Table 1. Electrical and Environmental Specifications (Applies to both SS400 series and 500 Series, unless otherwise noted.

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage[1]	V_s	—	3.8	—	30	Vdc
Rated sinking current (I_{sink})	I_{sink}	—	—	20	—	mA
Current consumption:						
On:						
SS400 Series		V_s = 30 Vdc, I_{sink} = 20 mA, -40 °C < T < 150 °C, B > operate max.	—	—	10.0	
SS500 Series	—	V_s = 30 Vdc, -40 °C < T < 150 °C, B > operate max.	—	—	10.0	mA
Off:						
SS400 Series		V_s = 30 Vdc, I_{sink} = 20 mA, -40 °C < T < 150 °C, B > operate max.	—	—	9.0	
SS500 Series		V_s = 30 Vdc, I_{sink} = 20 mA, -40 °C < T < 150 °C, B > release min.	—	—	10.0	
Vsat:						
SS400 Series	—	V_s = 3.8 Vdc, I_{sink} = 20 mA, B > operate max.	—	—	0.4	V
SS500 Series		V_s = 3.8 Vdc, B > operate max.	—	—	0.4	
Output leakage current:						
SS400 Series	—	Vs = 24 V, Vout = 30 V, B < release min.	—	—	0.4	uA
SS500 Series		—	—	—	10.0	
Output switching time:						
rise	—	V_s = 12 V, R_L = 1.6 kOhm, C_L = 20 pF, T = 25 °C [77 °F]	—	—	1.5	µs
fall		V_s = 12 V, R_L = 1.6 kOhm, C_L = 20 pF, T = 25 °C [77 °F]	—	—	1.5	
Operating temperature:						
SS400 Series	T	—	-40 [-40]	—	150 [302]	°C [°F]
SS500 Series		—	-50 [-58]	—	150 [302	
Storage temperature:						
SS400 Series	Ts	—	-50 [-58]	—	150 [302]	°C [°F]
SS500 Series		—	-65 [-85]	—	150 [302]	
Soldering temp. and time:						
SS400 Series	—	wave soldering process: 250 °C to 260 °C [482 °F to 500 °F] for 3 s max.				
SS500 Series		infrared reflow process: peak temperature 245 °C [473 °F] for 10 s max.				

[1]For supply voltages above 24 Vdc, a capacitor may be needed between the output and supply pins to ensure proper operation.

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 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	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_s	-1	—	30	V
Applied output voltage:					
SS400 Series	V_{out}	-0.5	—	30	V
SS500 Series (off)		—	—	30	
Output current:					
V_s = -1 Vdc to 24 Vdc		—	—	50	
V_s = 24 Vdcto 25 Vdc		—	—	37	
V_s = 25 Vdc to 26 Vdc		—	—	33	
V_s = 26 Vdc to 27 Vdc	I_{sink}	—	—	28	mA
V_s = 27 Vdc to 28 Vdc		—	—	24	
V_s = 28 Vdc to 29 Vdc		—	—	19	
V_s = 29 Vdc to 30 Vdc		—	—	15	
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. Circuit Diagram

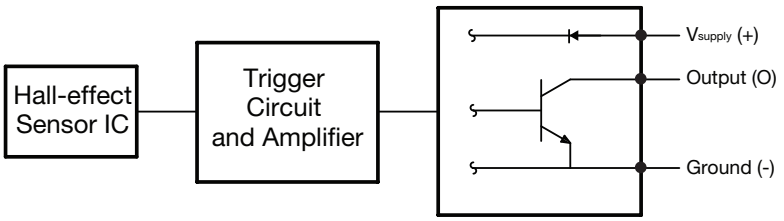
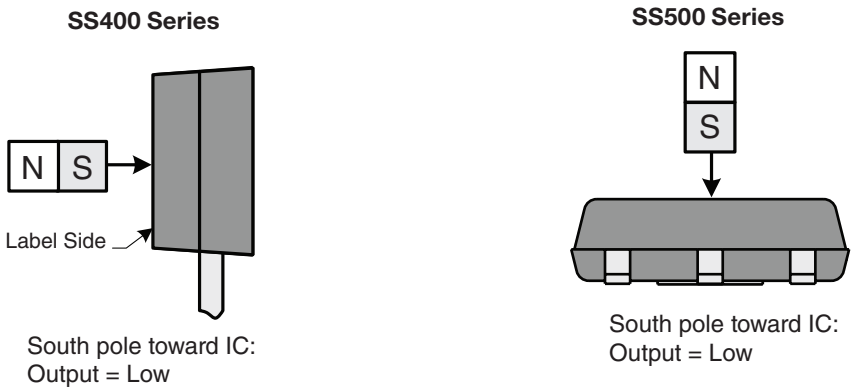


