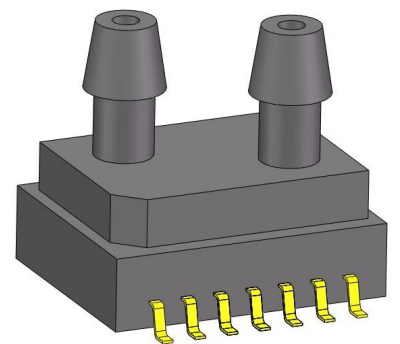




**BANNING**  
PRESSURE SENSOR  
BLWLP7xxxXD



**BANNING**

## DESCRIPTION

BLWLP7xxxXD series integrated low pressure and high precision pressure sensor, the high performance MEMS pressure sensitive chip and special conditioning chip are packaged in the structure of dual gas nozzle SOP14, the two gas path structure of the pressure reference each other, reduce the impact of environment on the output.

BLWLP7xxxXD adopts unique algorithm to realize multi-order temperature compensation for the sensor, and output in the form of digital IIC. Gauge pressure or differential pressure intake products are available.

## CHARACTERISTICS

- Pressure type: Gauge pressure, Differential pressure
- Measuring range: -10~10 cmH<sub>2</sub>O , -20~20 cmH<sub>2</sub>O , -40~40 cmH<sub>2</sub>O , -100~100 cmH<sub>2</sub>O,etc
- Output form: I<sup>2</sup>C
- Pressure type: gauge pressure, differential pressure
- High accuracy
- Calibrated compensation

## PERFORMANCE

| Parameter                   | Minimum | Typical | Maximum | Unit   |
|-----------------------------|---------|---------|---------|--------|
| Supply voltage              | 3       | 3.3     | 3.6     | V      |
|                             | 4.75    | 5       | 5.25    | V      |
| Working current             |         | 4.5     |         | mA     |
| Digital output minimum      |         | -26214  |         | Counts |
| Digital output maximum      |         | 26214   |         | Counts |
| Full range                  |         | 52428   |         | Counts |
| Resolution of resolution    |         | 16      |         | Bits   |
| Accuracy                    | -1      |         | 1       | %FS    |
| Temperature of compensation | -5      |         | 65      |        |
| Operating temperature       | -20     |         | 85      |        |
| Storage temperature         | -40     |         | 125     |        |

Note : Unless otherwise specified, all values in this table are tested at a voltage of 3.3/5.0Vdc and a temperature of 25

- Accuracy refers to the output accuracy of the product within the compensation temperature range and under clean gas environment.
- The accuracy is determined by linearity, repeatability and hysteresis of the product.

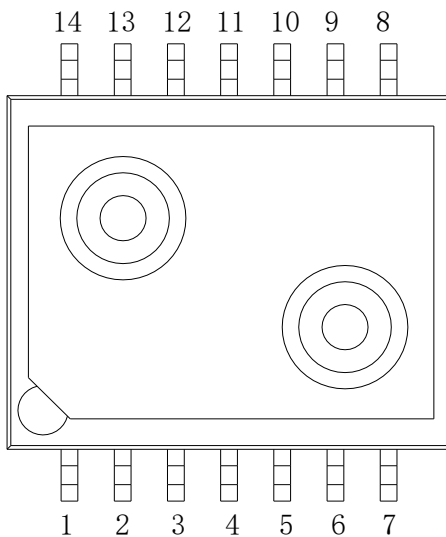
## APPLICATION

- Industrial control
- Medical monitoring
- Household appliances
- Fitness equipment
- Automotive Applications

## RANGE PARAMETER

| Model       | Working pressure            | Pressure tolerance <sup>(ab)</sup> | Burst pressure <sup>(ac)</sup> |
|-------------|-----------------------------|------------------------------------|--------------------------------|
| BLWLP7001GD | -0.5~10 cmH <sub>2</sub> O  | ± 100 cmH <sub>2</sub> O           | ±200 cmH <sub>2</sub> O        |
| BLWLP7001DD | -10~10 cmH <sub>2</sub> O   |                                    |                                |
| BLWLP7002GD | -1~20 cmH <sub>2</sub> O    | ± 300 cmH <sub>2</sub> O           | ±400 cmH <sub>2</sub> O        |
| BLWLP7002DD | -20~20 cmH <sub>2</sub> O   |                                    |                                |
| BLWLP7004GD | -5~40 cmH <sub>2</sub> O    |                                    |                                |
| BLWLP7004DD | -40~40 cmH <sub>2</sub> O   |                                    |                                |
| BLWLP7010GD | -5~100 cmH <sub>2</sub> O   | ± 600 cmH <sub>2</sub> O           | ±800 cmH <sub>2</sub> O        |
| BLWLP7010DD | -100~100 cmH <sub>2</sub> O |                                    |                                |
| BLWLP7014GD | -20~140 cmH <sub>2</sub> O  |                                    |                                |

