

**MICRO SWITCH**  
a Honeywell Division

FED. MFG. CODE 91929

**LINEAR OUTPUT HALL  
EFFECT TRANSDUCER**

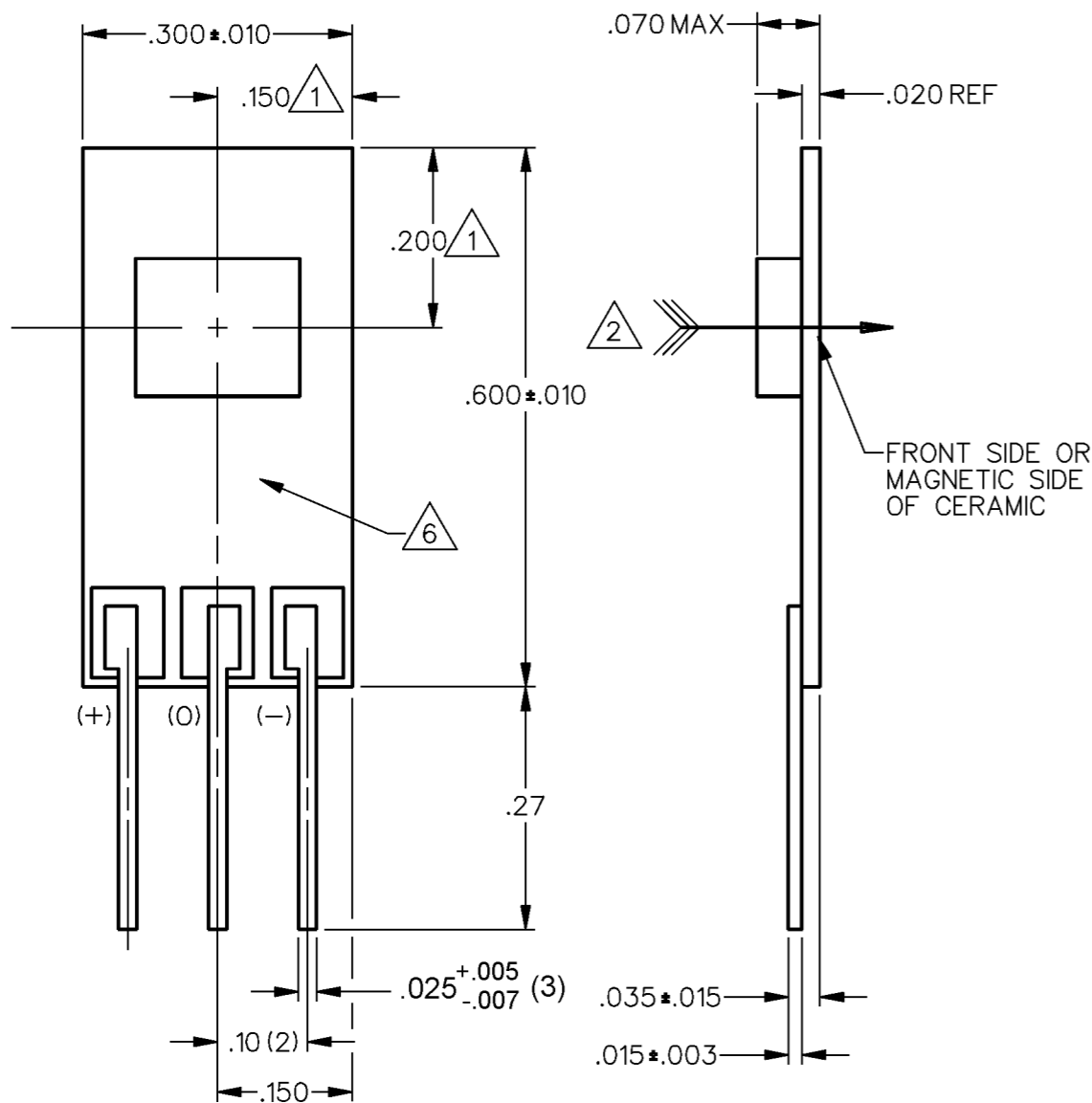
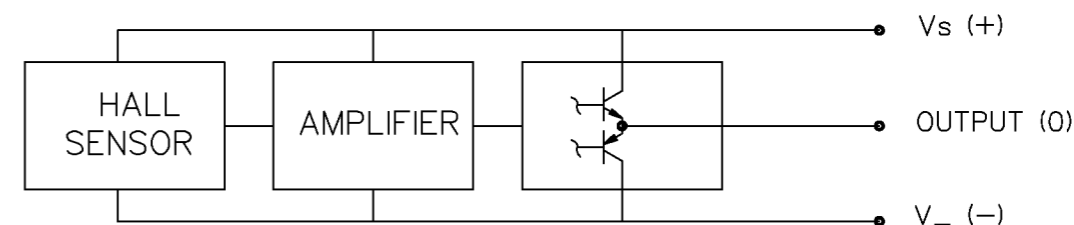
CATALOG LISTING  
**SS94A1**

