



# WF100DP

## 1. KEY FEATURES:

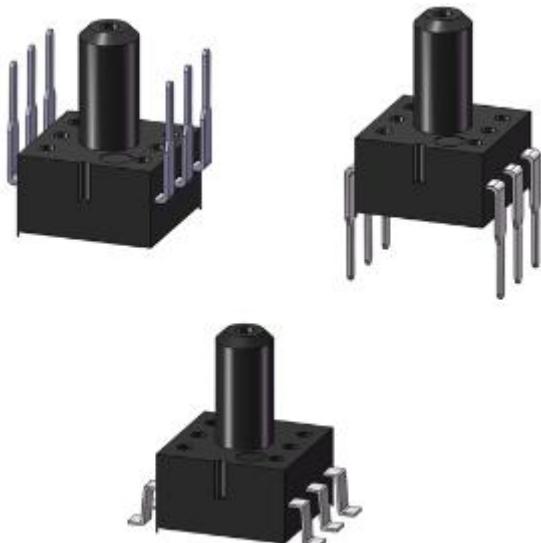
- Piezo-resistive silicon micro-machined sensor
- Gauge type pressure sensor
- I2C / SPI Interface
- Pressure range: 40KPa(10KPa/100KPa/200KPa)
- Pressure Sensitivity: 0.027 Pa/LSB
- 24 Bit  $\Sigma -\Delta$  ADC
- Temperature Compensation: -20°C ~ 85°C
- Operating voltage 3.0V/(5.0V)
- Operating mode current: ~0.6mA (typical)
- Sleep Mode current: 0.1uA (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

