

June 24, 2004

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No. V-7437

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Messrs.

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# SPECIFICATION

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Model: XFPM-050KPG(R)-P3

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RoHS compliance

Project:

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Reference:

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Fujikura Ltd.

**1. General;**

This document details the performance specifications of FUJIKURA's **XFPM-050KPG(R)-P3** high level output, on-chip signal conditioned, temperature compensated and calibrated pressure transducers.

**2. Principle;**

FUJIKURA's integrated semiconductor pressure sensor has four pressure sensitive piezoresistors which are formed on the diaphragm surface of a silicon chip. This chip includes a constant current drive circuit, signal amplification circuitry and resistors for calibration of offset and sensitivity and temperature compensation. These are achieved using silicon planer technique.

When the applied pressure deforms the diaphragm, the piezoresistors change their resistance due to the piezoresistance effect. The resistance change of the four resistors, which constitute a wheatstone bridge circuit, results in a pressure proportional voltage because there is an internally supplied constant current excitation. The surrounding circuit then amplifies the low-level voltage to provide a linear, repeatable high-level output voltage.

**Table shown below is revision records of this specification**

V				
IV				
III				
II				
Rev.I	04.6.24	H. Nishida	Add noise screening information	(A)
Est.	00.07.28	M.Hashimoto		
	Date	Name	Comments	Remark

**3. Pressure range & rating;**

Model	Rated (Measurable) pressure range
XFPM-050KPG(R)-P3	0 ~ +300 mmHg· Gauge (0 ~ +40.00 kPa· Gauge)

**4. Package outline dimensions, Electrical pin connections, Marking and Weight;**

Refer the attached drawings.

The following table shows the drawing No.

Model	Package outline dimensions	Electrical pin connections	Marking
XFPM-050KPG-P3	No.9-751-044	No.9-751-048	No.9-751-076
XFPM-050KPGR-P3	No.9-751-045	No.9-751-048	No.9-751-076

Weight	approximately 1.2g
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**5. Absolute maximum rating;**

Item	Symbol	Rating	Unit
Maximum load pressure	Pmax+	Twice of rated pressure	
Maximum input voltage	Vccmax	8	VDC
Compensated temperature range	Topt1	0 ~ 50	
Operating temperature range	Topt2	-40 ~ 125	
Storage temperature range	Tstg	-40 ~ 125	
Insulation durability	-	AC500V, 1minute.	
Insulation impedance	-	100M min. (DC500V)	

**6. Recommended operating conditions;**

Item	Symbol	Condition	Unit
Rated pressure	Popt	0 ~ +300 (0 ~ +40.00)	mmHg (kPa)
Type of pressure	-	Gauge pressure	
Pressure media	-	Non-corrosive gases	
Supply Voltage (const.)	Vcc	5.0 ± 0.25	VDC

**7. Electrical characteristics;** ( Vcc=5VDC constant, ambient temperature Ta =25 )

Item	Symbol	Rating	Note
Power consumption	Icc	10 mA max. (typ 7mA)	
Output impedance	Imp	10 max.	
Source current	Isource	0.2 mA max.	
Sink current	Isink	2 mA max.	
Offset voltage (Output at 0mmHg)	Voff	0.5 ± 0.1 V	1
Output voltage at full scale (Output at 300mmHg)	Vfs	4.0 ± 0.1 V	1
Output span voltage	SV	1.75 ± 0.05 V (0 - 150mmHg) 3.50 ± 0.10 V (0 - 300mmHg)	1
Output span error at 150mmHg	SVErr150	± 2.0mmHg/0 - 50	1, 2
Output span error at 300mmHg	SVErr300	± 2.5mmHg/0 - 50	1, 3
Maximum Temperature Error	TCErrMax	± 0.2 V/0 - 50	1, 4
Nonlinearity	NL	± 0.4%FS/0 - 50	5
Response time	Tr	1 ms. typ.	6
Noise screening		0.033mmHg p-p (for the detail, please refer to page 4)	(A)

- Notes;**
- 1) The error excludes the ratio metric effect of changes in input voltage.
  - 2) Output Span Error at 150mmHg is defined as deviations of the 150mmHg output span voltage at 0 and 50 °C referenced to 150mmHg output span voltage at 25 °C.
  - 3) Output Span Error at 300mmHg is defined as deviations of the 300mmHg output span voltage at 0, 25 and 50 °C referenced to twice of 150mmHg output span voltage at 25 °C.
  - 4) Maximum output error of all over the temperature range 0 to 50 °C.
  - 5) Nonlinearity is evaluated at 150mmHg from the best straight line goes from 0mmHg through 300mmHg over the temperature range 0 to 50 °C.
  - 6) Response time is defined as the time for the change in output voltage from 10% to 90% of its final value when the input pressure make a step change.

**8. Transfer Function;**

$$V_{out} = V_s \times ( P \times \text{span} + \text{offset} ) \pm ( \text{Pressure Error} \times \text{Temperature Error Multiplier} \times V_s )$$

Vs : 5Volts.

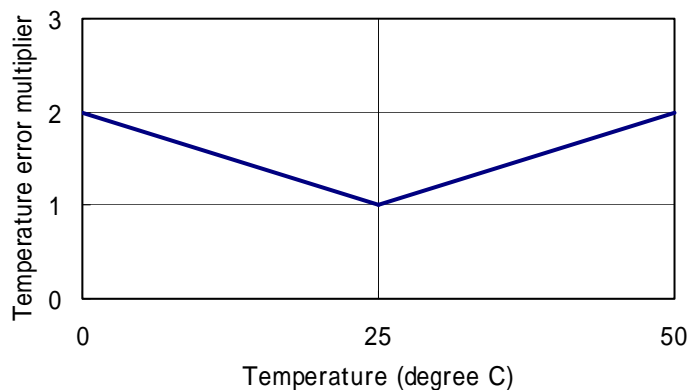
**Note:** Out put Vout is not perfectly ratiometric with power supply voltage Vs.

P : Input Pressure

Pressure Error and Temperature error multiplier are shown below.

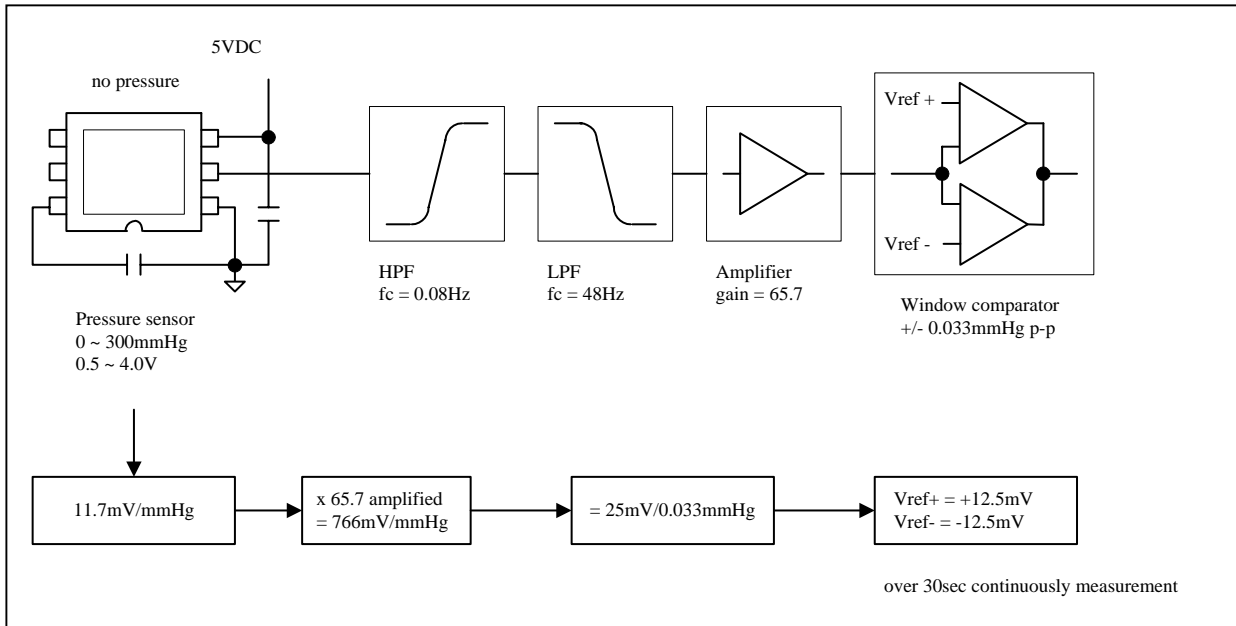
Model	Pressure Range	Pressure Error	Temperature Error Multiplier	Pressure Error 1) (mmHg)
XFPM-050KPG(R)-P3	0 - +300mmHg	0.00233	0.1	8.57

