

# *Sure Electronics*

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## **3 Axis Acceleration Sensor Board User's Guide**

Product Name : 3 Axis Acceleration Sensor Board  
(G Sensor)

Product ID : DC-SS009

Product Version : Ver 2.0

Document Version : Ver 2.0

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# Chapter 1. Quick Start Guide

3 Axis Acceleration Sensor Board is manufactured by Sure Electronics. Mainchip is MMA7260Q from Freescale. It is the first generation 3 axis acceleration sensor. Users could get acceleration values of X, Y, and Z axes. And it is widely used in shock, slope, and moving detection. Output sensitivity could be selected by simply setting voltage levels on a few pins. The measuring range is selectable among 1.5g, 3g, and 6g. It only costs 3uA in sleep mode, and the work current is as low as 500uA.

Sure Electronics provides this board for those who want to use such sensors but can not solder them on their own. With this small butterfly board, you could start your design quickly. It is easy to be integrated in 5V systems and 3.3V systems, and the cost is very low for batch use.

For more information of MMA7260Q from freescale, you could take reference from the documentation in the chip's PDF file. It could be found in Freescale website and the accessory CD-ROM.

The output of MMA7260Q is analog mode, so you need an A/D converter to read the acceleration value. Simple sample codes are provided to help you to understand how to integrate it to your design.

We will release a tiny microcontroller demo board which could be connected to this acceleration board, through the 2 rows of bare connectors. Then this board could be converted into a digital interface one.

This document is used to describe how to use 3 Axis Acceleration Sensor Board.