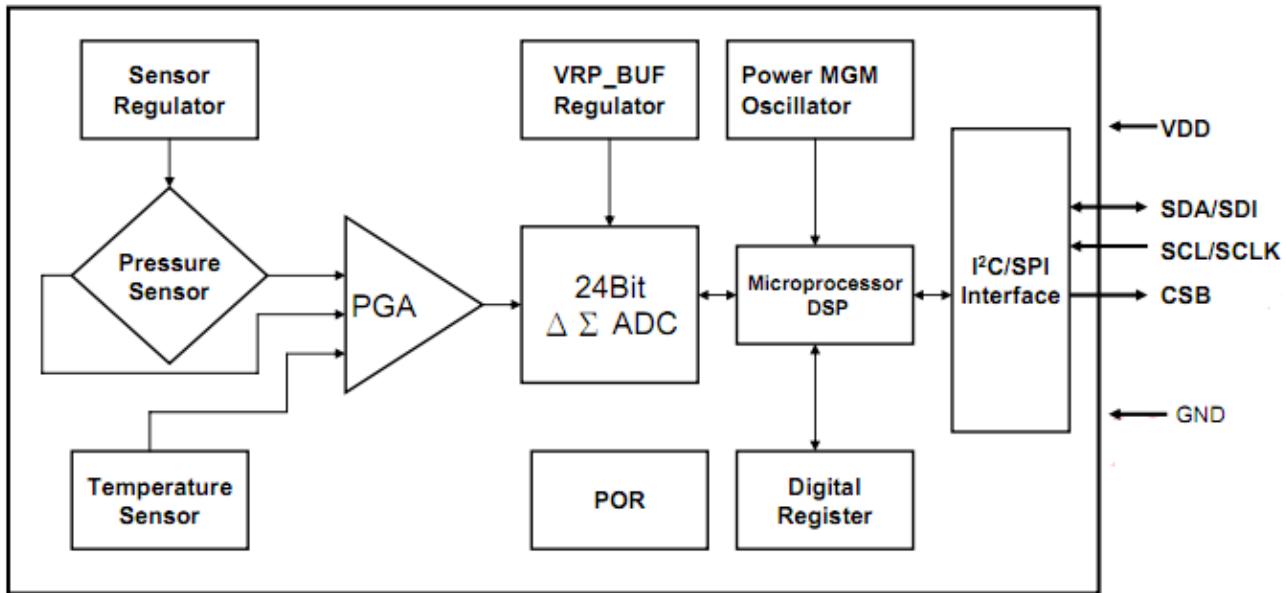


## 4. PERFORMANCE SPECIFICATIONS

Table 1.1 specifications

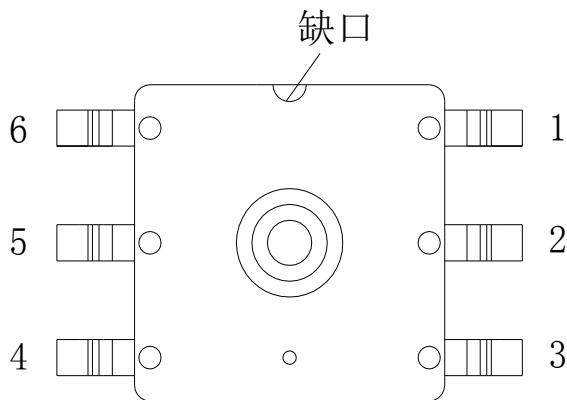
Parameter	Condition	Min.	Typical	Max.	Unit	Remark
Supply Voltage		1.8	3	3.6	Vdc	
Supply Current			1		mAdc	
Pressure range		40 (10/100/200)			kPa	
Sleep current	25°C	-	0.1	0.3	µ A	
Relative accuracy	25°C~40°C	-	±0.3	-	hPa	
Absolute accuracy	0°C~65°C	-	±4	-	hPa	
Linearity		--	0.2	0.5	%FS	
Resolution of output data in ultra high resolution mode	Pressure	-	0.05	-	Pa	
	Temperature	-	0.01	-	°C	
Absolute accuracy temperature	25°C	-	±0.5	-	°C	
	0°C~65°C	-	±1.0	-	°C	
TCR		1500	2000	2500	ppm/°C	
Stability			0.2		%FS/Y	
Hysteresis		--	0.05	0.1	%FS	
Overpressure			3X		--	
Operation temperature		-40	--	100	°C	
I2C Clock Frequency	3V	-	--	3.4	MHz	
SPI Clock Frequency	3V	-	1	20	MHz	

## 5. APPLICATION SCHEMATIC



pressure sensor schematic

## 6.CONNECTIONS



Top view

Table2.1 definition

Pin number	Definition	Definition
1	GND	Connected to GND
2	SCL	Clock input for I <sup>2</sup> C/SPI
3	SDA	(1) Data in/out for I <sup>2</sup> C. (2) Data input for SPI.
4	CSB	Chip select
5	VDD	Positive supply voltage
6	NC	NC

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



## 7. NORMAL REGISTERS

The WF5803F is designed to be connected directly to an external microcontroller of a mobile device via the I<sup>2</sup>C or SPI bus. The pressure and temperature data has to be compensated by the calibration data of the on-chip Non-Volatile Memory (NVM) which is individually factory calibrated for each device.

Table 4 Normal registers

Addr	Description	R/W	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	Default
0x00	SPI_Ctrl	RW	SDO_active	LSB_fi rst	Softre set			Softre set	LSB_fi rst	SDO_active	0x00
0x01	Part_ID	R									0x00
0x02	Status				Error_code<3:0>				1'b0	DRDY	
0x06	DATA_MSB	R				Data out<23:16>					0x00
0x07	DATA_CSB	R				Data out<15:8>					0x00
0x08	DATA_LSB	R				Data out<7:0>					0x00
0x09	TEMP_MSB	R				Temp out<15:8>					0x00
0x0A	TEMP_LSB	R				Temp out<7:0>					0x00
0x30	CMD	RW			Sleep_time<3:0>		Sco		Measurement<2:0>		0x00

### Reg0x00

**SDO\_active:** 1: 4-wire SPI, 0: 3-wire SPI

**LSB\_first:** 1: LSB first for SPI interface, 0: MSB first for SPI interface

**Soft\_reset:** 1: Reset all the WF5803F registers (except 'margin'), automatically come back to 0 after reset complete.

