Honeywell

Installation Instructions for the High Voltage and ESD Protection Bipolar Hall-Effect Digital Position Sensor IC: SS41F6

3011-5165
Issue A

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

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.

Use agitated rinse to clean the sensor.

TABLE 1. PERFORMANCE SPECIFICATIONS
(At V_S = 4.5 V to 60 V, T_A = -40°C to 150°C [-40°F to 302°F], I_O = 15 mA, except where otherwise specified.)

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_S	— -40°C to 125°C [-40°F to 257°F] 150°C [302°F]	4.5 4.5 4.5	— — —	60.0 60.0 24.0	V
Supply current	I_S	—	—	3.6	10.0	mA
Output voltage (ON)	V_{SAT}	I_O = 15 mA	—	0.215	0.600	V
Output leakage current	I_{OH}	—	—	—	10.0	µA
Output current limit[1]	$I_{O(SCP)}$	short circuit protection[1]	40	—	—	mA
Output switching time: rise time fall time	 t_r t_f	 T_A = 25°C [77°F] T_A = 25°C [77°F]	 — —	 — —	 1.5 1.5	µs
ESD (Human Body Model)	V_{ESD}	per JEDEC JS-001-2014	-16	—	16	kV
Operating temperature	T_A	—	-40 [-40]	—	150 [302]	°C [°F]
Junction temperature	T_J	—	-40 [-40]	—	165 [329]	°C [°F]
Storage temperature	T_S	—	-40 [-40]	—	150 [302]	°C [°F]
Thermal resistance	$R_{\theta JA}$	—	—	—	233	°C/W
Soldering time and temperature	—	3 s max.	250 [482]	—	260 [500]	°C [°F]

[1] Output short circuit protection is enabled when the output load current exceeds the rated load current.

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 >B_{RP} and <B_{OP}). Honeywell recommends allowing 10 µs after supply voltage has reached 4.5 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 (see Table 2). To test the switch against the specified limits, the switch must be placed in a uniform magnetic field.

TABLE 2. MAGNETIC CHARACTERISTICS
(At V_S = 4.5 V to 60 V, T_A = -40°C to 150°C [-40°F to 302°F], except where otherwise specified.)

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Operate	B_{OP}	— T_A = 25°C [75°F]	— —	25 25	115 65	Gauss
Release	B_{RP}	— T_A = 25°C [75°F]	-115 -65	-25 -25	— —	Gauss
Differential	B_{DIF}	—	30	—	—	Gauss

TABLE 3. ABSOLUTE MAXIMUM SPECIFICATIONS

Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_s	—	-0.5	—	60.0	V
Output voltage	V_O	—	-0.5	—	60.0	V
Output current	I_O	—	—	—	N/A[1]	mA
Magnetic flux	B	—	—	—	no limit	Gauss

[1] Output short circuit protection is enabled when the output load current exceeds the rated load current shown in Table 1.