## PIN DEFINITION

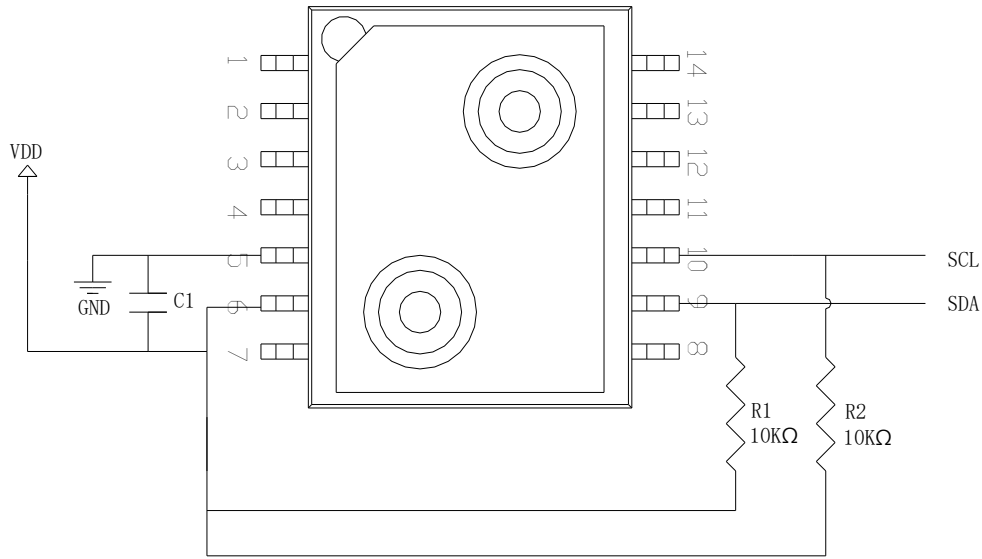


Pin Definition (face view)

| Pin number                | Pin definition | Instructions          |
|---------------------------|----------------|-----------------------|
| 5                         | GND            | Ground                |
| 6                         | VDD            | Positive power supply |
| 9                         | SDA            | Output end            |
| 10                        | SCL            | Time                  |
| 7                         | NC             | -                     |
| 1,2,3,4,8,<br>11,12,13,14 | NC             | -                     |

# FUNCTION DESCRIPTION

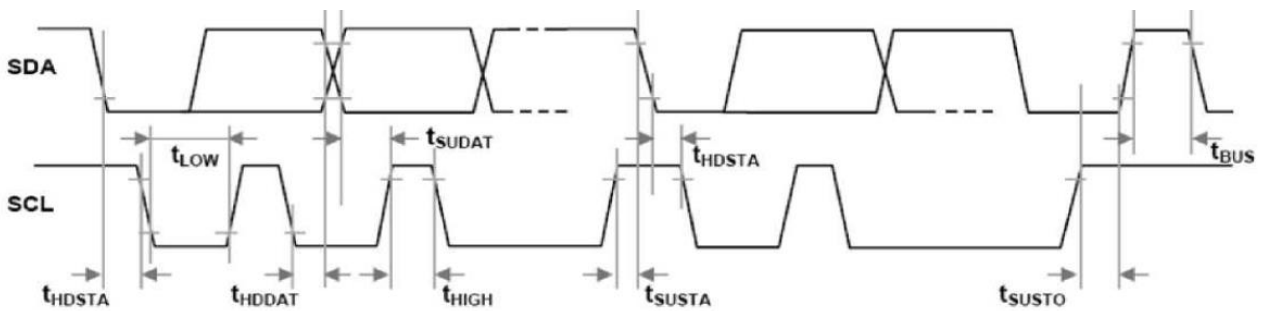
## Recommended circuit



- (1) If the filter capacitor C1 is considered between VDD and GND, the capacitor value is 100nf.
- (2) R1 and R2 can be 4.7 or 10 K based on the requirements. The actual resistance value can be adjusted based on the I<sup>2</sup>C clock frequency.