## 1-1. Overview

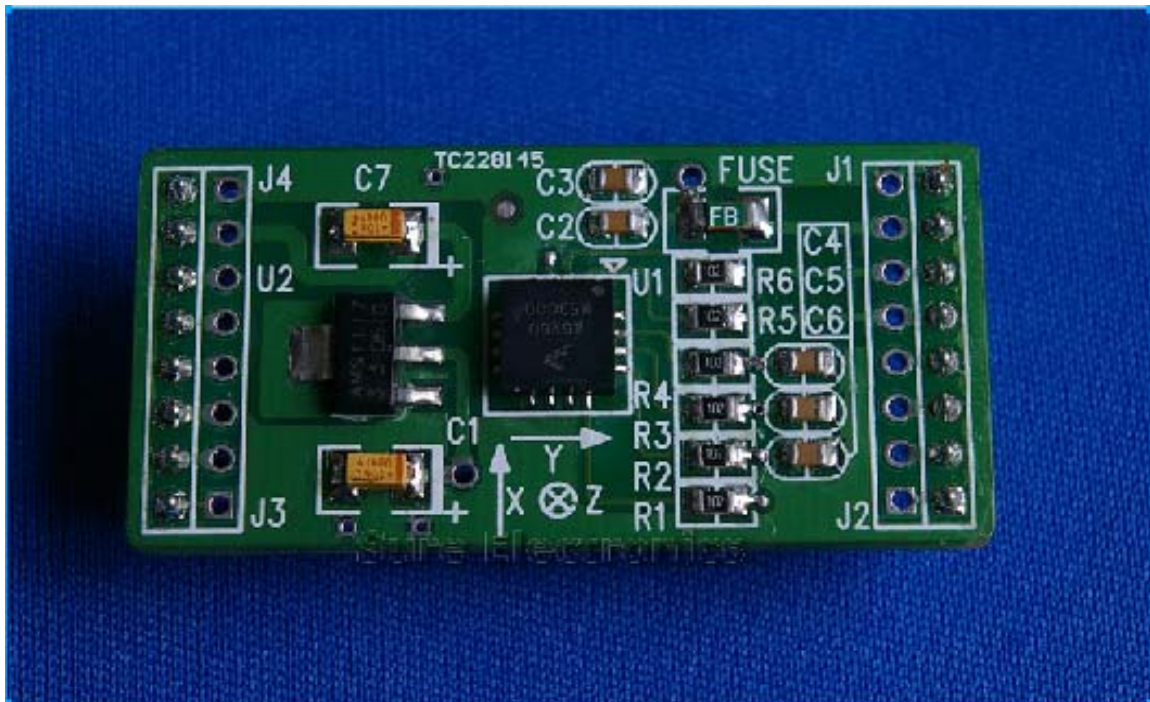


Figure 1

### 1-2. Part Layout

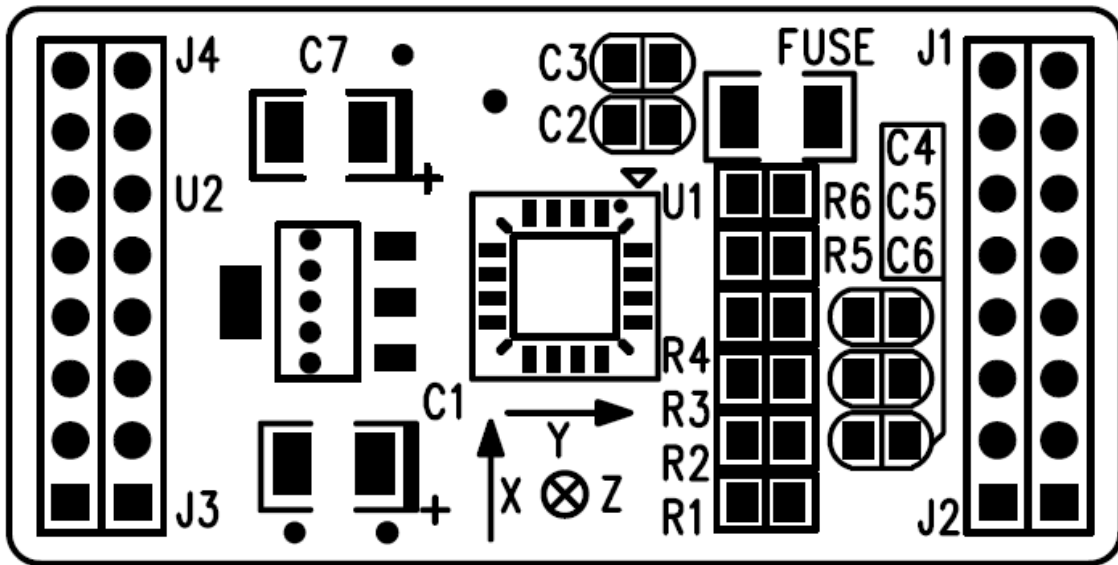


Figure 2 Top Part Layout

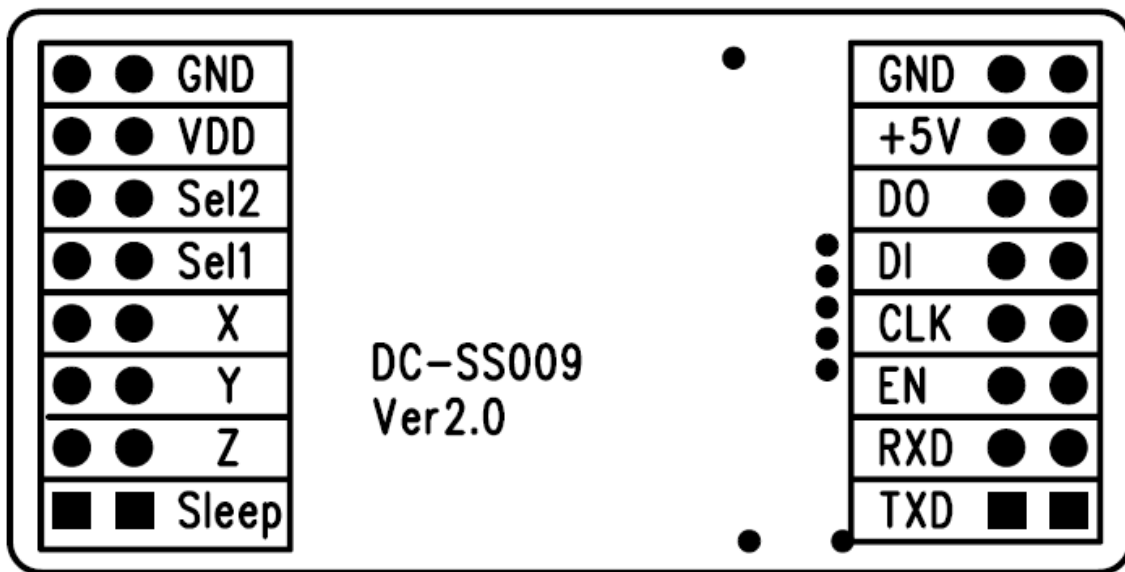


Figure 3 Bottom Part Layout

### 1-3. Main Feature

#### 1-3-1. Low Voltage Drop Linear Regulator

LT1117(compatible chip, probably AS1117) is used in this board as a linear regulator. It needs 1.2V voltage drop to work, so it can work well with a 5V power supply. If you have 3.3V voltage on board, just bypass it. Both 5V and 3.3V input pins are provided in this board. Maximum input voltage on 5V pin is 9V. Never try to connect 3.3V input pin of this board to a non-3.3V power supply, it will damage your acceleration board permanently.

#### 1-3-2. ±1.5g - 6g Three Axis Low-g Micromachined Accelerometer

The MMA7260 low cost capacitive micromachined accelerometer features signal conditioning, a 1-pole low pass filter, temperature compensation and g-Select which allows for the selection among 4 sensitivities. Zero-g offset full scale span and filter cut-off are factory set and require no external devices. There is just a Sleep Mode that makes it ideal for handheld battery powered electronics.