### Reg0x01

**PartID:** OTP programmed 8 bits Part ID, corresponding to OTP register Reg0xA4. Read only from the address 0x01.

### Reg0x02

**DRDY :** 1, indicates once conversion complete, and the output data is ready for reading .



**Error\_code:** When diagnostic function enabled, These bits stores the error information.

Error\_code[3]: VINP short to VDD

Error\_code[2]: VINP short to GND

Error\_code[1]: VINV short to VDD

Error\_code[0]: VINV short to GND

### Reg0x06-Reg0x08

**Data\_out:** 24 bits ADC output data when ‘raw\_data\_on’= 0 with an LSB equals to (1/64). 24 bits calibrated data when ‘raw\_data\_on’ = 1.

### Reg0x09-Reg0x0a

**Temp\_out:** Temperature output with an LSB equals to (1/256)°C.

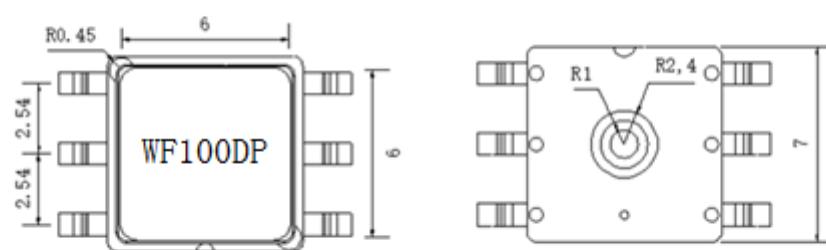
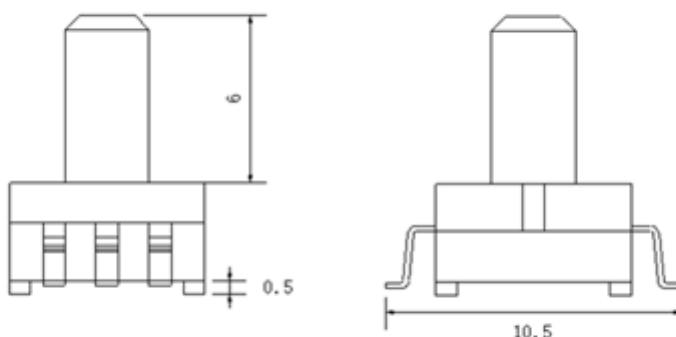
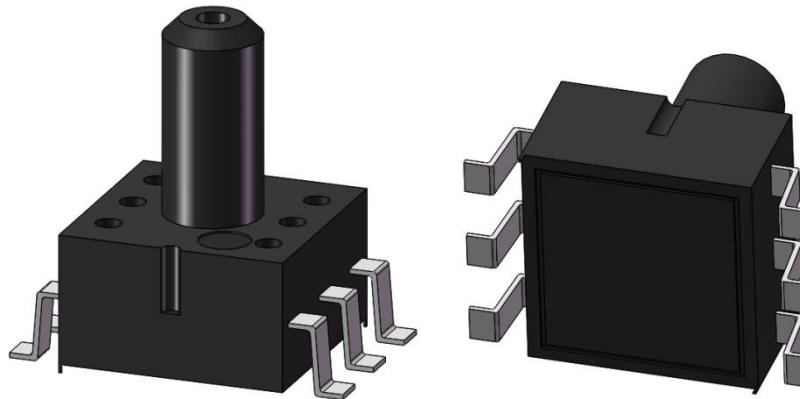
### Reg0x30

