

# GZP6847DC

## Pressure Sensor

Digital Output(IIC)

Datasheet

Version: V1.3

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Document Revision History

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| Revision | Description                          | Date       |
|----------|--------------------------------------|------------|
| V1.0     | Initial release                      | 2024.12.23 |
| V1.1     | Change performance data and IIC code | 2025.01.21 |
| V1.2     | Update drawings, templates and code  | 2025.07.04 |
| V1.3     | Modify the routine                   | 2025.09.19 |

The company reserves the right to make changes in the specifications contained herein without further notice.

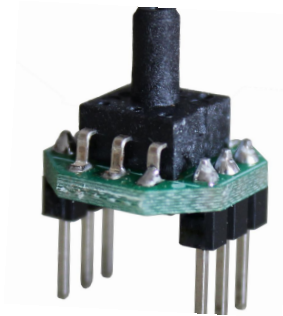
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## 1. Product Description

The GZP6847DC pressure sensor is a state-of-the-art MEMS pressure sensor designed particularly for a wide pressure measurement application in medical electronics, automotive electronics, and sports fitness equipment. It is composed of a silicon piezoresistive pressure sensing chip and a signal conditioning integrated circuit chip. The initial signal from the sensing chip is amplified, temperature compensated, calibrated and finally converted to a digital signal(I2C) that is corresponding to the applied pressure.

### 1.1 Features

- Multiple range from -100...0 to 1...1500kPa
- Gauge pressure
- DIP6 package
- 2.7~5.5V power supply
- IIC output
- Suitable for non-corrosive gases



### 1.2. Application Areas

- Medical fields such as respirators, oxygen generators, monitors, hemostasis devices, nebulizers, etc.
- Automotive electronics fields such as power steering, braking assistance, etc.
- Sports and fitness equipment fields such as massagers, massage chairs, air mattresses, etc.
- Domestic appliances fields such as water heaters, ozone water machines, beer machines, coffee machines, air pumps, electric breast pumps, vacuum cleaners, etc.
- Vacuum pumps, pressure gauges, pneumatic tools, etc.

## 2. Functional Description

This product is made with advanced micro-electromechanical principles. The crucial technology is the MEMS pressure sensor chip based on the silicon piezoresistive effect and the high-performance signal conditioning ASIC chip. The silicon micro-piezoresistive MEMS pressure sensor chip is connected to a Wheatstone bridge composed of four strain-sensitive resistors. The output signal is amplified, temperature compensated and linearized by the ASIC chip. The linearity and temperature compensation of the transfer function are realized by the digital processing circuit in the ASIC. The high-precision pressure measurement in the full operating temperature range is achieved through the polynomial compensation algorithm and multi-point pressure calibration technology at multiple temperatures.

### 2.1 Pin Definition

The pin configuration of the pressure sensor is shown in Figure 1.

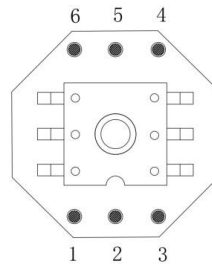


Fig.1 Pin Diagram

Tab.1 Pin Definition

| Pin No. | Description | Remark               |
|---------|-------------|----------------------|
| 1       | SCL         | Signal output pin    |
| 2       | NC          | Floating pin         |
| 3       | GND         | Power input negative |
| 4       | VDD         | Power input positive |
| 5       | SDA         | Data output pin      |
| 6       | NC          | Floating pin         |

## 2.2 Block Diagram

The sensor functional block diagram is shown in Figure 2.

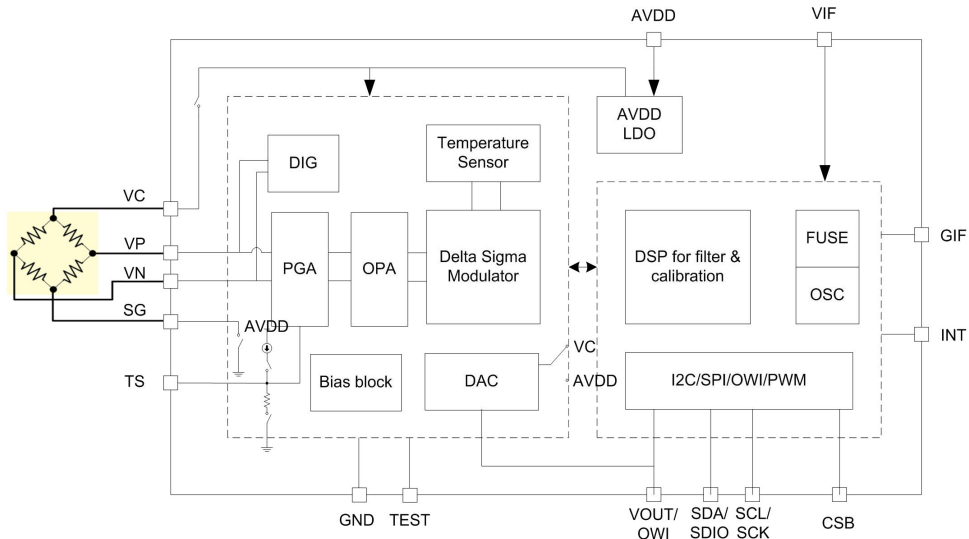


Fig.2 Block Diagram

## 2.3 Accuracy

GZP6847DC pressure sensor is affected by supply voltage, input pressure, ambient temperature, and aging. The value calculated using the transfer function is the sensor's specified value, also known as the theoretical value. The sensor's error is the difference between the actual output value and the specified output value at a specified input pressure.

