



# WF100DP

## 1. KEY FEATURES:

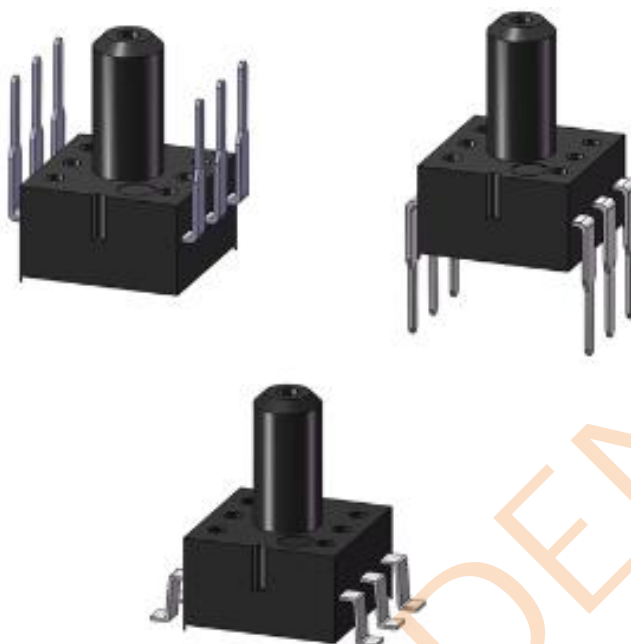
- Piezo-resistive silicon micro-machined sensor
- Gauge type pressure sensor
- I2C / SPI Interface
- Pressure range: 100KPa (5KPa/10KPa/20KPa/40KPa/100KPa/200KPa/300KPa/500KPa/1000KPa)
- Pressure Sensitivity: 0.027 Pa/LSB
- 24 Bit  $\Sigma$ - $\Delta$  ADC
- Temperature Compensation:  $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$
- Operating voltage 3.0V/(5.0V)
- Operating mode current:  $\sim 0.6\text{mA}$  (typical)
- Sleep Mode current:  $0.1\mu\text{A}$  (typical)
- SOP6 or DIP6 package
- RoHS compliant and Halogen-free

## 2. PRODUCT INTRODUCTION:

WF100DP series product is the pressure sensor which measures gauge pressures. It consists of a silicon micro-machined sensing element chip and a signal conditioning ASIC. The ASIC is equipped with a 24-bit resolution  $\Sigma$ - $\Delta$  ADC and outputs a highly precise pressure value as a digital value.

WF100DP series products provides digital output interface. It can achieve ESD robustness, fast response time, high accuracy and linearity as well as long-term stability. All measurement data is fully calibrated and temperature compensated. In addition, it allows for easy system integration.

This series pressure sensor use SOP6 or DIP6 package which is suitable for lots application.



### 3. APPLICATION

- Automobile electronic
- Consumer electronics
- Household electronic
- Industrial monitor and control
- Medicine care