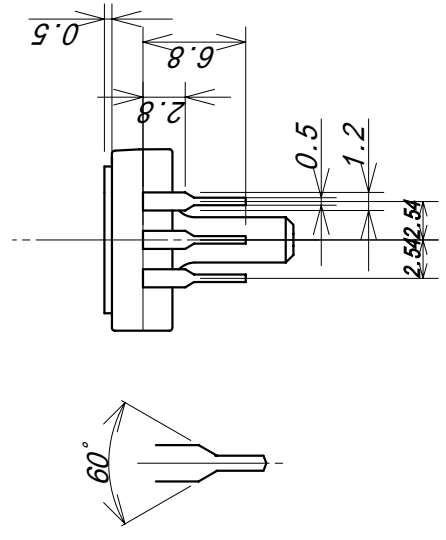
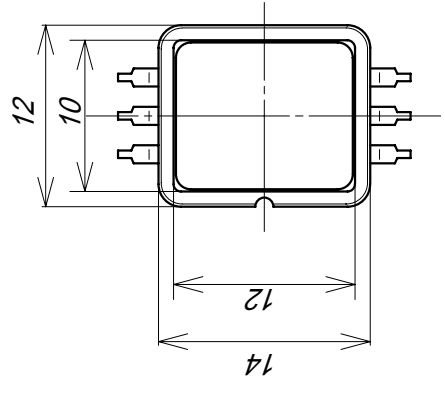
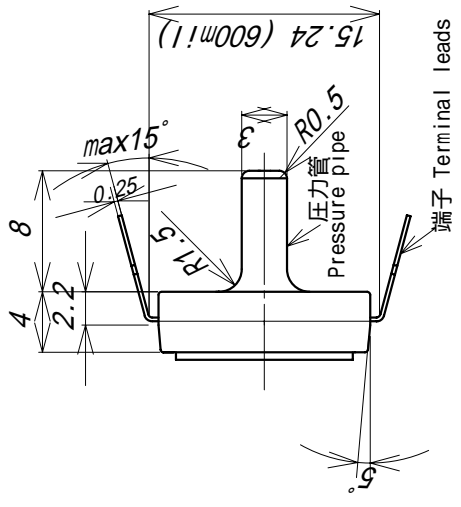
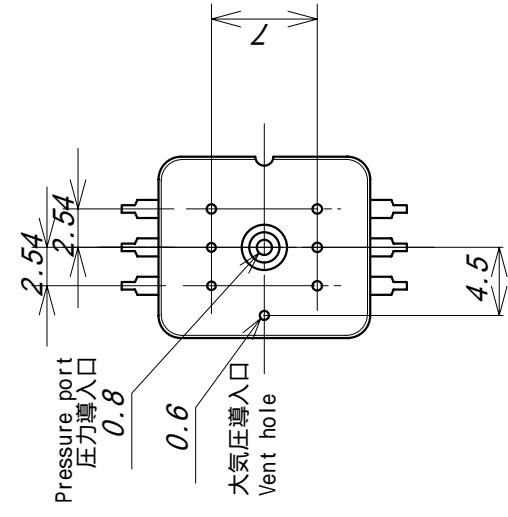
- 1) Pressure error includes Non-linearity, pressure hysteresis, span calibration error and offset calibration error at room temperature.
- 2) Temperature Error Multiplier is shown below graph.



- 3) Output Span Error at 150mmHg over the temperature range 0 to 50 °C is within +/-2.0mmHg.  
And Output Span Error at 300mmHg over the temperature range 0 to 50 °C is within +/-2.5mmHg.

8. Noise screening; (A)





PART NO.	部品名	材質	個数	摘要
	NAME OF PART	MAT'L	QTY.	REMARKS
PROJECT NAME :				
名称 TITLE				
XFPN/N-XXXXG series				
Package outline dimensions				
図面番号 DRAWING NO.				
9 - 751 - 044				
REV. MARK				
◇				

第3角法 3RD ANGLE PROJECTION	名称 TITLE
単位 UNITS mm	
尺度 SCALE FREE	
DATE OF ISSUE 01/12/12	検図 CHECKED BY R. Nagano
DATE OF DESIGN 01/12/12	製図 DRAWN BY M. Sato

承認 APPROVED BY  
**K. NURI**

設計 DESIGNED BY  
**M. Sato**

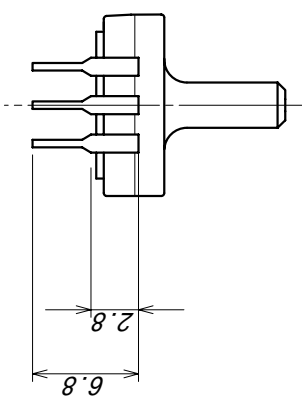
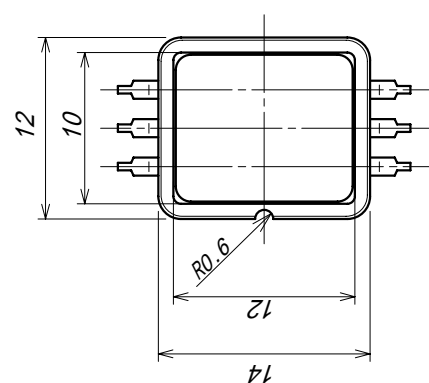
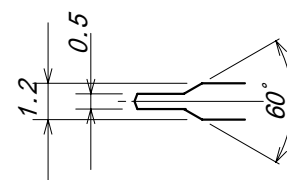
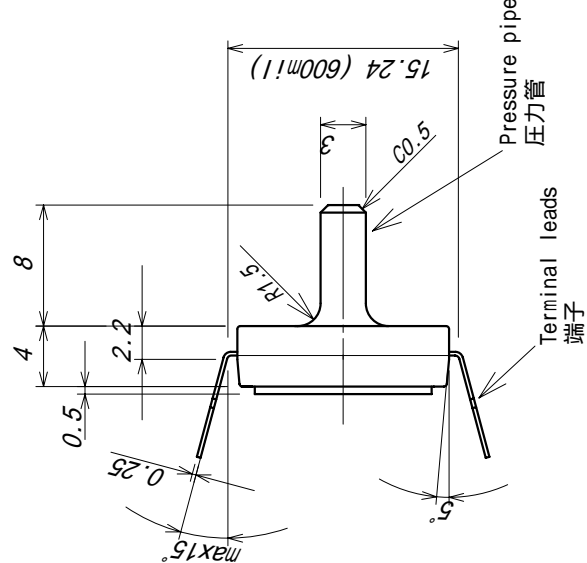
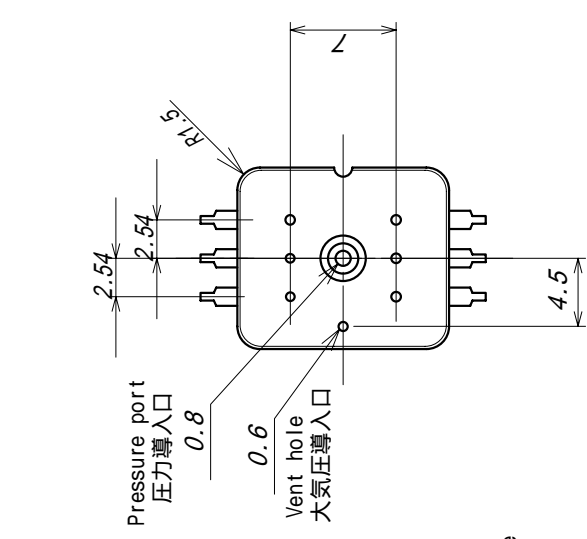
変更者 BY  
BY

