

## Installation Instructions for the MICRO SWITCH SS100 Series Surface Mount Hall Effect Sensors

ISSUE 2  
PK 88830

### GENERAL INFORMATION

SS100 Series Hall effect sensors have an NPN (current sinking) output. The small SOT89 style package surface mounts on PC boards and flexible circuits.

#### WARNING

These products are **NOT** suitable for protection against personal injury.

To **AVOID** personal injury or death, **DO NOT USE** these products as emergency stop or safety devices, or in any other application where human safety is at risk.

#### NOTICE

SS100 Series sensors are Category 2 ESD sensitive per DOD-STD-1686A. Perform assembly operations on tables with conductive tops, with operators grounded.

### SOLDERING INSTRUCTIONS

Exposure to high temperatures should be kept at a minimum.

MICRO SWITCH recommends a convection infrared reflow process with peak temperatures not to exceed 220°C (428°F) for 20 seconds maximum. **DO NOT wave solder this product.** Performance and reliability may be negatively affected. Subjecting these products to wave soldering will void MICRO SWITCH's warranty.

### CLEANING

Use agitated rinse. **Do not use pressure wash.** High pressure stream could force contaminants into sensor package.

### ABSOLUTE MAXIMUM RATINGS

|                                      |  |
|--------------------------------------|--|
| Supply Voltage                       | -1 to +30 VDC  |
| Voltage externally applied to output | +30 VDC max. (OFF condition only)<br>-0.5 VDC min. (OFF or ON condition) |
| Output ON current                    | 50 mA max.   |
| Temperature                          |  |
| Operating                            | -40 to +150°C (-40 to +302°F)  |
| Storage                              | -55 to +150°C (-67 to +302°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.

