

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

SS400 Series, SS500 Series

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		$V_s = 30 \text{ Vdc}$, $I_{sink} = 20 \text{ mA}$, $-40 \text{ }^\circ\text{C} < T < 150 \text{ }^\circ\text{C}$, B > operate max.	—	—	10.0	mA
SS500 Series	—	$V_s = 30 \text{ Vdc}$, $-40 \text{ }^\circ\text{C} < T < 150 \text{ }^\circ\text{C}$, B > operate max.	—	—	10.0	
Off:						
SS400 Series		$V_s = 30 \text{ Vdc}$, $I_{sink} = 20 \text{ mA}$, $-40 \text{ }^\circ\text{C} < T < 150 \text{ }^\circ\text{C}$, B > operate max.	—	—	9.0	
SS500 Series		$V_s = 30 \text{ Vdc}$, $I_{sink} = 20 \text{ mA}$, $-40 \text{ }^\circ\text{C} < T < 150 \text{ }^\circ\text{C}$, B > release min.	—	—	10.0	
Vsat:						
SS400 Series	—	$V_s = 3.8 \text{ Vdc}$, $I_{sink} = 20 \text{ mA}$, B > operate max.	—	—	0.4	V
SS500 Series		$V_s = 3.8 \text{ Vdc}$, B > operate max.	—	—	0.4	
Output leakage current:						
SS400 Series	—	$V_s = 24 \text{ V}$, $V_{out} = 30 \text{ V}$, B < release min.	—	—	0.4	uA
SS500 Series		—	—	—	10.0	
Output switching time:						
rise	—	$V_s = 12 \text{ V}$, $R_L = 1.6 \text{ k}\Omega$, $C_L = 20 \text{ pF}$, $T = 25 \text{ }^\circ\text{C}$ [77 °F]	—	—	1.5	μs
fall		$V_s = 12 \text{ V}$, $R_L = 1.6 \text{ k}\Omega$, $C_L = 20 \text{ pF}$, $T = 25 \text{ }^\circ\text{C}$ [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.				

¹For 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.



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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	
$V_s = 24$ Vdc to 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

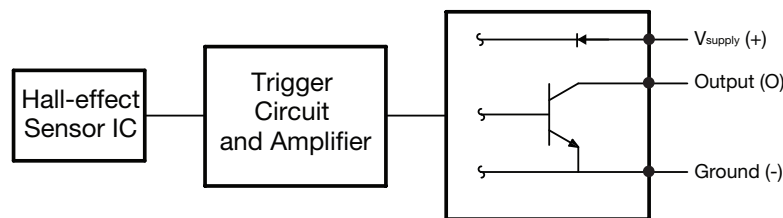
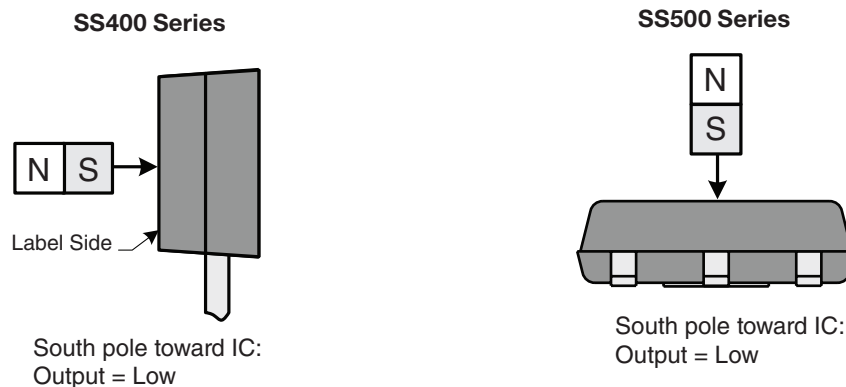


Figure 2. Magnetic Activation



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Table 3. Magnetic Specifications