年月日 DATE

変更 REVISIONS



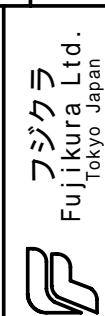
フジクラ  
Fujikura Ltd.  
Tokyo, Japan



注．寸法の一般公差は±0.3mmとする

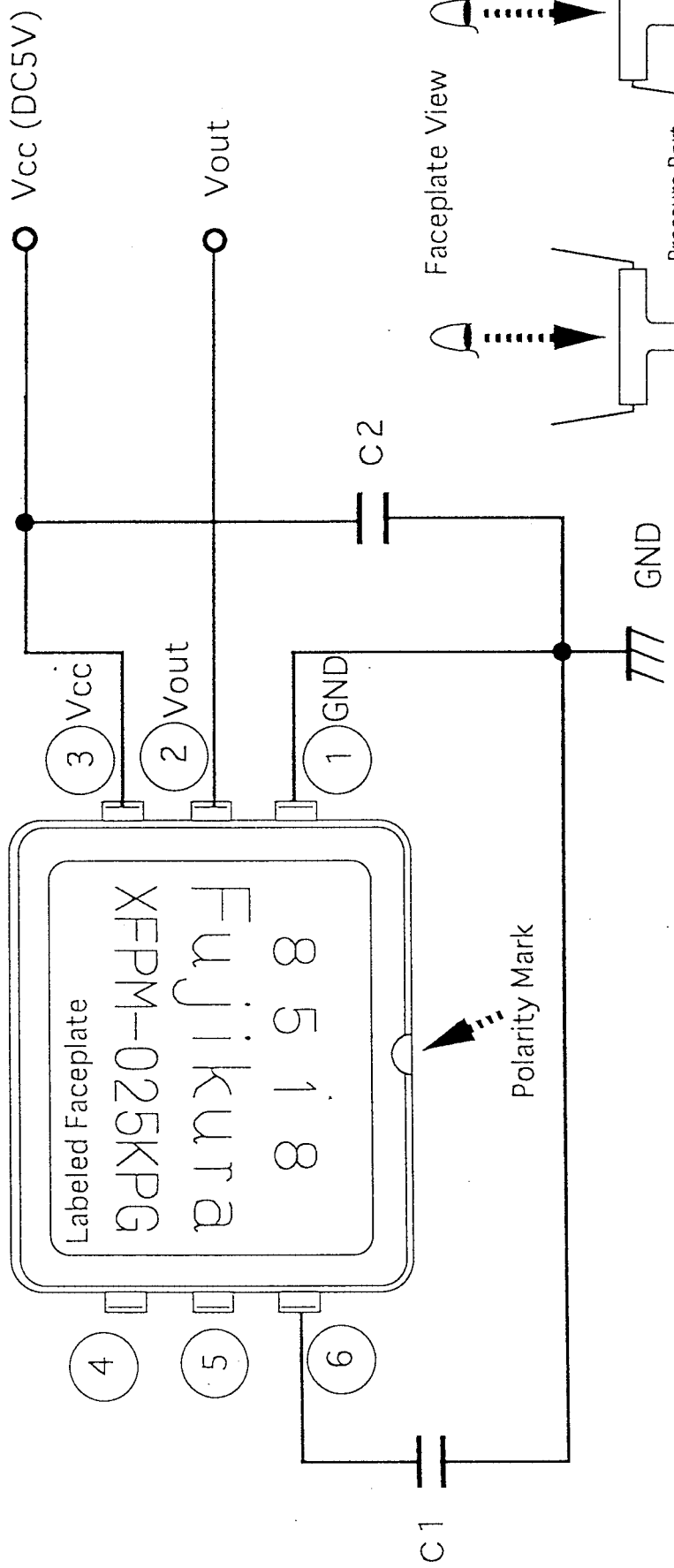
PART NO.	部品名	材質	個数	摘要
PROJECT NAME :				
名称TITLE				
XFPM/N-XXXYPZR series				
Package outline dimensions				
図面番号 DRAWING NO.				
9-751-045				
REV. MARK				
◇				

承認 APPROVED BY	検図 CHECKED BY
K. Nuri	R. Nagano
設計 DESIGNED BY	製図 DRAWN BY
M. Sato	M. Sato



年日 DATE	変更者 BY

変更 REVISIONS	



XFPM/N-XXXYPZR      XFPM/N-XXXYPZ

Notes;

- 1) C1 : Connect 680pF within 2cm from the sensor.
- 2) C2 : Connect 0.01 $\mu$ F or more within 2cm from the sensor.
- 3) Do Not connect anything with pin No4 and No5.  
And do Not connect each other.

Rev.(B): Delete the pull up resistor connected between pin No2 and No3.

PART NO.	部品名	材質	個數	摘要
PROJECT NAME:				
第3角法	名称TITLE			
通規(寸法)	XFPM/N-***PG(R) series			
單位(個)	Pin connection diagram			
尺度SCALE				
DATE OF ISSUE	図面番号DRAWING NO.			
06/29/00	9-751-048			
DATE OF DESIGN	REV. MARK			
06/29/00	B			

承認 APPROVED BY	検図 CHECKED BY
K. Nuri	M. Hashimoto
設計 DESIGNED BY	製図 DRAWN BY
K. Ito	M. Hashimoto

変異 REVISIONS	年月日 DATE	変異者 BY	フジクラ Fujikura Ltd. Tokyo JAPAN



インデックス/Index



9126

Fujikura  
XFPM050KPG\*\*#

Japan

型式 Model

識別記号/ ID character

ロット Lot No.

9126

年 Year

9 : 1999y, 0 : 2000y

月 Month


1~9 : Jan. ~ Sep., X : Oct., Y : Nov., Z : Dec.  
(10月) (11月) (12月)

日 Day

01~31 : 1st~31th

PART NO.	部品名	材質	個数	摘要
	NAME OF PART	MAT'L	QTY.	REMARKS
PROJECT NAME:				
第3角法	名称TITLE			
製図規格	XFPM-050KPG series			
単位UNITS	Marking Diagram			
mm	尺度SCALE			
DATE OF ISSUE	図面番号DRAWING NO.			
07/14/00	9-751-076			
DATE OF DESIGN	REV. MARK			
06/27/00	◇			

承認APPROVED BY	検図CHECKED BY
K.Nuri	M.Hashimoto
設計DESIGNED BY	製図DRAWN BY
M.Hashimoto	M.Hashimoto

変更	REVISIONS	年月日	変更者
DATE	BY		
 フジクラ Fujikura Ltd. Tokyo Japan			

August 17, 2007

No. V-7563

Messrs.

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# SPECIFICATION

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Model: XFGM-6050KPGSR-P3-(TP)

RoHS compliance

Project:

Reference:

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Fujikura Ltd.

**1. General;**

This document details the performance specifications of FUJIKURA's **XFGM-6050KPGSR-P3-(TP)** high level output, on-chip signal conditioned, temperature compensated and calibrated pressure transducers.

**2. Principle;**

FUJIKURA's integrated semiconductor pressure sensor has four pressure sensitive piezoresistors which are formed on the diaphragm surface of a silicon chip. This chip includes a constant current drive circuit, signal amplification circuitry and resistors for calibration of offset and sensitivity and temperature compensation. These are achieved using silicon planer technique.

When the applied pressure deforms the diaphragm, the piezoresistors change their resistance due to the piezoresistance effect. The resistance change of the four resistors, which constitute a wheatstone bridge circuit, results in a pressure proportional voltage because there is an internally supplied constant current excitation. The surrounding circuit then amplifies the low-level voltage to provide a linear, repeatable high-level output voltage.

**Table shown below is revision records of this specification**

V				
IV				
III	8-17-07	H. Nishida	New plastic (PPS→Epoxy) for 250degC reflow soldering	(C)
II	12-07-06	H. Nishida	Marking drawing 9-757-015 → 9-757-094	(B)
Rev.I	6-22-04	H. Nishida	Add tape & reel model, noise screening information	(A)
Est.	6-01-01	H. Nishida		
	Date	Name	Comments	Remark

**3. Pressure range & rating;**

Model	Rated (Measurable) pressure range
XFGM-6050KPGSR-P3-(TP) (A)	0 ~ +300 mmHg·Gauge (0 ~ +40.00 kPa·Gauge)

**4. Package outline dimensions, Electrical pin connections, Marking and Weight; (A), (B), (C)**

Refer the attached drawings. The following table shows the drawing No.