Figure 2. Magnetic Activation



Bipolar, Latching, or Unipolar Digital Hall-effect Sensor ICs:

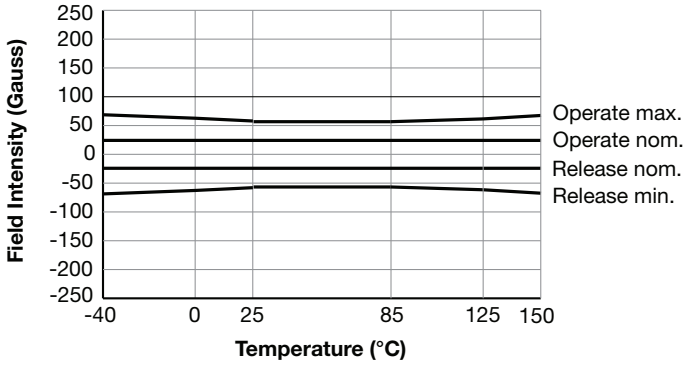
SS400 Series, SS500 Series

Table 3. Magnetic Specifications

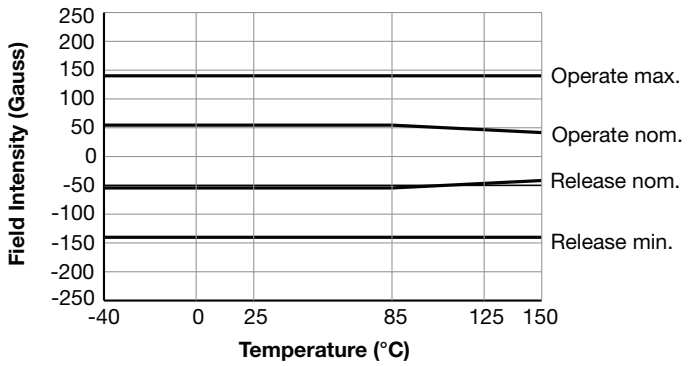
Temperature	Operating Characteristic	Magnetic Characteristic (Guass)													
		Bipolar				Unipolar						Latching			
		SS411	SS511AT	SS413	SS513AT	SS441	SS541AT	SS443	SS543AT	SS449	SS549AT	SS461	SS561AT	SS466	SS566AT
-40 °C [-40 °F]	**operate:**														
	minimum	NS		NS		50		110		285		5	—	100	
	maximum	70		140		135		215		435		110	100	200	
	release:														
	minimum	-70		-140		20		80		210		-110	-100	-200	
	maximum	NS		NS		120		190		360		-5	-5	-100	
	differential (min.)	15		20		15		25		30		50	50	200	
0 °C [0 °F]	**operate:**														
	minimum	NS		NS		53		110		305		5		100	
	maximum	65		140		117		190		400		90		185	
	release:														
	minimum	-65		-140		20		80		230		-90		-185	
	maximum	NS		NS		99		165		325		-5		-100	
	differential (min.)	15		20		15		25		30		50		200	
25 °C [77 °F]	**operate:**														
	minimum	NS		NS		55		110		310		10		100	
	maximum	60		140		115		180		390		85		180	
	release:														
	minimum	-60		-140		20		75		235		-85		-180	
	maximum	NS		NS		95		155		315		-10		-100	
	differential (min.)	15		20		20		25		30		50		200	
85 °C [185 °F]	**operate:**														
	minimum	NS		NS		45		90		290	—	10		95	
	maximum	60		140		120		180		400	400	85		180	
	release:														
	minimum	-60		-140		15		70		215	315	-85		-180	
	maximum	NS		NS		105		165		325	—	-10		-95	
	differential (min.)	12		20		15		15		30	30	50		190	
125 °C [257 °F]	**operate:**														
	minimum	NS		NS		40		80		270	290	5		80	
	maximum	65		140		123		190		410	400	100		180	
	release:														
	minimum	-65		-140		15		60		200	215	-100		-180	
	maximum	NS		NS		115		180		340	325	-5		-80	
	differential (min.)	12		20		8		10		30	30	50		160	
150 °C [302 °F]	**operate:**														
	minimum	NS		NS		35		65		260		5		70	
	maximum	70		140		125		200		420		110		185	
	release:														
	minimum	-70		-140		10		55		185		-110		-185	
	maximum	NS		NS		120		195		345		-5		-70	
	differential (min.)	10		20		5		5		30		50		140	