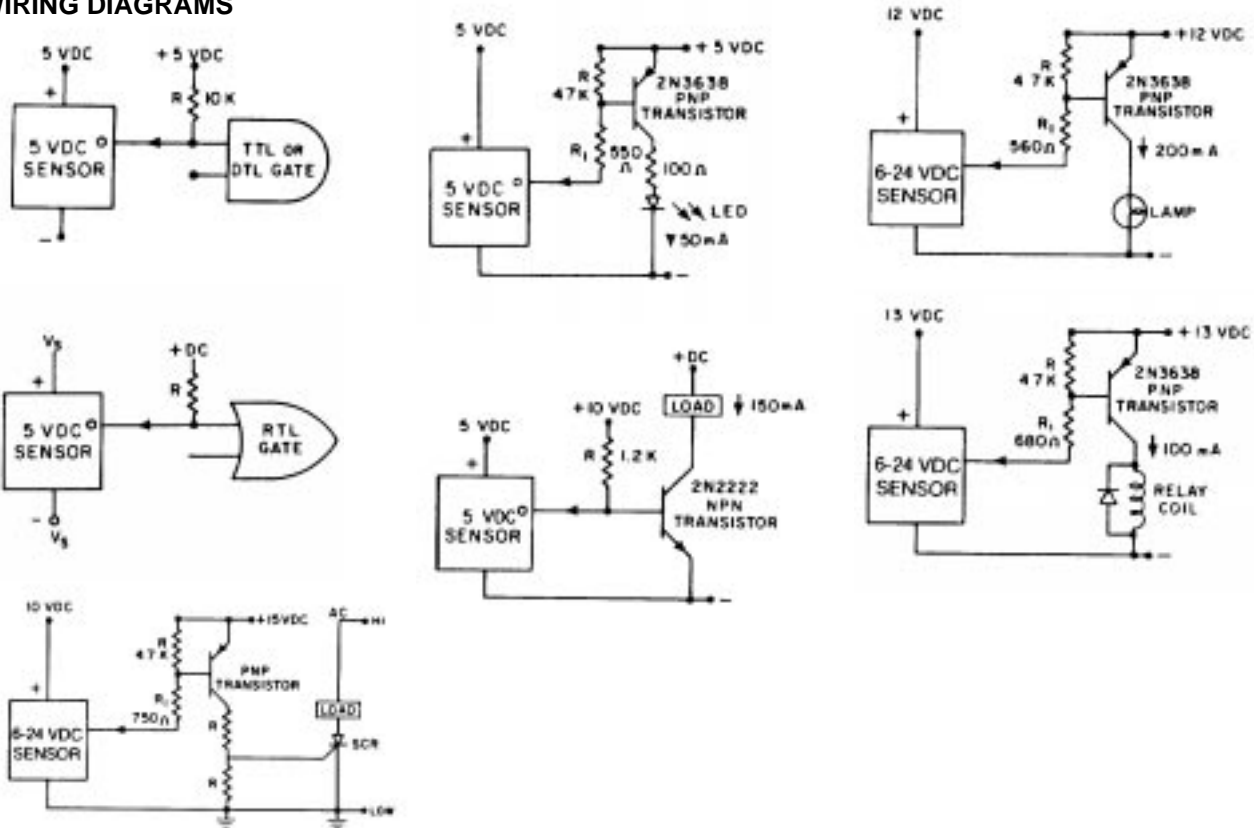
### OPERATING CHARACTERISTICS

|                                   | Min.  | Typ.        | Max.        | Remarks               |
|-----------------------------------|-------|-------------|-------------|-----------------------|
| Supply Voltage                    | 3.8   | —           | 30          | VDC                   |
| Current Consumption               | —     | —           | 10          | mA                    |
| Output Voltage (operated)         | —     | 0.15        | 0.40        | Sinking 20 mA max.    |
| Output Current (operated)         | —     | —           | 20 mA       |                       |
| Output Leakage Current (released) | —     | —           | 10 $\mu$ A  |                       |
| Output Switching Time             |       |             |             | $V_{CC} = 12 V,$      |
| Rise, 10 to 90%                   | —     | .05 $\mu$ s | 1.5 $\mu$ s | $R_1 = 1.6 K \Omega,$ |
| Fall, 90 to 10%                   | —     | .15 $\mu$ s | 1.5 $\mu$ s | $C_L = 20 pF$         |
| Operating Temperature Range       | -40°C | —           | +125°C      |                       |

## MAGNETIC CHARACTERISTICS

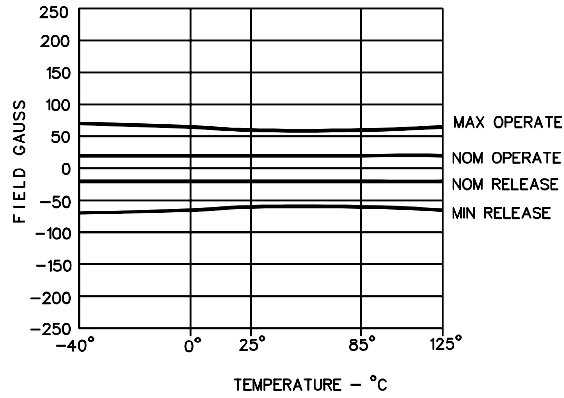
| Catalog Listing                  | SS111A    | SS113A  | SS141A   | SS143A   | SS149A   | SS161A   | SS166A   |      |
|----------------------------------|-----------|---------|----------|----------|----------|----------|----------|------|
| Magnetic Type                    | Bipolar   | Bipolar | Unipolar | Unipolar | Unipolar | Latching | Latching |      |
| Magnetic Characteristics (Gauss) |           |         |          |          |          |          |          |      |