Model	Package outline dimensions	Electrical pin connections	Marking	Delivery Style
XFGM-6050KPGSR-P3	9-757-119	9-757-003	9-757-094	Bulk
XFGM-6050KPGSR-P3-TP				Tape & reel

Weight	approximately 0.3g
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**5. Absolute maximum rating;**

Item	Symbol	Rating	Unit
Maximum load pressure	Pmax+	Twice of rated pressure	
Maximum input voltage	Vccmax	8	VDC
Compensated temperature range	Topt1	0 ~ 50	
Operating temperature range	Topt2	-40 ~ 125	
Storage temperature range	Tstg	-40 ~ 125	
Insulation durability	-	AC500V, 1minute.	
Insulation impedance	-	100M min. (DC500V)	

#### 6. Recommended operating conditions;

Item	Symbol	Condition	Unit
Rated pressure	Popt	0 ~ +300 (0 ~ +40.00)	mmHg (kPa)
Type of pressure	-	Gauge pressure	
Pressure media	-	Non-corrosive gases	
Supply Voltage (const.)	Vcc	5.0 ± 0.25	VDC

#### 7. Electrical characteristics; ( Vcc=5VDC constant, ambient temperature Ta =25 )

Item	Symbol	Rating	Note
Power consumption	Icc	10 mA max. (typ 7mA)	
Output impedance	I <sub>mp</sub>	10 max.	
Source current	I <sub>source</sub>	0.2 mA max.	
Sink current	I <sub>sink</sub>	2 mA max.	
Offset voltage (Output at 0mmHg)	V <sub>off</sub>	0.5 ± 0.1 V	1
Output voltage at full scale (Output at 300mmHg)	V <sub>fs</sub>	4.0 ± 0.1 V	1
Output span voltage	SV	1.75 ± 0.05 V (0 - 150mmHg) 3.50 ± 0.10 V (0 - 300mmHg)	1
Output span error at 150mmHg	SV <sub>Err150</sub>	± 2.0mmHg/0 - 50	1, 2
Output span error at 300mmHg	SV <sub>Err300</sub>	± 2.5mmHg/0 - 50	1, 3
Maximum Temperature Error	TC <sub>ErrMax</sub>	± 0.2 V/0 - 50	1, 4
Nonlinearity	NL	± 0.4%FS/0 - 50	5
Response time	Tr	1 ms. typ.	6
Noise screening		0.033mmHg p-p (for the detail, please refer to page 4)	(A)

- Notes;**
- 1) The error excludes the ratio metric effect of changes in input voltage.
  - 2) Output Span Error at 150mmHg is defined as deviations of the 150mmHg output span voltage at 0 and 50 °C referenced to 150mmHg output span voltage at 25 °C.
  - 3) Output Span Error at 300mmHg is defined as deviations of the 300mmHg output span voltage at 0, 25 and 50 °C referenced to twice of 150mmHg output span voltage at 25 °C.
  - 4) Maximum output error of all over the temperature range 0 to 50 °C.
  - 5) Nonlinearity is evaluated at 150mmHg from the best straight line goes from 0mmHg through 300mmHg over the temperature range 0 to 50 °C.
  - 6) Response time is defined as the time for the change in output voltage from 10% to 90% of its final value when the input pressure make a step change.

**8. Transfer Function;**

$$V_{out} = V_s \times (P \times \text{Gain} + \text{Offset}) \pm (\text{Pressure Error} \times \text{Temperature Error Multiplier} \times V_s)$$

Vs : 5Volts.

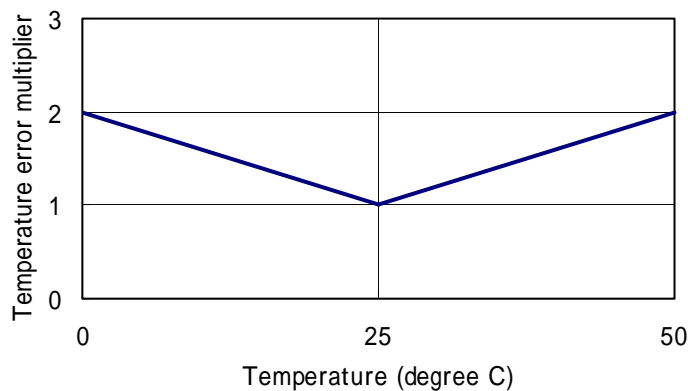
**Note:** Output Vout is not perfectly ratiometric with power supply voltage Vs.

P : Input Pressure

Pressure Error and Temperature error multiplier are shown below.

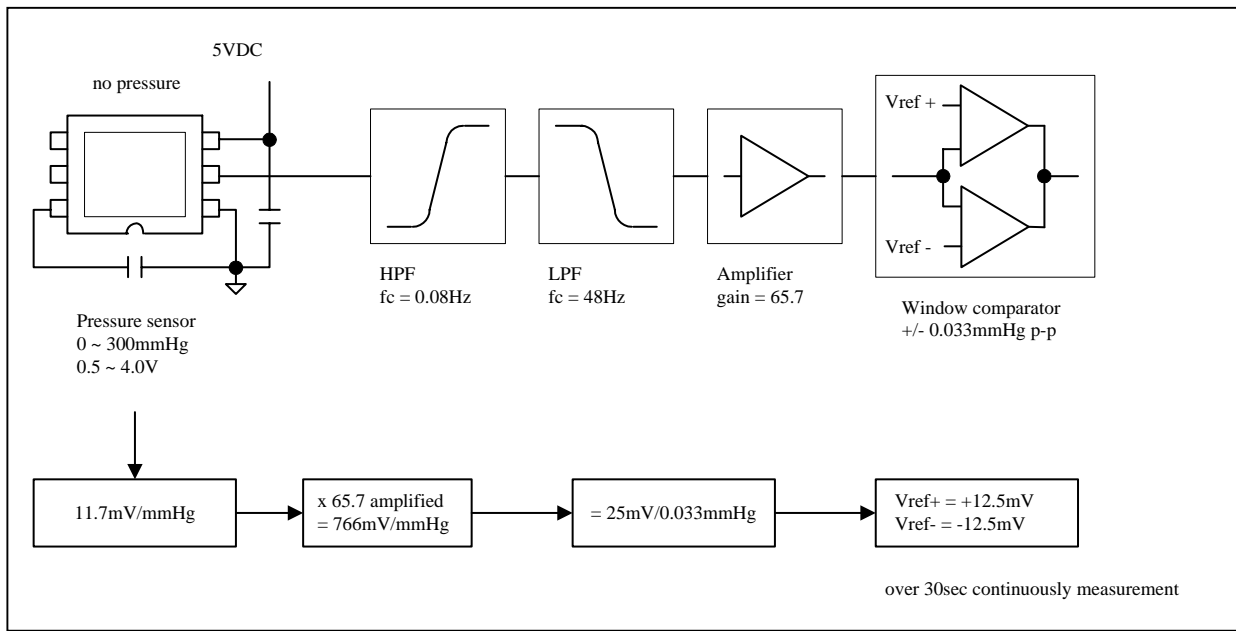
Model	Pressure Range	Pressure Error	Temperature Error Multiplier	Pressure Error (mmHg)
XFGM-6050KPGSR-(F)-P3-(TP)	0 - +300mmHg	0.00233	0.1	8.57

- 1) Pressure error includes Non-linearity, pressure hysteresis, span calibration error and offset calibration error at room temperature.
- 2) Temperature Error Multiplier is shown below graph.



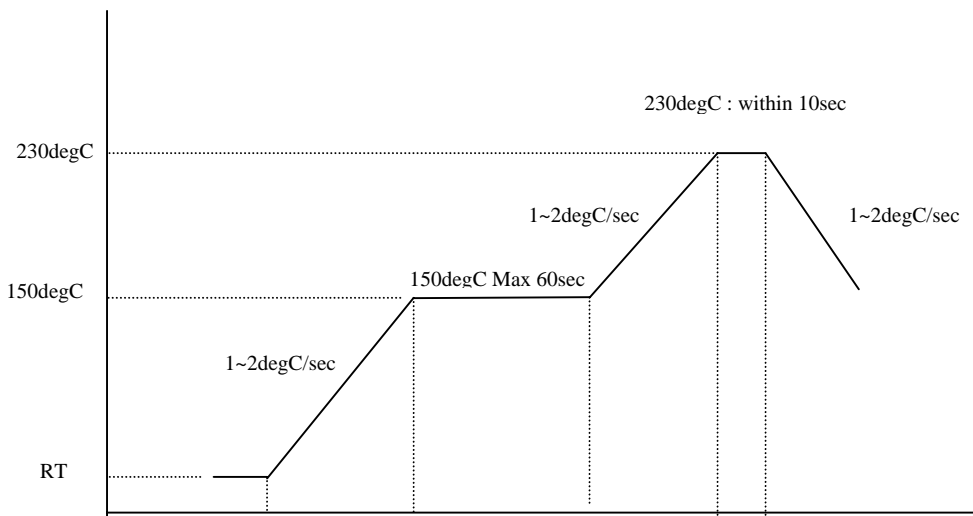
- 3) Output Span Error at 150mmHg over the temperature range 0 to 50 °C is within +/-2.0mmHg.  
And Output Span Error at 300mmHg over the temperature range 0 to 50 °C is within +/-2.5mmHg.

