PRELIMINARY

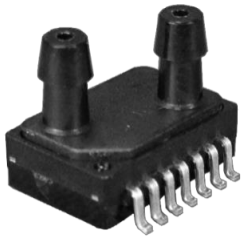
Document Number V-70083 updated: 19 May, 2016

Low Pressure & Digital Output Semiconductor Pressure Sensor

AL4 Series

Description

The AL4 pressure sensor series is a low pressure and digital output pressure sensor. It 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 digital data that is proportional with the applied pressure.



AL4*DB

Features

- Low pressure range
- I^2C Digital output
- High accuracy ±1.5 %FS
- Supply voltage 3.0, 3.3 & 5.0 Vdc
- High load pressure +100 kPa
- Low supply current Max 3.5 mA at 3.3 Vdc
- Miniature 11.36mm x 10.32 mm SMT package
- Dual barbed ports
- Operating temperature -40 to 85℃
- Compensated temperature 0 to 50℃
- Pressure range modification available

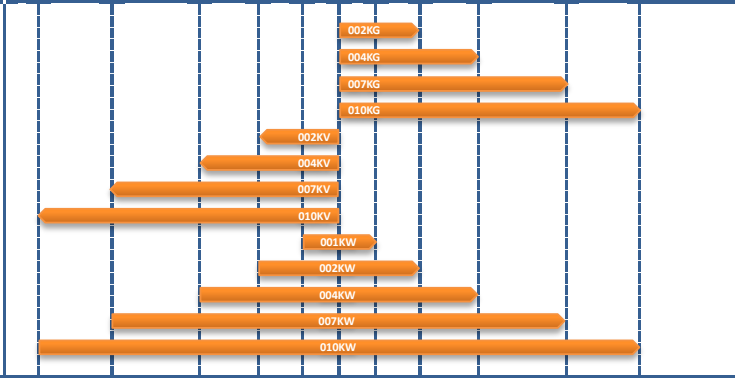
Applications

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

✓ RoHS Compliant

Device Lineup

Model	Pressure Type	Supply Voltage	Accuracy	Pressure Range
AL4	Gauge	5.0 Vdc 3.3 Vdc 3.0 Vdc	±1.5%FS	-10 (-100) -7 (-70) -4 (-40) -2 (-20) -1 (-10) 0 1 (10) 2 (20) 4 (40) 7 (70) 10 kPa (100) cmH_2O



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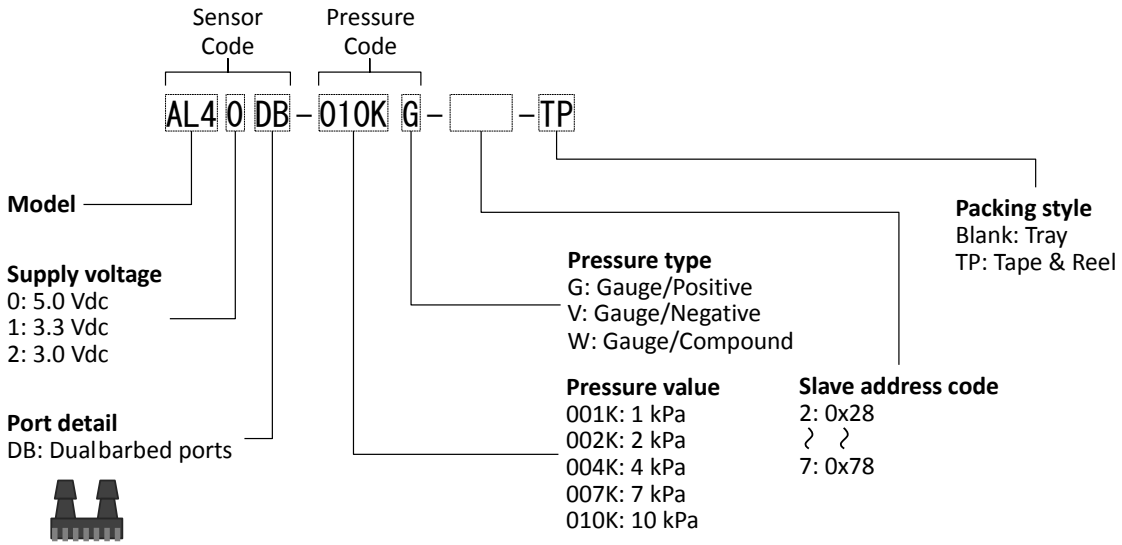
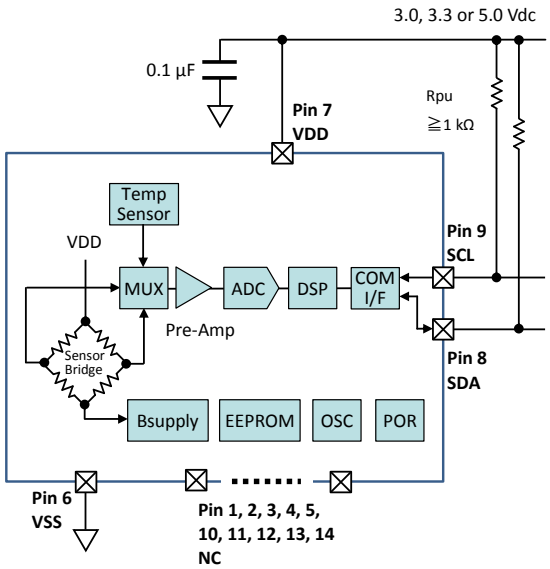
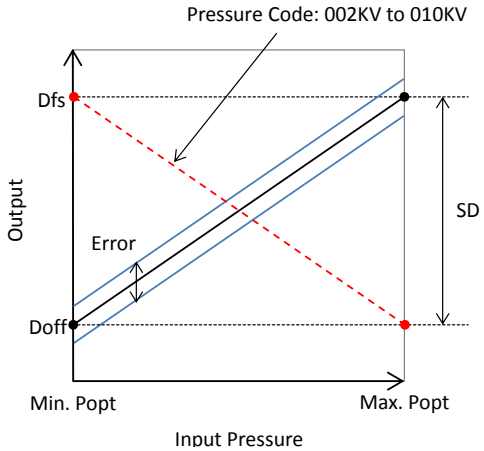
Device Name Code