### Overall Accuracy

The overall error includes more accuracy sources based on the product accuracy :

**Pressure drift:** The output deviation between the actual output voltage at zero point and full scale and the specified output voltage within the specified pressure range.

**Temperature effect:** The output deviation of zero point and full scale at different temperatures within the temperature range.

The overall accuracy is expressed by error band, and the data are shown in Figure 3 and Table 2 shown.

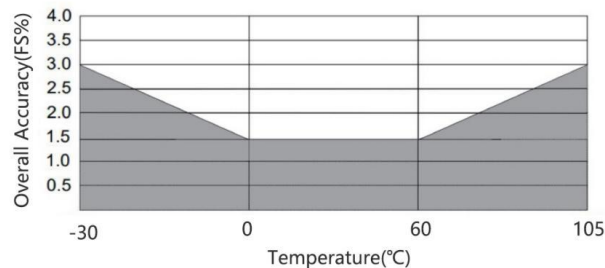


Fig.3 Relationship between overall accuracy and temperature

Tab.2 Overall Accuracy

| Temperature (°C) | Overall Accuracy(Full Span) |
|------------------|-----------------------------|
| -30~105          | ±3.0%                       |
| 0~60             | ±1.5%                       |

\*Different pressure ranges have different overall errors. Please consult customer service for more details.

### 3. Technical Indicators

Measured at a power supply of (5±0.25) V DC and a temperature of 25°C.

#### 3.1 Maximum Rated Parameters

The maximum rated parameters of the sensor are shown in Table 3.

Tab.3 The maximum rated parameters

| Parameter           | Min.                      | Typical | Max. | Unit  | Remark |
|---------------------|---------------------------|---------|------|-------|--------|
| Supply Voltage      | -0.3                      |         | 6.5  | V     |        |
| ESD Protection      |                           | ±2      |      | kV    | HBM    |
| Overload Pressure   | 4X (Range≤60kPa)          |         |      | Rated |        |
|                     | 2.5X (60kPa≤Range≤200kPa) |         |      | Rated |        |
|                     | 1.5X (Range≥200kPa)       |         |      | Rated |        |
| Bursting Pressure   | 5X (Range≤60kPa)          |         |      | Rated |        |
|                     | 3X (60kPa≤Range≤200kPa)   |         |      | Rated |        |
|                     | 2X (Range≥200kPa)         |         |      | Rated |        |
| Working Temperature | -30                       |         | 105  | °C    |        |
| Storage Temperature | -40                       |         | 125  | °C    |        |

1. Different pressure range may have different overload pressure and burst pressure, please consult Sencocho for more details.
2. Long exposure at the specified limits may cause degradation to the device.

## 3.2 Performance Indicators

The sensor performance indicators are shown in Table 4.

Tab.4 Sensor performance indicators

| Parameter                     | Value                             | Unit  | Remark           |
|-------------------------------|-----------------------------------|-------|------------------|
| Pressure Range                | <a href="#">-100...0~1...1500</a> | kPa   | Customizable     |
| Power Supply                  | 2.7~5.5                           | V     |                  |
| Standby Current               | 100                               | nA    |                  |
| Accuracy                      | ±1                                | %Span |                  |
| Pressure Resolution           | 24                                | Bits  |                  |
| Built-in Temperature Accuracy | ±2                                | °C    | @0~60°C          |
| Temperature Resolution        | 16                                | Bits  | LSB = (1/256) °C |
| Compensation Temperature      | 0~60                              | °C    | Customizable     |
| Pull-up Resistors             | 2.2                               | K ohm |                  |
| Clock Frequency               | 400                               | KHz   | Max.             |
| Response Time                 | 2.5                               | ms    | OSR_P=512X       |

\* The different pressure range may have different accuracy, please consult Sencoch for more details.

## 4. Application Circuit

The recommended application circuit is shown in Figure 4.

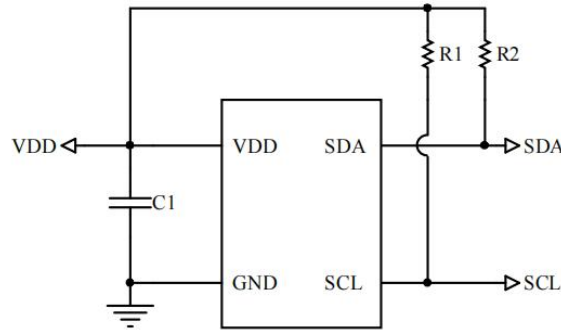


Fig.4 Application circuit

### Notice :

1. The recommended value of C1 is 100nF, and the recommended values of R1 and R2 are 4.7k.
2. Please confirm the electrical definition before assembly.
3. Do not have any electrical connection to the NC pin, otherwise it may cause product failure.
4. Provide anti-static protection during welding.
5. Overload voltage (6.5Vdc) may burn out the circuit chip.
6. This product has no reverse polarity protection, please pay attention to the power polarity during assembly.

