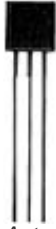




### 2SS52M



*Actual product appearance may vary.*

**2SS52M Series Omnipolar  
Magnetoresistive Sensor; radial lead IC  
package**

#### Features

- Low gauss operation can extend sensing distance to one inch or more, depending on magnet size
- Digital current sinking output
- Omnipolar - can be operated with either North or South magnetic pole
- Operating speed: 0 kHz to over 100 kHz
- Small size

#### Potential Applications

- Weaker field/ Larger detection distance
- Polarity independant applications
- Presence/absence detection
- Lid sensor for laptop computers
- Position sensor for material handling equipment
- Cylinder position sensing in pneumatic cylinders

#### Description

2SS Series position sensors have magnetoresistive material integrated on silicon and encapsulated in a plastic package. The integrated circuit provides a digital output in response to very low magnetic fields. Though this signal is identical to our digital Hall effect sensors, it can be achieved by magnetoresistive sensors at much greater sensor-to-magnet distances.

**OPERATING MODE** 2SS sensors are operated by magnetic fields (North or South pole) parallel to the magnetoresistive element.

**NOTE:** Due to the inherent high sensitivity of 2SS sensors, stray magnetic fields which are parallel to the IC may affect operation.

Product Specifications	
Product Type	Magnetoresistive Digital Position Sensor IC
Package Quantity/Type	Available in 1,000/Bag
Package Style	Radial Lead IC
Supply Voltage	3.8 Vdc to 30.0 Vdc
Output Type	Sink
Termination Type	PC Board
Magnetic Actuation Type	Omnipolar
Operating Temperature Range	-40 °C to 150 °C [-40 °F to 302 °F]

Storage Temperature	-40 °C to 150 °C [-640 °F to 302 °F]
Output Voltage	0.4 Vdc max.
Switching Time Rise (10 % to 90 %)	1.5 μs max.
Switching Time Fall (90 % to 10 %)	1.5 μs max.
Availability	Global
Supply Current (max. @ 25 °C)	11 mA
Output Current (max.)	20 mA
Operate Point @ 25 °C	2.5 mT [25 G] max.
Release Point @ 25 °C	0.5 mT [5 G] min.
Leakage Current max.	10 μA
Differential	0.8 mT [8 G] max.
Series Name	2SS

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CATALOG LISTING  
**2SS52M SERIES CHART 1**  
PAGE 1 OF 2