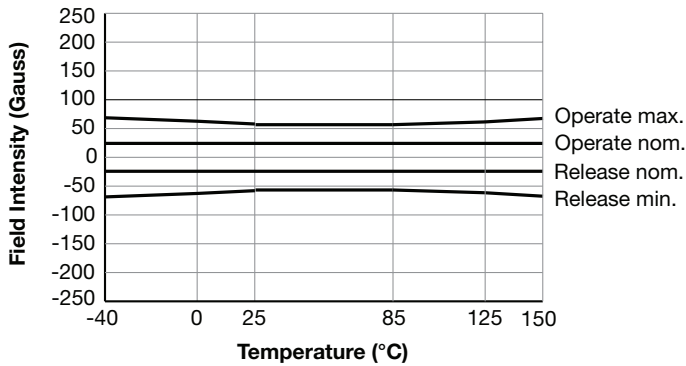
Temperature	Operating Characteristic	Magnetic Characteristic (Gauss)												
		Bipolar				Unipolar				Latching				
		SS411	SS511AT	SS413	SS513AT	SS441	SS541AT	SS443	SS543AT	SS449	SS549AT	SS461	SS561AT	SS466
-40 °C [-40 °F]	operate: minimum	NS		NS	50	110	285		5	—	100			
	maximum	70		140	135	215	435		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			

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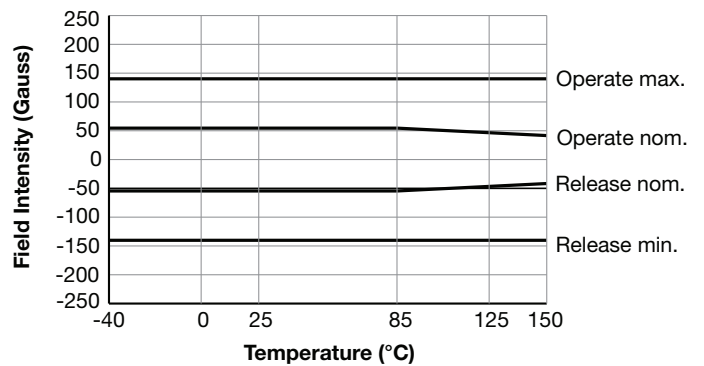
SS400 Series, SS500 Series