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. MAGNETIC CHARACTERISTICS VS TEMPERATURE

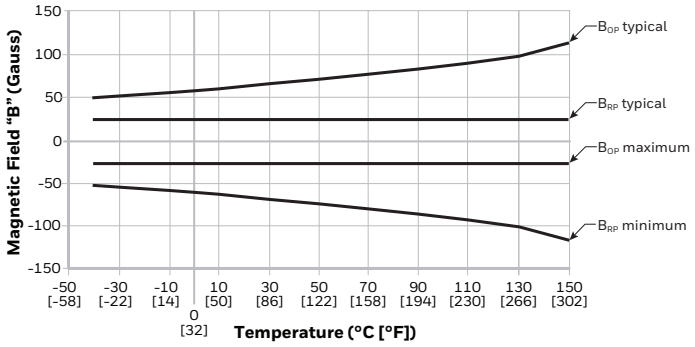


FIGURE 2. POWER DERATING CURVE

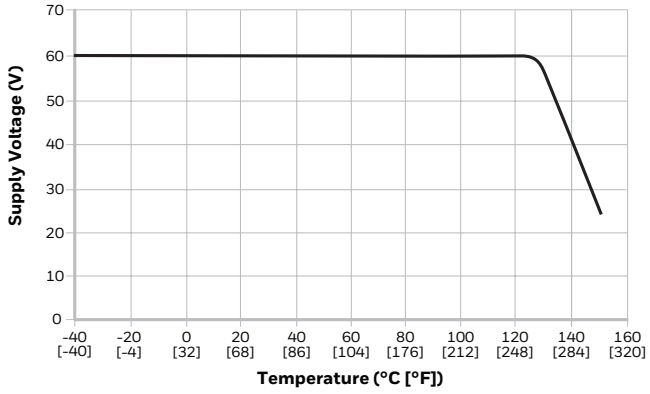


FIGURE 3. TRANSFER CHARACTERISTICS

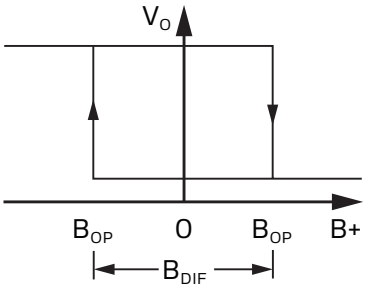


FIGURE 4. TRANSFER CHARACTERISTICS DEFINITION

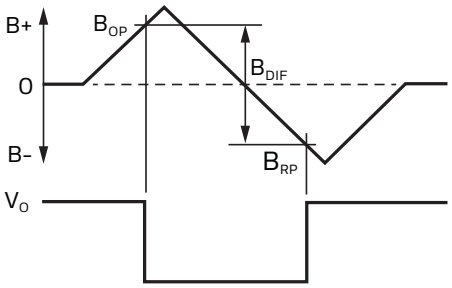


FIGURE 5. CURRENT SINKING OUTPUT BLOCK DIAGRAM

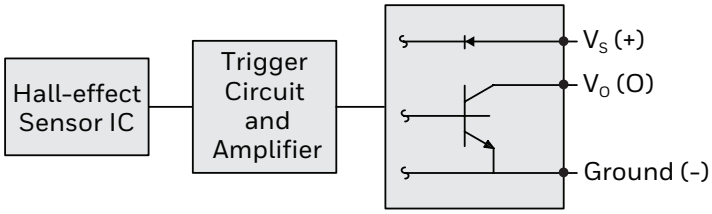


FIGURE 6. BASIC APPLICATION CIRCUIT

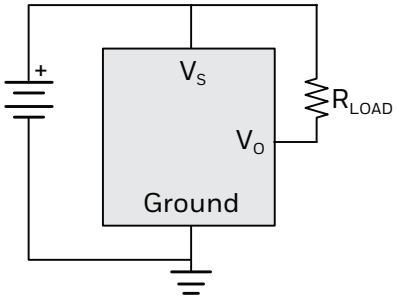
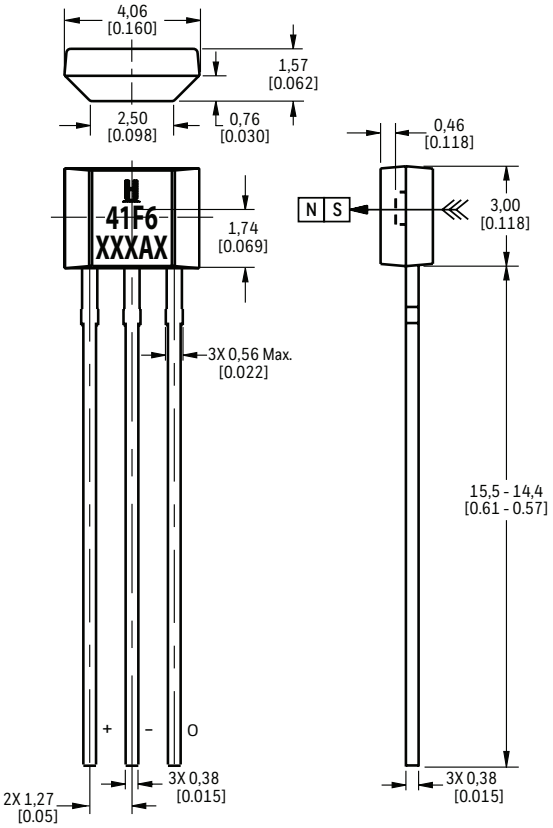


FIGURE 7. MOUNTING AND DIMENSIONAL DRAWINGS (FOR REFERENCE ONLY: MM/[IN])



Note: Ensure the minimum hole size in the PCB is 0,68 mm [0.027] dia. based on the IPC 2222 Level B standard.

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WARRANTY/REMEDY

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this writing. However, Honeywell assumes no responsibility for its use.

⚠ 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 product sheet 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.

FOR MORE INFORMATION

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