## I<sup>2</sup>C INTERFAC

- Frequency of clock: 100kHz ~400kHz
- I<sup>2</sup>C communication timing



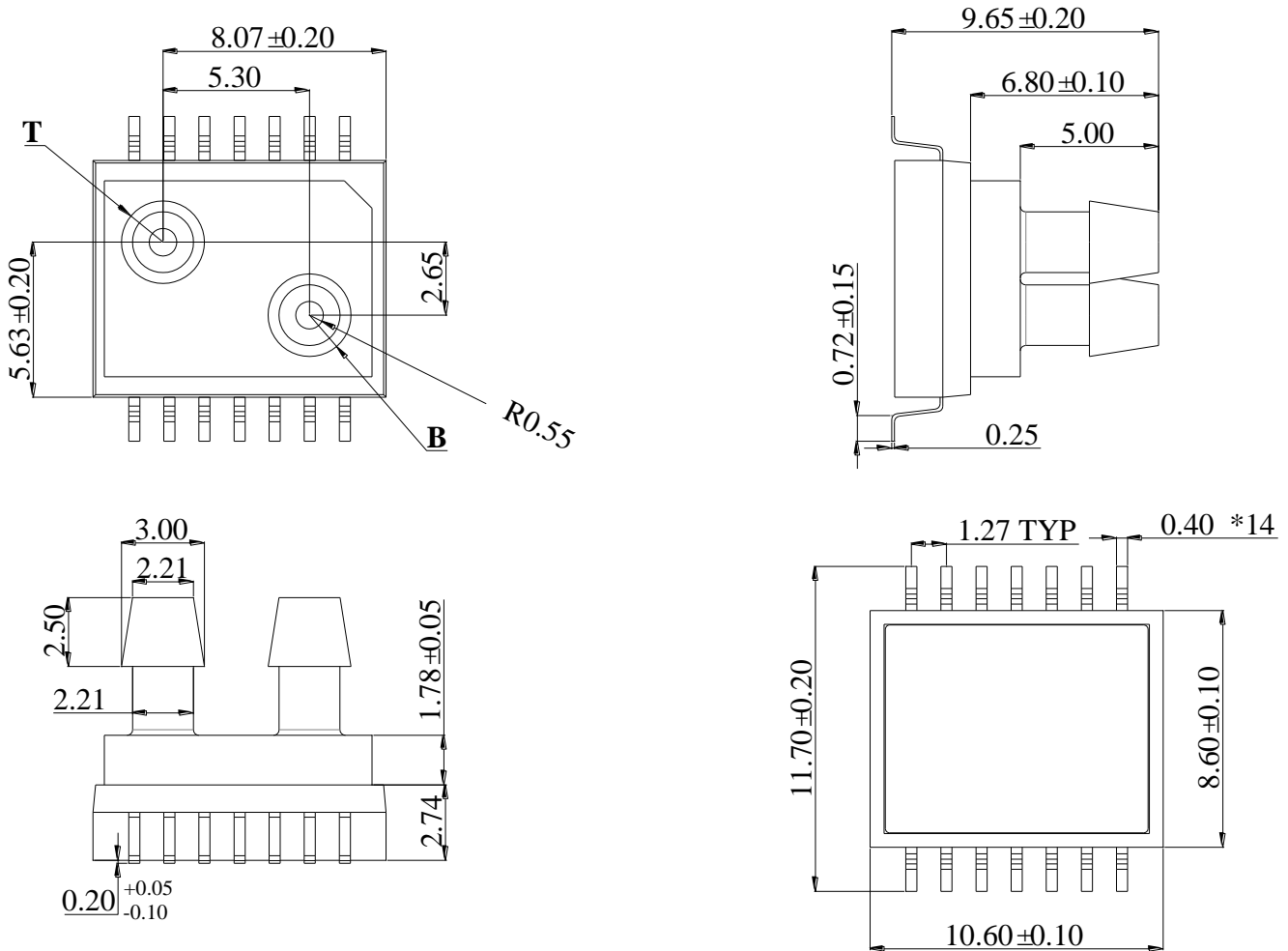
The timing value of I<sup>2</sup>C communication

| Parameter  | Symbol       |            |
|--|--------------|------------|
| Frequency of clock                                       | $F_{SCL}$    | 100~400kHz |
| Start signal hold time                                   | $t_{HDATA}$  | 0.1us      |
| Minimum width of clock low level                         | $t_{LOW}$    | 0.6us      |
| Minimum width of clock high level                        | $t_{HIGH}$   | 0.6us      |
| Data retention time on SDA relative to SCL edge          | $t_{HIDDAT}$ | 0us        |
| Data creation time on SDA relative to SCL edge           | $t_{SUDAT}$  | 0.1us      |
| The stop condition on SCL sets the time                  | $t_{SUSTO}$  | 0.1us      |
| Idle time between a stop condition and a start condition | $t_{BUS}$    | 2us        |