**9. Noise screening; (A)**



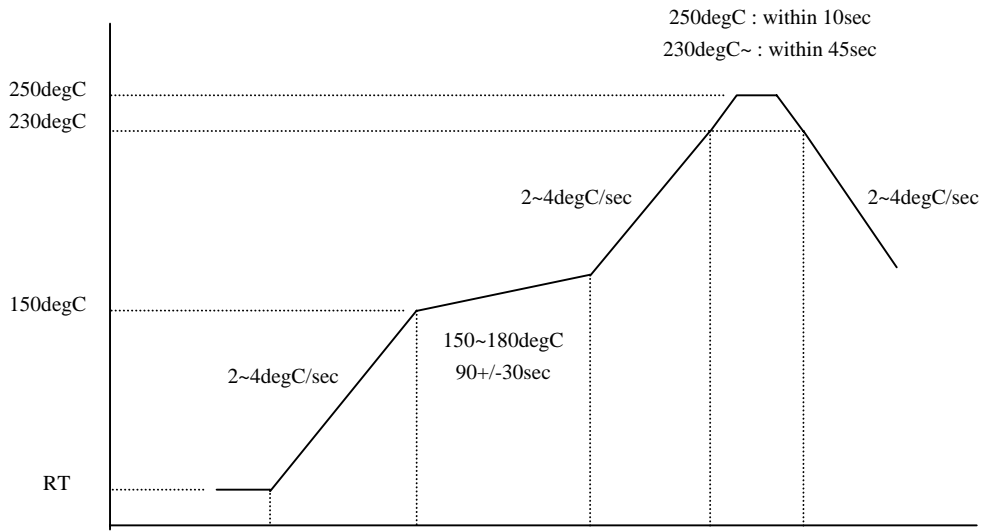
**10. Recommended soldering conditions ; (C)**

10.1 XFGM-6050KPGSR-P3-(TP) without “#” marking for Pb reflow soldering

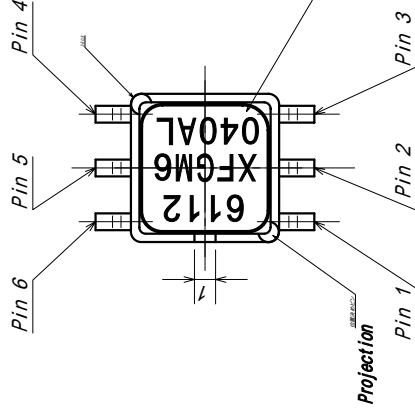
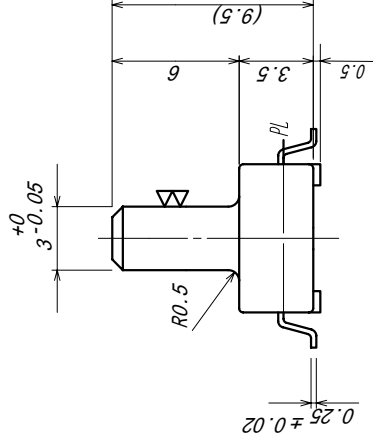
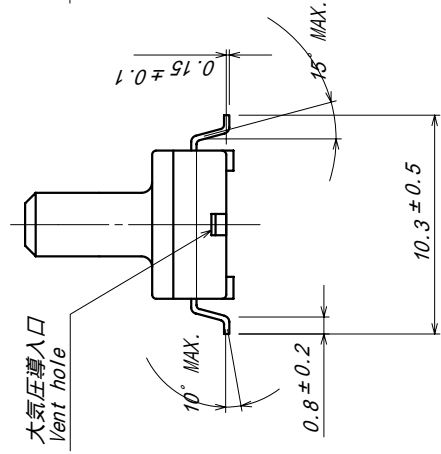
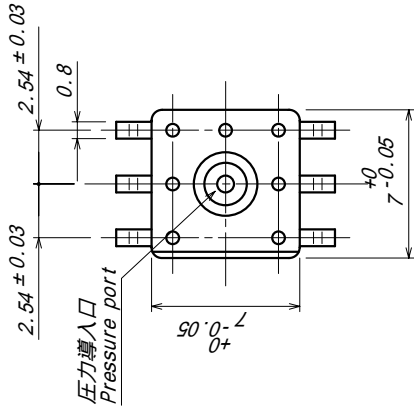


Reflow: Two(2) times maximum.

10.2 XFGM-6050KPGSR-P3-(TP) with “#” marking for Pb free reflow soldering



Reflow: Two(2) times maximum.



Definition of the model name  
 package : FGM, FGN ... un-amplified sensor  
 XFGM, XFGN ... pre-amplified, compensated sensor  
 FGMG, XFGMG ... applicable for liquid medium

suffix : -AU ... gold plated lead pins, otherwise silver (Ag) plated

一般公差 : 指定無き部位寸法公差は ±0.1mm  
 (General Tolerance : ±0.1mm)

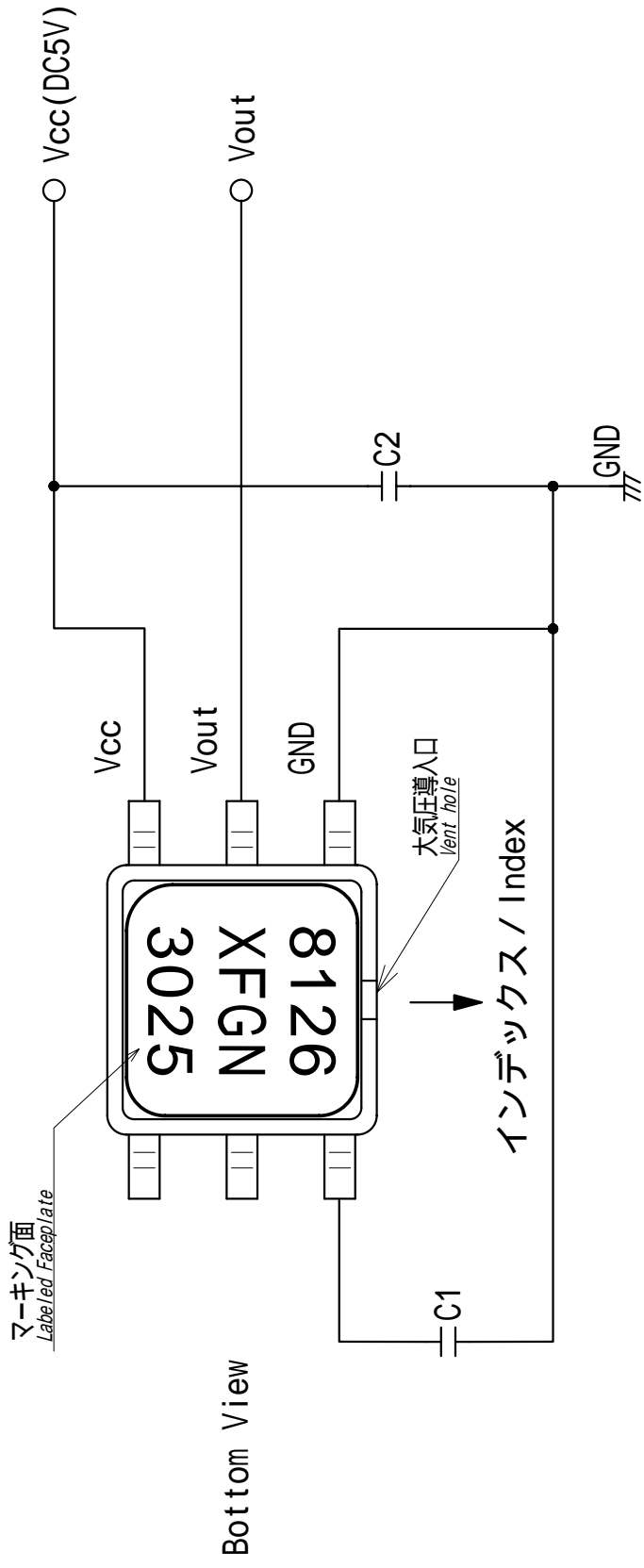
承認 APPROVED BY	検図 CHECKED BY
H. Kosugi	H. Nishida
設計 DESIGNED BY	製図 DRAWN BY
N. Nagasawa	N. Nagasawa



