

## Installation Instructions for the SS400F and SS400G Series Temperature Compensated, Hall-effect Position Sensors

ISSUE 1  
50038766

### GENERAL INFORMATION

#### CAUTION

##### ELECTROSTATIC DISCHARGE DAMAGE

This component is sensitive to electrostatic discharge (ESD). Take normal ESD precautions in handling this product to prevent ESD-induced damage and/or degradation.

**Failure to comply with these instructions will result in product damage.**



#### NOTICE

Bipolar Hall-effect sensors 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  $>B_{rp}$  and  $<B_{op}$ ). Honeywell recommends allowing 10  $\mu$ s for output voltage to stabilize after supply voltage has reached 5 V.

#### SOLDERING/ASSEMBLY

Leads must be adequately supported during any forming/shearing operation so the leads are not stressed inside the plastic case. Recommended PC board wave soldering temperature is 250 °C [482 °F] peak for 10 s max., or 260 °C [500 °F] for 5 s max.

**Table 1. Absolute Maximum Ratings**

Supply voltage	-1 Vdc to +30 Vdc
Voltage externally applied to output	+30 Vdc max. (OFF only) -0.5 Vdc min. (OFF or ON)
Output ON current	see Table 2
Operating temperature	-40 °C to 150 °C [-40 °F to 302 °F]
Storage temperature	-65 °C to 160 °C [-85 °F to 320 °F]
Magnetic flux	No limit. Circuit cannot be damaged by magnetic overdrive.

#### NOTICE

Absolute maximum ratings are the extreme limits that the device will withstand without damage to the device. However, the electrical and mechanical characteristics are not guaranteed as the maximum limits (above recommended operating conditions) are approached, nor will the device necessarily operate at absolute maximum ratings.

**Table 2. Output Current Absolute Limits**

Supply Voltage	Output Current
0 Vdc to 24 Vdc	50 mA max.
24 Vdc to 25 Vdc	37 mA max.
25 Vdc to 26 Vdc	33 mA max.
26 Vdc to 27 Vdc	28 mA max.
27 Vdc to 28 Vdc	24 mA max.
28 Vdc to 29 Vdc	19 mA max.
29 Vdc to 30 Vdc	15 mA max.

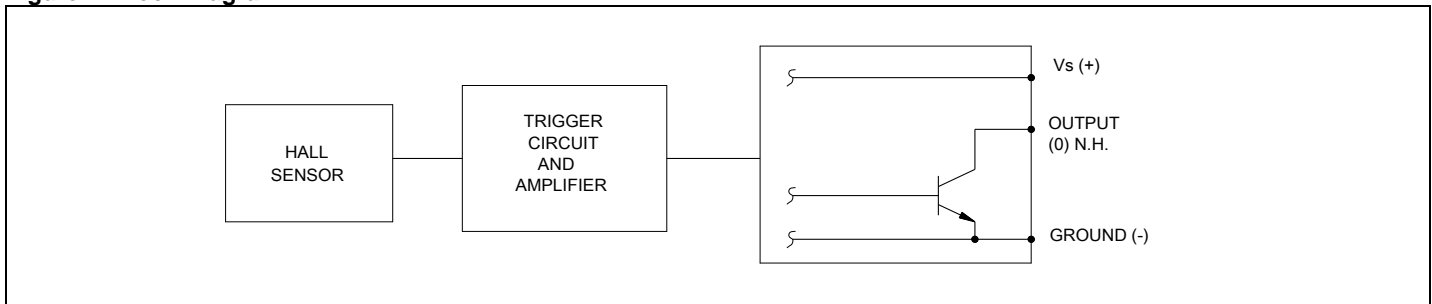
**Table 3. Operating Characteristics (Over operating voltage and temperature, unless otherwise noted.)**

Characteristic	Min.	Typ.	Max.	Unit	Note
Supply voltage	3.8	-	30	Vdc	-
Current consumption	-	-	10	mA	-
Supply current (operated at 25°C, $V_s = 5$ V)	-	6.5	-	mA	-
Output voltage (operated)	-	-	0.40	mA	sinking, 20 mA max.
Output current (operated)	-	-	20	mA	-
Output leakage current (released)	-	-	10 $\mu$ A	$\mu$ A	-
Output switching time:					$V_{cc} = 12$ V, $R_L = 1.6$ k $\Omega$ , $CL = 20$ pF
rise, 10% to 90%	-	0.05	1.5	$\mu$ s	
fall, 90% to 10%	-	0.15	1.5	$\mu$ s	