# Chapter 2. Hardware Detail

## 2-1 Schematic

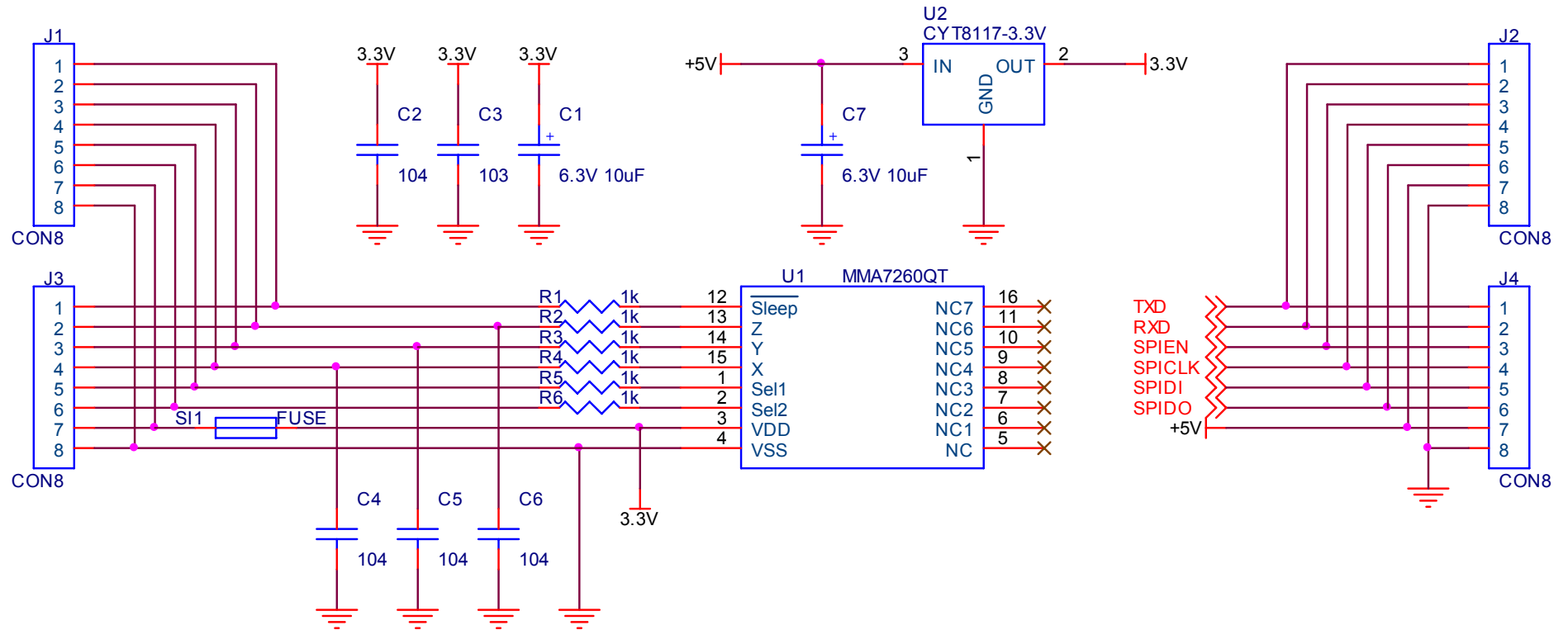


Figure 4

2-2 Physical Dimension

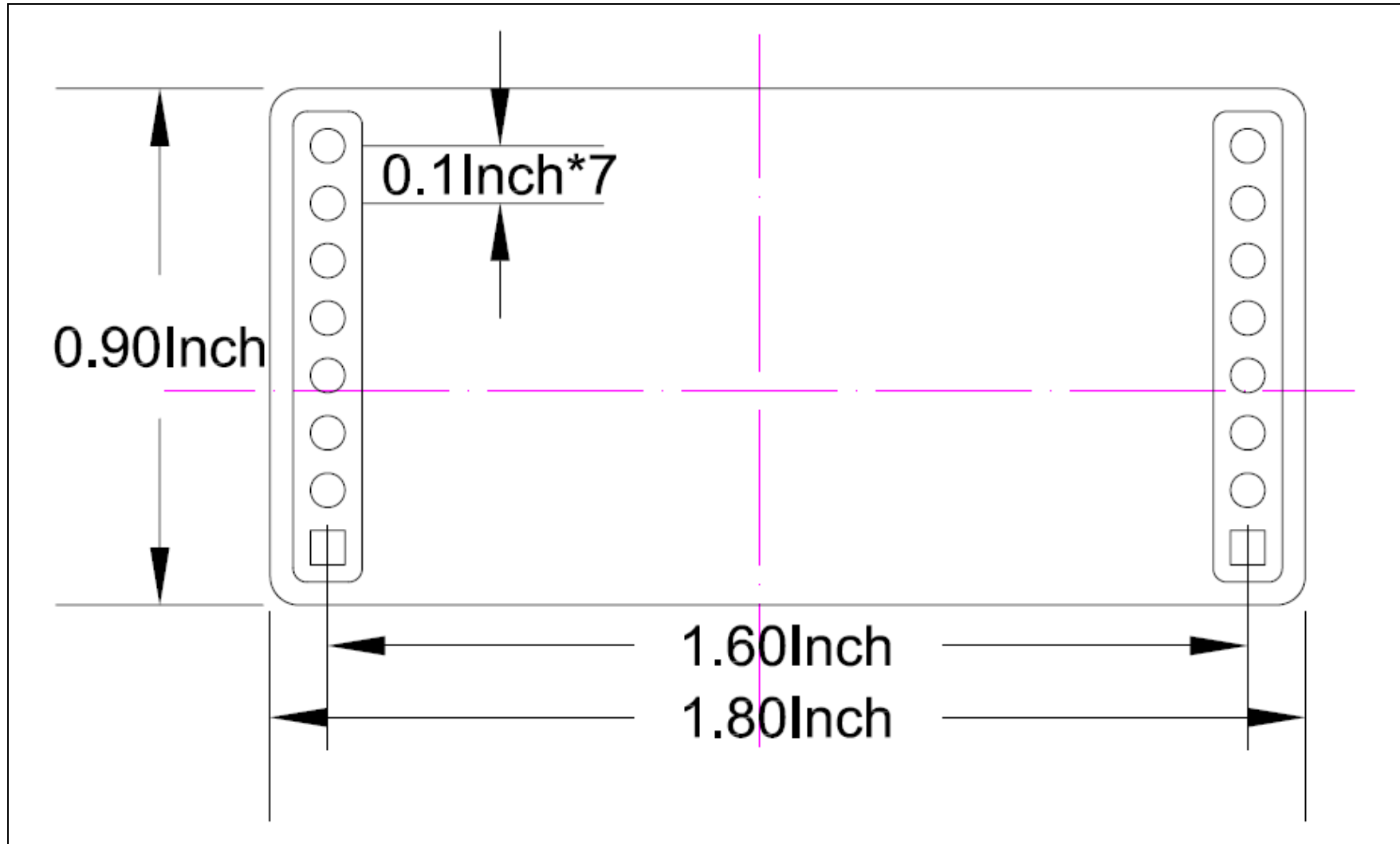


Figure 5

2-3 Circuit Diagram

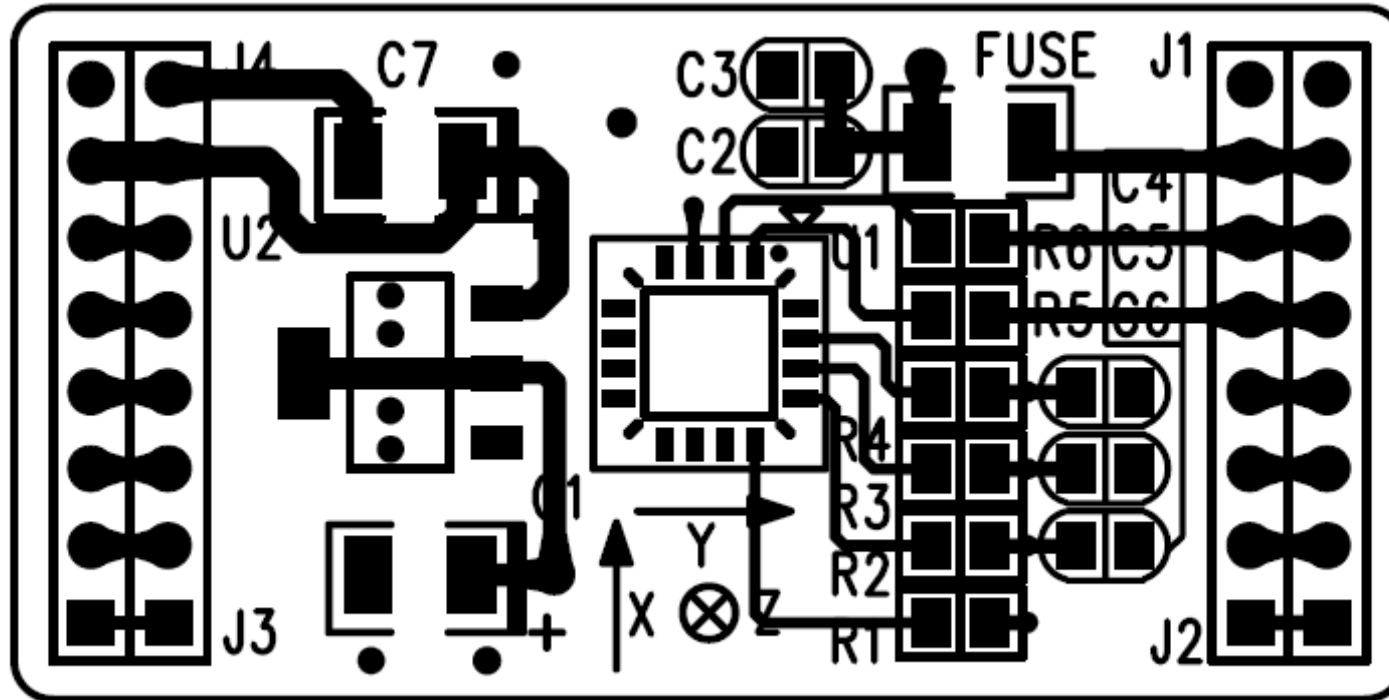


Figure 6