MARK	変更 REVISIONS	年月日 DATE	変更者 BY
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PART NO.	部品名 NAME OF PART	材質 MAT'L	個数 QTY.	摘要 REMARKS
PROJECT NAME :				
第3角法 3RD ANGLE PROJECTION	名称 TITLE			
単位 UNITS	(X)FGM/N-6			
m.m	for Pb free reflow soldering			
尺度 \$SCALE	図面番号 DRAWING NO.			
Free	9-757-119			
DATE OF ISSUE 01/13/06	REV. MARK			
DATE OF DESIGN 01/13/06	REV. MARK			





**注意事項;**

- 1) C1 : 680 pF を端子から 2 cm 以内の近傍に接続して下さい。
- 2) C2 : 0.01  $\mu$ F 以上を端子から 2 cm 以内の近傍に接続して下さい。
- 3) 4, 5 番ピンはNCピンです。完全にフローティングとし、他のラインあるいはNCピン同士を接続しないで下さい。

**Notes;**

- 1) C1 : 680 pF (Connect within 2cm from XFGM/N)
- 2) C2 : 0.01  $\mu$ F or More (Connect within 2cm from XFGM/N)
- 3) Do not connect anything with No.4 and No.5 pin and do not connect each other.

Rev.B: Delete pull up resistor connected between pin #2 and pin #3.

MARK	変更	REVISIONS	年月日	R Nagano	フジクラ
			DATE	変更者	Fujikura Ltd.
				BY	Tokyo Japan

承認 APPROVED BY	検図 CHECKED BY
K.Nuri	R.Nagano
設計 DESIGNED BY	製図 DRAWN BY
T.Adachi	T.Adachi

PART NO.	部品名	材質	個数	摘要
	NAME OF PART	MAT'L	QTY.	REMARKS
PROJECT NAME:				
第3角法	名称 TITLE			
3D ANGLE PROJECTION	XFGM/N			
単位 UNITS	尺度 SCALE			
mm	mm			
DATE OF ISSUE	図面番号 DRAWING NO.			
01/29/98	9-757-003			
DATE OF DESIGN	REV. MARK			
01/29/98	B			

**Connection Diagram**

インデックス / Index

#1126  
XFGM\*  
050P3

ロット Lot No.

1126

年 Year

0 : 2000y, 1 : 2001y, 2 : 2002y

月 Month

1~9 : Jan. ~ Sep., X : Oct., Y : Nov., Z : Dec.  
(10月) (11月) (12月)

日 Day


01 ~ 31 : 1st ~ 31th

3: XFGM-3  
6: XFGM-6

"#": to identify a model for 250degC reflow soldering  
without "#": for 230degC reflow soldering

PART NO.	部品名 NAME OF PART	材質 MAT'L	個数 QTY.	摘要 REMARKS
PROJECT NAME :				
第3角法 3RD ANGLE PROJECTION	名称 TITLE			
単位 UNITS	XFGM-3(6)050KPGSR-P3-(TP)			
m	Marking Diagram			
尺度 SCALE	図面番号 DRAWING NO.			
DATE OF ISSUE 9/30/03	9-757-094			REV. MARK
DATE OF DESIGN 9/30/03	◇			

承認 APPROVED BY	検図 CHECKED BY
K.Nuri	K.Nuri
設計 DESIGNED BY	製図 DRAWN BY
H. Nishida	H. Nishida


 フジクラ  
 Fujikura Ltd.  
 Tokyo Japan

to identify a model for 250degC soldering	2007/8/17	H.N
Specify of sensor type for XFGM-3 or XFG-6	2006/12/07	H.N
変更 REVISIONS	年月日 DATE	変更者 BY

December 12, 2007

No. V-7695

Messrs.

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# SPECIFICATION

---

Model: XFGM-3050KPGSR-P3-(TP)

RoHS compliance

Project:

Reference:

---

Fujikura Ltd.

**1. General;**

This document details the performance specifications of FUJIKURA's **XFGM-3050KPGSR-P3-(TP)** high level output, on-chip signal conditioned, temperature compensated and calibrated pressure transducers.

**2. Principle;**

FUJIKURA's integrated semiconductor pressure sensor has four pressure sensitive piezoresistors which are formed on the diaphragm surface of a silicon chip. This chip includes a constant current drive circuit, signal amplification circuitry and resistors for calibration of offset and sensitivity and temperature compensation. These are achieved using silicon planer technique.

When the applied pressure deforms the diaphragm, the piezoresistors change their resistance due to the piezoresistance effect. The resistance change of the four resistors, which constitute a wheatstone bridge circuit, results in a pressure proportional voltage because there is an internally supplied constant current excitation. The surrounding circuit then amplifies the low-level voltage to provide a linear, repeatable high-level output voltage.

**Table shown below is revision records of this specification**

V				
IV				
III				
II				
Rev.I	12-12-07	H. Nishida	To add reflow soldering profile.	(A)
Est.	12-07-06	H. Nishida		
	Date	Name	Comments	Remark

**3. Pressure range & rating;**

Model	Rated (Measurable) pressure range
XFGM-3050KPGSR-P3-(TP)	0 ~ +300 mmHg· Gauge (0 ~ +40.00 kPa· Gauge)

**4. Package outline dimensions, Electrical pin connections, Marking and Weight;**

Refer the attached drawings.

The following table shows the drawing No.

Model	Package outline dimensions	Electrical pin connections	Marking	Delivery style
XFGM-3050KPGSR-P3	No.9-757-014	No.9-757-003	No.9-757-094	Bulk
XFGM-3050KPGSR-P3-TP				Tape&reel

Weight	approximately 0.3g
--------	--------------------

**5. Absolute maximum rating;**

Item	Symbol	Rating	Unit
Maximum load pressure	Pmax+	Twice of rated pressure	
Maximum input voltage	Vccmax	8	VDC
Compensated temperature range	Topt1	0 ~ 50	
Operating temperature range	Topt2	-40 ~ 125	
Storage temperature range	Tstg	-40 ~ 125	
Insulation durability	-	AC500V, 1minute.	
Insulation impedance	-	100M min. (DC500V)	

**6. Recommended operating conditions;**

Item	Symbol	Condition	Unit
Rated pressure	Popt	0 ~ +300 (0 ~ +40.00)	mmHg (kPa)
Type of pressure	-	Gauge pressure	
Pressure media	-	Non-corrosive gases	
Supply Voltage (const.)	Vcc	5.0 ± 0.25	VDC

**7. Electrical characteristics;** ( Vcc=5VDC constant, ambient temperature Ta =25 )

Item	Symbol	Rating	Note
Power consumption	Icc	10 mA max. (typ 7mA)	
Output impedance	Imp	10 max.	
Source current	Isource	0.2 mA max.	
Sink current	Isink	2 mA max.	
Offset voltage (Output at 0mmHg)	Voff	0.5 ± 0.1 V	1
Output voltage at full scale (Output at 300mmHg)	Vfs	4.0 ± 0.1 V	1
Output span voltage	SV	1.75 ± 0.05 V (0 - 150mmHg) 3.50 ± 0.10 V (0 - 300mmHg)	1
Output span error at 150mmHg	SVErr150	± 2.0mmHg/0 - 50	1, 2
Output span error at 300mmHg	SVErr300	± 2.5mmHg/0 - 50	1, 3
Maximum Temperature Error	TCErrMax	± 0.2 V/0 - 50	1, 4
Nonlinearity	NL	± 0.4%FS/0 - 50	5
Response time	Tr	1 ms. typ.	6
Noise screening		0.033mmHg p-p (for the detail, please refer to page 4)	

- Notes;**
- 1) The error excludes the ratio metric effect of changes in input voltage.
  - 2) Output Span Error at 150mmHg is defined as deviations of the 150mmHg output span voltage at 0 and 50 °C referenced to 150mmHg output span voltage at 25 °C.
  - 3) Output Span Error at 300mmHg is defined as deviations of the 300mmHg output span voltage at 0, 25 and 50 °C referenced to twice of 150mmHg output span voltage at 25 °C.
  - 4) Maximum output error of all over the temperature range 0 to 50 °C.
  - 5) Nonlinearity is evaluated at 150mmHg from the best straight line goes from 0mmHg through 300mmHg over the temperature range 0 to 50 °C.
  - 6) Response time is defined as the time for the change in output voltage from 10% to 90% of its final value when the input pressure make a step change.