Figure 3. Operate and Release Point Performance Graphics

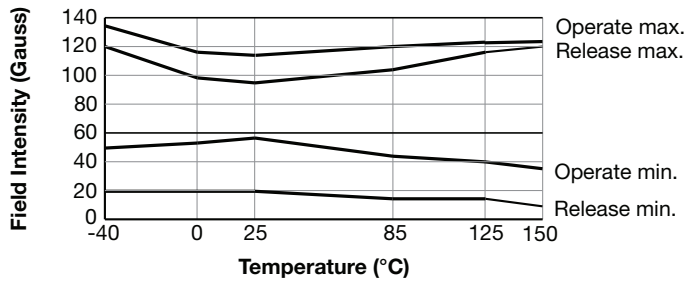
SS411/SS511AT



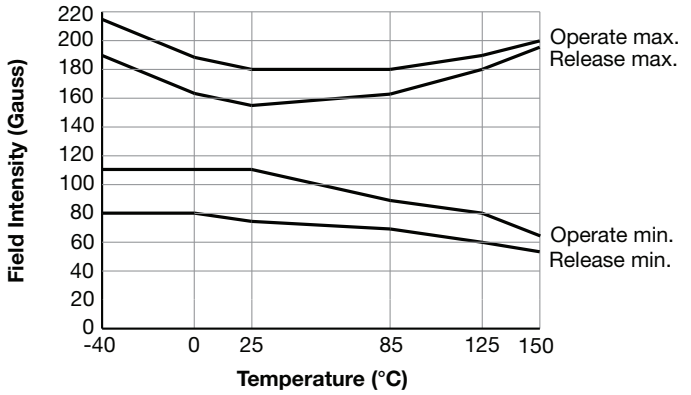
SS413/SS513AT



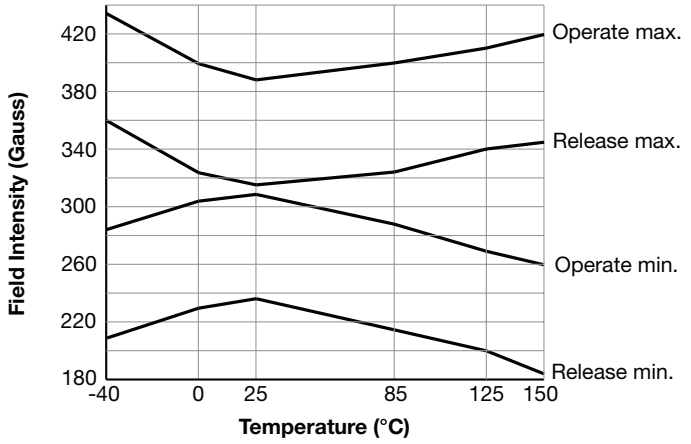
SS441/SS541AT



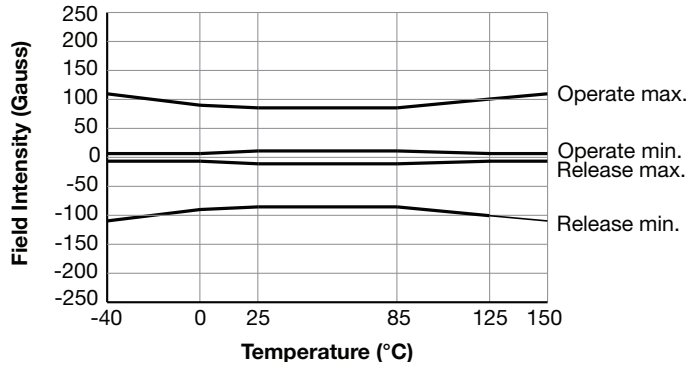
SS443/SS443AT



SS4449/SS549AT



SS461/SS561AT