## 5. I<sup>2</sup>C Communication Protocol

The I<sup>2</sup>C bus uses SCL and SDA as signal lines. Both lines are connected to VDD through pull-up resistors (typical value 4.7K) and remain high when not communicating. The I<sup>2</sup>C device address is 0x58.

The I<sup>2</sup>C communication protocol has specific start (S) and stop (P) conditions. While SCL is high, a falling edge on SDA signals the start of data transmission. The I<sup>2</sup>C master device sequentially transmits the slave device's address (7 bits) and the read/write control bit. When the slave device recognizes this address, it generates an acknowledge signal and pulls SDA low in the ninth cycle. After receiving the slave device's acknowledgement, the master device continues to transmit the 8-bit register address and, upon receiving the acknowledgement, continues to send or read data. A rising edge on SDA while SCL is high signals the end of I<sup>2</sup>C communication. In addition to the start and stop signals, data transmitted by SDA must remain stable while SCL is high. The value transmitted by SDA can change while SCL is low. All data transmission in I<sup>2</sup>C communication is in 8-bit units, and an acknowledge signal is required after every 8 bits of data transmission to ensure continued transmission.

The I<sup>2</sup>C timing diagrams are shown in Figures 5 and 6.

## ■ I<sup>2</sup>C Timing Diagram

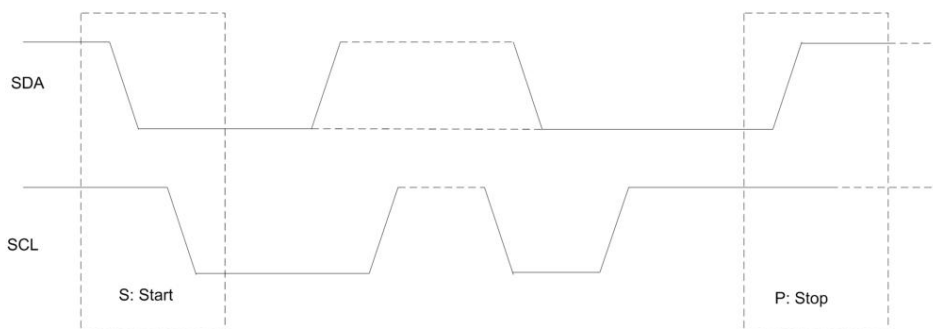


Fig.5 I<sup>2</sup>C timing diagram 1

## ■ I<sup>2</sup>C Protocol

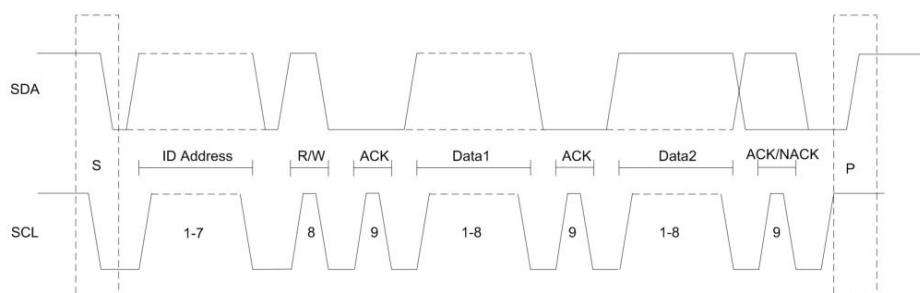


Fig.6 I<sup>2</sup>C timing diagram 2

## 6. Register Description

The register description is shown in Table 5.

Tab.5 Register Description

| Add. | Description  | R/W | Bit7            | Bit6 | Bit5       | Bit4       | Bit3     | Bit2             | Bit1        | Bit0   |  |
|------|--------------|-----|-----------------|------|------------|------------|----------|------------------|-------------|--------|--|
| 0x00 | ID           | R   | ID<7:0>         |      |            |            |          |                  |             |        |  |
| 0x01 | Chip_Control | R/W | /               |      | data_Ready | /          | data_out | measurement_ctrl | Active<1:0> |        |  |
| 0x02 | CFG_OSR      | R/W | OSR_T<7:5>      |      |            | OSR_P<4:2> |          |                  | MODE[1:0]   |        |  |
| 0x03 | CFG_MEAS     | R/W | /               |      | T_SB[5:3]  |            |          | PT_R[2:0]        |             |        |  |
| 0x04 | P_data       | R   | Data out<23:16> |      |            |            |          |                  |             |        |  |
| 0x05 | P_data       | R   | Data out<15:8>  |      |            |            |          |                  |             |        |  |
| 0x06 | P_data       | R   | Data out<7:0>   |      |            |            |          |                  |             |        |  |
| 0x07 | T_data       | R   | Temp out<15:8>  |      |            |            |          |                  |             |        |  |
| 0x08 | T_data       | R   | Temp out<7:0>   |      |            |            |          |                  |             |        |  |
| 0x24 | CFG_OPER     | R/W | reserved<7:1>   |      |            |            |          |                  |             | DAC_EN |  |

**Reg0x00** I<sup>2</sup>C device address, the default address is 0x58.

**Reg0x01** (factory pre-configured)

Chip Control Register

active<1:0>: 00, the chip is powered off; 01, the chip is powered on;

measurement\_ctrl: 0, pressure measurement; 1, temperature measurement;

data\_out: 0, output calibration data; 1, output original data;

data\_ready: 0, data conversion is not completed; 1, data conversion is completed.