**8. Transfer Function;**

$$V_{out} = V_s \times ( P \times \text{Sensitivity} + \text{Offset} ) \pm ( \text{Pressure Error} \times \text{Temperature Error Multiplier} \times V_s )$$

Vs : 5Volts.

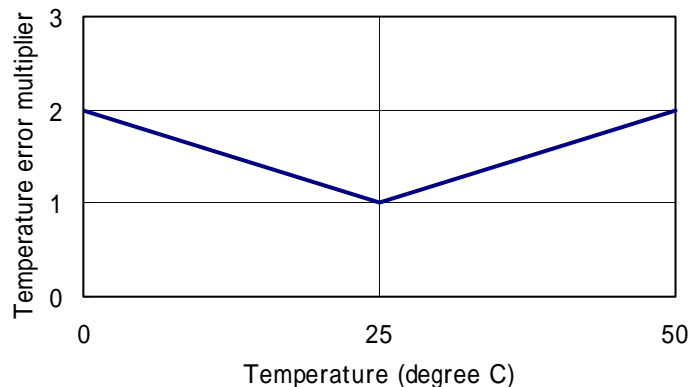
**Note:** Out put Vout is not perfectly ratiometric with power supply voltage Vs.

P : Input Pressure

**Pressure Error and Temperature error multiplier are shown below.**

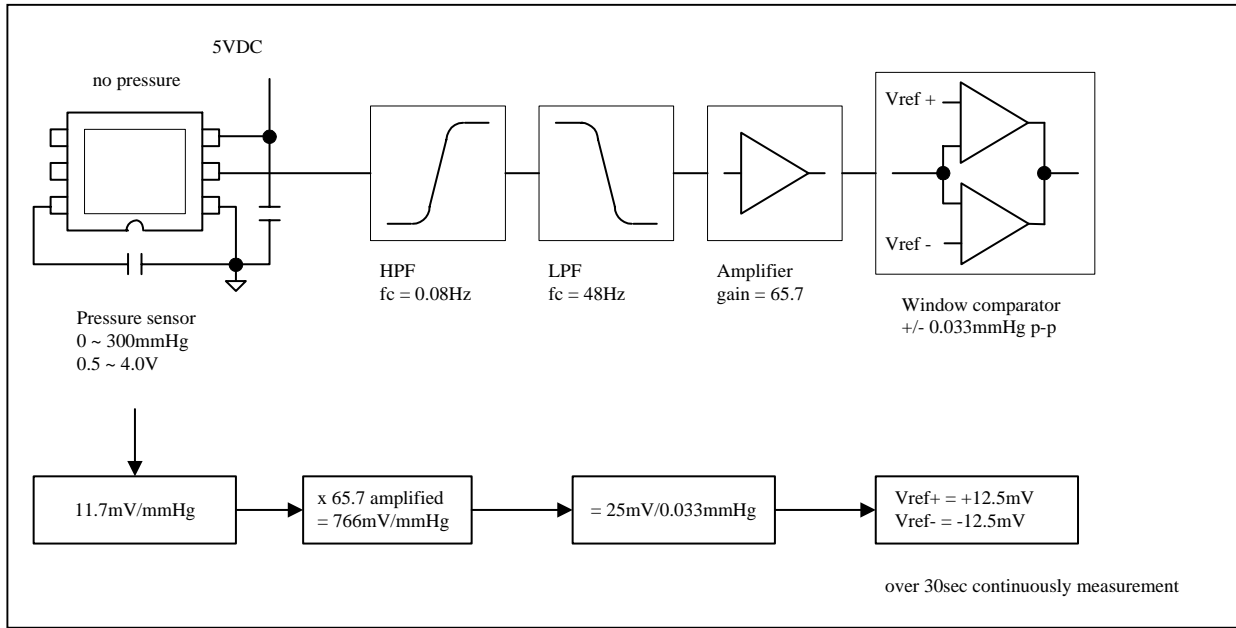
Model	Pressure Range			Pressure Error 1) (mmHg)
XFGM-3050KPGSR-P3-(TP)	0 - +300mmHg	0.00233	0.1	8.57

- 1) Pressure error includes Non-linearity, pressure hysteresis, span calibration error and offset calibration error at room temperature.
- 2) Temperature Error Multiplier is shown below graph.

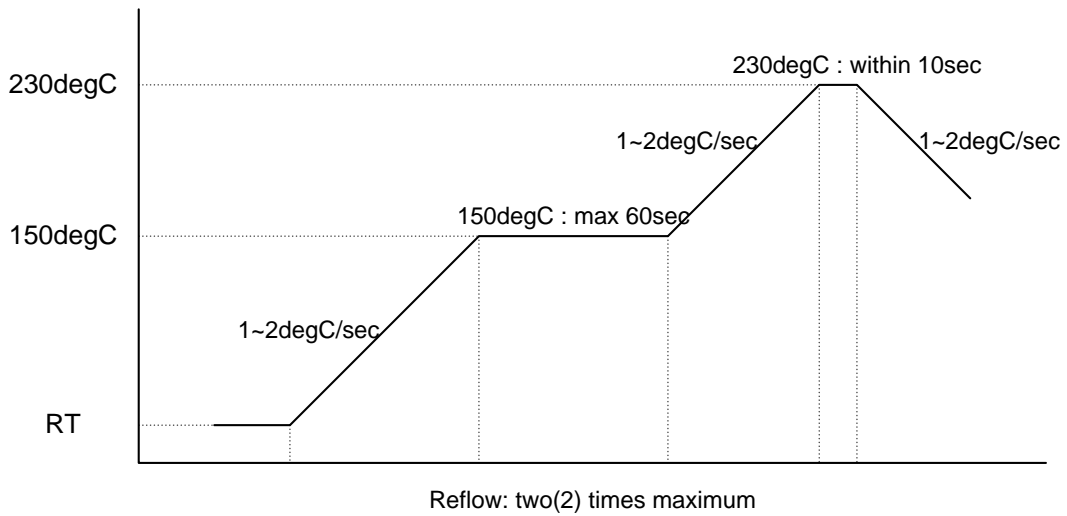


- 3) Output Span Error at 150mmHg over the temperature range 0 to 50 °C is within +/-2.0mmHg.  
And Output Span Error at 300mmHg over the temperature range 0 to 50 °C is within +/-2.5mmHg.

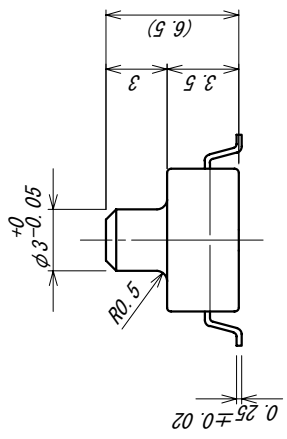
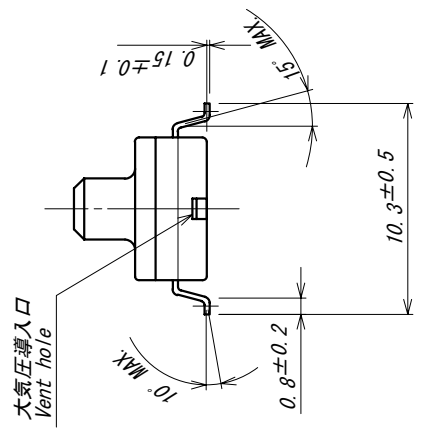
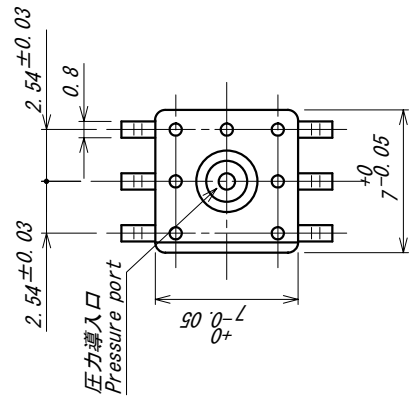
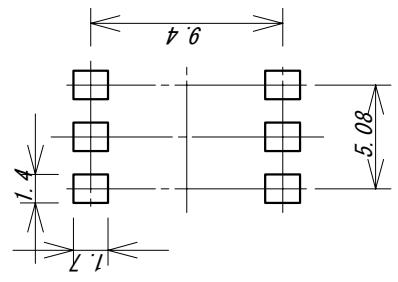
**9. Noise screening;**