ISSUE  
**M**  
3

REVISIONS  
A PR23372  
J A K  
27 MAR 98  
B C093840  
J A F  
5 JAN 99

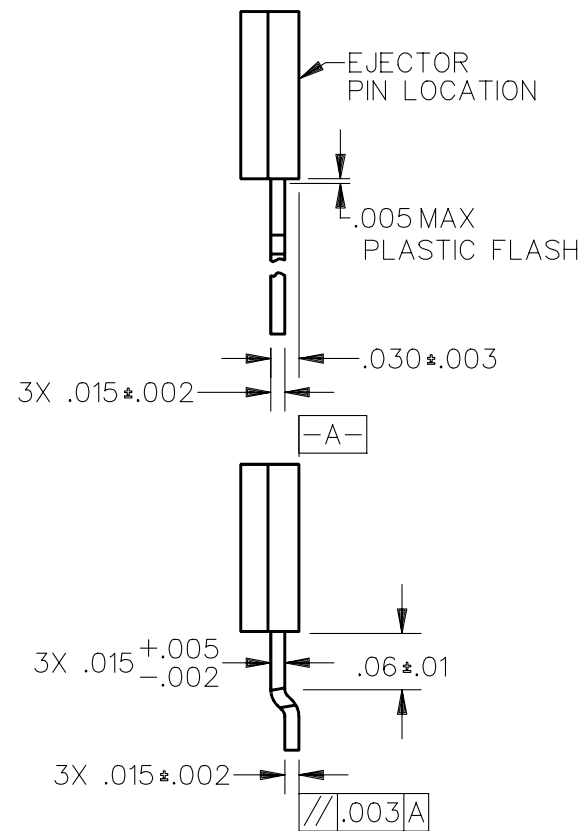
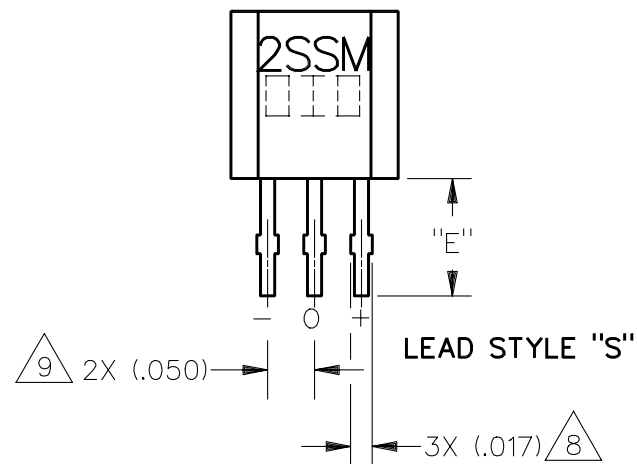
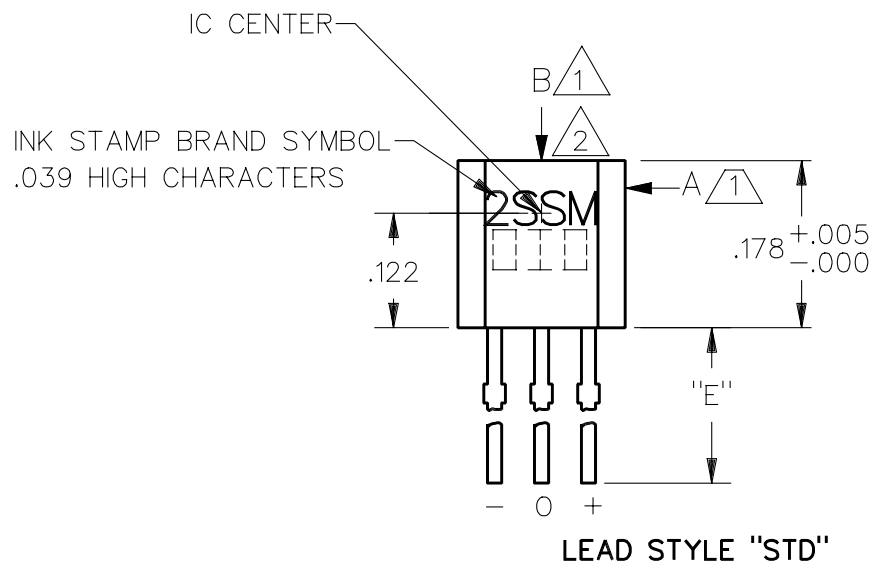
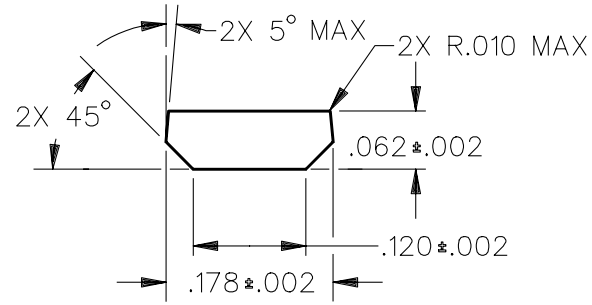
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J A F  
6 APR 98

