

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

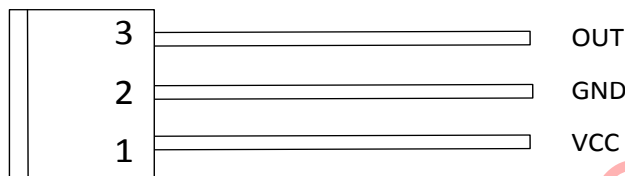


Figure 2. Pin Configuration

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

Table 1. Pin Description

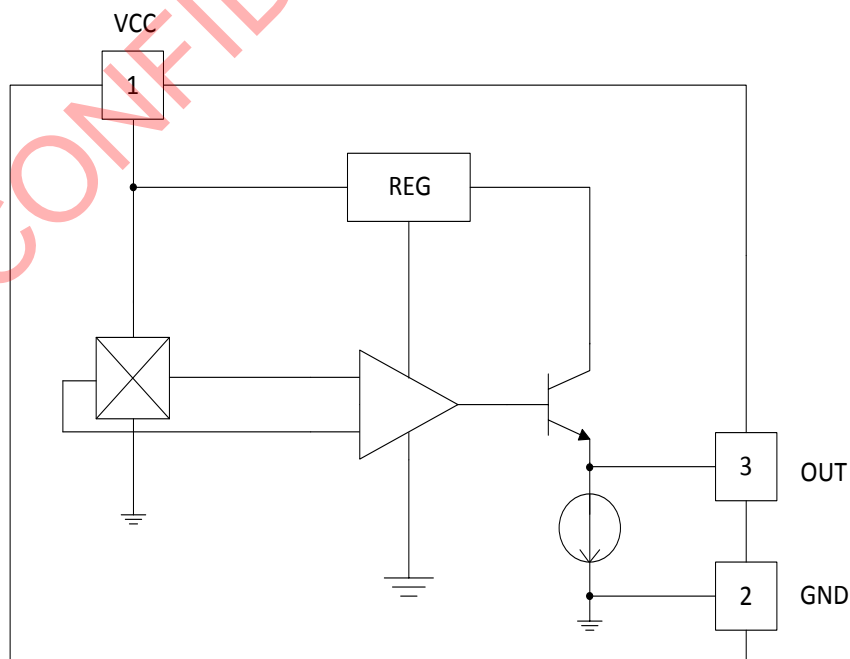
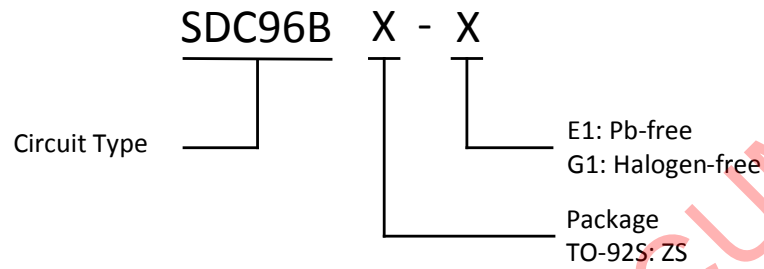
Functional Block Diagram


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_{CC}=5V, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply voltage	V _{CC}	-	4.5	-	10.5	V
Supply current	I _{CC}	V _{CC} =5.0V	-	6.8	8.5	mA
Quiescent output voltage	V _{OUT}	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 _{OH}	B=1250GS	4.9	-	-	V
Low output voltage	V _{OL}	B=-1250GS	-	-	15	mV
Output resistance	R _{OUT}	-	-	40	100	Ω
Noise	V _{NO}	BW=10Hz~10kHz	-	90	-	uV