SS466/SS566AT

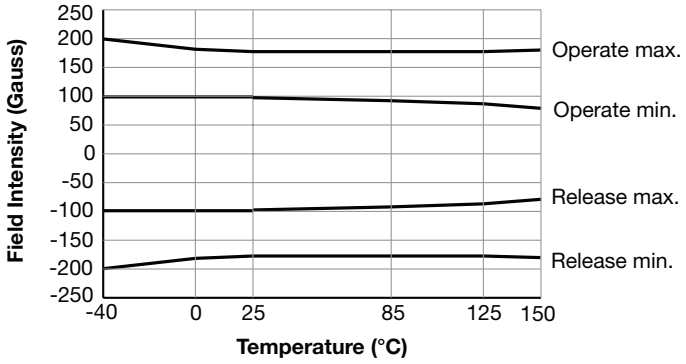


Figure 4. Circuit Diagrams

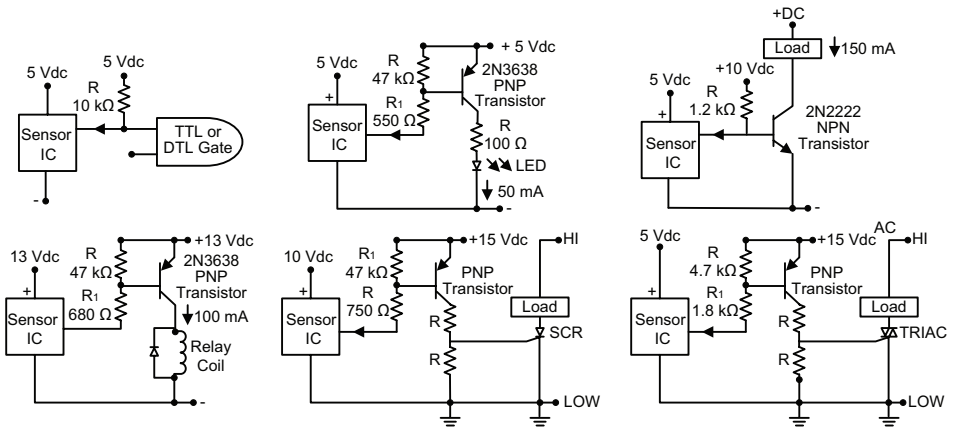
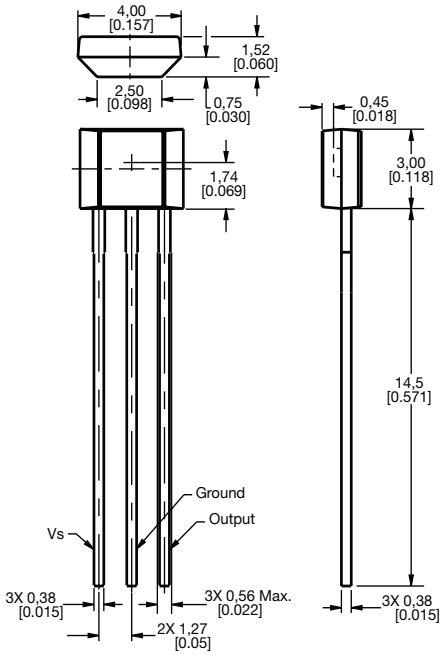
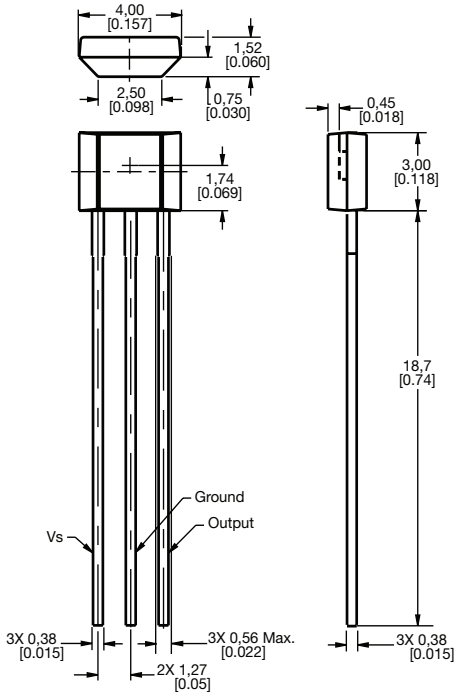


Figure 5. SS400 Series Flat TO-92-Style Mounting and Dimensional Drawings (For reference only: mm/[in].)