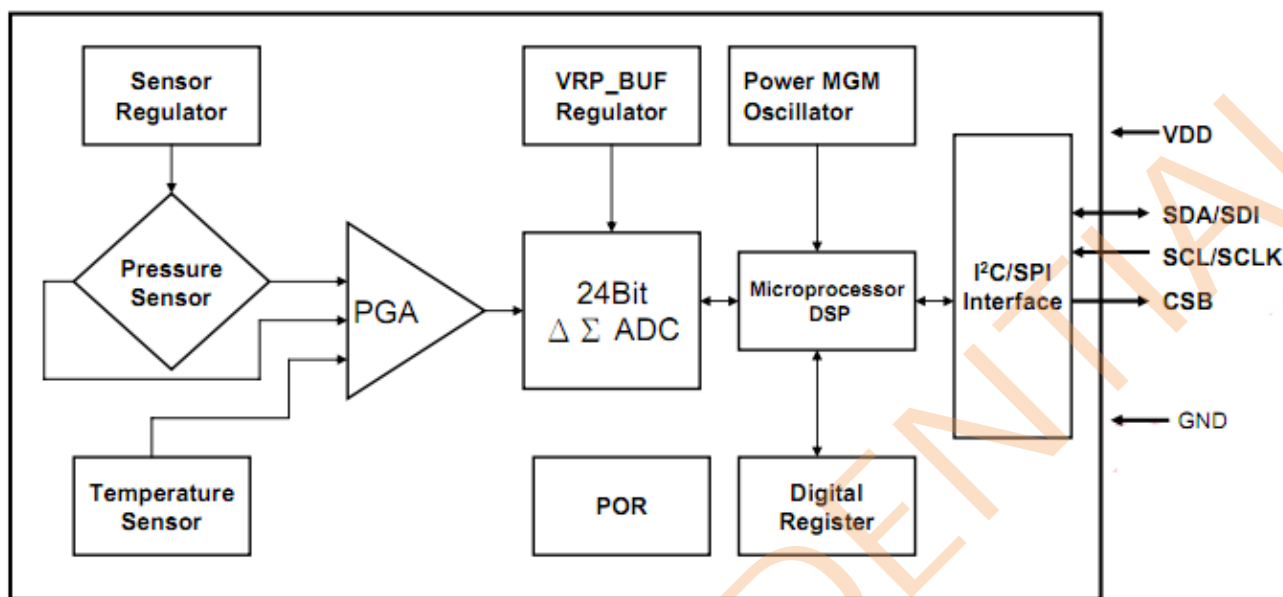


#### 4. PERFORMANCE SPECIFICATIONS

Table 1 Specifications

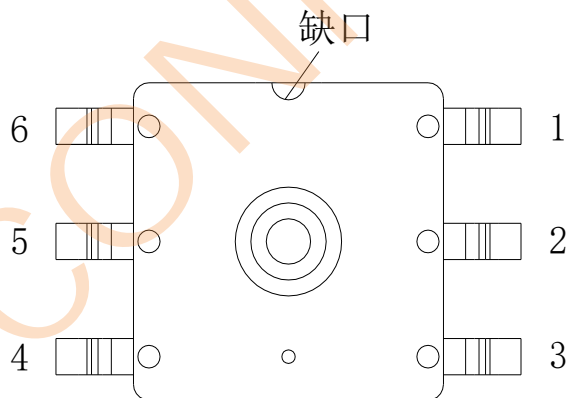
| Parameter   | Condition                             | Min. | Typical | Max. | Unit  | Remark |
|---|---------------------------------------|------|---------|------|-------|--------|
| Supply Voltage  |                                       | 1.8  | 3       | 5.5  | Vdc   |        |
| Supply Current  |                                       |      | 1       |      | mAdc  |        |
| Pressure range  | 100 (5/10/20/40/100/200/300/500/1000) |      |         |      | kPa   |        |
| Sleep current   | 25℃                                   | —    | 0.1     | 0.3  | μA    |        |
| Relative accuracy                                       | 25℃~40℃                               | —    | ±0.3    | —    | hPa   |        |
| Absolute accuracy                                       | -40℃~125℃                             | —    | ±4      | —    | hPa   |        |
| Linearity   |                                       | —    | 0.2     | 0.5  | %FS   |        |
| Resolution of output data in ultra high resolution mode | Pressure                              | —    | 0.05    | —    | Pa    |        |
|   | Temperature                           | —    | 0.01    | —    | ℃     |        |
| Absolute accuracy temperature                           | 25℃                                   | —    | ±0.5    | —    | ℃     |        |
|   | 0℃~65℃                                | —    | ±1.0    | —    | ℃     |        |
| TCR   |                                       | 1500 | 2000    | 2500 | ppm/℃ |        |
| Stability   |                                       | 0.2  |         |      | %FS/Y |        |
| Hysteresis  |                                       | —    | 0.05    | 0.1  | %FS   |        |
| Overpressure  |                                       | 3X   |         |      | —     |        |
| Operation temperature                                   |                                       | -40  | —       | 125  | ℃     |        |
| I2C Clock Frequency                                     | 3V                                    | —    | —       | 3.4  | MHz   |        |
| SPI Clock Frequency                                     | 3V                                    | —    | 1       | 20   | MHz   |        |
| Tupdae_P  | 3V                                    | —    | 2.5     | —    | ms    |        |
| Tupdae_T  | 3V                                    | —    | 2.5     | —    | ms    |        |

