

Advance information

Honeywell SENSOR PRODUCTS

2-AXIS MAGNETIC SENSOR CIRCUIT

Features

- Small 20-Pin SOIC Package
- Two AMR Bridges with Precision Signal Conditioning in One Package
- Wide Field Range of +/- 3 Gauss
- 750 mV/gauss Sensitivity
- Operational Voltage of 4.5 to 5.5V

Product Description

The Honeywell HMC6022 is a high performance magnetoresistive sensor circuit in a single package. The advantages of this design include orthogonal two-axis sensing, digital precision temperature and offset compensation, small size and low power capability in a surface mount package.

Each of the magnetoresistive sensors are integrated with signal conditioning circuitry configured as a 2-axis magnetometer to convert magnetic fields to large-signal analog output voltages. This sensor assembly offers a compact, low cost, high sensitivity and highly reliable solution for low field magnetic sensing.



APPLICATIONS

- Compassing
- Navigation Systems
- Attitude Reference

HMC6022 Circuit Diagram



HMC6022		Honeywell			
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Characteristics	Conditions*	Min	Тур	Max	Units
Maximum Ratings				· · · ·	
Storage Temperature		-55	-	+150	°C
Supply Voltage		4.5	-	5.5	Volts
Nominal Ratings					
Sensitivity			750		mV/Oe
Bridge Offset			0.1		% F.S.
Set/Reset Repeatability				0.20	mV
Linearity Over Magnetic Field Range				2	%
Field Range		-3		+3	Oe
Disturbing Field	Sensitivity starts to degrade.			25	Oe
	Use S/R pulse to restore sensitivity.				
Max. Exposed	No perming effect on zero reading			10000	gauss
Field					
Operating	Ambient	0	25	70	°C
Temperature					
Sensitivity Ratio of					%
X,Y Sensors					
X,Y sensor	Sensitive direction in X and Y sensors				degree
Orthogonality					
Hysteresis Error	3 sweeps across +/-3 gauss		0.06		%FS
Repeatability Error	3 sweeps across +/-3 gauss		0.1		%FS
Set/Reset Strap					
Strap Resistance	Measured from S/R+ to S/R-	5.5		9	ohms
Current	0.1% duty cycle, or less,	0.4		4	Amp
	2µsec current pulse				

ppm/°C

3500

* Tested at 25°C except stated otherwise.

Resistance

Tempco

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Pin Configuration

HMC6022

Pin Number	Pin Name	Description
1	VDDF2	EEPROM Positive Supply Voltage 2
2	UNLK2	Unlock 2, Allows Communication Into Signal Processor 2
3	DIO2	Digital Input/Output 2, Digital Communication Data Line
4	NC	No Connection
5	S/R1+	Set/Reset Strap 1, Positive Connection
6	S/R1-	Set/Reset Strap 1, Negative Connection
7	VDD1	Positive Supply Voltage 1
8	VDDF1	EEPROM Positive Supply Voltage 2
9	UNLK1	Unlock 1, Allows Communication Into Signal Processor 1
10	DIO1	Digital Input/Output 1, Digital Communication Data Line
11	NC	No Connection
12	NC	No Connection
13	NC	No Connection
14	GND (VSS)	Ground Reference, Negative Supply Voltage Connection
15	OUT1	Analog Output 1
16	OUT2	Analog Output 2
17	S/R2+	Set/Reset Strap 2, Positive Connection
18	S/R2-	Set/Reset Strap 2, Negative Connection
19	NC	No Connection
20	VDD2	Positive Supply Voltage 2

Basic Device Operation

The HMC6022 is a two-axis linear magnetic sensor circuit designed as Wheatstone bridges formed by a magnetoresistive metal film connected to signal processing circuits for amplification and error correction. With the power supply applied to the bridge, the sensors converts any incident magnetic field in the sensitive direction to a balanced voltage output. The magnetoresistive sensors are made of a nickel-iron (Permalloy) thin-film deposited on a silicon wafer in pattern of resistive strips. In the presence of a magnetic field, a change in the bridge resistive elements causes a corresponding change in voltage across the bridge outputs.

PACKAGE DRAWING 20-PIN SOIC



Ordering Information

Ordering Number	Product
HMC6022	Two Axis Magnetic Sensor Circuit– SOIC-20 Package

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