

### General Description

The SDC96B is a linear Hall-effect IC, the output voltage varies with magnetism density changes. It can detect fine changes of magnetic field. It applies to aspect below, such as motion, distance, location sensor measuring, and also be fit to be used under the environment which is very bad or contaminate gravely.

### Features

- High sensitivity, low-power consumption
- Low output noise
- Response speed up to 23 kHz
- Wide operating voltage range: 4.5V~10.5V.
- Good temperature characteristic
- Low output voltage down to<15mV, high output voltage up to>4.9V

### Applications

- Current sensing
- Motor control, position detection
- Polarity detection
- Weight sensing



Figure 1. Package Type

**Pin Description**

Package: TO-92S

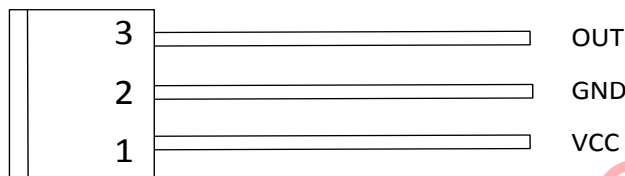


Figure 2. Pin Configuration

Pin Number	Pin Name	Function
1	VCC	Power supply pin
2	GND	GND pin
3	OUT	Output pin

Table 1. Pin Description

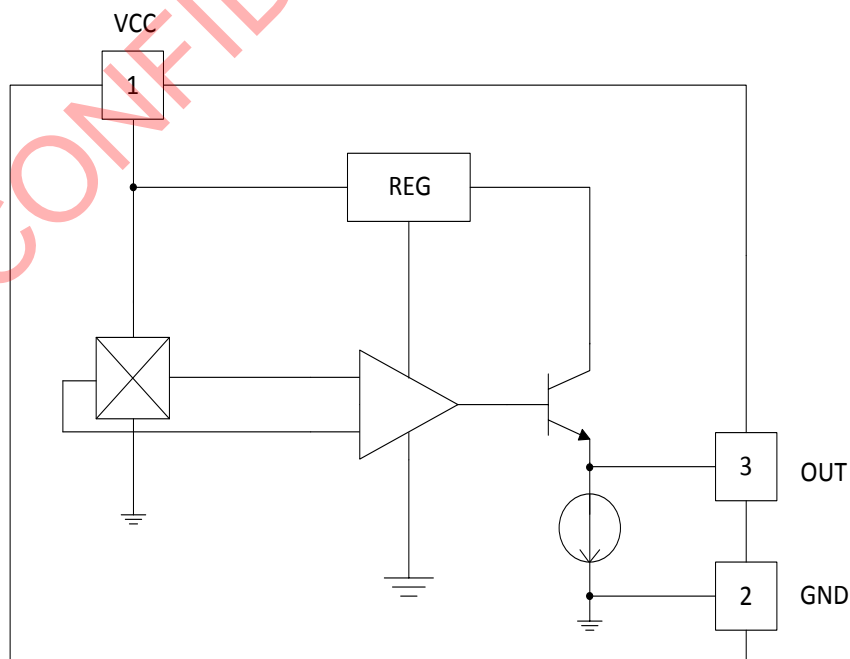
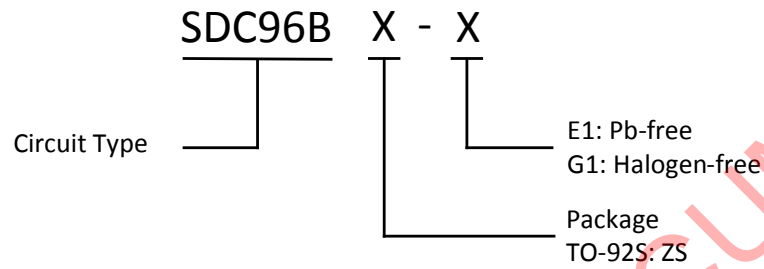
**Functional Block Diagram**


Figure 3. Functional Block Diagram

**Ordering Information**


Package	Temperature Range	Part Number		Marking ID		Packing Type
		Pb-free	Halogen-free	Pb-free	Halogen-free	
TO-92S	-20°C~85°C	SDC96BZS-E1	SDC96BZS-G1	96B	96BG	Bulk

**Absolute Maximum Ratings** (Note: Stresses greater than those listed under absolute maximum ratings may cause permanent damage to the device.)

Parameter	Symbol	Value	Units
Supply Voltage	$V_{CC}$	12	V
Output Voltage	$V_{OUT}$	12	V
Storage temperature	$T_S$	-65 to 150	°C
Maximum Junction Temperature	$T_J$	150	°C
ESD, HBM model per Mil-Std-883, Method 3015	HBM	2000	V
ESD, MM model per JEDEC EIA/JESD22-A115	MM	200	V
Latch-up test per JEDEC 78	-	200	mA
Package power dissipation	$P_D$	550	mW

Table 2. Absolute Maximum Ratings

**Recommended Operating Conditions**

Parameter	Symbol	Min	Max	Unit
Power supply	$V_{CC}$	4.5	10.5	V
Operation temperature	$T_a$	-20	85	°C

Table 3. Recommended Operating Conditions

**Electrical Characteristics** (Ta=25°C, V<sub>CC</sub>=5V, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply voltage	V <sub>CC</sub>	-	4.5	-	10.5	V
Supply current	I <sub>CC</sub>	V <sub>CC</sub> =5.0V	-	6.8	8.5	mA
Quiescent output voltage	V <sub>OUT</sub>	B=0GS	2.25	2.50	2.75	V
Sensitivity	Sens	B=0GS~±900GS	2.3	2.5	2.7	mV/GS
High output voltage	V <sub>OH</sub>	B=1250GS	4.9	-	-	V
Low output voltage	V <sub>OL</sub>	B=-1250GS	-	-	15	mV
Output resistance	R <sub>OUT</sub>	-	-	40	100	Ω
Noise	V <sub>NO</sub>	BW=10Hz~10kHz	-	90	-	uV