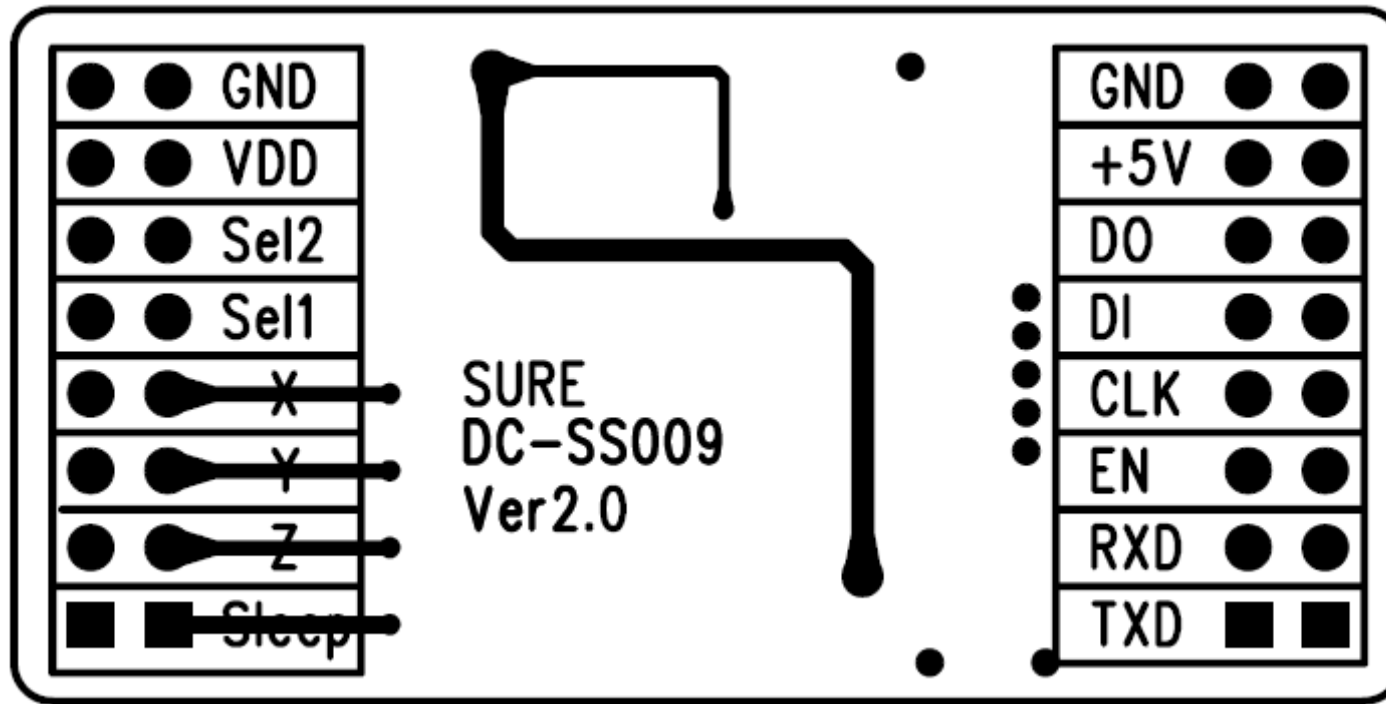


Figure 7

**2-4 Electric Characters and Environment Characters**

- Low Current Consumption: 500  $\mu$ A, when use a 3.3V direct supply.
- Low Current Consumption: 4.5mA, when use a 5V supply.
- Low Voltage Operation: 2.2 V -3.6, when use a 3.3V direct supply.
- Wide Voltage Operation: 4.5 V -9 V, when applied on 5V pin.
- High Sensitivity output (800 mV/g @ 1.5g)
- Working Temperature Range: -10 to +65°C
- Storage Temperature Range: -20 to +85°C

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