A: 14,5 mm [0.57 in] Straight Standard Leads Sensor IC, Bulk Pack



B: 18,7 mm [0.74 in] Straight Long Leads Sensor IC, Bulk Pack



C. 14,5 mm [0.57 in] Straight Standard Leads, Ammopack Tape-in-Box

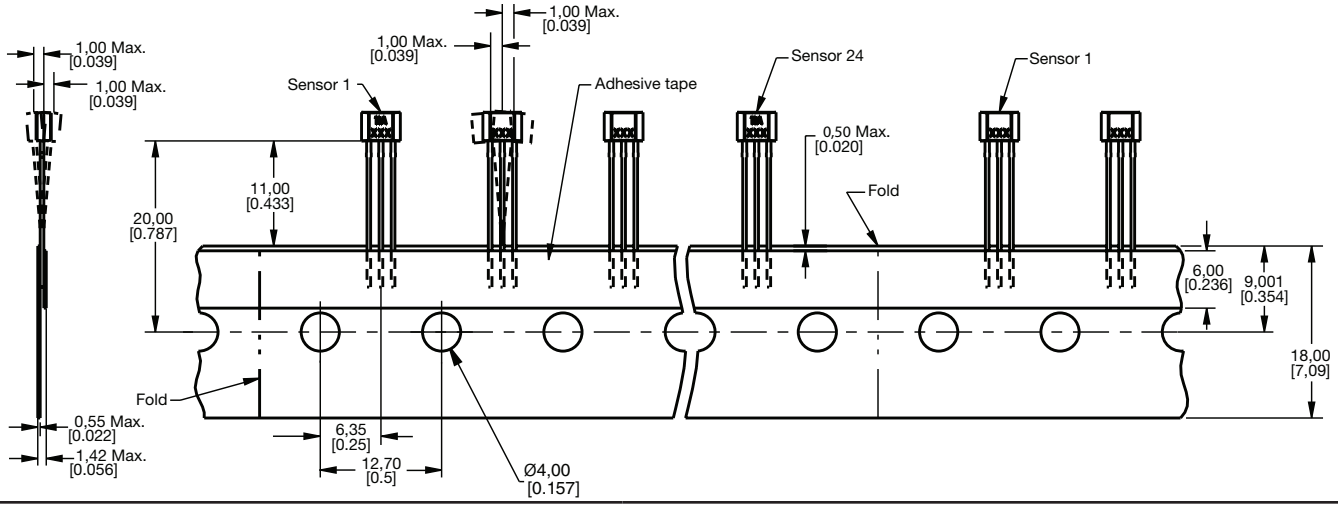
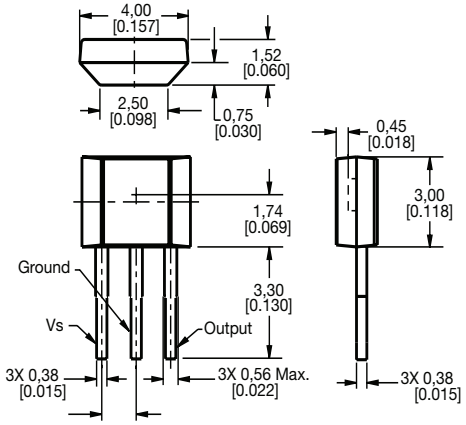
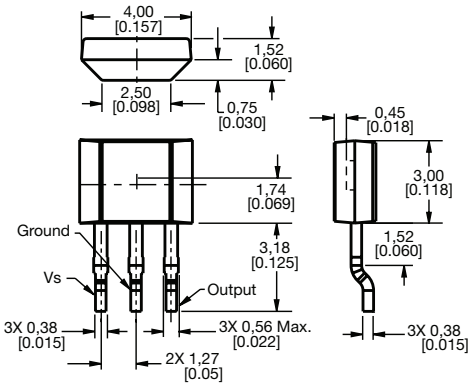


Figure 5. SS400 Series Flat TO-92-Style Mounting and Dimensional Drawings (continued)