Table 4. Electrical Characteristics

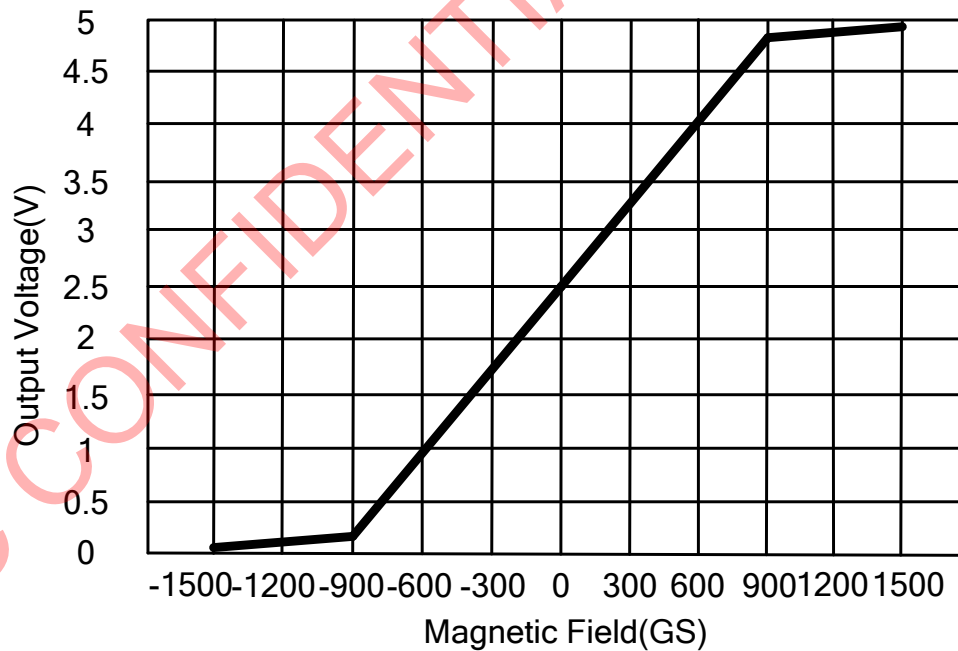
**Typical Performance Characteristics**


Figure 4. Output Voltage vs. Magnetic Field

**Operation Theory**

The output null voltage ( $B=0GS$ ) is nominally one-half the supply voltage. A south magnetic pole, presented to the branded face of the Hall-effect sensors will drive the output higher than the null voltage level. A north magnetic pole will drive the output below the null level.

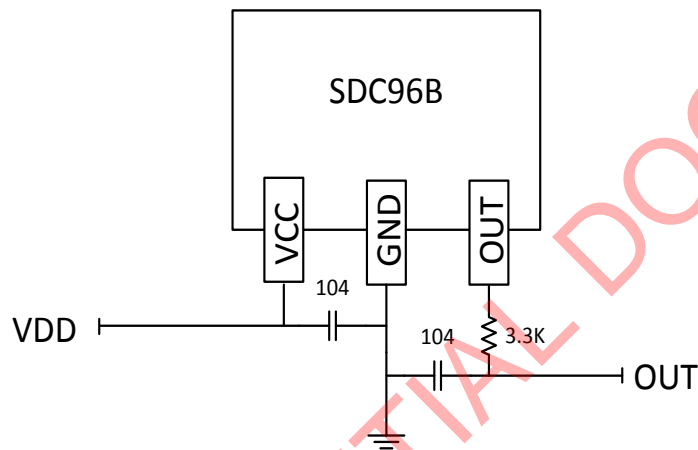
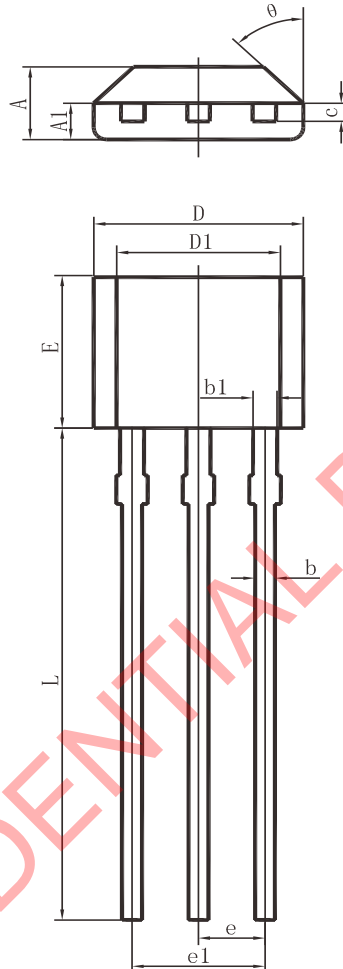
**Typical Application**


Figure 5. Typical Application

**Package Dimensions  
TO-92S**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
b	0.350	0.480	0.014	0.019
b1	0.380	0.530	0.015	0.021
c	0.360	0.510	0.014	0.020
D	3.900	4.100	0.154	0.161
D1	2.970	3.270	0.117	0.129
E	2.900	3.100	0.116	0.124
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	14.500	14.900	0.580	0.596
$\theta$	45° TYP.		45° TYP.	



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