**Reg0x02** (factory pre-configured)

MODE[1:0]: 00: Sleep mode, 01: Normal mode, 10: One shot mode

OSR\_P[4:2]: (pressure oversampling):

000: over sampling x 256

001: over sampling x 512

010: over sampling x 1024

011: over sampling x 2048

100: over sampling x 4096

101: over sampling x 8192

110: over sampling x 16384

111: over sampling x 32768

OSR\_T[7:5] (temperature oversampling):

000: over sampling x 256

001: over sampling x 512

010: over sampling x 1024

011: over sampling x 2048

100: over sampling x 4096

101: over sampling x 8192

110: over sampling x 16384

111: over sampling x 32768

**Reg0x03** (factory pre-configured)

PT\_R[2:0]: 000: 64/1, 001: 32/1, 010: 16/1, 011: 8/1, 100: 4/1, 101: 1/1, Others: 128/1  
(pressure/temperature measurement ratio in normal mode)

T\_SB[5:3]: 000: 0ms, 001: 62.5ms, 010: 125ms, 011: 250ms, 100: 500ms, 101: 750ms, 110: 1000ms,  
111: 2000ms (standby time setting in normal mode)

### Reg0x04-Reg0x06

Pressure Data Register

### Reg0x07-Reg0x08

Temperature Data Register

### Reg0x24

DAC\_EN: 0: disable DAC, 1: enable DAC

## 7. Working Mode Description

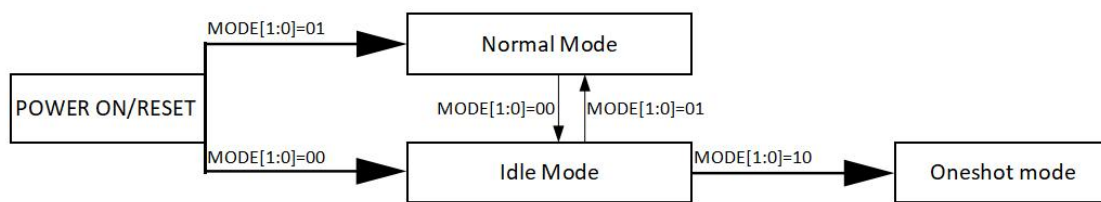


Fig.7 Working Mode

### Normal Mode:

When powered on, the sensor automatically enters Normal Mode. If switching from another mode to Normal Mode, it can be enabled by writing 01b to the MODE register (0x02[1:0]). The pressure and temperature sensor signals output measurement data cyclically at a predetermined frequency (Normally the standby time was pre-configured with 0mS).

### One Shot Mode:

It can be enabled by writing 10b to the MODE register (0x02[1:0]). The user can specify whether to measure the temperature or pressure signal by clearing or setting the measurement\_ctrl bit (0x01[2]). After completing a single measurement, the sensor enters Idle Mode to await the next command.

**Idle Mode:** The sensor keep the low-consumption sleep situation till it is activated.

In normal mode, read 5 bytes continuously from 0x04 to 0x08 after power-up (ASIC will automatically refresh the data. The first 3 bytes are the pressure data, later 2 bytes are temperature data.

### Pressure Calculation

Sum = (0x04 value \* 2<sup>16</sup> + 0x05 value \* 2<sup>8</sup> + 0x06 value),

If sum < 8388608, P = sum / 2<sup>21</sup> \* (P<sub>MAX</sub> - P<sub>MIN</sub>) (Unit: Pa)

If sum ≥ 8388608, P = (sum - 2<sup>24</sup>) / 2<sup>21</sup> \* (P<sub>MAX</sub> - P<sub>MIN</sub>) (Unit: Pa)

※ P<sub>MAX</sub> is the upper value of pressure range, P<sub>MIN</sub> is the lower value of pressure range.

Tab.6 Range calibration parameters

| Pressure range | Calibration parameters |        |
|----------------|------------------------|--------|
|                | PMIN                   | PMAX   |
| 0-40kPa        | 0                      | 40000  |
| 0-100kPa       | 0                      | 100000 |
| -100-700kPa    | -10000                 | 700000 |

## 8. Structure Specification (unit: mm)

Refer to Figure 8 for sensor dimensions ( Tolerance  $\pm 0.5\text{mm}$  ).