**Table 4. Magnetic Characteristics (Factory tested at 25 °C for F and 125 °C for G.)**

Temperature	Operating Characteristic	SS411G Bipolar	SS413F SS413G Bipolar	SS441G Unipolar	SS443F SS443G Unipolar	SS449G Unipolar	SS461G Latching	SS466G Latching
-40 °C [-40 °F]	min. op.	NS	NS	50 G	110 G	285 G	5 G	100 G
	max. op.	70 G	140 G	135 G	215 G	435 G	110 G	200 G
	min. rel.	-70 G	-140 G	20 G	80 G	210 G	-110 G	-200 G
	max. rel.	NS	NS	120 G	190 G	360 G	-5 G	-100 G
	min. dif.	15 G	20 G	15 G	25 G	30 G	50 G	200 G
0 °C [32 °F]	min. op.	NS	NS	53 G	110 G	305 G	5 G	100 G
	max. op.	65 G	140 G	117 G	190 G	400 G	90 G	185 G
	min. rel.	-65 G	-140 G	20 G	80 G	230 G	-90 G	-185 G
	max. rel.	NS	NS	99 G	165 G	325 G	-5 G	-100 G
	min. dif.	15 G	20 G	15 G	25 G	30 G	50 G	200 G
25 °C [77 °F]	min. op.	NS	NS	55 G	110 G	310 G	10 G	100 G
	max. op.	60 G	140 G	115 G	180 G	390 G	85 G	180 G
	min. rel.	-60 G	-140 G	20 G	75 G	235 G	-85 G	-180 G
	max. rel.	NS	NS	95 G	155 G	31 G G5	-10 G	-100 G
	min. dif.	15 G	20 G	20 G	25 G	30 G	50 G	200 G
85 °C [185 °F]	min. op.	NS	NS	45 G	90 G	290 G	110 G	95 G
	max. op.	60 G	140 G	120 G	180 G	400 G	85 G	180 G
	min. rel.	-60 G	-140 G	15 G	70 G	215 G	-85 G	-180 G
	max. rel.	NS	NS	105 G	165 G	325 G	-10 G	-95 G
	min. dif.	12 G	20 G	15 G	15 G	30 G	50 G	190 G
125 °C [257 °F]	min. op.	NS	NS	40 G	80 G	270 G	5 G	80 G
	max. op.	65 G	140 G	123 G	190 G	410 G	100 G	180 G
	min. rel.	-65 G	-140 G	15 G	60 G	200 G	-100 G	-180 G
	max. rel.	NS	NS	115 G	180 G	340 G	-5 G	-80 G
	min. dif.	12 G	20 G	8 G	10 G	30 G	50 G	160 G
150 °C [302 °F]	min. op.	NS	NS	35 G	65 G	260 G	5 G	70 G
	max. op.	70 G	140 G	125 G	200 G	420 G	110 G	185 G
	min. rel.	-70 G	-140 G	10 G	55 G	185 G	-110 G	-185 G
	max. rel.	NS	NS	120 G	195 G	345 G	-5 G	-70 G
	min. dif.	10 G	20 G	5 G	5 G	30 G	50 G	140 G

**Figure 1. Block Diagram**



**Figure 2. Performance Charts**

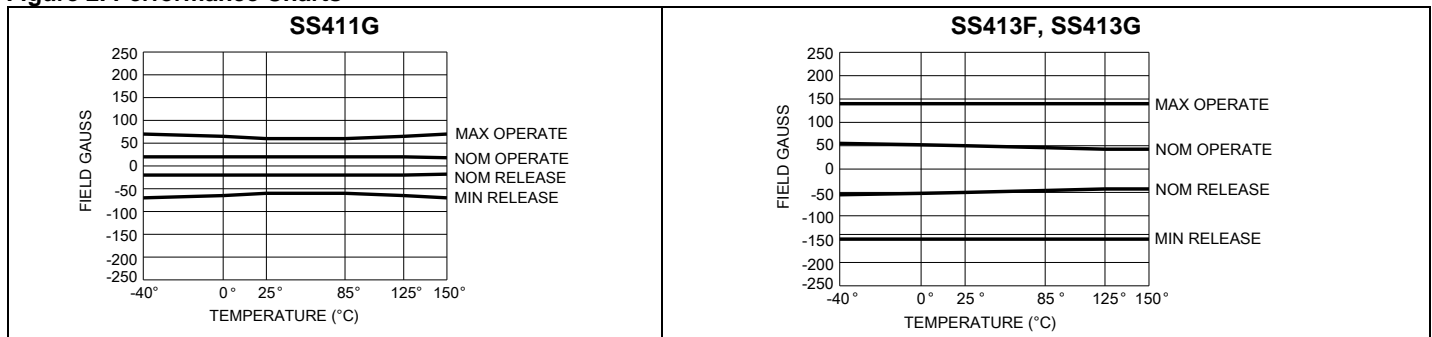


Figure 2. Performance Charts (continued)