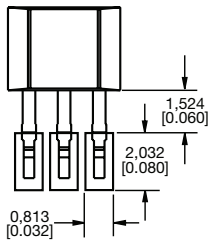
D. 3,30 [0.130 in] Straight Reduced Leads Sensor IC, Bulk Pack



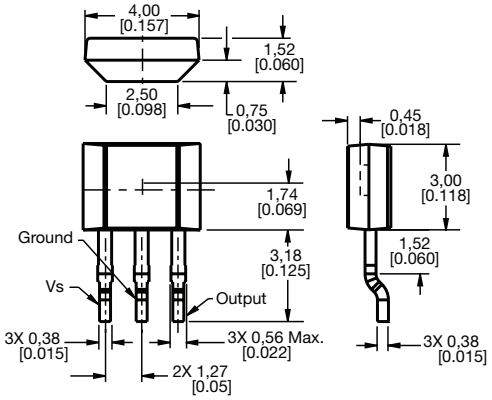
E. 3,18 [0.125 in] Surface Mount Sensor IC, Bulk Pack

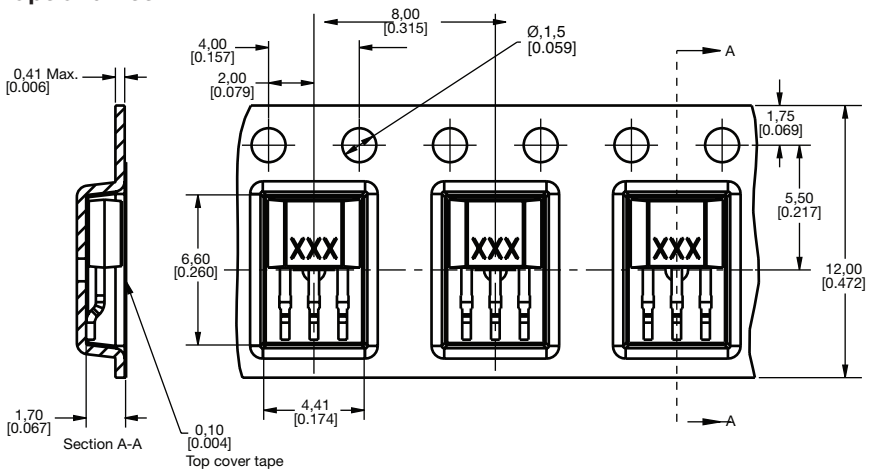


PCB Land Pattern

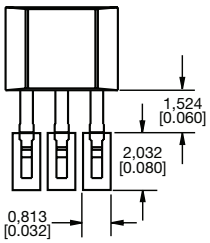


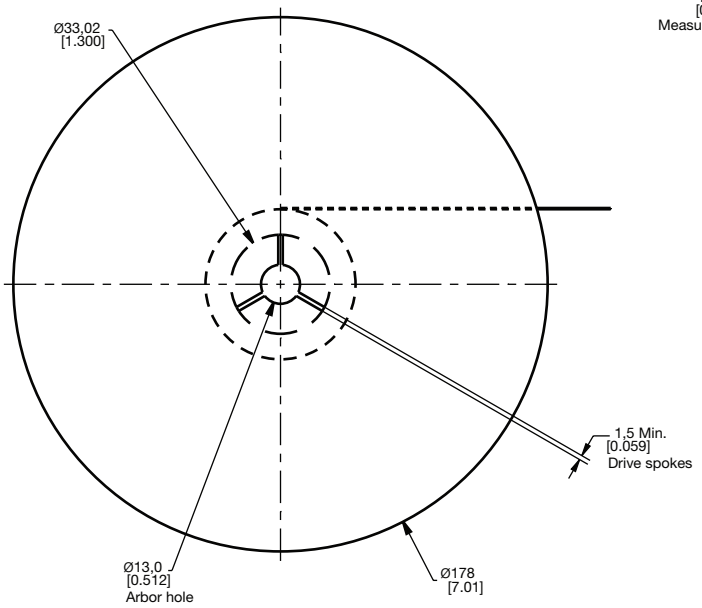
F. 3,18 [0.125 in] Surface Mount Sensor IC, Pocket Tape and Reel