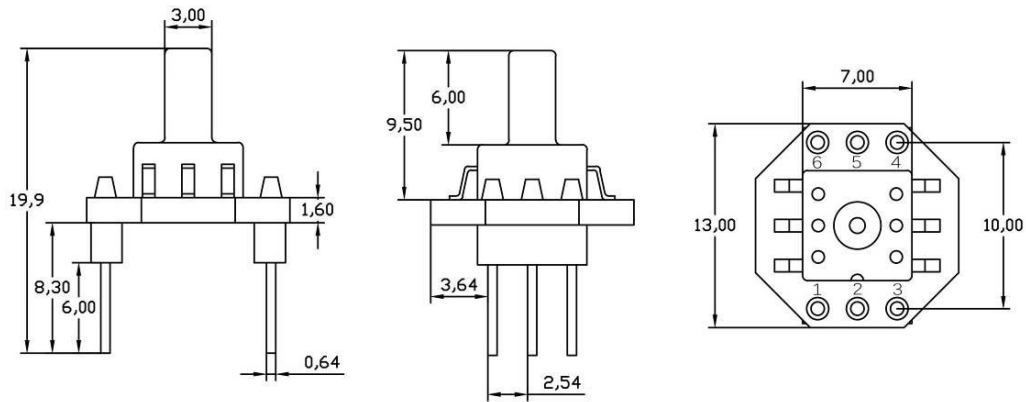


Fig.8 Product Dimensions

Recommended Footprint Layout refer to Figure 9.

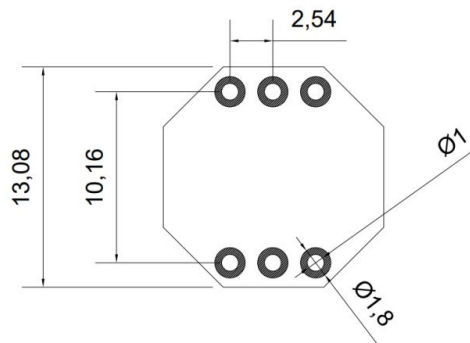


Fig.9 Recommended footprint

## 9. Order Guide

### GZP 6847 DC - 040KPP F01 WX

Tab.7 Order Guide

|        |                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GZP    | Pressure Sensor Series                                                                                                                                                                                                                                                                                                                                                             |
| 6847   | Product Series                                                                                                                                                                                                                                                                                                                                                                     |
| D      | Output type A: Analog output D: IIC output                                                                                                                                                                                                                                                                                                                                         |
| C      | IIC Communication Content Format                                                                                                                                                                                                                                                                                                                                                   |
| 040KPP | <p>Pressure range: 040 means the measured pressure value is 0~40 (including 0~40, -40~0, -40~40)</p> <p>Pressure unit: KP: KPa MP: MPa PS: PSI BA: Bar</p> <p>Pressure type: P: positive pressure (e.g. 0~40) N: negative pressure (e.g. -40~0) W: negative pressure to positive pressure (e.g.-40~40)</p> <p>Therefore, 040KPP means the measured pressure from 0KPA to 40KPA</p> |
| F01    | Packaging Method: B01: Reel&Tape ; F01: Tube                                                                                                                                                                                                                                                                                                                                       |
| WX     | Company interior code                                                                                                                                                                                                                                                                                                                                                              |

## 10. Model Example

Tab.8 Model example

| Pressure Range | Model                  |
|----------------|------------------------|
| 0 ~ 10kPa      | GZP6847DC010KPP F01 WX |
| 0 ~ 20kPa      | GZP6847DC020KPP F01 WX |
| 0 ~ 40kPa      | GZP6847DC040KPP F01WX  |
| 0 ~ 100kPa     | GZP6847DC101KPP F01WX  |
| 0 ~ 400kPa     | GZP6847DC401KPP F01WX  |
| 0 ~ 700kPa     | GZP6847DC701KPP F01WX  |
| 0 ~ 1000kPa    | GZP6847DC001MPP F01WX  |
| -100 ~ 0kPa    | GZP6847DC101KPN F01WX  |
| -20 ~ 0kPa     | GZP6847DC020KPN F01 WX |
| -100 ~ 1000kPa | GZP6847DC001MPW F01WX  |

1. Above model example is for order information only, contact Sencoch for production and stock status.
2. For more customized ranges and special parameter part numbers, please consult Sencoch or agents.

## 11. Instructions for Use

### 11.1 Soldering

Since this product has a small structure with low heat capacity, please minimize the influence of heat from the outside. Otherwise, it may be damaged due to thermal deformation and cause changes in characteristics. Please use non-corrosive rosin type flux. In addition, since the product is exposed to the outside, please be careful not to allow flux to penetrate into the inside.

#### 1) Manual soldering

· Please use a soldering iron with a head temperature of 260 to 300°C (30 W) and perform the work within 5 seconds.

· When soldering with a load applied to the terminals, the output may change, so be careful.

Please keep the soldering iron tip clean.