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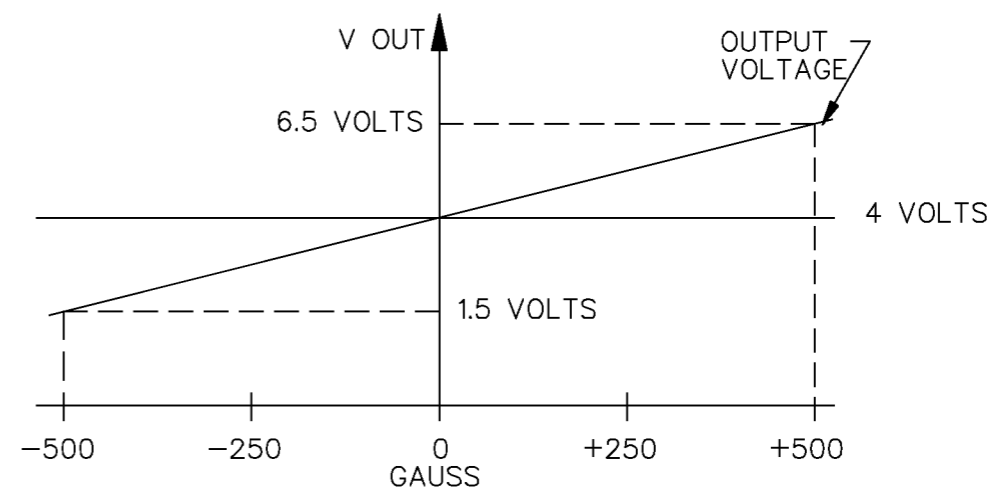
**OPERATING CHARACTERISTICS**

PARAMETER	MIN	TYP	MAX	UNITS	CONDITIONS/REMARKS
SUPPLY VOLTAGE	6.6	8.0	12.6	VOLTS	-40°C TO +125°C
SUPPLY CURRENT		13	30	mA	MAX @ 12.6 V @ -40°C
OUTPUT CURRENT			1	mA	SINKING OR SOURCING
OUTPUT SPAN		.625 V <sub>S</sub>		VOLTS	-500G TO +500G @ 25°C /5\
SENSITIVITY	4.90	5.0	5.10	mV/g	@ 8.0 V <sub>S</sub> & 25°C
LINEARITY	-1.5	-.8	0	% OF SPAN	DEV FROM STR LINE THRU -500 AND +500
V <sub>OUT</sub> @ 0 GAUSS	3.960	4.000	4.040	VOLTS	25°C
TEMP ERROR-NULL	-.02		+.02	%/°C	-40°C TO +125°C
TEMP ERROR-GAIN	-.02		+.02	%/°C	-40°C TO +125°C

**BLOCK DIAGRAM CURRENT SINKING OR SOURCING OUTPUT**



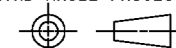
**NOMINAL TRANSFER CHARACTERISTICS AT 8.0 VDC**



**NOTES**

- 1 CENTERLINE OF HALL CELL (IC) ONLY. THE LOCATION OF THE CERAMIC COVER IS SPECIFIED
- 2 THE + MAGNETIC FLUX IS IN THIS DIRECTION (THIS ASSUMES THE CONVENTION THAT THE DIRECTION OF THE EXTERNAL FLUX OF A MAGNET IS FROM THE NORTH TO THE SOUTH POLE OF THE MAGNET)
- 3 - THE DEVICE CANNOT BE DAMAGED BY MAGNETIC OVERDRIVE
- 4 - OUTPUT TYPE - RATIOMETRIC
- 5 THE OUTPUT IS CLAMPED AT 9.0 VDC MINIMUM, 9.5 VDC TYPICAL
- 6 ARTWORK TYPICAL

THIRD ANGLE PROJECTION



SCALE 5 : 1

DO NOT SCALE PRINT

**UNLESS OTHERWISE SPECIFIED TOLERANCES ARE**

ONE PLACE (.0) ±.030

TWO PLACE (.00) ±.015

THREE PLACE (.000) ±.005

ANGLES ±

WEIGHT



CATALOG LISTING  
**SS94A1**  
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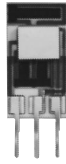
ISSUE  
**8**

**REVISIONS**

REV	NO	DATE	BY	CHK	DESCRIPTION
A	CO64262	J A S 13 SEPT 88			
B	CO72441	J A S 18 MAY 92			
C	CO-95704	DLM 21 MAR 00			
D	0038694	SSK 11 APR 08			
E	0039911	SS 19 MAY 08			

