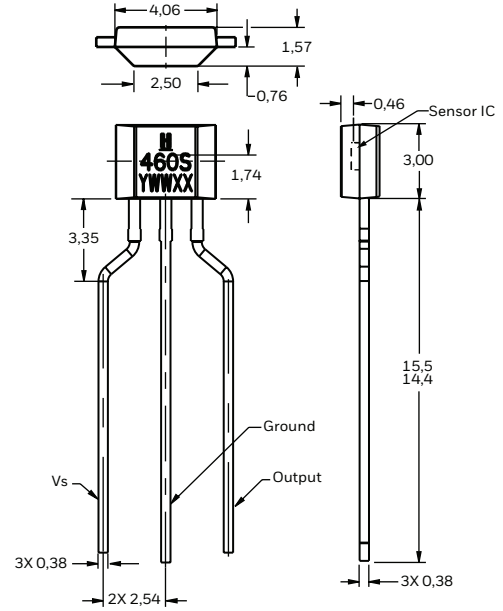
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Figure 6. SS460S Sensor IC, SS460S-T2 and SS460S-T3 Sensor IC and Ammopack Tape-in-Box Mounting Dimensions (For reference only. mm)

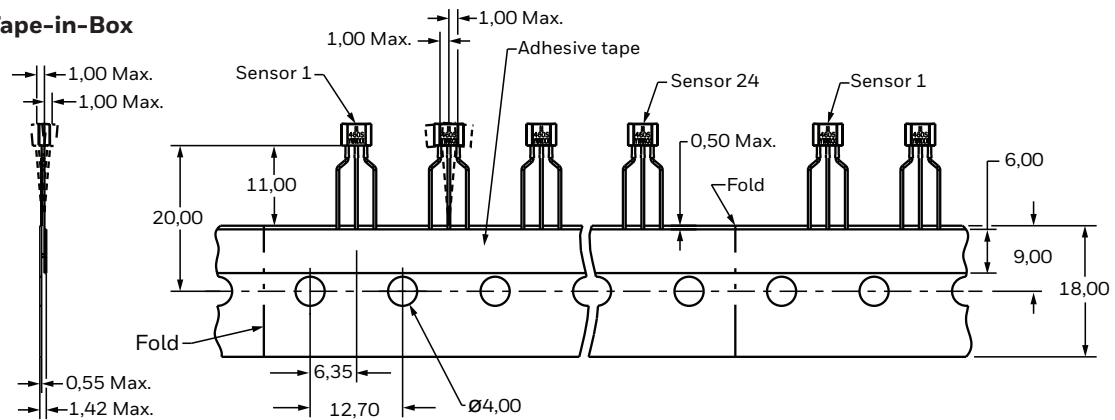
SS460S, SS460S-T3 Sensor IC



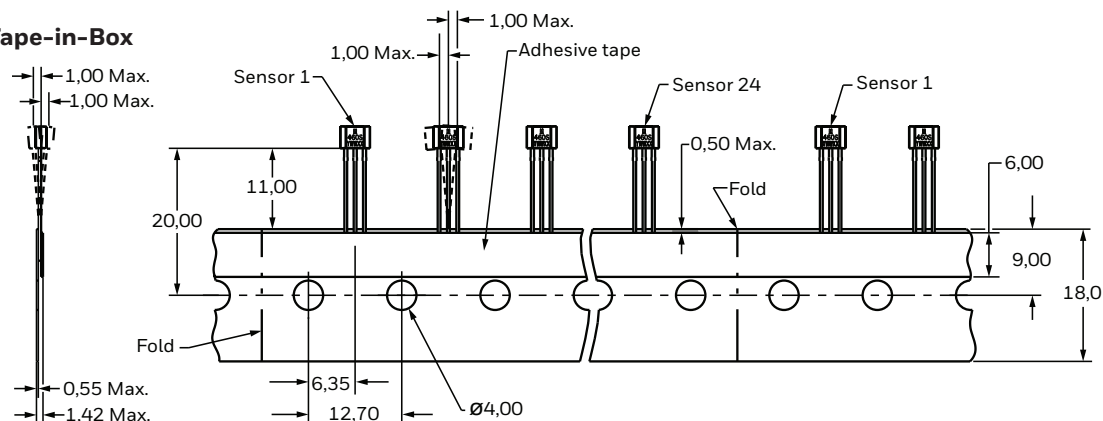
SS460S-T2 Sensor IC



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.

⚠️ 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

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