#### 2) Reflow soldering (SMD terminal type)

■ The recommended reflow oven temperature setting conditions are shown:

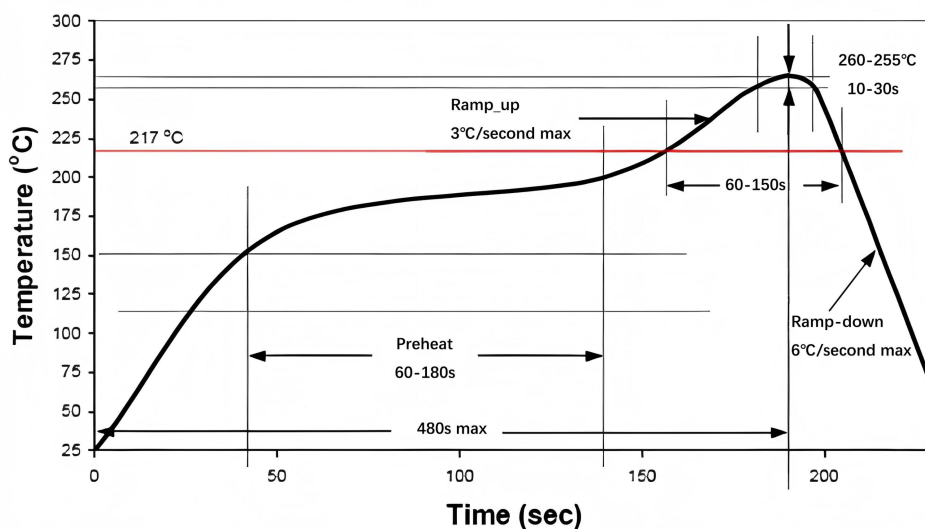


Fig.10 Remelting temperature setting conditions

3) The warping of the printed circuit board relative to the entire sensor should be kept below 0.05mm. Please manage this.

4) After installing the sensor, when cutting and bending the substrate, be careful not to cause stress on the soldered parts.

5) Since the sensor terminals are exposed, if metal pieces touch the terminals, abnormal output will occur. Be careful not to touch them with metal pieces or hands.

6) After soldering, when coating is applied to prevent insulation degradation of the substrate, be careful not to allow chemicals to adhere to the sensor.

## 11.2 Cleaning Requirements

- 1) Since the product is an open type, be careful not to allow cleaning fluid to enter the interior.
- 2) Please avoid using ultrasonic cleaning as it may cause product failure.

## 11.3 Storage and Transportation

- 1) This product is not drip-proof, so do not use it in a location where it may be splashed with water.
- 2) Do not use in an environment where condensation occurs. In addition, if moisture attached to the sensor chip freezes, it may cause changes in sensor output or damage.
- 3) The chip of the pressure sensor is structurally exposed to light, and the output will change. Especially when applying pressure through a transparent cover, please avoid light from reaching the chip of the sensor.
- 4) Normally packaged pressure sensors can be transported by ordinary transportation tools. Please note: The product should be protected from moisture, impact, sunburn and pressure during transportation.

## 11.4 Other Precautions

- 1) If the installation method is incorrect, it may cause an accident, so please be careful.
- 2) Avoid using the product in a manner that applies high-frequency vibrations, such as ultrasonic waves.
- 3) The only pressure media that can be used directly are air and non-corrosive gases. Other media, especially when used in corrosive media or media containing foreign matter, may cause malfunctions and damage, so please avoid using it in the above environment .
- 4) There is a pressure sensor chip inside the pressure inlet. If a needle or other foreign object is inserted into the pressure inlet, the chip will be damaged and the inlet will be blocked, so please avoid such operations. In addition, please avoid blocking the atmosphere inlet when using it.
- 5) Please use the pressure within the rated pressure range. Using outside the range may cause damage.
- 6) Since static electricity may cause damage, please pay attention to the following matters when using.  
  
Please ground the charged objects and workers on the table to discharge the static electricity around safely.
- 7) If you have any questions, please feel free to ask.

## 12.Packing Information

### Tube Packing

| Product Series |             | Tube (PCS) | Box (PCS) | Box (PCS) | Remark           |
|----------------|-------------|------------|-----------|-----------|------------------|
| GZP6847DC      | DIP package | 38         | 760       | 7600      | Vacuum packaging |

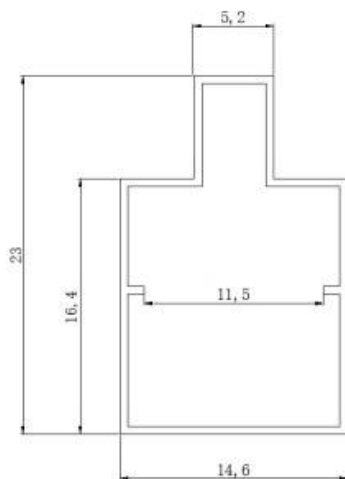


Fig.11 Section Schematic Diagram (Unit:mm)