## 5. APPLICATION SCHEMATIC



pressure sensor schematic

## 6.CONNECTIONS



Top view

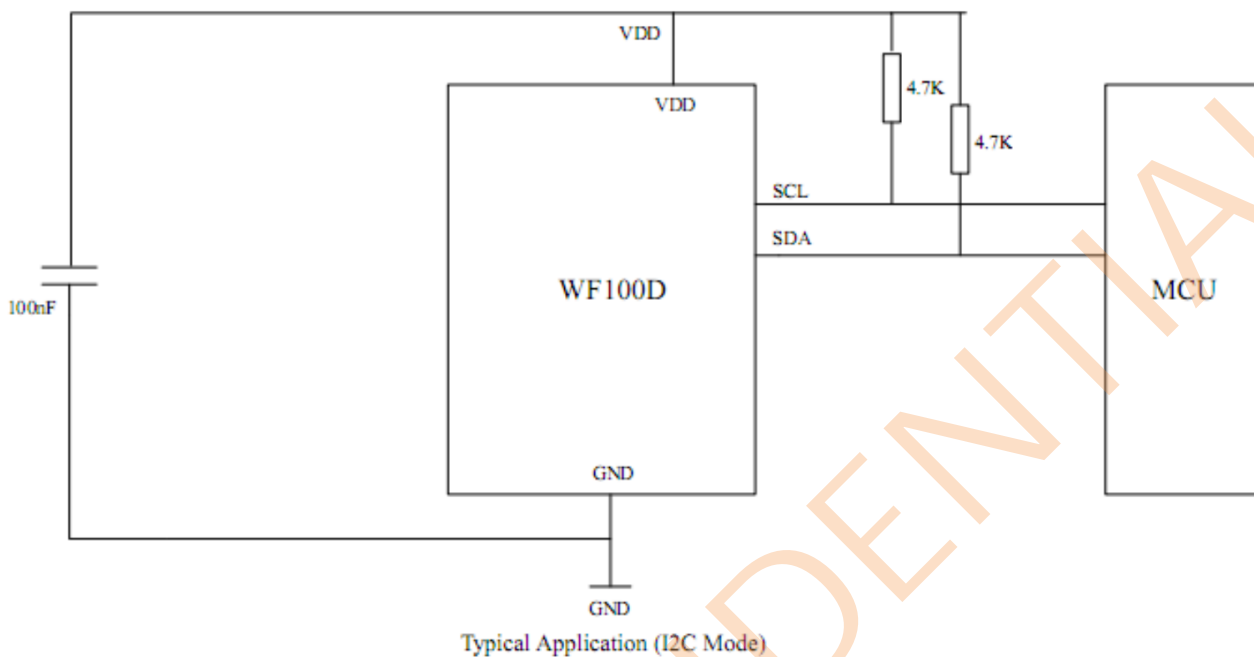
Table2 Definition

| Pin number | Definition | Definition  |
|------------|------------|---|
| 1          | GND        | Connected to GND                                    |
| 2          | SCL        | Clock input for I2C/SPI                             |
| 3          | SDA        | (1) Data in/out for I2C.<br>(2) Data input for SPI. |
| 4          | CSB        | Pulling Low = SPI, NC = IIC                         |
| 5          | VDD        | Positive supply voltage                             |
| 6          | NC         | NC  |