**Sleep\_time<3:0>:** 0000:0ms, 0001:62.5ms, 0010:125ms ... 1111: 1s, only active during sleep mode conversion.

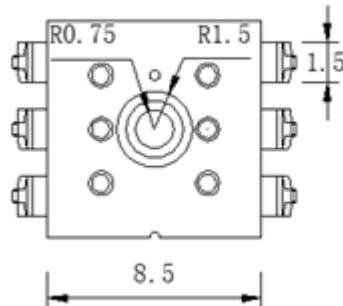
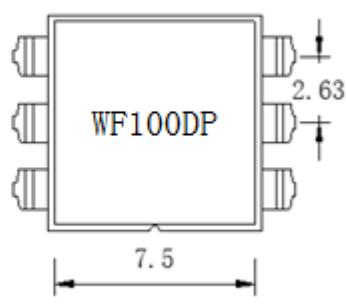
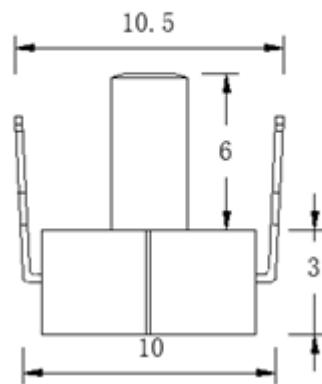
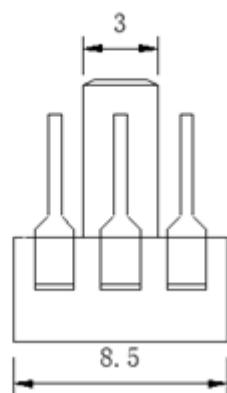
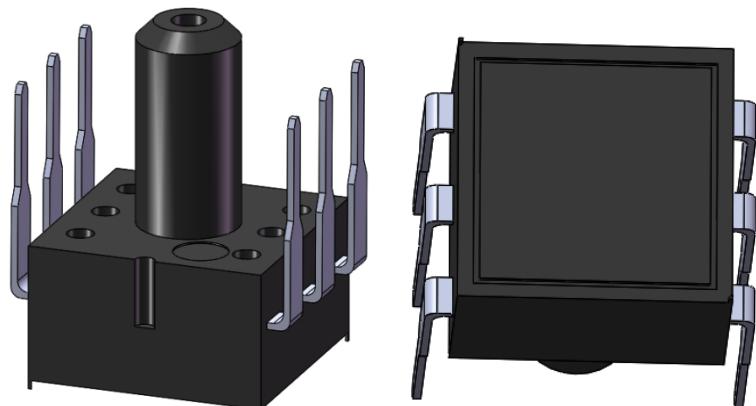
**Measurement\_control<1:0>:** 000b, indicate a single shot temperature signal conversion. 001b, indicate a single shot sensor signal conversion. 010b: indicate a combined conversion (once temperature conversion immediately followed by once sensor signal conversion). 011b: indicate a sleep mode conversion (periodically perform once combined conversion with an interval time of ‘sleep\_time’ ), 100b: OTP programming mode, enter this mode to when programming OTP banks.

