



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

MICRO SWITCH
a Honeywell Division
FED. MFG. CODE 91924

SOLID STATE SENSOR

CATALOG LISTING
2SS52M SERIES CHART 1

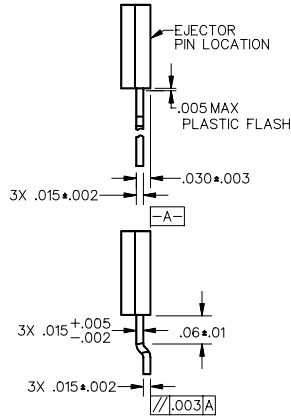
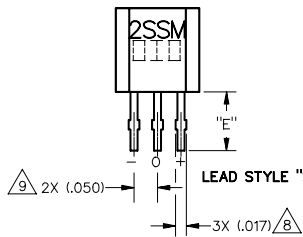
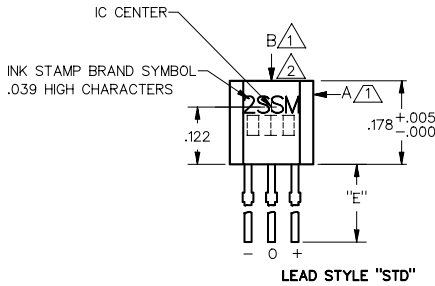
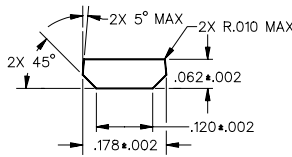
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CATALOG LISTING
2SS52M SERIES CHART 1
PAGE 1 OF 2
RELEASE NO. PR-23372

REVISIONS
A PR23372
27 MAR 98
B C09384C
5 JUN 98

DDM/CAD
DRAWN
J A K 27 MAR 98
CHECK J A F 6 APR 98
CHECK

ANSI Y14.5M-1982 APPLIES



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" TEST TO THE OPERATING CHARACTERISTICS 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	
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE	
ONE PLACE	(.0) ± .030
TWO PLACE	(.00) ± .015
THREE PLACE	(.000) ± .005
ANGLES	±
WEIGHT	

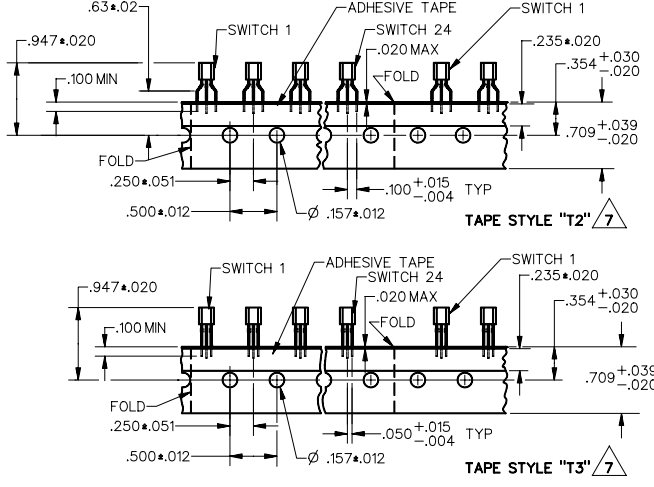
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2SS52M SERIES CHART 1
 PAGE 2 OF 2
 ISSUE 3
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 A PR23372
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 5 JUN 98
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MAGNETIC CHARACTERISTICS $\Delta 1 \Delta 3 \Delta 6$

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

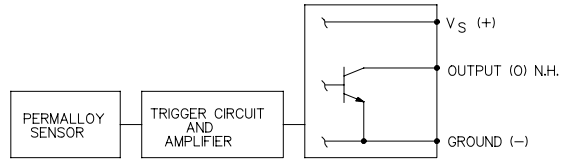
ABSOLUTE MAXIMUM RATING Δ

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) $\Delta 4$		6 mA	11 mA	MAX (OPERATED) MAX (RELEASED)
OUTPUT VOLTAGE (OPERATED) $\Delta 3$		0.25 V	0.40V	SINKING 20 mA MAX
OUTPUT LEAKAGE CURRENT (RELEASED) $\Delta 3$			10 μ A	LEAKAGE INTO SWITCH OUTPUT
OUTPUT SWITCHING TIME $\Delta 3$				1600 OHM, 20 pF LOAD
RISE TIME	0.2 μ S	1.5 μ S		10% TO 90%
FALL TIME	0.1 μ S	1.5 μ S		90% TO 10%

BLOCK DIAGRAM CURRENT SINKING OUTPUT

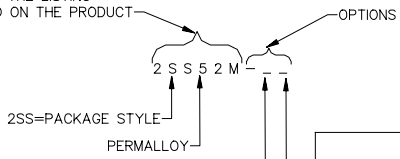


CATALOGING SYSTEM

PREFIX **SUFFIX**

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

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

THIRD ANGLE PROJECTION

SCALE NONE

DO NOT SCALE PRINT

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

ONE PLACE (.0) \pm .030

TWO PLACE (.00) \pm .015

THREE PLACE (.000) \pm .005

ANGLES \pm

WEIGHT