Block Diagram



Output Characteristics



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Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply Voltage	VDDmax	-0.3 to +6	Vdc
Voltage at Digital I/O Pins	Vdiomax	-0.3 to VDD + 0.3	Vdc
Load Pressure	Pmax+	See Pressure Range Table	
Operating Temperature	Topt	-40 to +85	°C
Storage Temperature	Tstg	-40 to +85	°C

General Specifications

Item	Symbol	Sensor Code			Unit
		AL40DB	AL41DB	AL42DB	
Supply Voltage	VDD	5.0±0.25	3.3±0.165	3.0±0.15	Vdc
Type of Pressure	-	Gauge pressure			
Pressure Media	-	Non-corrosive gases			
Compensated Temperature	-	0 to +50			°C
Operating Humidity	Hopt	30 to 85 (non-condensing)			%RH
Storage Humidity	Hstg	30 to 85 (non-condensing)			%RH

Pressure Range

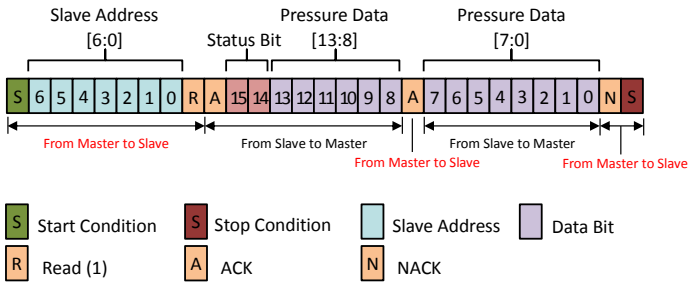
Item	Symbol		Pressure Code												Unit
			002KG	004KG	007KG	010KG	002KV	004KV	007KV	010KV	001KW	002KW	004KW	007KW	010KW	
Abs. Max. Load Pressure	Pmax+		+100	+100	+100	+100	+100	+100	+100	+100	+100	+100	+100	+100	+100	kPa
Measurement Pressure	Popt	Min.	0	0	0	0	-2	-4	-7	-10	-1	-2	-4	-7	-10	
		Max.	+2	+4	+7	+10	0	0	0	0	+1	+2	+4	+7	+10	

Electrical Characteristics

Ambient temperature Ta = 25°C

Item	Condition	Symbol	Rating			Unit
			Min.	Typ.	Max.	
Offset Pressure Data	Min. Popt, 002KV to 010KV: Max. Popt	Doff	598	819	1040	Count
Full Scale Pressure Data	Max. Popt, 002KV to 010KV: Min. Popt	Dfs	15344	15565	15786	Count
Span Pressure Data	Min. to max. Popt	SD	-	14746	-	Count
Accuracy	0 to 50°C	Error	-1.5	-	+1.5	%FS
Supply Current	VDD = 5 Vdc	Ic	-	-	4.5	mAdc
	VDD = 3.3, 3.0 Vdc		-	-	3.5	
Response Time	for reference	tr	-	1	-	msec.

Communication Interface & Protocol

Item	Content
Interface	I²C™
Slave Address	7 bit , 0x28 to 0x78
Measurement Packet	

I²C™ is a trademark of NXP Semiconductors.

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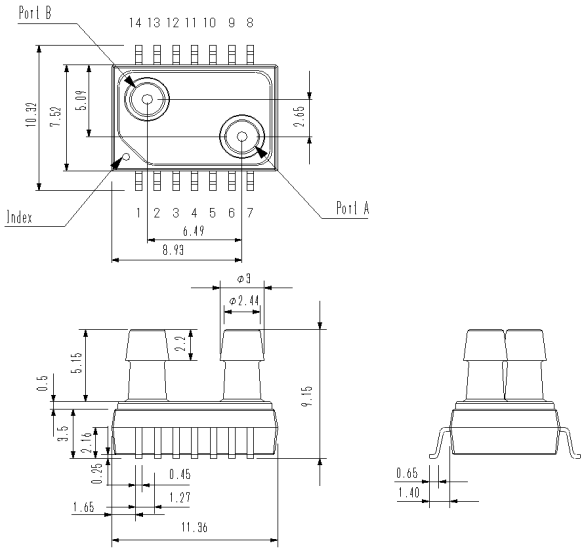
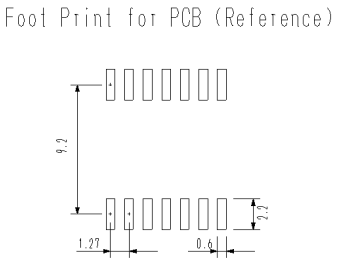
Package Dimensions

unit: mm





Port A is the pressure port. Pressure has to be applied through Port A.

Port B is the reference pressure port. Port B has to be connected to atmospheric pressure.

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