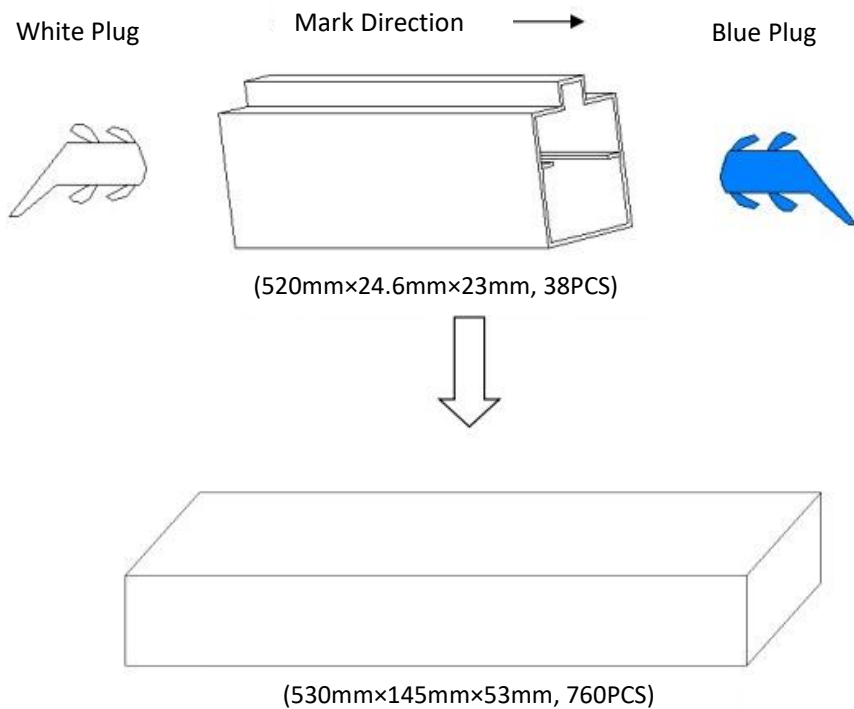


Fig.12 Section Schematic Diagram (Unit:mm)

## Safety Precautions

This product is made of semiconductor components for general electronic equipment (communication equipment, measuring equipment, working machinery, etc.). Products using these semiconductor components may malfunction and fail due to external interference and surges, so please confirm the performance and quality under actual use. To be on the safe side, please perform safety design on the device (setting of protection circuits such as fuses and circuit breakers, multiple devices, etc.) so that life, body, property, etc. will not be harmed in the event of a malfunction. To prevent injuries and accidents, please be sure to comply with the following matters:

- The driving current and voltage should be used below the rated values.

Please wire according to the electrical definition . In particular, reverse connection of the power supply may cause accidents due to circuit damage such as heat, smoke, and fire, so please be careful.

- Be careful when fixing the product and connecting the pressure inlet .

## Warranty and Disclaimer

The information in this sheet has been carefully reviewed and is believed to be accurate; however, no responsibility is assumed for inaccuracies. Furthermore, this information does not convey to the purchaser of such devices any license under the patent rights to the manufacturer. Sencoch Technology reserves the right to make changes without further notice to any product herein. Sencoch Technology makes no warranty, representation or guarantee regarding the suitability of its product for any particular purpose, nor does Sencoch Technology assume any liability arising out of the application or use of any product or circuit and specifically disclaims any and all liability, including without limitation consequential or incidental damages. Typical parameters can and do vary in different applications. All operating parameters must be validated for each customer application by customer's technical experts. Sencoch Technology does not convey any license under its patent rights nor the rights of others.

## IIC Example Code

```
#include <reg52.h>
#include <math.h>
#define DELAY_TIME 600 //Time-Delay Parameter
#define TRUE 1
#define FALSE 0
#define uchar unsigned char
#define uint unsigned int

float SPAN = 40; //SPAN is the span of the sensor

sbit SCL = P1 ^ 7; //IIC clock line
sbit SDA = P1 ^ 6; //IIC clock line

//Time-Delay Function
void DELAY(uint t)
{
    while (t != 0)
        t--;
}

void I2C_Start(void) //IIC Start signal
{
    SDA = 1; //SDA output high
    DELAY(DELAY_TIME);
    SCL = 1; //SCL output high
    DELAY(DELAY_TIME);
    SDA = 0; //SDA output low
    DELAY(DELAY_TIME);
    SCL = 0; //SCL output low
    DELAY(DELAY_TIME);
}

void I2C_Stop(void) //IIC Stop signal
{
    SDA = 0;
    DELAY(DELAY_TIME);
    SCL = 1;
    DELAY(DELAY_TIME);
    SDA = 1;
    DELAY(DELAY_TIME);
    SCL = 0;
    DELAY(DELAY_TIME);
}

void SEND_0(void) //IIC send data "0"
{
    SDA = 0;
    DELAY(DELAY_TIME);
    SCL = 1;
    DELAY(DELAY_TIME);
```

```
SCL = 0;
DELAY(DELAY_TIME);
}

void SEND_1(void) //IIC send data "1"
{
    SDA = 1;
    DELAY(DELAY_TIME);
    SCL = 1;
    DELAY(DELAY_TIME);
    SCL = 0;
    DELAY(DELAY_TIME);
}

bit Check_Acknowledge(void) //Read ACK signal
{
    char F0 = 0;
    SDA = 1;
    DELAY(DELAY_TIME);
    SCL = 1;
    DELAY(DELAY_TIME / 2);
    F0 = SDA;
    DELAY(DELAY_TIME / 2);
    SCL = 0;
    DELAY(DELAY_TIME);
    if (F0)
        return FALSE;
    return TRUE;
}

void WriteI2CByte(uchar b) reentrant //Write One Byte of Data
{
    char i;
    for (i = 0; i < 8; i++)
        if ((b << i) & 0x80) //Send high bits first
            SEND_1();
        else
            SEND_0();
}

uchar ReadI2CByte(void) reentrant //Receive one byte
{
    char b = 0, i, F0 = 0;
    for (i = 0; i < 8; i++)
    {
        SDA = 1;
        DELAY(DELAY_TIME);
        SCL = 1;
        DELAY(DELAY_TIME);
        F0 = SDA;
        DELAY(DELAY_TIME);
        SCL = 0;
        if (F0)
```

```

        {
            b = b << 1; //Receive high bits first
            b = b | 0x01;
        }
        else
            b = b << 1;
    }
    return b;
}