Remark: the connections definition is same for SOP and DIP package product

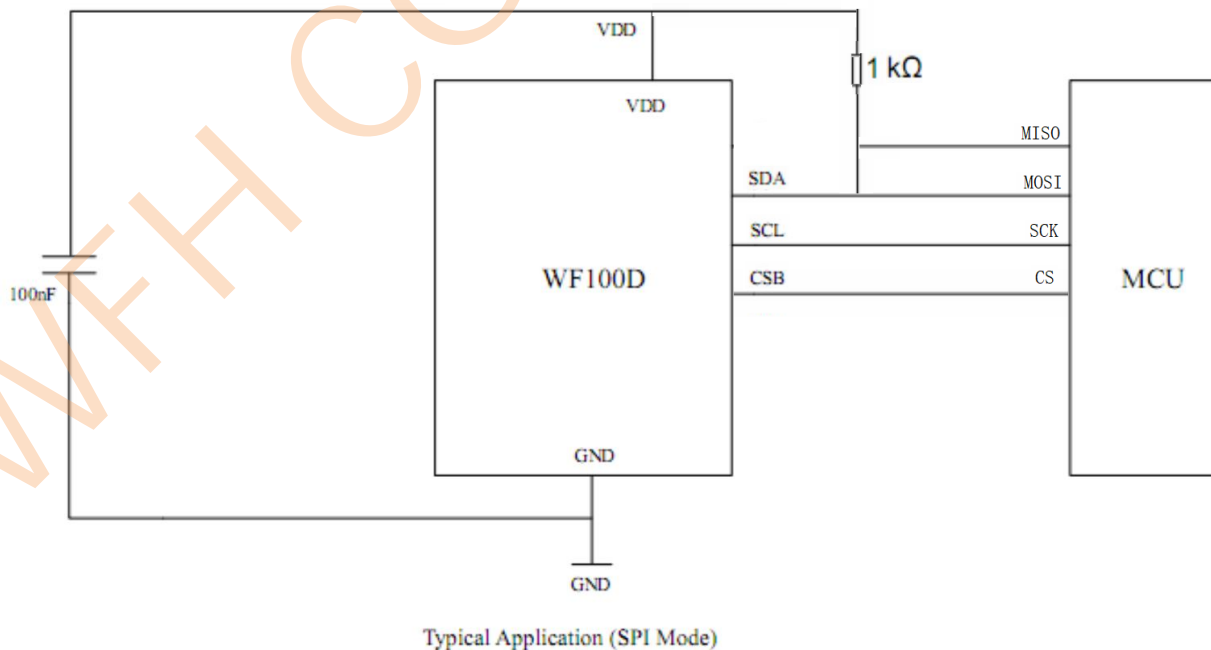


## 7. CONNECTION DIAGRAM



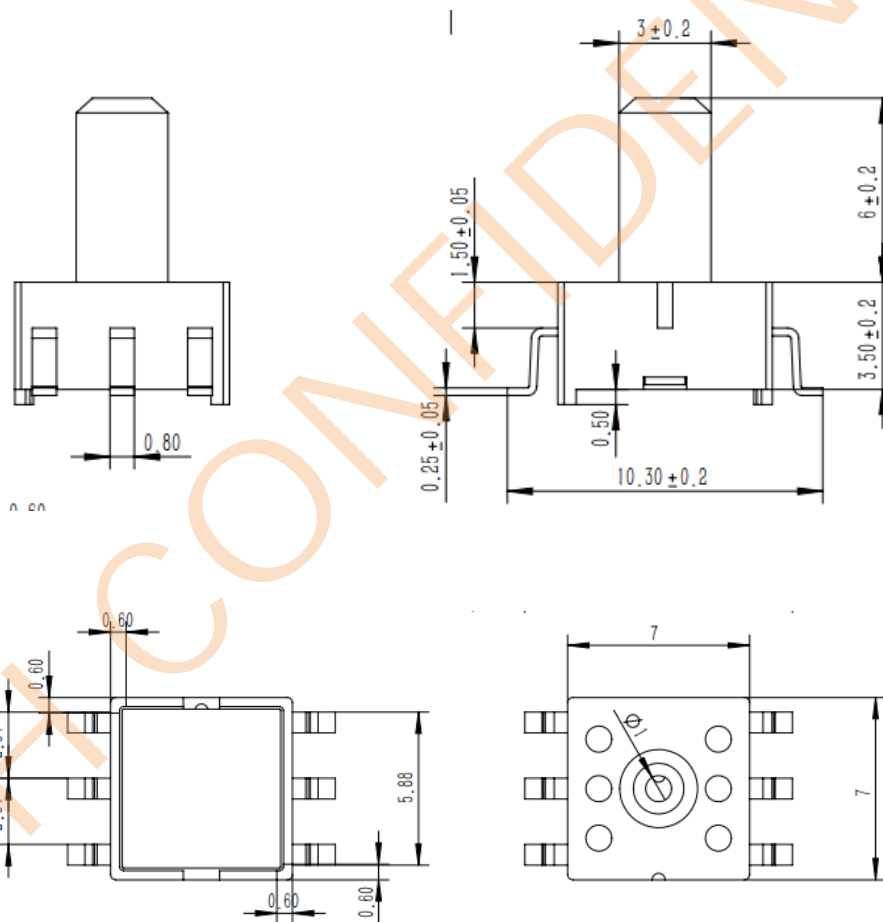
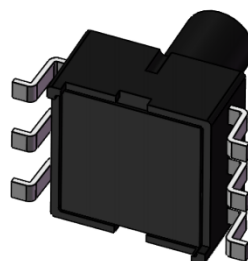
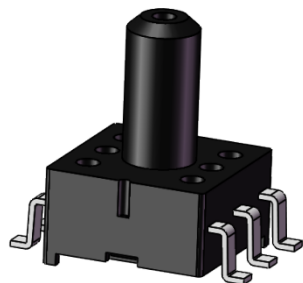
### Notes:

- The recommended value for C1 is 100nF
- The value for the pull-up resistors R1, R2 should be based on the interface timing and the bus load; a normal value of R1 is 4.7k $\Omega$ , R2 is 4.7k $\Omega$ .