PCB Land Pattern





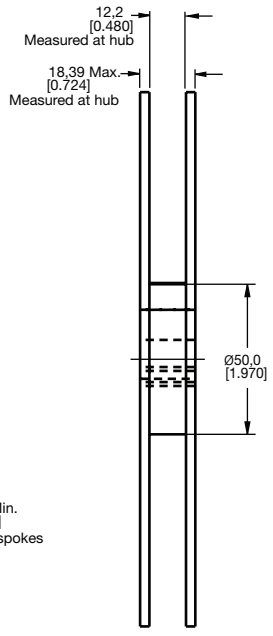
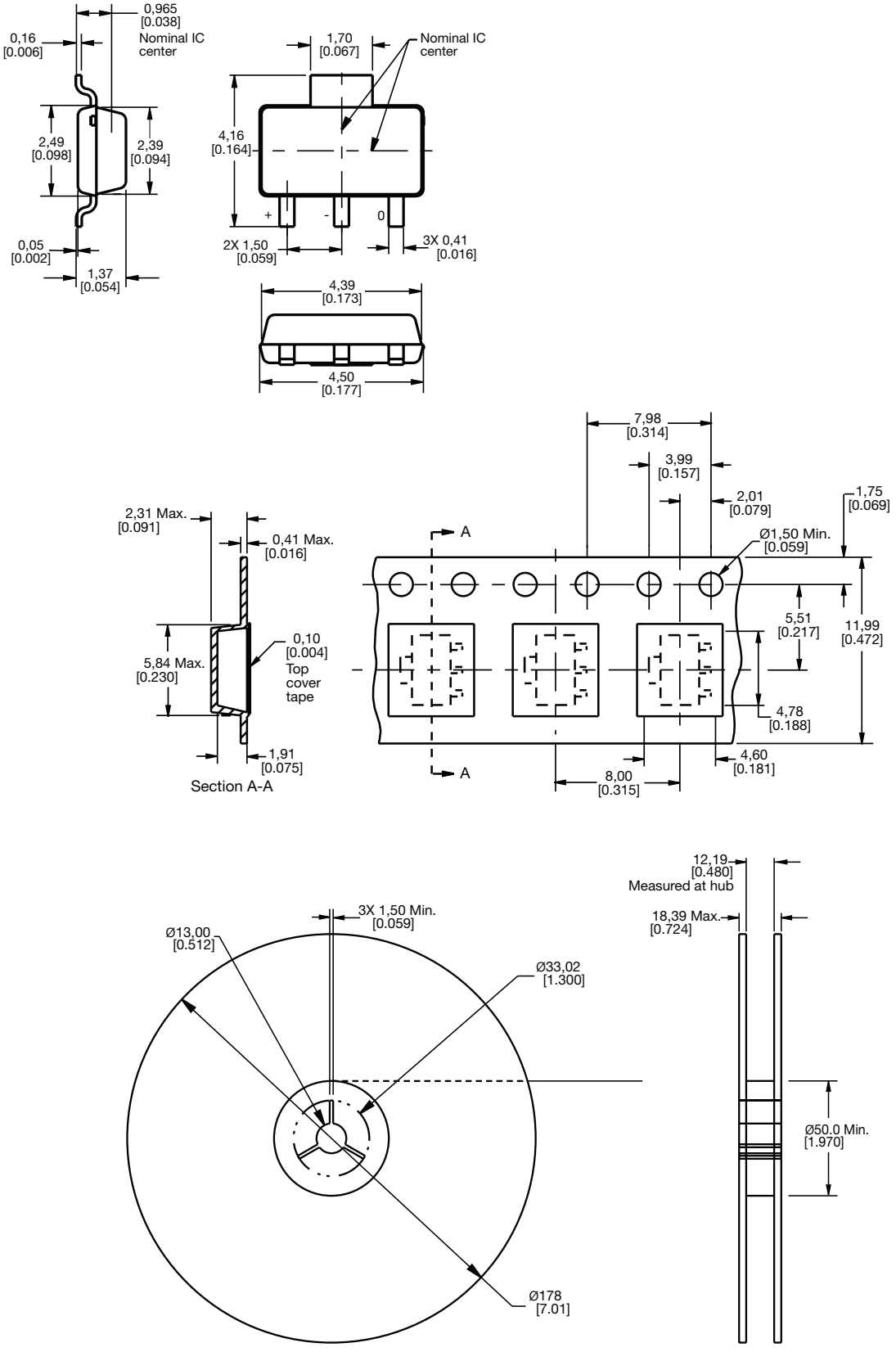


Figure 6. SS500 Series Mounting and Dimensional Drawings (For reference only: mm/[in].)