```

//Write a register's address and a command byte to the sensor

//"addr": register's address, "thedata": the command byte

void Write\_One\_Byte(uchar addr, uchar thedata)

```

{
    bit acktemp = 1;
    I2C_Start(); //IIC START Signal
    WriteI2CByte(0x58 << 1 + 0); //The SLAVER address is 0x58
    // The lowest bit of address is 0 means writing
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    WriteI2CByte(addr); //Send the register's address
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    WriteI2CByte(thedata); //Write command to the sensor
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    I2C_Stop(); //IIC STOP Signal
}

```

//Read one byte of data from the sensor

uchar Read\_One\_Byte(uchar addr)

```

{
    bit acktemp = 1;
    uchar mydata;
    I2C_Start(); //IIC START Signal
    WriteI2CByte(0x58 << 1 + 0); //The SLAVER address is 0x58
    // The lowest bit of address is 0 means writing
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    WriteI2CByte(addr); //Send the register's address
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    I2C_Start(); //IIC START Signal 发
    WriteI2CByte(0x58 << 1 + 1); //The SLAVER address is 0x58
    // The lowest bit of address is 1 means Reading
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    mydata = ReadI2CByte(); //Read the above register's data
    acktemp = Check_Acknowledge(); //check the SLAVER's ACK
    I2C_Stop(); //IIC STOP Signal
    return mydata;
}

```

//Ms Time-Delay Function

void Delay\_xms(uint x)

```

{
    uint i, j;
    for (i = 0; i < x; i++)

```

```
        for (j = 0; j < 112; j++)
            ;
    }

void main(void) //The main function
{
    uchar pressure_H, pressure_M, pressure_L, temperature_H, temperature_L;
    //Temporary variables used to save bytes of pressure and temperature from the sensor
    long int pressure_ad, temperature_ad;
    //Temporary variables used to save AD values of pressure and temperature from the sensor
    float pressure, temperature, Shift_N;
    //pressure: actual pressure
    //temperature: actual temperature
    uchar byte1, byte2;
    int EOFF;

    Delay_xms(1000);
    while (1)
    {
        Write_One_Byte(0x01, 0x01);
        //Send 0x01 to the register whose address is 0x01 to start a data collection

        Delay_xms(20);

        pressure_H = Read_One_Byte(0x04); //Read bytes of pressure from the sensor
        pressure_M = Read_One_Byte(0x05);
        pressure_L = Read_One_Byte(0x06);
        pressure_ad = pressure_H * 65536 + pressure_M * 256 + pressure_L;
        //compute the AD pressure of the sensor
        temperature_H = Read_One_Byte(0x07); //Read bytes of temperature from the sensor
        temperature_L = Read_One_Byte(0x08);
        temperature_ad = temperature_H * 256 + temperature_L;
        //compute the AD temperature of the sensor

        //compute the actual pressure of the sensor
        //pressure's unit is Pa
        if (pressure_ad >= 8388608)
            pressure = (float) (pressure_ad - 16777216) / 2^21 * (PMAX-PMIN) ;
        else
            pressure = (float) pressure_ad / 2^21 * (PMAX-PMIN) ;

        //compute the actual temperature of the sensor
        //temperature's unit is Centigrade
        if (temperature_ad > 32768)
            temperature_ad -= 65536;
        byte1 = Read_One_Byte(0x20); //Read temperature parameter from the sensor
        byte2 = Read_One_Byte(0x21); //Read temperature parameter from the sensor
        if (byte1 == 0x0C) //According byte1 to evaluate the variable EOFF
            EOFF = 4096;
        else if (byte1 == 0x8C)
            EOFF = -4096;
        else if (byte1 == 0x0D)
            EOFF = 8192;
```

```
    else if(byte1 == 0x8D)
        EOFF = -8192;
    else if(byte1 == 0x0E)
        EOFF = 16384;
    else if(byte1 == 0x8E)
        EOFF = -16384;
    Shift_N = byte2 / 10; //compute the variable Shift_N
    temperature = (temperature_ad - EOFF) / 2 ^ Shift_N + 25;
    //the actual temperature of the sensor

    printf("Actual pressure is %f Pa\r\n",pressure);
    printf("Actual temperature is %f Centigrade\r\n\r\n",temperature);

    Delay_xms(1000);
}
}
```