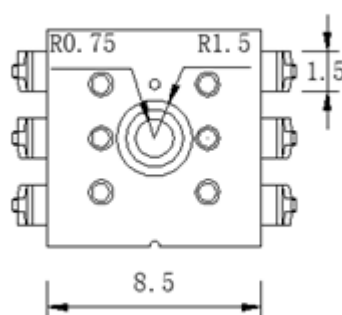
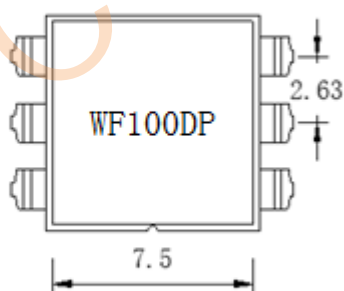
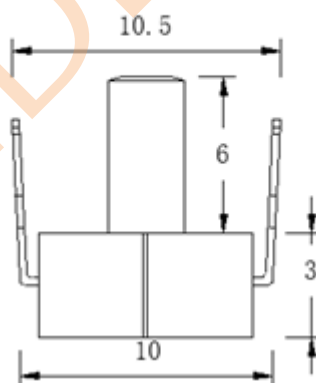
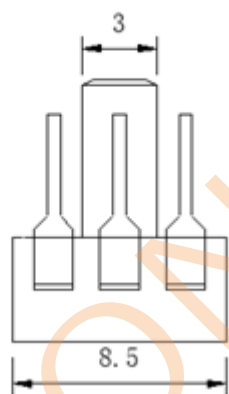
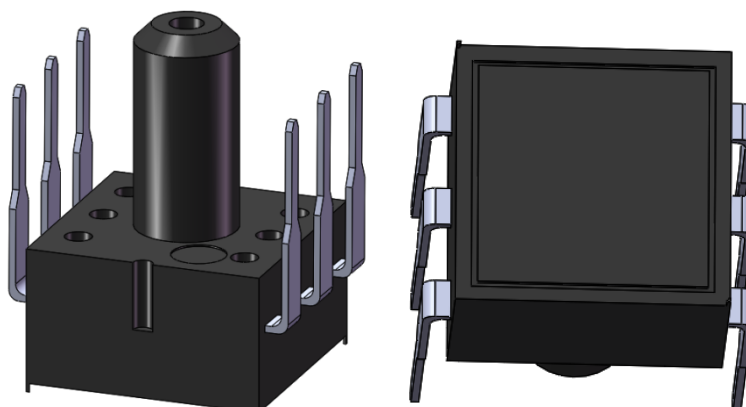
## 8. PRODUCT DIMENSIONS