- I<sup>2</sup>C Read and write sequence

For detailed data reading and writing methods, refer to the programming manual LWLP7xxxXD

## DIMENSION(mm)



(1) All dimensions are in mm, the tolerance position is not marked, the tolerance is ± 0.05mm

(2) B is the air pipe connected to the bottom of the sensor, and T is the air pipe connected to the top of the sensor. The top trachea T is defined as a high pressure interface.

# ORDER

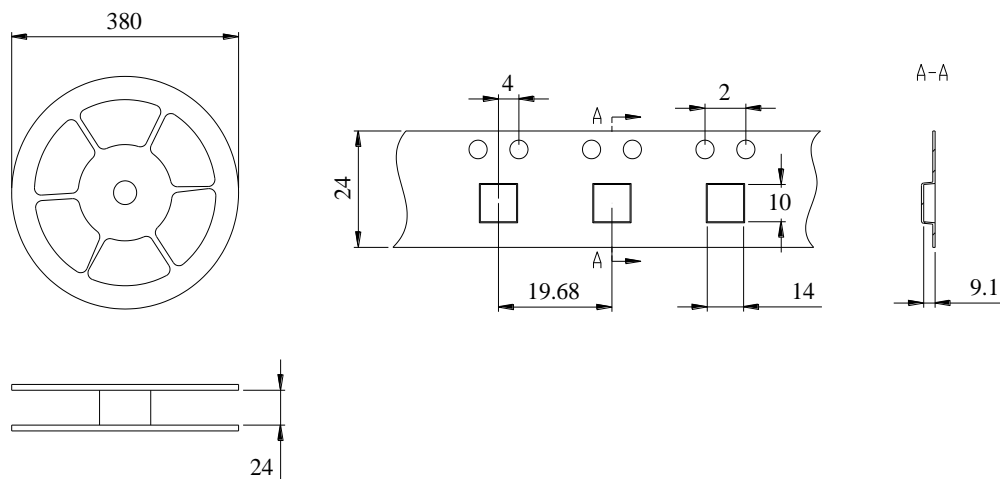
| Model       | Working pressure            | Method of packing | Minimum packing quantity |
|-------------|-----------------------------|-------------------|--------------------------|
| BLWLP7001GD | -0.5~10 cmH <sub>2</sub> O  | Roll tape packing | 450 pcs/volume           |
| BLWLP7001DD | -10~10 cmH <sub>2</sub> O   |                   |                          |
| BLWLP7002GD | -1~20 cmH <sub>2</sub> O    |                   |                          |
| BLWLP7002DD | -20~20 cmH <sub>2</sub> O   |                   |                          |
| BLWLP7004GD | -5~40 cmH <sub>2</sub> O    |                   |                          |
| BLWLP7004DD | -40~40 cmH <sub>2</sub> O   |                   |                          |
| BLWLP7010GD | -5~100 cmH <sub>2</sub> O   |                   |                          |
| BLWLP7010DD | -100~100 cmH <sub>2</sub> O |                   |                          |
| BLWLP7014GD | -20~140 cmH <sub>2</sub> O  |                   |                          |

| Unit                | 10cmH <sub>2</sub> O | 20cmH <sub>2</sub> O | 40cmH <sub>2</sub> O | 100cmH <sub>2</sub> O | 140cmH <sub>2</sub> O |
|---------------------|----------------------|----------------------|----------------------|-----------------------|-----------------------|
| PSI                 | 0.14                 | 0.3                  | 0.6                  | 1.4                   | 2                     |
| kPa                 | 1                    | 2                    | 4                    | 10                    | 14                    |
| mbar                | 10                   | 20                   | 39                   | 98                    | 137                   |
| bar                 | 0.01                 | 0.02                 | 0.04                 | 0.1                   | 0.14                  |
| in*H <sub>2</sub> O | 4                    | 8                    | 16                   | 39                    | 55                    |
| mm*Hg               | 7.4                  | 15                   | 29                   | 74                    | 103                   |
| hPa                 | 10                   | 20                   | 39                   | 98                    | 137                   |
| in*Hg               | 0.29                 | 0.58                 | 1.16                 | 2.9                   | 4                     |
| Pa                  | 981                  | 1961                 | 3923                 | 9807                  | 13729                 |

