# Analog Output Semiconductor Pressure Sensor

AG2 Series

### Description

The AG2 pressure sensor series is composed of a silicon piezoresistive pressure sensing chip and a signal conditioning integrated circuit. The low-level signal from the sensing chip is amplified, temperature compensated, calibrated and finally converted to a high level analog output voltage that is proportional with the applied pressure. The AG2 series measures gauge pressure.



### **Features**

- Amplified and temperature compensated analog output
- High accuracy ±1.5 %FS
- Supply voltage 3.0, 3.3 & 5.0 Vdc
- · Low supply current Max 2 mA at 3.3 Vdc
- Miniature 10.3 mm x 7 mm SMT package
- 3 mm port and 6 mm port available
- · Operating temperature -40 to 125°C
- Wide compensated temperature 0 to 85°C
- Pins & Package compatible with Fujikura's XFGM integrated pressure sensor
- · Customization available

### **Applications**

- · Battery-operated Devices
- Medical Devices
- · Industrial Pneumatic Devices
- Consumer Devices



### **Device Lineup**

Model	Port Length	Pressure Type	Supply Voltage	Accuracy	-100	-50	0	25	50	Pressu 100	re Range 200	500	700	1000 kPa
	Length	.,,,,,	Voltage		(-15)	(-7)		(3)	(7)	(15)	(30)	(70)	(100)	(150) psi
AG2	6 mm or 3 mm	Gauge	5.0 Vdc or 3.3 Vdc	±1.5 %FS		050K		KG KG KG KG MG						-
			3.0 Vdc	±2.0 %FS	Same a	s the	above	9						

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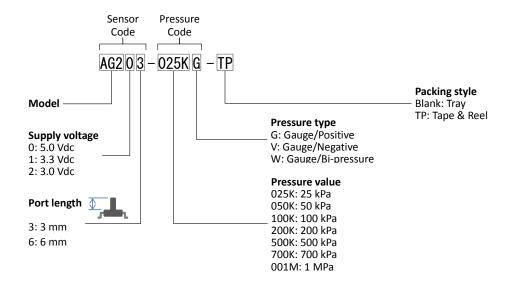




**AG2** Series

Analog Output Semiconductor Pressure Sensor

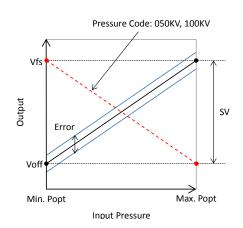
### **Device Name Code**



## **Block Diagram**

#### 3.0, 3.3 or 5.0 Vdc Pin 3 VDD Temp Sensor VDD MUX DSP DAC Pin 2 Buffer VOUT EEPROM osc POR Bridge $\boxtimes$ $\boxtimes$ Pin 1 Pin 4 Pin 5 Pin 6 NC NC

# **Output Characteristics**





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### **Absolute Maximum Ratings**

Item	Symbol	Rating	Unit
Supply Voltage	VDDmax	6	Vdc
Load Pressure	Pmax+	See Pressure Range Table	
Operating Temperature	Topt	-40 to +125	°C
Storage Temperature	Tstg	-40 to +125	°C

## **General Specifications**

Item	Symbol	Sensor Code					
item	Syllibol	AG20*	AG21*	AG22*	Unit		
Supply Voltage	VDD	5.0±0.25	3.3±0.165	3.0±0.15	Vdc		
Type of Pressure	-						
Pressure Media	-	Non-corrosive gases					
Compensated Temperature	-	0 to +85					
Operating Humidity	Hopt	30 to 85 (non-condensing)					
Storage Humidity	Hstg	30 to 85 (non-condensing)					

### **Pressure Range**

Item		Svmbol		Pressure Code							Unit		
item	Зуппрог		025KG	050KG	100KG	200KG	500KG	700KG	001MG	050KV	100KV	100KW	Onit
Absolute Maximum Load Pressure	Pmax+		+50	+100	+200	+400	+1000	+1400	+1500	+100	+200	+200	
Management Bassacca		Min.	0	0	0	0	0	0	0	-50	-100	-100	kPa
Measurement Pressure	Popt	Max.	+25	+50	+100	+200	+500	+700	+1000	0	0	+100	