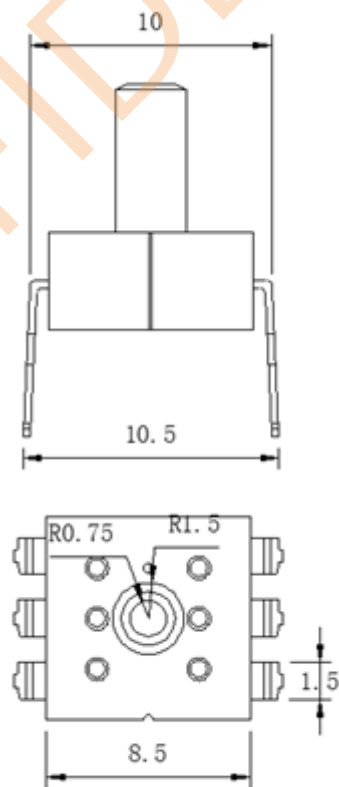
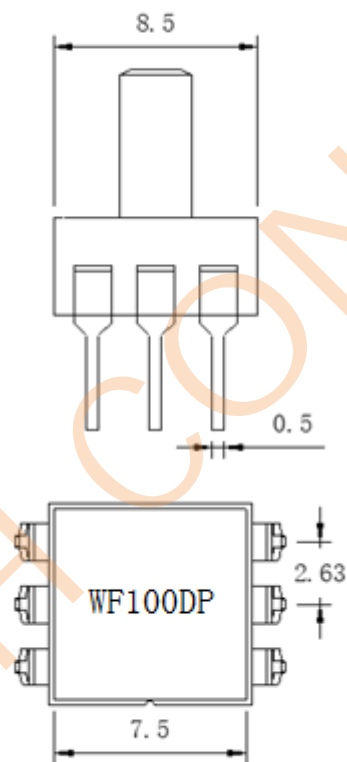
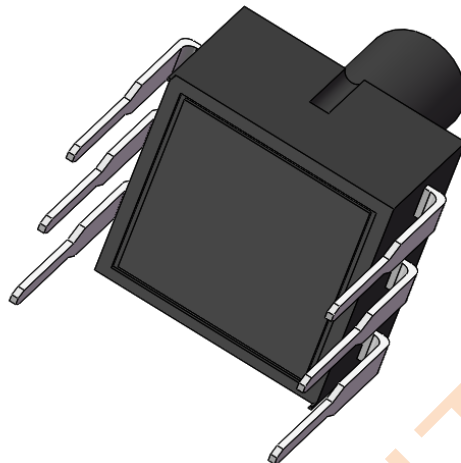
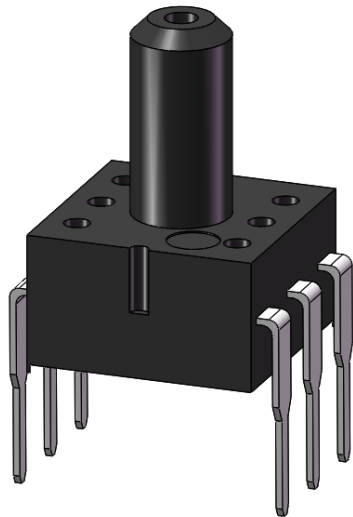
**WF100DP SOP6 Top Tube** TOL:  $\pm 0.2\text{mm}$