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J A F  
6 APR 98

CHECK  
J A K  
27 MAR 98

DDM/CAD  
DRAWN  
J A K  
27 MAR 98

REPLACES  
RELEASE NO. PR-23372



NOTES

- 1 TO TEST THE SENSOR AGAINST THE SPECIFIED OPERATING CHARACTERISTICS PLACE IN A HELMHOLTZ COIL FIELD AND GIVE THE FOLLOWING HISTORY :  
35 GAUSS MINIMUM IN DIRECTION "A" : 35 GAUSS MINIMUM IN DIRECTION "B"  
(THIS ASSUMES THE CONVENTION THAT THE DIRECTION OF THE EXTERNAL FLUX OF A MAGNET IS FROM THE NORTH TO SOUTH POLE OF THE MAGNET)
- 2 THE SENSOR WILL OPERATE WITH THE FLUX FROM EITHER POLE OF A MAGNET WHEN APPLIED IN THE DIRECTION AND LOCATION SHOWN
- 3 AT SUPPLY VOLTAGE OF 3.8 TO 30 VDC AND OVER THE TEMPERATURE RANGE SPECIFIED
- 4 AT 24°C ± 2°C, AND 16 VDC ±0.5 % SUPPLY VOLTAGE
- 5 ABSOLUTE MAXIMUM RATINGS ARE THE EXTREME LIMITS THAT THE DEVICE WILL WITHSTAND WITHOUT DAMAGE TO THE DEVICE. HOWEVER, THE ELECTRICAL AND MAGNETIC CHARACTERISTICS ARE NOT GUARANTEED AS THE MAXIMUM LIMITS (ABOVE RECOMMENDED OPERATING CONDITIONS) ARE APPROACHED NOR WILL THE DEVICE NECESSARILY OPERATE AT ABSOLUTE MAXIMUM RATING
- 6 THE MAGNETIC CHARACTERISTICS OF THE SENSOR MAY BE AFFECTED BY STRAY MAGNETIC FIELDS
- 7 AMMOPACK STYLES "T2" & "T3". 24 SENSORS BETWEEN FOLDS, SKIP SPACE AT FOLD. MAY BE REFERRED TO AS "FAN FOLD"
- 8 MAXIMUM SIZE OVER BURRS. ENTIRE LEAD MUST PASS THROUGH Ø.023 HOLE. LEAD REFERENCE DIMENSIONS DO NOT INCLUDE SOLDER THICKNESS
- 9 DIMENSION REFERS TO THE LOCATION OF LEAD CENTERLINES AS THEY EXIT THE PLASTIC PACKAGE

THIRD ANGLE PROJECTION	
SCALE	5 : 1
DO NOT SCALE PRINT	
<b>UNLESS OTHERWISE SPECIFIED TOLERANCES ARE</b>	
ONE PLACE	(.0) ±.030
TWO PLACE	(.00) ±.015
THREE PLACE	(.000) ±.005
ANGLES	±
WEIGHT	

**MICRO SWITCH**  
a Honeywell Division

FED. MFG. CODE 91929

SOLID STATE SENSOR

CATALOG LISTING  
2SS52M SERIES CHART 1

THIS DRAWING COVERS A PROPRIETARY ITEM AND IS THE PROPERTY OF MICRO SWITCH. A DIVISION OF HONEYWELL. THIS DRAWING IS NOT TO BE COPIED OR USED WITHOUT THE APPROVAL OF MICRO SWITCH

MAGNETIC CHARACTERISTICS  $\triangle 1 \triangle 3 \triangle 6$

TEMPERATURE RANGE	-20°C TO 85°C	-40°C TO 150°C
OPERATE MAX	25 GAUSS	25 GAUSS
RELEASE MIN	5 GAUSS	4 GAUSS
DIFF MAX	7 GAUSS	8 GAUSS