| -40°C                            | Max. Op.  | 70      | 140      | 135      | 215      | 440      | 110      | 200  |
|                                  | Min. Rel. | -70     | -140     | 20       | 80       | 210      | -110     | -200 |
|                                  | Min. Dif. | 15      | 20       | 15       | 25       | 30       | 50       | 200  |
| 0°C                              | Max. Op.  | 65      | 140      | 117      | 190      | 400      | 90       | 185  |
|                                  | Min. Rel. | -65     | -140     | 20       | 80       | 230      | -90      | -185 |
|                                  | Min. Dif. | 15      | 20       | 18       | 25       | 30       | 50       | 200  |
| 25°C                             | Max. Op.  | 60      | 140      | 115      | 180      | 390      | 85       | 180  |
|                                  | Min. Rel. | -60     | -140     | 20       | 75       | 235      | -85      | -180 |
|                                  | Min. Dif. | 15      | 20       | 20       | 25       | 30       | 50       | 200  |
| 85°C                             | Max. Op.  | 60      | 140      | 120      | 180      | 400      | 85       | 180  |
|                                  | Min. Rel. | -60     | -140     | 15       | 70       | 215      | -85      | -180 |
|                                  | Min. Dif. | 12      | 20       | 15       | 15       | 30       | 50       | 190  |
| 125°C                            | Max. Op.  | 65      | 140      | 123      | 190      | 410      | 100      | 180  |
|                                  | Min. Rel. | -65     | -140     | 15       | 60       | 200      | -100     | -180 |
|                                  | Min. Dif. | 12      | 20       | 8        | 10       | 30       | 50       | 160  |