Figure 3. Operate and Release Point Performance Graphics

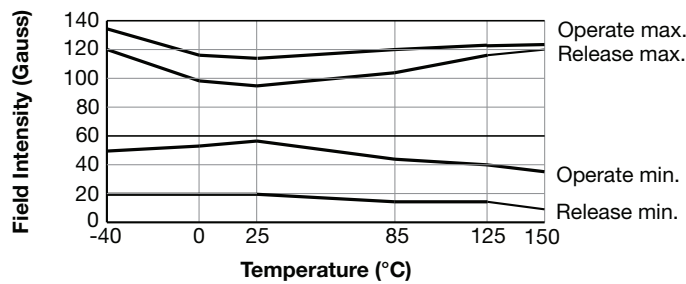
SS411/SS511AT



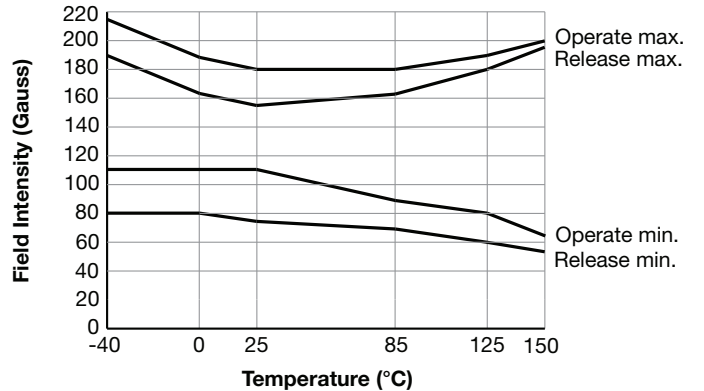
SS413/SS513AT



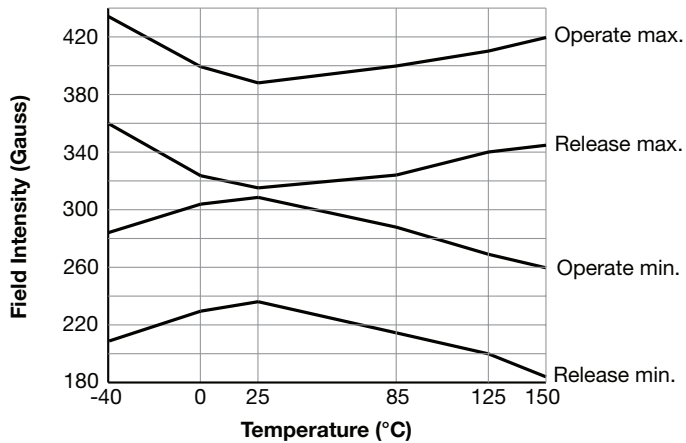
SS441/SS541AT



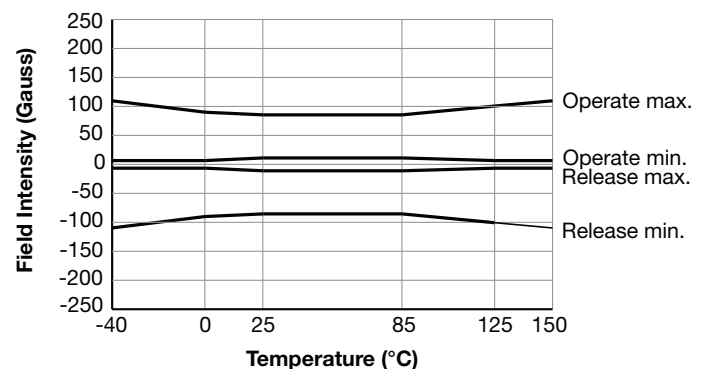
SS443/SS443AT



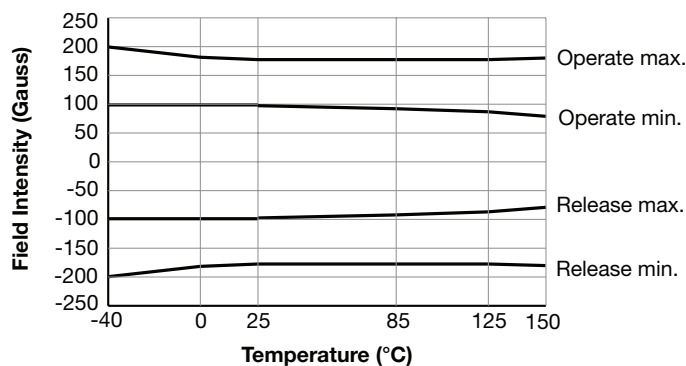
SS4449/SS549AT



SS461/SS561AT



SS466/SS566AT