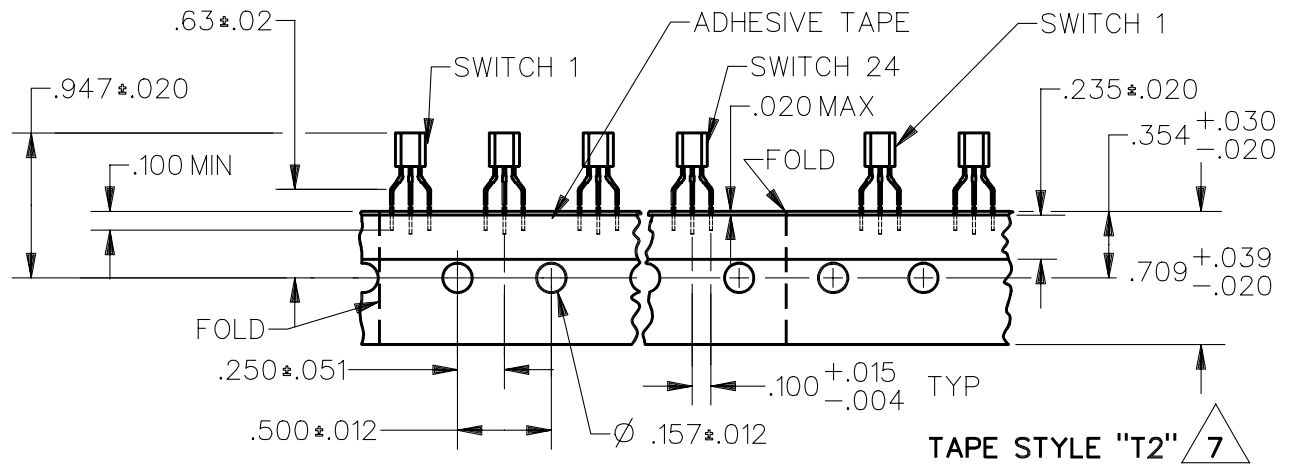
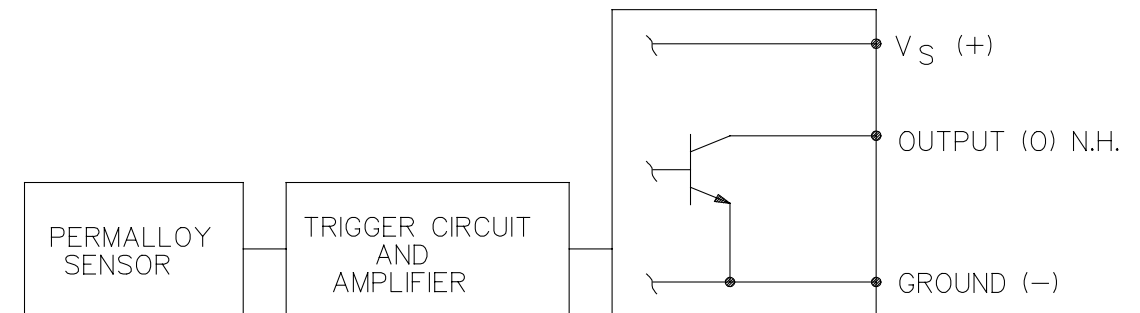
ABSOLUTE MAXIMUM RATING  $\triangle 5$

SUPPLY VOLTAGE (VS)	3.8 TO 30 VOLTS DC
VOLTAGE EXTERNALLY APPLIED TO OUTPUT	+30 VDC MAX WITH SWITCH IN "OFF" CONDITION ONLY -0.5 VOLTS WITH SWITCH IN "OFF" OR "ON" CONDITION
OUTPUT CURRENT	20 mA
TEMPERATURE	-40°C TO 150°C
MAGNETIC FLUX	NO LIMIT, THE CIRCUIT CANNOT BE DAMAGED BY MAGNETIC OVERDRIVE