### **Electrical Characteristics**

Load resistor RL = $\infty$ , Ambient temperature Ta =  $25^{\circ}$ C

				,	. p	
Item	Condition	Symbol		Rating		Unit
Item	Condition		Min.	Тур.	Max.	Offic
Offset Voltage	Min. Popt, 050KV & 100KV: Max. Popt	Voff	0.1325	0.2	0.2675	V
Min.   Typ.   Max.	4.7675	V				
Span Voltage	Min. to max. Popt	SV	-	4.5	Typ. Max. 0.1 0.2 0.2675 V 4.7 4.7675 V 4.5 - V - +1.5 %F: - +0.0675 V 2.5 - m\ 0.3 0.3405 V 3.0 3.0405 V 2.7 - V 1.7 - m\ - 2 mAc 0.15 0.204 V 2.85 2.904 V 2.7 - V 2.85 2.904 V 2.7 - V 1.5 - H0.054 V 1.5 - m\ - +2.0 %F: - +0.054 V 1.5 - m\ - 1 - mse 1 - mse 1 - kΩ	V
	0.1 0500	_	-1.5	-	+1.5	%FS
Accuracy	0 to 85 C	Error	-0.0675	-	+0.0675	V
Output Resolution		Vrso	-	2.5	-	mV
Supply Current		lc	-	-	3	mAdc
Offset Voltage	Min. Popt, 050KV & 100KV: Max. Popt	Voff	0.2595	0.3	0.3405	V
Full Scale Voltage	Max. Popt, 050KV & 100KV: Min. Popt	Vfs	2.9595	3.0	Typ.         Max.         Un           0.2         0.2675         V           4.7         4.7675         V           4.5         -         V           -         +1.5         %F           -         +0.0675         V           2.5         -         m'           -         3         mA           0.3         0.3405         V           3.0         3.0405         V           2.7         -         V           -         +1.5         %F           -         +0.0405         V           1.7         -         m'           2.85         2.904         V           2.7         -         V           2.85         2.904         V           2.7         -         V           -         +2.0         %F           -         +0.054         V           1.5         -         m'           -         2         mA           1         -         kH           -         -         kH	V
Span Voltage	Min. to max. Popt	SV	-	2.7	-	V
	0.1.05°0	_	-1.5	-	+1.5	%FS
Accuracy	0 to 85 C	Nin.   Typ.   Max.   University	Error	V		
Output Resolution			-	mV		
Supply Current		lc	-	-	2	mAdc
Offset Voltage	Min. Popt, 050KV & 100KV: Max. Popt	Voff	0.096	0.15	0.204	V
Full Scale Voltage	Max. Popt, 050KV & 100KV: Min. Popt	Vfs	2.796	2.85	2.904	V
Span Voltage	Min. to max. Popt	SV	-	2.7	-	V
	0.4- 0500	_	-2.0	-	+2.0	%FS
Accuracy	0 to 85 C	Error	-0.054	-	+0.054	V
Output Resolution		Vrso	-	1.5	Max. 0.2675 4.7675 - +1.5 5 +0.0675 - 3 m 0.3405 3.0405 - +1.5 5 +0.0405 - 0.204 2.904 - +2.0 5 +0.054 -  m - n - n -	mV
Supply Current		lc	-	-	2	mAdc
Response Time	for reference	tr	-	1	-	msec.
Sampling Frequency		fs	-	1	-	kHz
Load Resistor	VOUT - VSS or VDD - VOUT	RL	2.5	-	-	kΩ
Load Capacitance	VOUT - VSS	CL	-	-	15	nF
	Offset Voltage Full Scale Voltage Span Voltage Accuracy Output Resolution Supply Current Offset Voltage Full Scale Voltage Span Voltage Accuracy Output Resolution Supply Current Offset Voltage Full Scale Voltage Full Scale Voltage Full Scale Voltage Full Scale Voltage Span Voltage Accuracy Output Resolution Supply Current Response Time Sampling Frequency Load Resistor	Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Max. Popt, 050KV & 100KV: Min. Popt Accuracy Oto 85°C  Output Resolution Supply Current Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Max. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Min. to max. Popt Accuracy Oto 85°C  Output Resolution Supply Current Offset Voltage Min. Popt, 050KV & 100KV: Min. Popt Span Voltage Min. to max. Popt  Accuracy Oto 85°C  Output Resolution Supply Current Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Min. Popt, 050KV & 100KV: Max. Popt Full Scale Voltage Min. to max. Popt  Accuracy Oto 85°C  Output Resolution Supply Current Response Time for reference Sampling Frequency Load Resistor VOUT - VSS or VDD - VOUT	Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Voff Full Scale Voltage Max. Popt, 050KV & 100KV: Min. Popt Vfs Span Voltage Min. to max. Popt SV Accuracy 0 to 85°C Error  Output Resolution Vrso Supply Current Ic Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Voff Full Scale Voltage Max. Popt, 050KV & 100KV: Min. Popt Vfs Span Voltage Min. to max. Popt SV Accuracy 0 to 85°C Error  Output Resolution Vrso Supply Current Ic Offset Voltage Min. Popt, 050KV & 