Output range unit comparison table

## METHOD OF PACKING

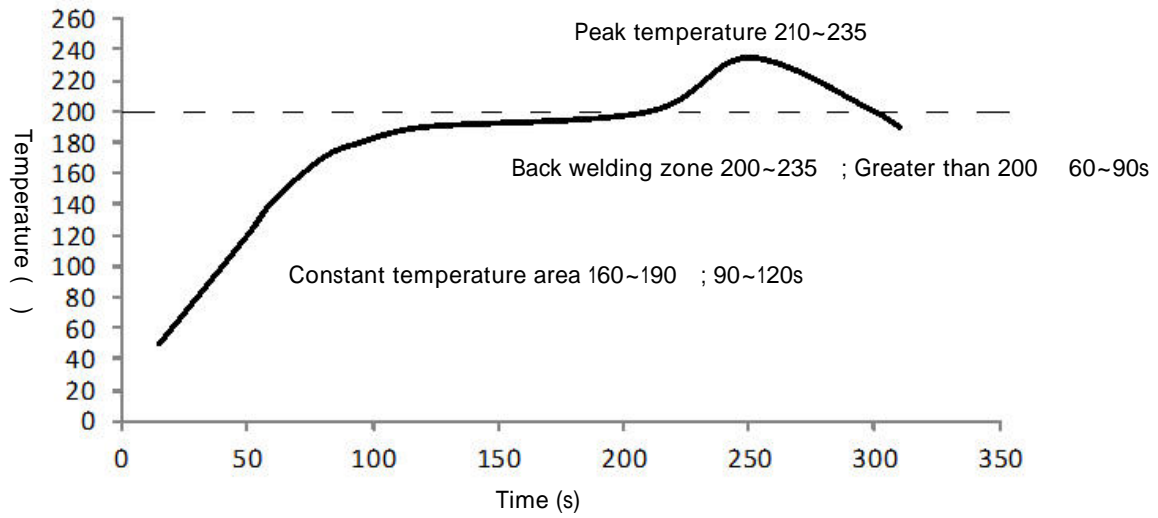
BLWLP7xxxXD adopts reel and tape packing, with a minimum packing quantity of 450pcs.



# PRECAUTIONS FOR USE

## Requirements for reflow welding

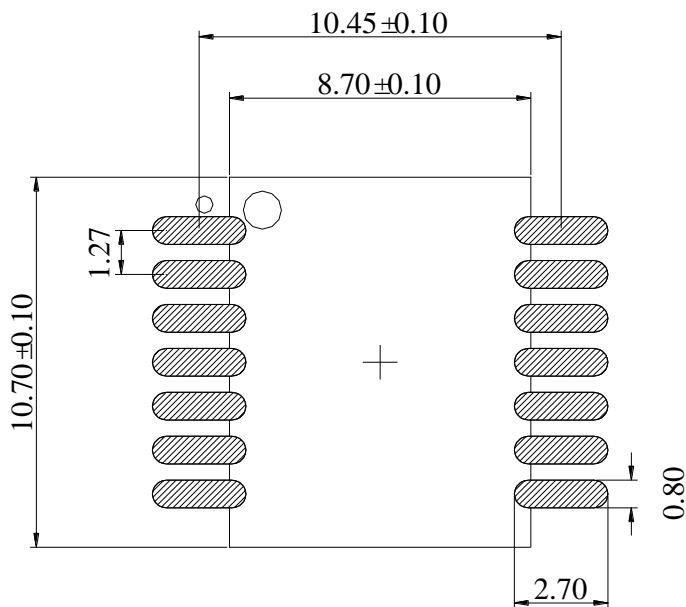
The maximum welding temperature of BLWLP7xxxV series is not higher than 235 , which can be set by referring to Figure 1.



## Gas path requirements

It is recommended to use silicone hose as the air inlet pipe for BLWLP7xxxXD series products. Rigid PVC pipes are not recommended.

## Patch pad size (mm)



Size drawing of patch pad

# DISCLAIMER

## Warning

### LIFE OR PROPERTY RISK

- Please ensure that this product has been designed as part of whole system and already considered related risks, make sure the product has the correct ratings and is designed based on the entire system. It must not be used when applications related to serious life or property damage risks.

Failure to follow this instruction can result in death or serious injury.

## Warning

### PERSONAL INJURY

- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to follow this instruction can result in death or serious injury.

## Warning

### MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to follow this instruction can result in death or serious injury.

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