**Sco:** 1, Start of conversion, automatically come back to 0 after conversion ends (except sleep mode conversion).

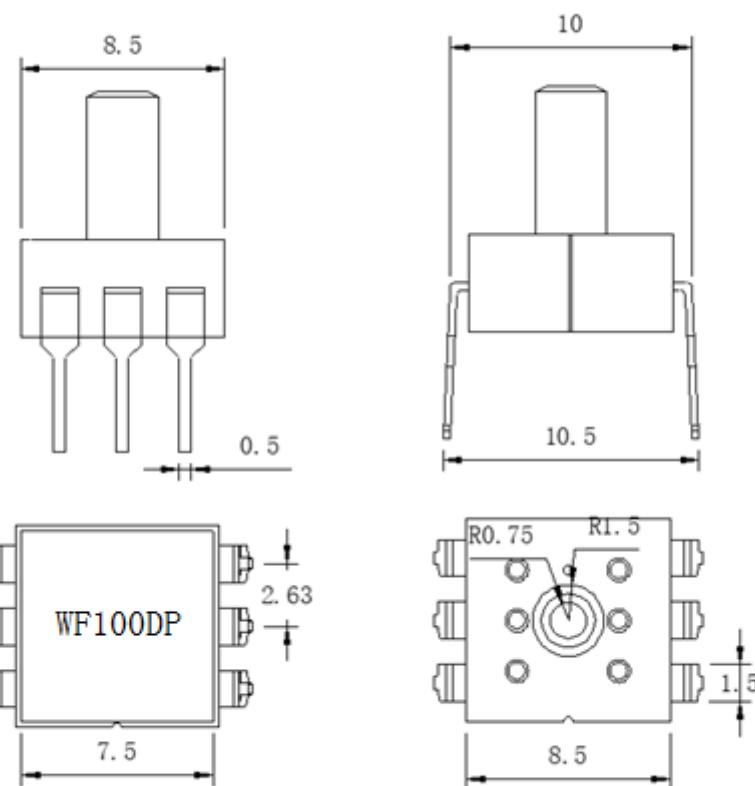
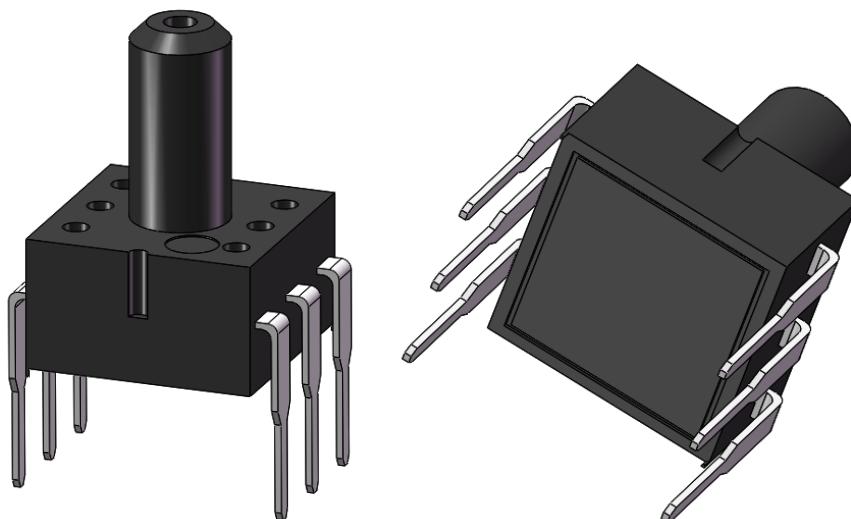
## 8. PRODUCT DIMENSIONS



**WF100DP SOP6 Top Tube**



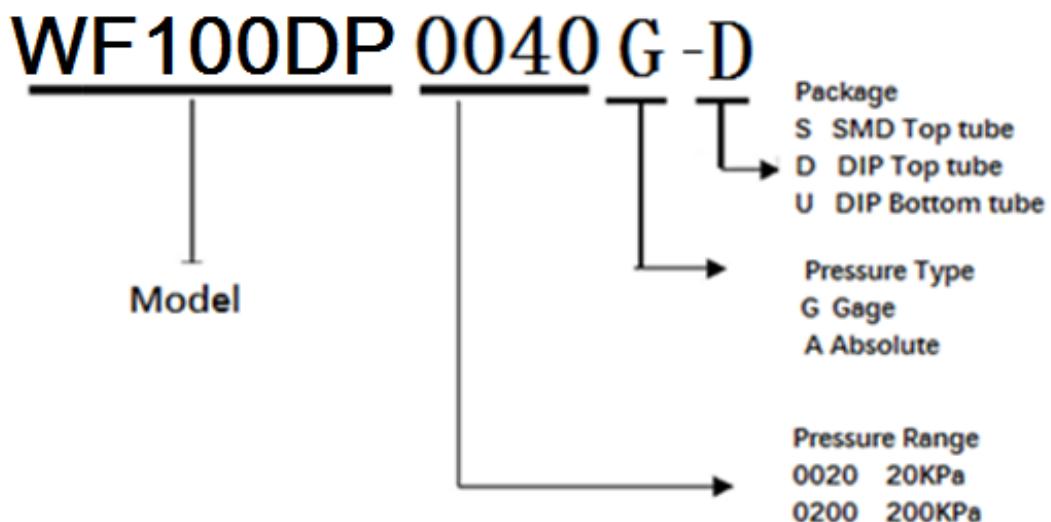
**WF100DP DIP6 Bottom Tube**



WF100DP DIP6 Top Tube



## 9. ORDER INFORMATION



Note:

D	DIP Top tube
U	DIP Bottom tube
S	SOP Top tube
8	SO8 Hole
N	SMALL DIP Top tube
SU	SMD bottom tube
Q	QFN
5Q	DFN (5*5)