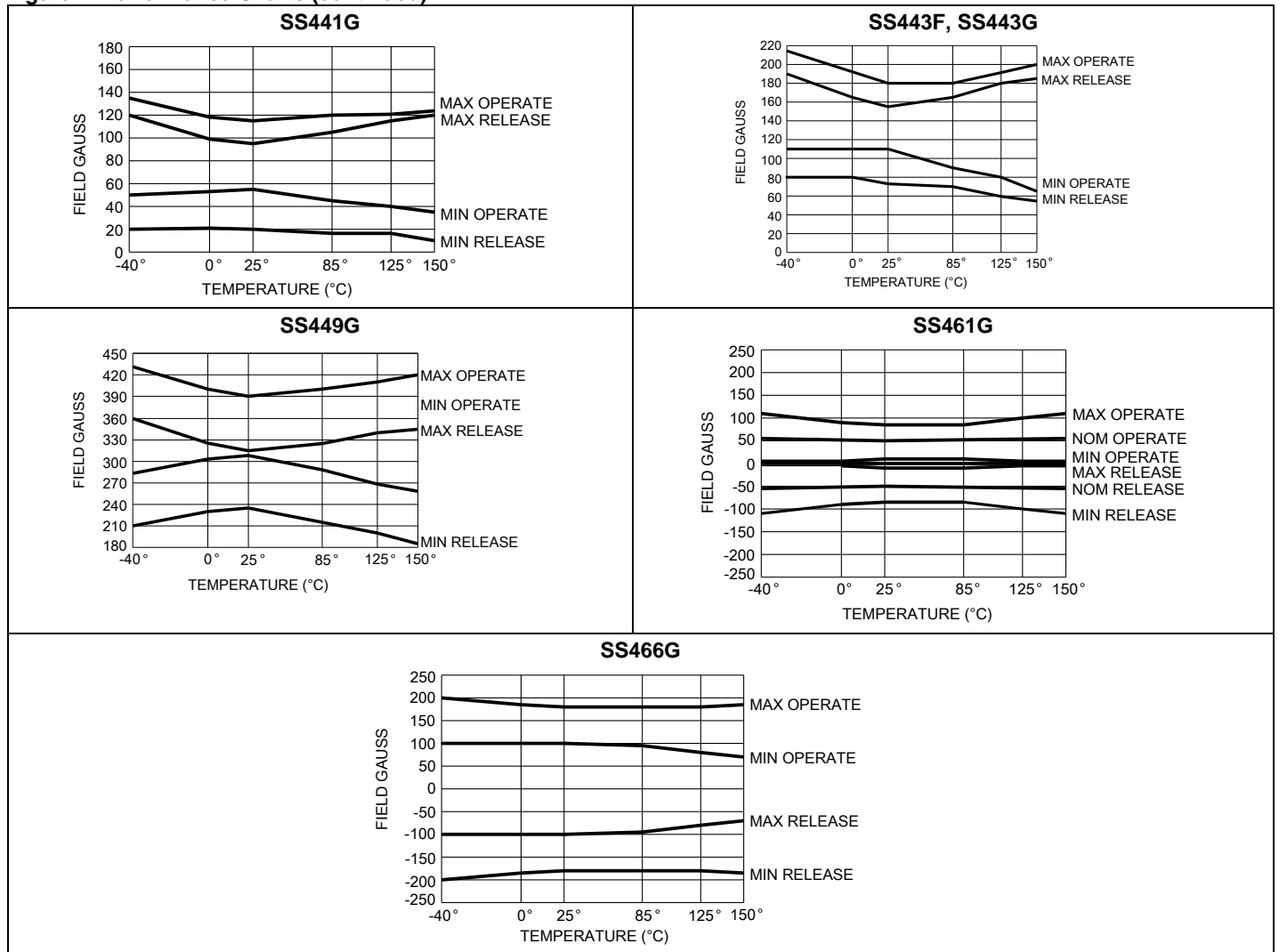


Figure 3. Mounting Dimensions (For reference only: mm/in.)