SOT-89B Sensor IC, Pocket Tape and Reel



Bipolar, Latching, or Unipolar Digital Hall-effect Sensor ICs:

SS400 Series, SS500 Series

Table 4. Order Guide for the SS400 Series (Flat TO-92-Style)

Catalog Listing	Description
SS4XX: 14,5 mm [0.57 in] straight standard leads, bulk pack, 1000 units/bag	
SS411A	Bipolar
SS413A	Bipolar
SS441A	Unipolar
SS443A	Unipolar
SS449A	Unipolar
SS461A	Latching
SS466A	Latching
SS4XX-L: 18,7 mm [0.74 in] straight long leads, bulk pack, 1000 units/bag	
SS461A-L	Latching
SS4XX-T3: 14,5 mm [0.57 in] straight standard leads, ammopack tape-in-box, 5000 units/box	
SS443A-T3	Unipolar
SS449A-T3	Unipolar
SS4XX-R: 3,30 [0.130 in] straight reduced leads, bulk pack, 1000 units/bag	
SS411A-R	Bipolar
SS4XX-S: 3,18 [0.125 in] surface mount, bulk pack	
SS411A-S	Bipolar
SS443A-S	Unipolar
SS449A-S	Unipolar
SS4XX-SP: 3,18 [0.125 in] surface mount, pocket tape and reel, 1000 units/reel	
SS443A-SP	Unipolar
SS449A-SP	Unipolar

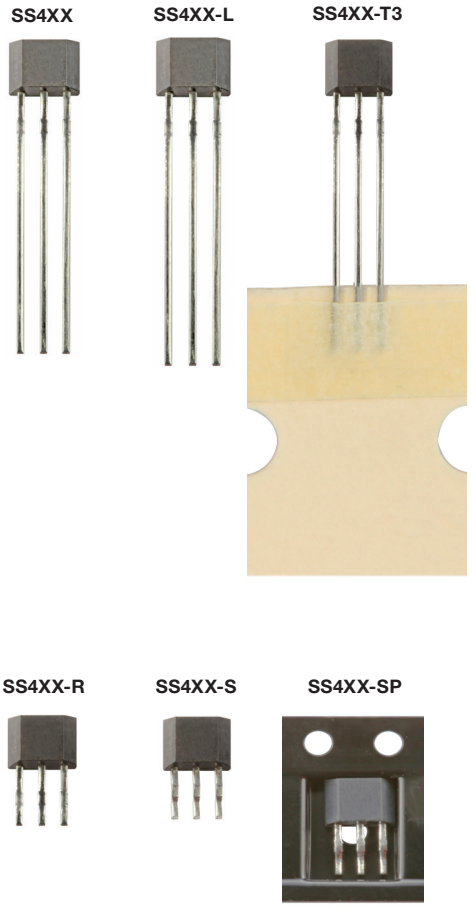
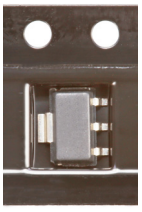


Table 5. Order Guide for the SS500 Series (SOT-89B, Pocket Tape and Reel, 1000 Units/Reel)

Catalog Listing	Description
SS511AT	Bipolar
SS513AT	Bipolar
SS541AT	Unipolar
SS543AT	Unipolar
SS549AT	Unipolar
SS561AT	Latching
SS566AT	Latching



ADDITIONAL INFORMATION

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

- Product Line Guide
- Product Range Guide
- Selection Guides
- Application-specific 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.**

While Honeywell may 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.

Find out more

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.

To learn more about Honeywell Sensing and Productivity Solutions' products, call **+1-815-235-6847** or **1-800-537-6945,** visit **sensing.honeywell.com**, or e-mail inquiries to **info.sc@honeywell.com**

Honeywell Sensing and Productivity Solutions
9680 Old Bailes Road
Fort Mill, SC 29707
honeywell.com

32320997-A-EN IL50 GLO
June 2016