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Figure 4. Circuit Diagrams

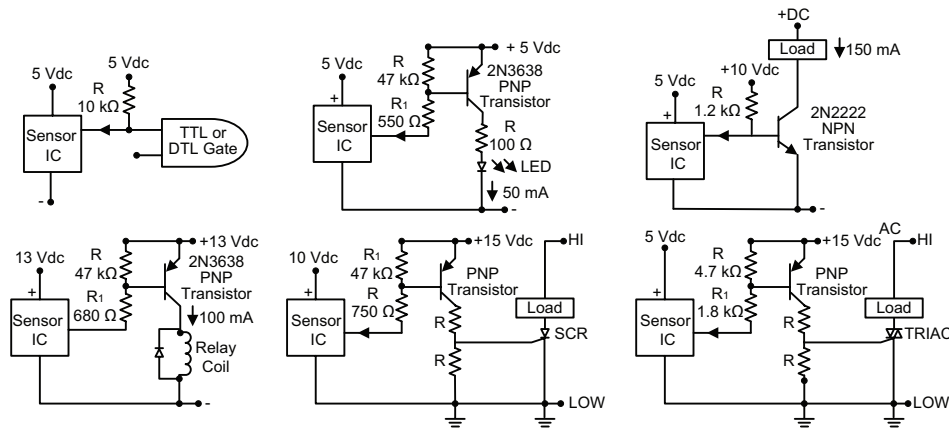
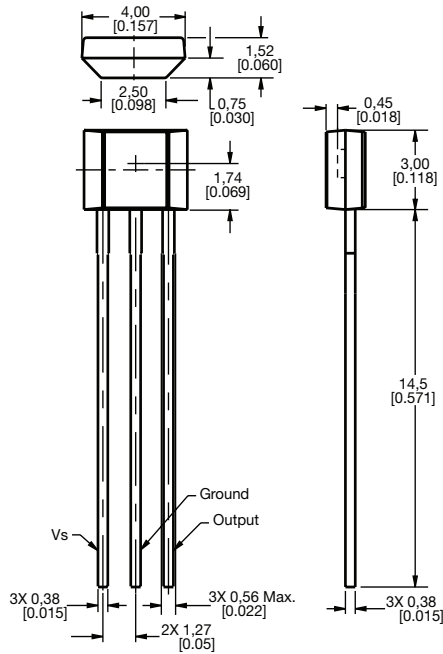
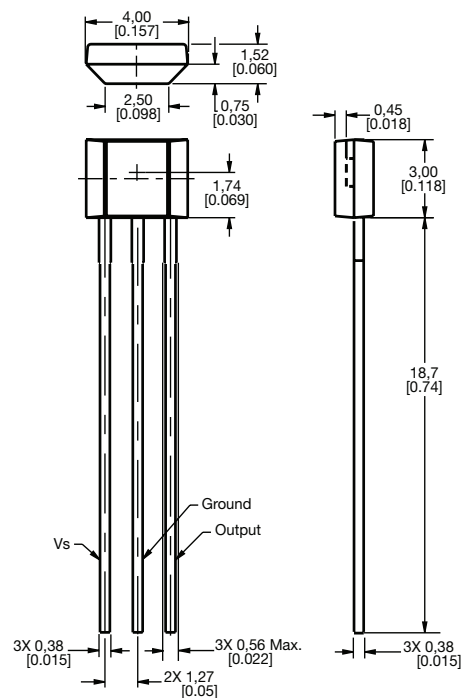


Figure 5. SS400 Series Flat TO-92-Style Mounting and Dimensional Drawings (For reference only: mm/[in].)

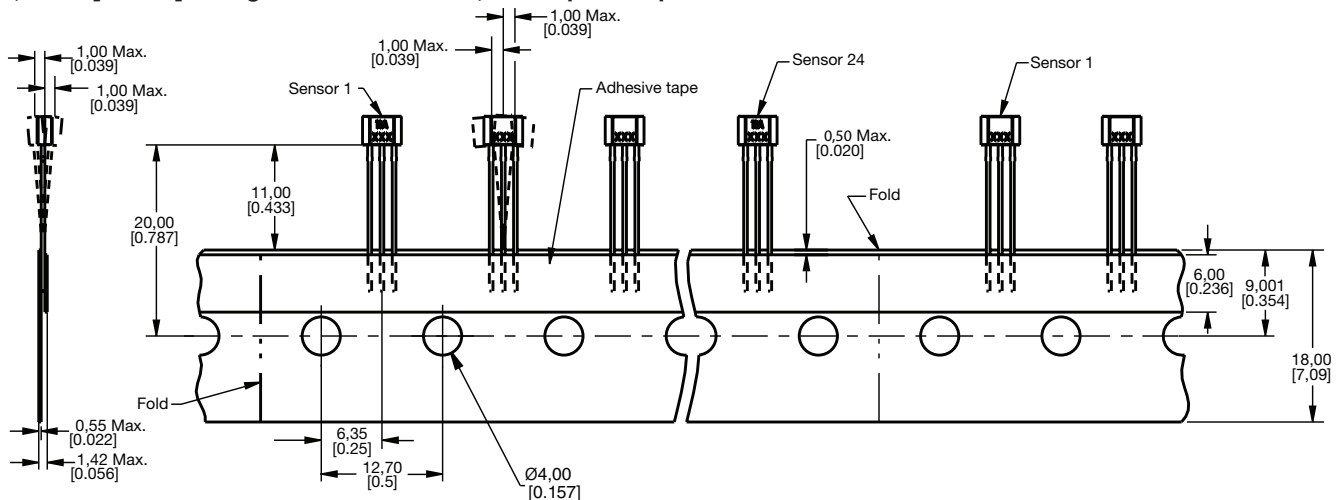
A: 14,5 mm [0.57 in] Straight Standard Leads Sensor IC, Bulk Pack