RASTER  
DRAWN

REPLACES X83052-SS  
RELEASE NO. DR-3524  
CHECK BLR 19MAY08  
CHECK BLR 13 SEPT 88  
CHECK D A W 13 SEPT 88



### FEATURES

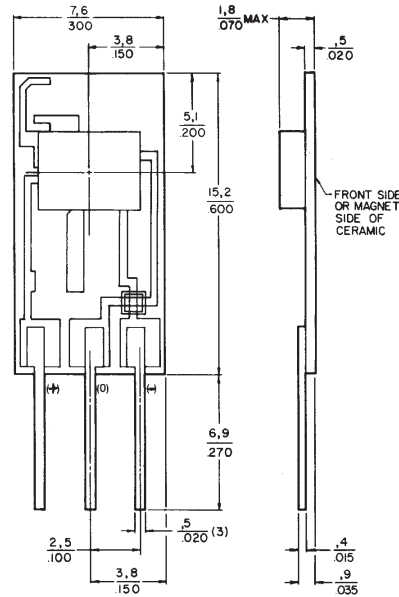
- Single current sinking or current sourcing linear output
- Improved temperature stability
- Three pin in-line printed circuit board terminals
- Standard .100" mounting centers
- Laser trimmed thin film and thick film resistors minimize sensitivity variations and compensate for temperature variations
- Flux range of  $\pm 100$  to  $\pm 2500$  gauss

### OPERATION

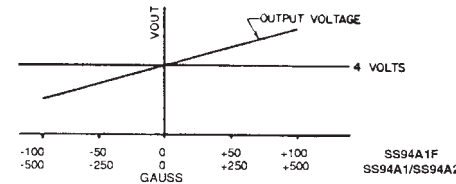
The SS9 utilizes a Hall effect integrated circuit chip which provides increased temperature stability and performance. Laser trimmed thick film resistors on the ceramic substrate and thin film resistors on the integrated circuit reduce null and gain shifts over temperature which results in consistent sensitivity from one device to the next.

### MOUNTING DIMENSIONS (For reference only)

#### SS9



### TYPICAL TRANSFER CHARACTERISTICS



Analog

### SS9 ORDER GUIDE

Catalog Listing	SS94A1	SS94A1B	SS94A1E	SS94A1F	SS94A2	SS94A2C	SS94A2D
Main Feature	Gen. purpose	5 VDC operation	Low drift	High sensitivity	Noise shielded††	Noise shielded††	Noise shielded††
Supply Voltage (VDC)*	6.6 to 12.6	4.5 to 8.0	6.6 to 12.6	6.6 to 12.6	6.6 to 12.6	6.6 to 12.6	6.6 to 12.6
Supply Current (mA)**	13 typ. 30 max.	8 typ. 17.5 max.	13 typ. 30 max.	13 typ. 30 max.	13 typ. 30 max.	13 typ. 30 max.	13 typ. 30 max.
Output Current (mA) Sinking or Sourcing	1 max.	1 max.	1 max.	1 max.	1 max.	1 max.	1 max.
Response Time ( $\mu$ sec.)	3 typ.	3 typ.	3 typ.	3 typ.	3 typ.	3 typ.	3 typ.
Magnetic Characteristics*** Span*	.625 $V_s$	.375 $V_s$	.625 $V_s$	.625 $V_s$	.625 $V_s$	.625 $V_s$	.625 $V_s$
Range (gauss)*	-500 to +500	-500 to +500	-500 to +500	-100 to +100	-500 to +500	-1000 to +1000	-2500 to +2500
Sensitivity (mV/gauss @ 25°C)	5.0 $\pm$ .1	1.875 $\pm$ .100	5.0 $\pm$ .1	25.0 $\pm$ .5	5.0 $\pm$ .1	2.50 $\pm$ .05	1.00 $\pm$ .02
Linearity† (% span)	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.	-0.8 typ. -1.5 max.
Vout (0 gauss @ 25°C)***	4.00 $\pm$ .04V	2.50 $\pm$ .05V	4.00 $\pm$ .04V	4.00 $\pm$ .08V	4.00 $\pm$ .04V	4.00 $\pm$ .04V	4.00 $\pm$ .04V
Temperature Error (all %s reference 25°C value)*							
Null (%/°C)	$\pm$ .02	$\pm$ .025	$\pm$ .01	$\pm$ .10	$\pm$ .02	$\pm$ .0125	$\pm$ .007
Gain (%/°C)	$\pm$ .02	$\pm$ .025	$\pm$ .02	+02 -055	$\pm$ .02	$\pm$ .02	$\pm$ .02

\* -40° to 125°C.

MilliTesla = Gauss  $10^{-1}$

\*\* Excludes load. Typical at 25°C/Maximum at -40°C.

\*\*\* @  $V_s = 5$  VDC for SS94A1B only/@  $V_s = 8$  VDC for all others.

† Derived from straight line between end points.

†† Silver coating on back of ceramic is electrically connected to - terminal. Specified using a 2.2K $\Omega$  resistor unless otherwise noted.

Null voltage (Vout at 0 gauss) and sensitivity are ratiometric to supply voltage.

**Magnets page 25.**

Application consideration: The output is clamped at the high end. Clamping voltage may be as low as 9VDC. The output will not exceed the clamping voltage regardless of field strength or supply voltage.