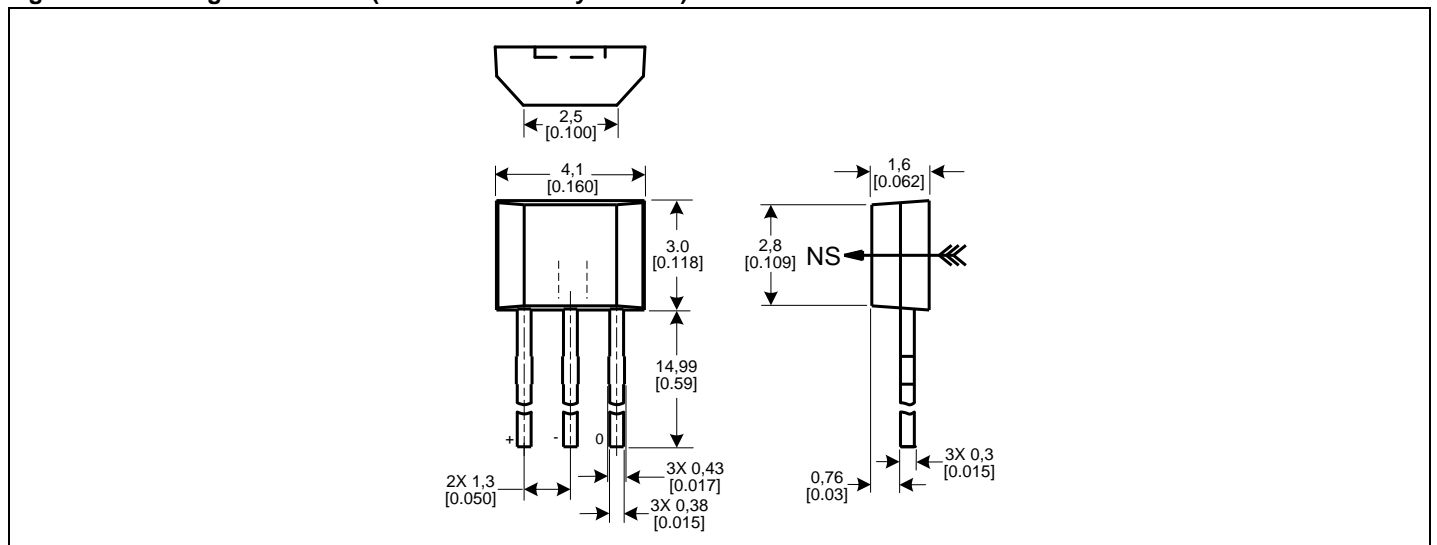
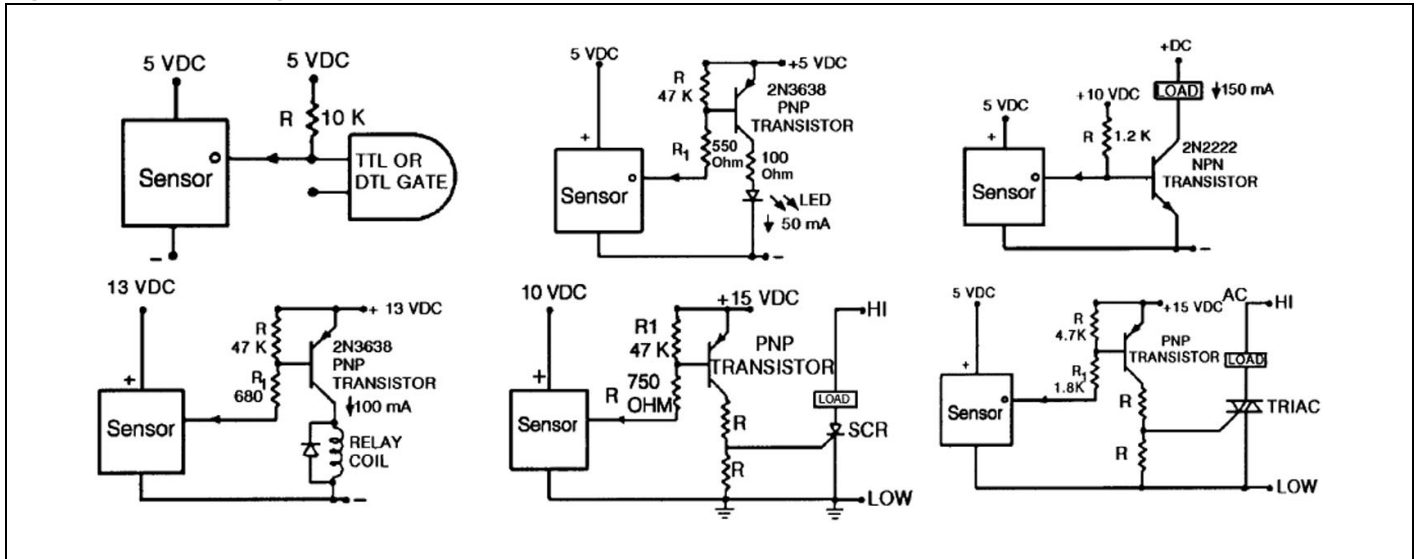


Figure 4. Electronic Diagrams



**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.**

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