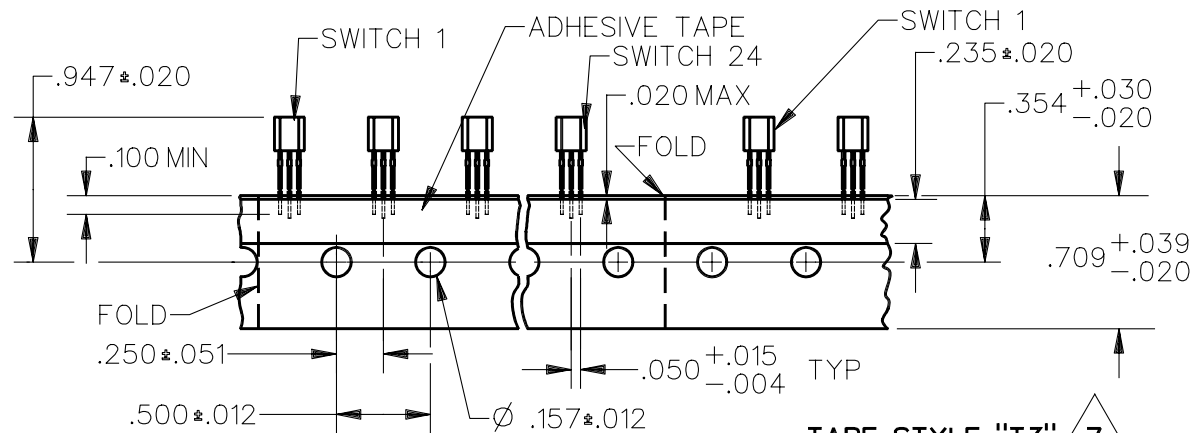
ELECTRICAL CHARACTERISTICS

	MIN	TYP	MAX	REMARKS
SUPPLY CURRENT (WITHOUT LOAD) $\triangle 4$		6 mA	11 mA 10 mA	MAX (OPERATED) MAX (RELEASED)
OUTPUT VOLTAGE (OPERATED) $\triangle 3$		0.25 V	0.40V	SINKING 20 mA MAX
OUTPUT LEAKAGE CURRENT (RELEASED) $\triangle 3$			10 $\mu$ A	LEAKAGE INTO SWITCH OUPUT
OUTPUT SWITCHING TIME $\triangle 3$				1600 OHM, 20 pF LOAD
RISE TIME		0.2 $\mu$ S	1.5 $\mu$ S	10% TO 90%
FALL TIME		0.1 $\mu$ S	1.5 $\mu$ S	90% TO 10%

BLOCK DIAGRAM CURRENT SINKING OUTPUT



TAPE STYLE "T2"  $\triangle 7$



TAPE STYLE "T3"  $\triangle 7$

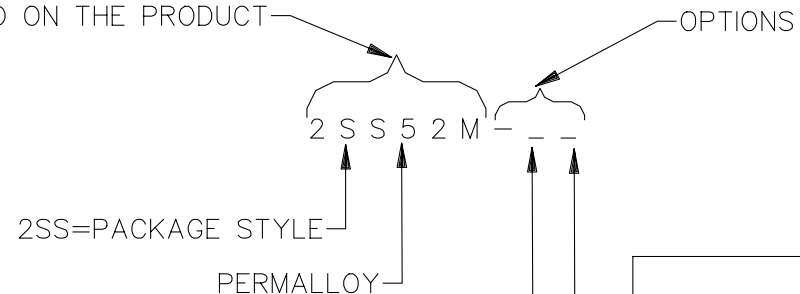
CATALOGING SYSTEM

PREFIX

SUFFIX

BASIC CATALOG LISTING: PACKAGE STYLE, MAGNETIC TYPE, ELECTRICAL/MAGNETIC SPECS  
LEAD & PACKAGING OPTIONS: BULK, AMMOPACK

CHARACTERS IN THESE POSITIONS OF THE LISTING ARE BRANDED ON THE PRODUCT



DESCRIPTION	NOMINAL LEAD SPACING	NOMINAL "E" DIM LENGTH	PARTS PER CONTAINER
STANDARD, BULK PACK	.050	.590	1000/BAG
SURFACE MOUNT, BULK PACK	.050	.125	1000/BAG
TAPE, AMMOPACK	.100	.590	5000/BOX
TAPE, AMMOPACK	.050	.590	5000/BOX

S  
T 2  
T 3

CATALOG LISTING  
2SS52M SERIES CHART 1  
PAGE 2 OF 2

ISSUE  
3

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6 APR 98

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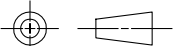
27 MAR 98

DDM/CAD  
DRAWN

J A K

ANSI Y14.5M-1982 APPLIES

THIRD ANGLE PROJECTION



SCALE NONE

DO NOT SCALE PRINT

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

ONE PLACE (.0)	±.030
TWO PLACE (.00)	±.015
THREE PLACE (.000)	±.005
ANGLES	±

WEIGHT