## WF100DP Digital Pressure Sensor



**WF100DP DIP6 Bottom Tube** TOL:  $\pm 0.2\text{mm}$

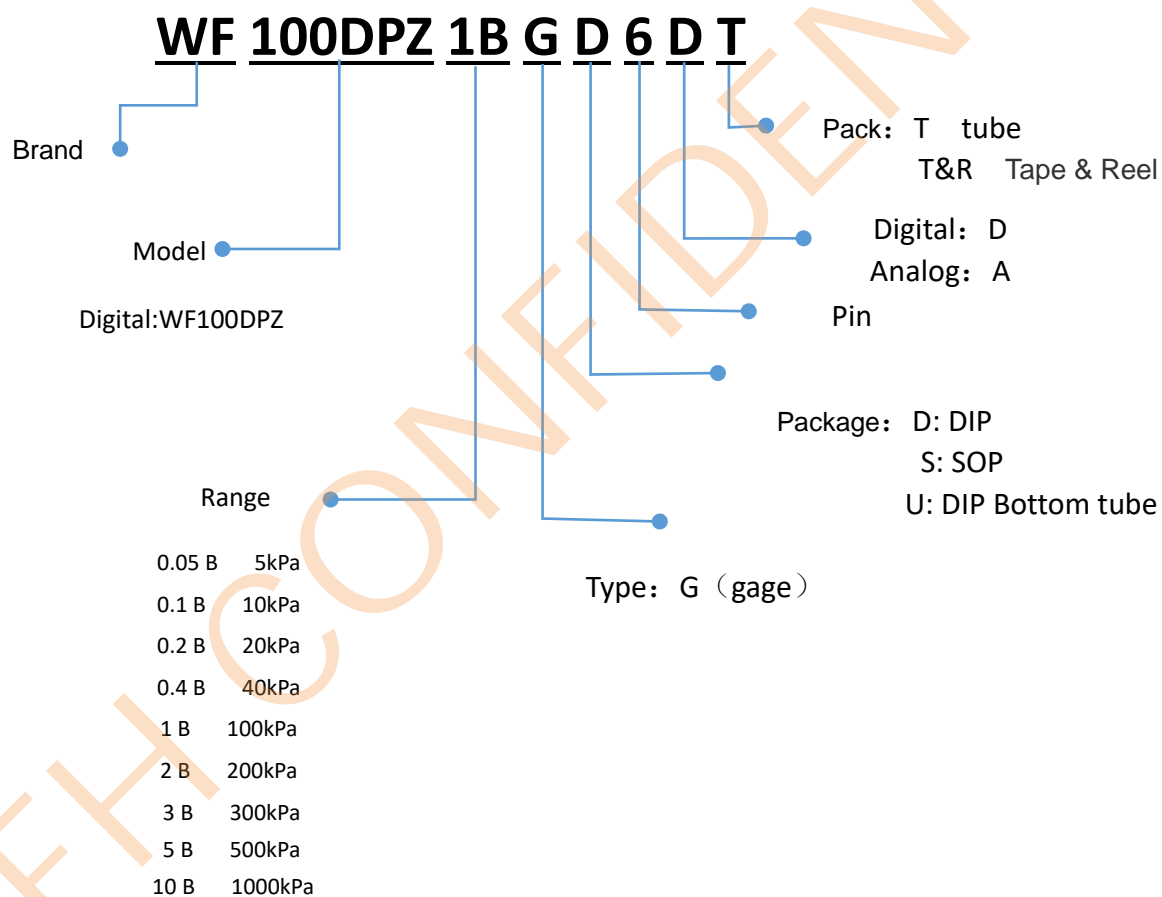


**WF100DP DIP6 Top Tube** TOL :  $\pm 0.2\text{mm}$





## 9. ORDER INFORMATION



## 10. SOLDERING RECOMMENDATION

The recommended soldering profile is shown in Figure 1 , followed by a description of the profile features in Table 3 .

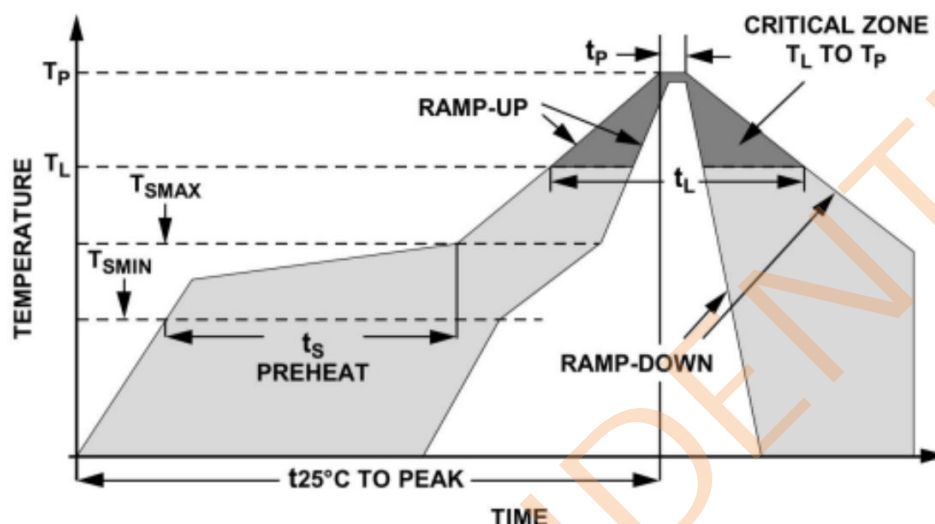


Figure 1 Recommended Soldering Profile

Table 3 Recommended Soldering Profile

| Profile Feature  | Pb-Free           |
|--|-------------------|
| Average ramp-up rate( $T_{S\text{MAX}}$ to $T_P$ )               | 3°C/sec max.      |
| Preheat:   |                   |
| -Temperature Min.( $T_{S\text{MIN}}$ )                           | 150°C             |
| -Temperature Max.( $T_{S\text{MAX}}$ )                           | 200°C             |
| -Time.( $T_{S\text{MIN}}$ to $T_{S\text{MAX}}$ )( $t_s$ )        | 60 sec to 180 sec |
| Time maintained above:   |                   |
| -Temperature( $T_L$ )  | 217°C             |
| -Time( $t_L$ )   | 60 sec to 150 sec |
| Peak temperature( $T_P$ )  | 250°C             |
| Time within 5°C of actual peak temperature( $T_P$ ) <sup>2</sup> | 20 sec to 40 sec  |
| Ramp-down rate   | 4°C/sec max.      |
| Time 25°C to peak temperature                                    | 8 minutes max.    |