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

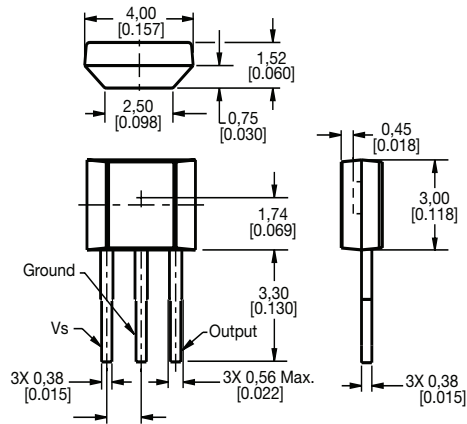


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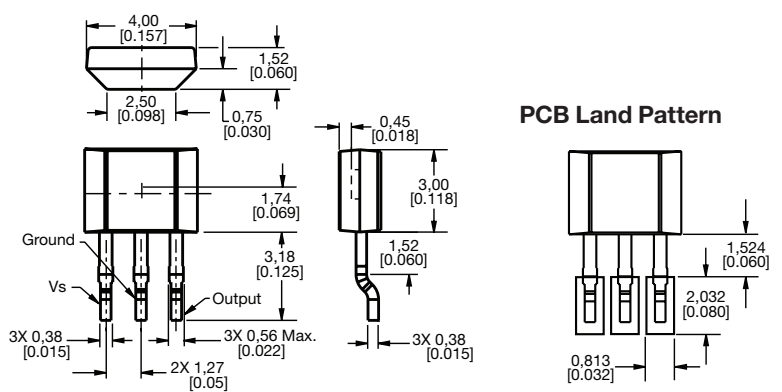
SS400 Series, SS500 Series