## WIRING DIAGRAMS

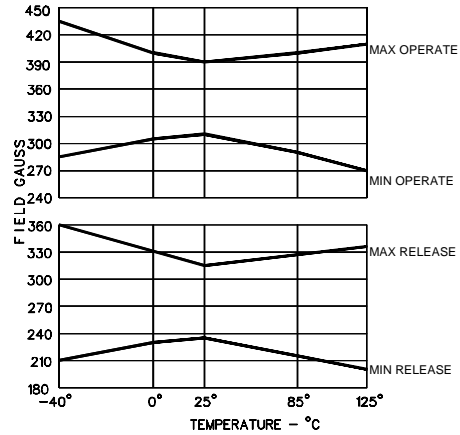


## OPERATE AND RELEASE POINTS

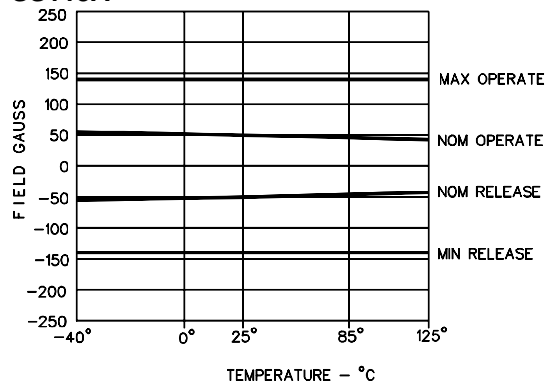
### SS111A



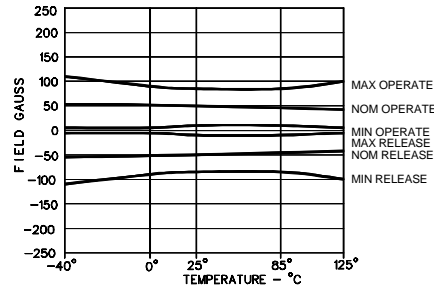
### SS149A



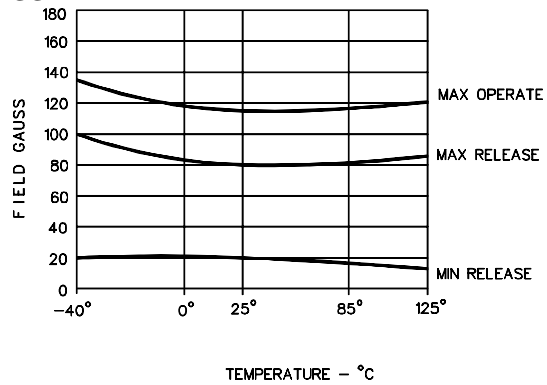
### SS113A



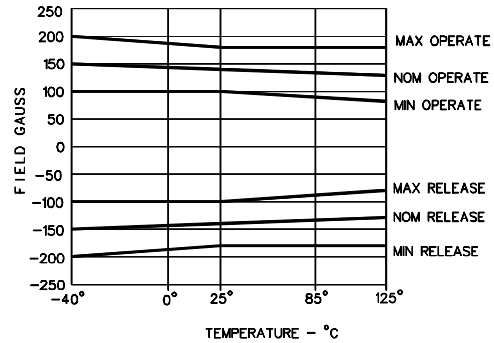
### SS161A



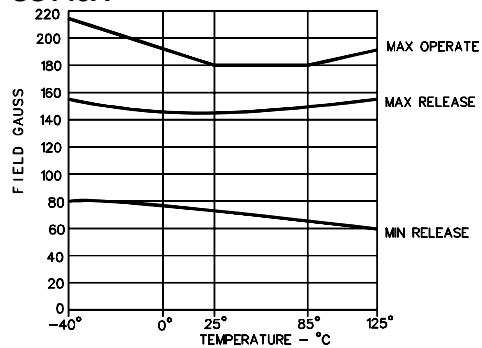
### SS141A



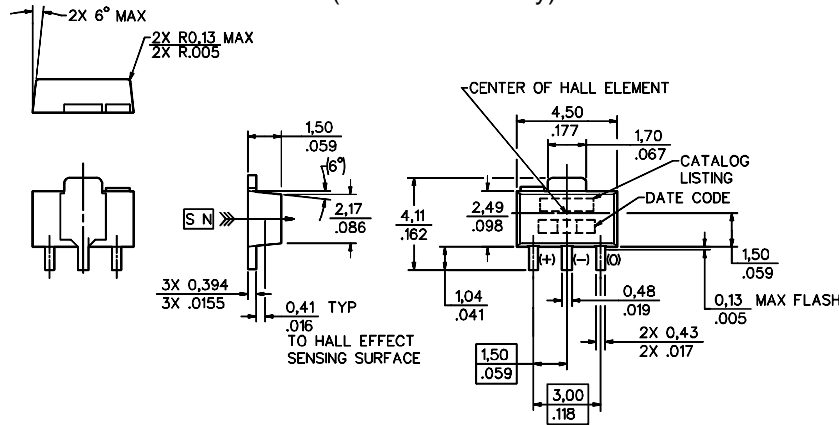
### SS166A



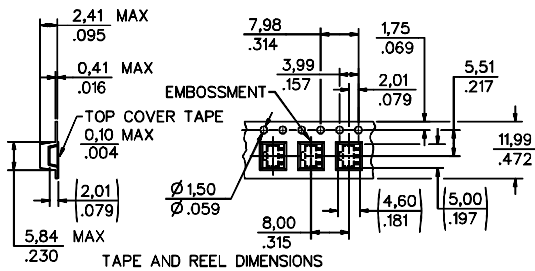
### SS143A



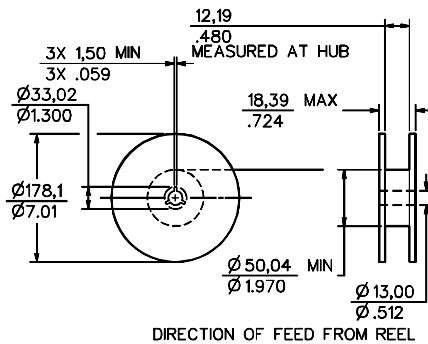
## MOUNTING DIMENSIONS (for reference only)



## TAPE DIMENSIONS



## REEL DIMENSIONS



## WARRANTY/REMEDY

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 1-800-737-3360 Canada  
 1-815-235-6847 International  
**FAX 1-815-235-6545 USA**

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# Honeywell

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