100KV: Min. Popt Vfs Span Voltage Min. to max. Popt SV Accuracy 0 to 85°C Error  Output Resolution Vrso Supply Current Ic Offset Voltage Min. Popt, 050KV & 100KV: Max. Popt Voff Full Scale Voltage Max. Popt, 050KV & 100KV: Min. Popt Vfs Span Voltage Min. to max. Popt Span Voltage Min. to max. Popt Voff Ic Output Resolution Svc Total Span Voltage Min. to max. Popt SV Ic Output Resolution Vrso Supply Current Ic Response Time for reference tr Sampling Frequency Icad Resistor VOUT - VSS or VDD - VOUT RL	Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.1325           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         4.6325           Span Voltage         Min. to max. Popt         SV         -           Accuracy         0 to 85°C         Error         -1.5           Output Resolution         Vrso         -           Supply Current         Ic         -           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.2595           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         2.9595           Span Voltage         Min. to max. Popt         SV         -           Accuracy         0 to 85°C         Error         -1.5           Output Resolution         Vrso         -           Supply Current         Ic         -           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.096           Full Scale Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.096           Full Scale Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.096           Full Scale Voltage         Min. to max. Popt         SV         -	Item         Condition         Symbol         Min.         Typ.           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.1325         0.2           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         4.6325         4.7           Span Voltage         Min. to max. Popt         SV         -         4.5           Accuracy         0 to 85°C         Error         -1.5         -           Output Resolution         Vrso         -         2.5           Supply Current         Ic         -         -           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.2595         0.3           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         2.9595         3.0           Span Voltage         Min. to max. Popt         SV         -         2.7           Accuracy         0 to 85°C         Error         -         -0.0405         -           Output Resolution         Vrso         -         1.7         -           Supply Current         Ic         -         -         -           Offset Voltage         Min. Popt, 050KV & 100KV: Min. Popt         Vfs         2.796         <	Item         Condition         Symbol         Min.         Typ.         Max.           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.1325         0.2         0.2675           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         4.6325         4.7         4.7675           Span Voltage         Min. to max. Popt         SV         -         4.5         -           Accuracy         0 to 85°C         Error         -1.5         -         +1.65           Output Resolution         Vrso         -         2.5         -           Supply Current         Ic         -         -         3           Offset Voltage         Min. Popt, 050KV & 100KV: Max. Popt         Voff         0.2595         0.3         0.3405           Full Scale Voltage         Max. Popt, 050KV & 100KV: Min. Popt         Vfs         2.9595         3.0         3.0405           Span Voltage         Min. to max. Popt         SV         -         2.7         -           Accuracy         0 to 85°C         Error         -1.5         -         +1.5           Output Resolution         Vrso         -         1.7         -           Suphly Current         Ic



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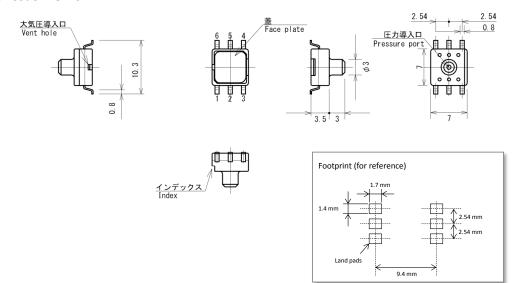
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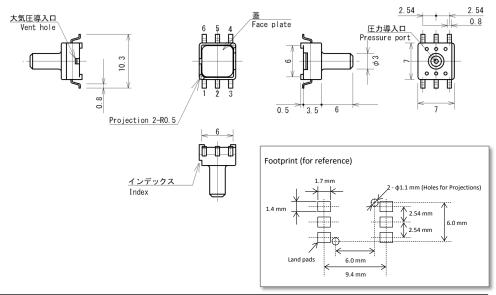
## **Package Dimensions**

unit: mm

### Sensor Code: AG2\*3



### Sensor Code: AG2\*6



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