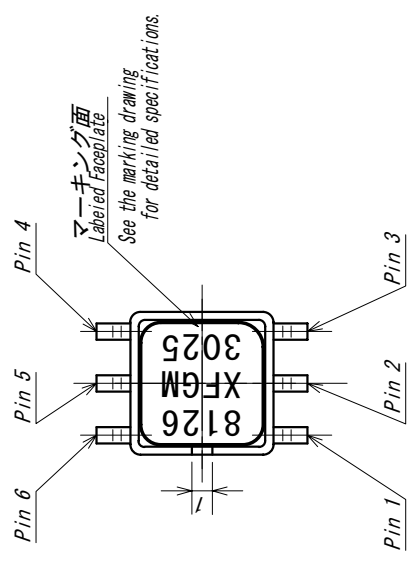
**9. Recommended soldering conditions; (A)**



◇ Recommended foot print



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大気圧導入口  
Vent hole

承認 APPROVED BY	検図 CHECKED BY
K. Nuri	R. Nagano
設計 DESIGNED BY	製図 DRAWN BY
S. Suzuki	S. Suzuki

フジクラ  
Fujikura Ltd.  
Tokyo Japan

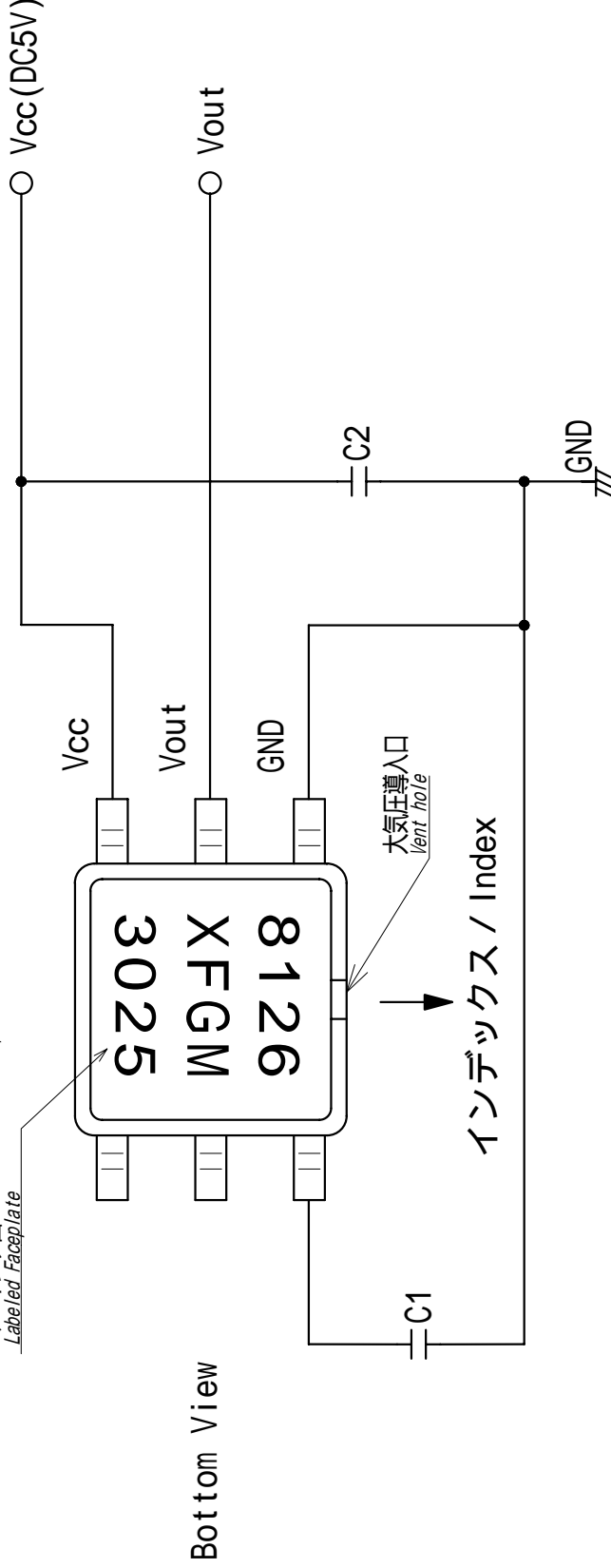
Dec 11, 07 H. Nishida  
年月日 変更者  
DATE BY

◇ To add solder pad layout  
MARK 変更 REVISIONS

PART NO.	部品名 NAME OF PART	材質 MAT'L	個数 QTY.	摘要 REMARKS
PROJECT NAME :				
第3角法 3RD ANGLE PROJECTION	名称 TITLE			
単位 UNITS	(X) FGM-3			
m	Outline Diagram			
尺度 SCALE	図面番号 DRAWING NO.			
Free	9-757-014			
DATE OF ISSUE 01/29/98	REV. MARK			
DATE OF DESIGN 01/29/98	◇			



マーキング面  
Labeled Faceplate  
See the marking drawing  
for detailed specifications.



Bottom View

注意事項;

- 1) C1 : 680 pF を端子から 2 cm 以内の近傍に接続して下さい。
- 2) C2 : 0.01  $\mu$ F 以上を端子から 2 cm 以内の近傍に接続して下さい。
- 3) 4, 5 番ピンはNCピンです。完全にフローティングとし、他のラインあるいはNCピン同士を接続しないで下さい。

Notes;

- 1) C1 : 680 pF (Connect within 2cm from XFGM/N)
- 2) C2 : 0.01  $\mu$ F or More (Connect within 2cm from XFGM/N)
- 3) Do not connect anything with No.4 and No.5 pin and do not connect each other.

Rev.B: Delete pull up resistor connected between pin #2 and pin #3.

MARK	変更	REVISIONS	年月日	R Nagano	フジクラ Fujikura Ltd. Tokyo Japan
			DATE	変更者	
			04/17/00	R Nagano	

承認 APPROVED BY	検図 CHECKED BY
K.Nuri	R.Nagano
設計 DESIGNED BY	製図 DRAWN BY
T.Adachi	T.Adachi

PART NO.	部品名	材質	個数	摘要
	NAME OF PART	MAT'L	QTY.	REMARKS
PROJECT NAME :				
第3角法 3RD ANGLE PROJECTION	名称 TITLE	XFGM/N		
単位 UNITS	m.m			
尺度 SCALE	Connection Diagram			
DATE OF ISSUE	図面番号 DRAWING NO.	REV. MARK		
01/29/98	9-757-003	B		
DATE OF DESIGN	01/29/98			

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#1126  
XFGM\*  
050P3

ロット Lot No.

1126

年 Year

0 : 2000y, 1 : 2001y, 2 : 2002y

月 Month

1~9 : Jan. ~ Sep., X : Oct., Y : Nov., Z : Dec.  
(10月) (11月) (12月)

日 Day

01 ~ 31 : 1st ~ 31th

\*#: to identify a model for 250degC reflow soldering

without \*#: for 200degC reflow soldering

3: XFGM-3  
6: XFGM-6

◇	to identify a model for 250degC soldering	2007/8/17	H.N
◇	Specify of sensor type for XFGM-3 or XFG-6	2006/12/07	H.N
MARK	変更 REVISIONS	年月日 DATE	変更者 BY



承認 APPROVED BY	検図 CHECKED BY
K.Nuri	K.Nuri
設計 DESIGNED BY	製図 DRAWN BY
H. Nishida	H. Nishida

PART NO.	部品名 NAME OF PART	材質 MAT'L	個数 QTY.	摘要 REMARKS
PROJECT NAME :				
第3角法 3RD ANGLE PROJECTION	名称 TITLE			
単位 UNITS	XFGM-3(6)050KPGSR-P3-(TP)			
m	Marking Diagram			
尺度 SCALE	図面番号 DRAWING NO.			
DATE OF ISSUE 9/30/03	9-757-094			REV. MARK
DATE OF DESIGN 9/30/03	◇			