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

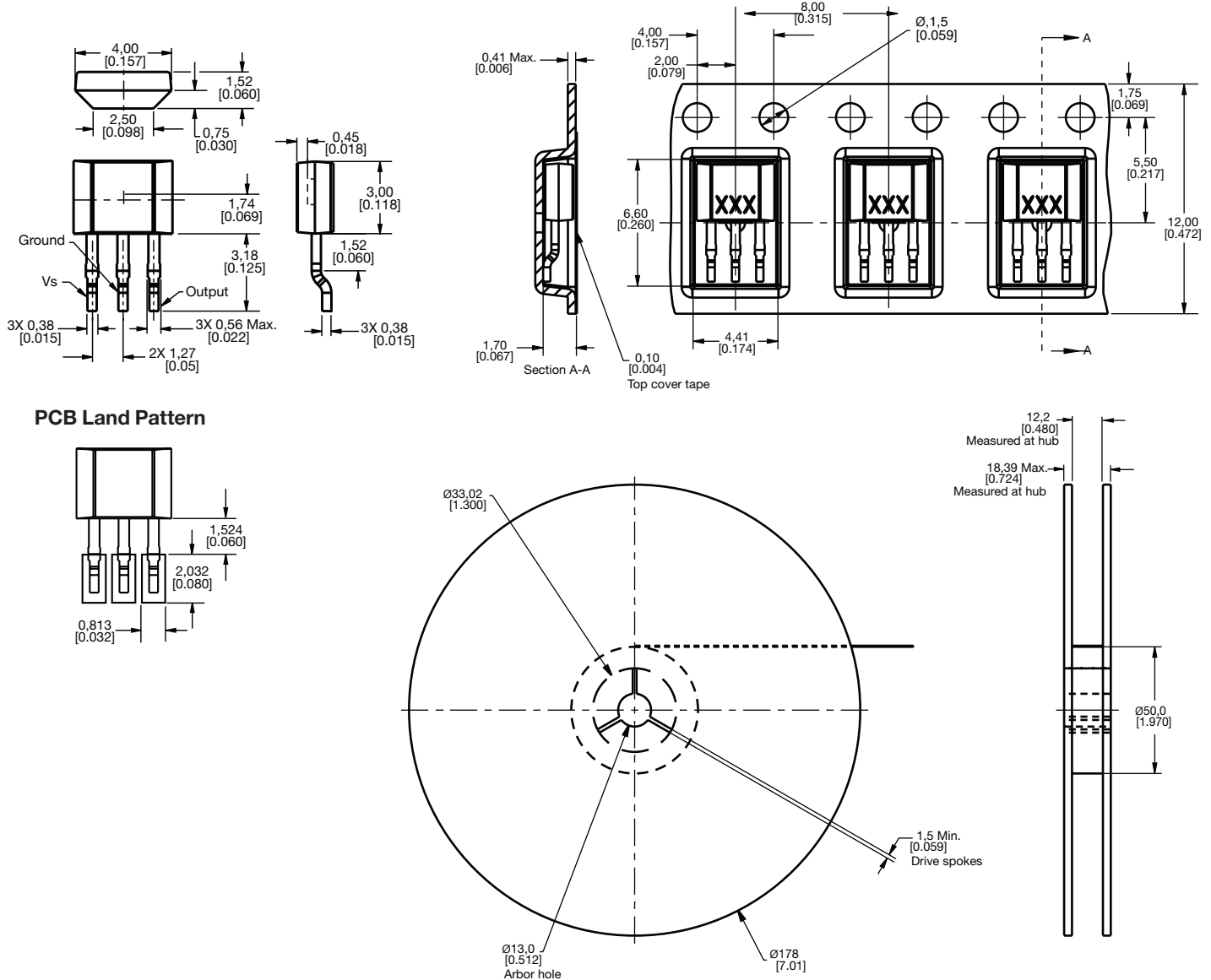
D. 3,30 [0.130 in] Straight Reduced Leads Sensor IC, Bulk Pack