Table 4. Electrical Characteristics

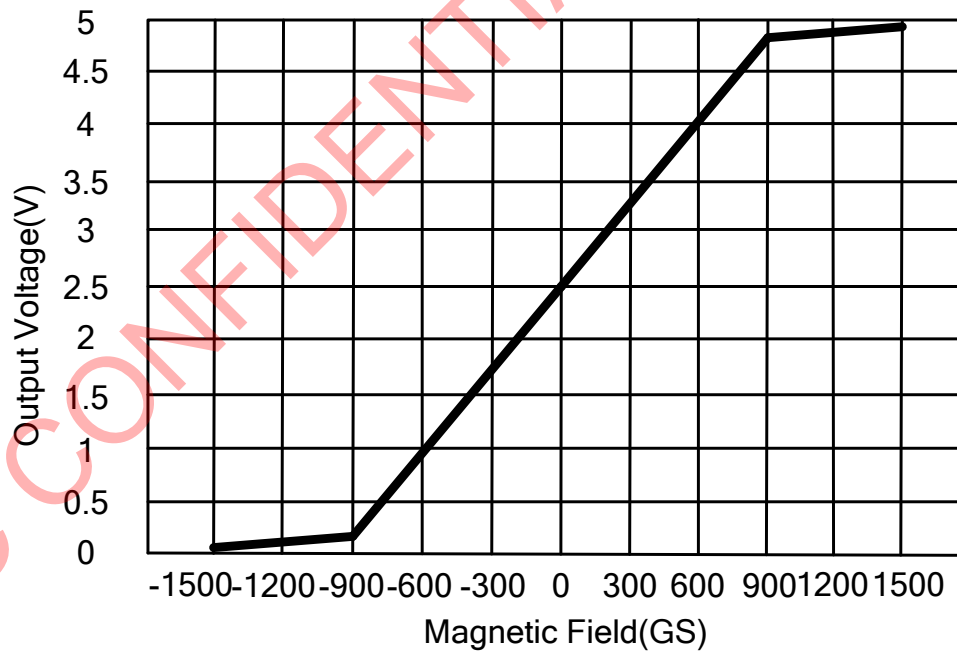
Typical Performance Characteristics


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.

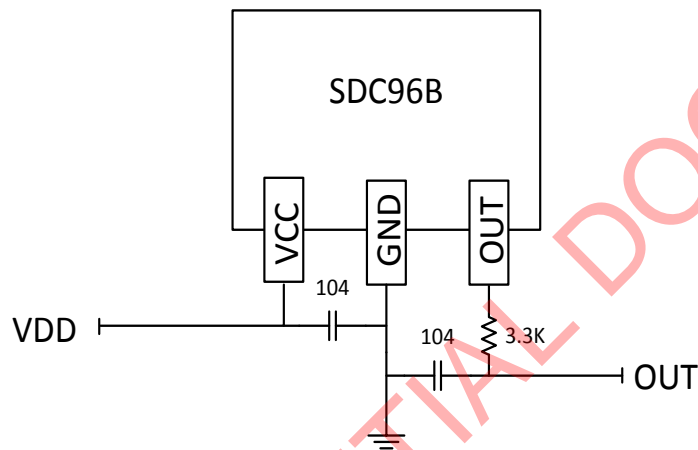
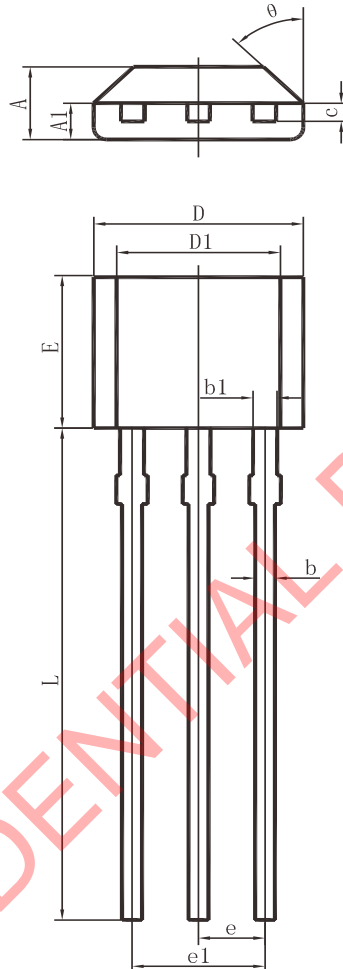
Typical Application


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
θ	45° TYP.		45° TYP.	



Shaoxing Devechip Microelectronics Co., Ltd.

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Contact us:

Headquarters of Shaoxing

Address: Tian Mu Road, No13,

Shaoxing city, Zhejiang province, China

Zip code: 312000

Tel: (86) 0575-8861 6750

Fax: (86) 0575-8862 2882

Shenzhen Branch

Address: 22A, Shangbu building, Nan Yuan Road, No.68,

Futian District, Shenzhen city, Guangdong province, China

Zip code: 518031

Tel: (86) 0755-8366 1155

Fax: (86) 0755-8301 8528