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



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

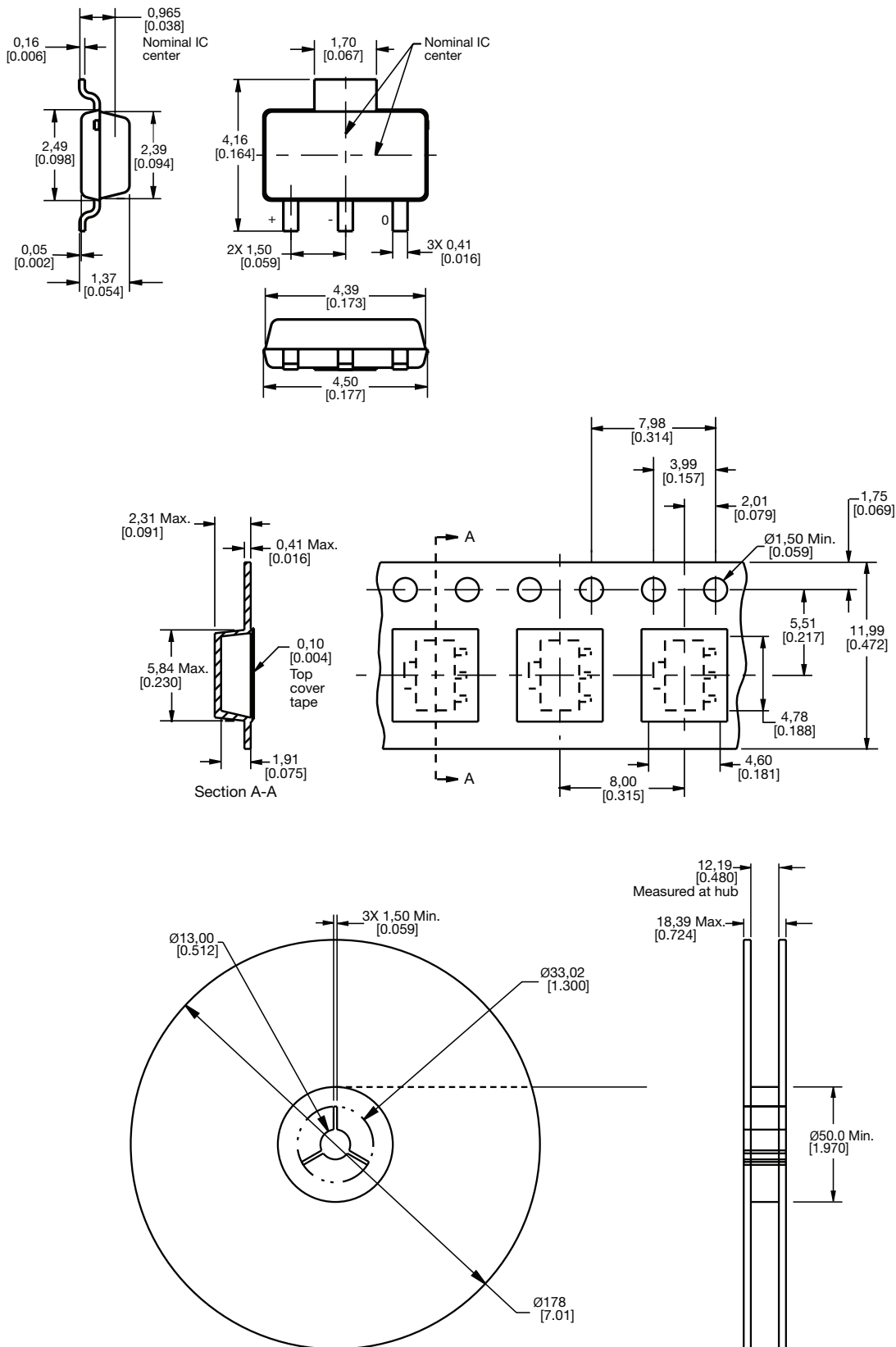


Bipolar, Latching, or Unipolar Digital Hall-effect Sensor ICs:

SS400 Series, SS500 Series

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

SOT-89B Sensor IC, Pocket Tape and Reel



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SS400 Series, SS500 Series

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



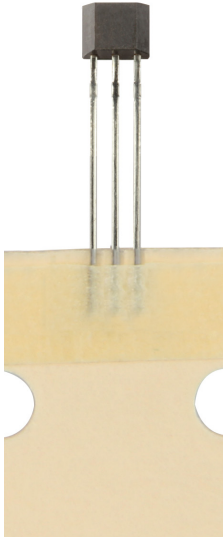


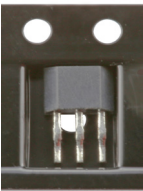

Catalog Listing	Description	SS4XX	SS4XX-L	SS4XX-T3
SS4XX: 14,5 mm [0.57 in] straight standard leads, bulk pack, 1000 units/bag				
SS411A	Bipolar			
SS413A	Bipolar			
SS441A	Unipolar			
SS443A	Unipolar			
SS449A	Unipolar			
SS461A	Latching			
SS466A	Latching			
SS4XX-L: 18,7 mm [0.74 in] straight long leads, bulk pack, 1000 units/bag				
SS461A-L	Latching			
SS4XX-T3: 14,5 mm [0.57 in] straight standard leads, ammpack 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

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Failure to comply with these instructions could result in death or serious injury.

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Honeywell Sensing and Productivity Solutions

9680 Old Bailes Road
Fort Mill, SC 29707
honeywell.com

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