Formaldehyde Gas Sensor Module

Product Data Sheet
Model #SSGSM-HCHO

Applications

- Ideal for portable instrument
- Air-quality monitor
- Air cleaner
- Air renewal system
- Smart home

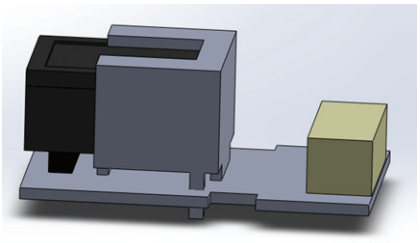


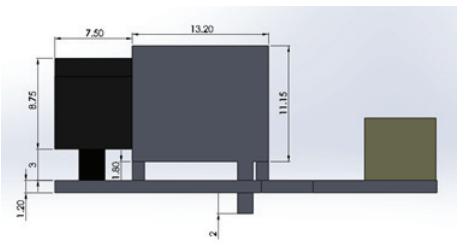
Specifications

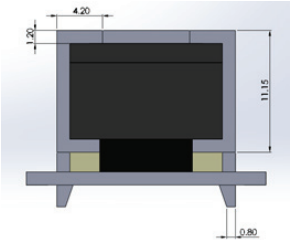
Performance Characteristics	
Operating Principle	2-Electrochemical gas sensor
Detection Gas	Formaldehyde(HCHO)
Measurement Range	0~1 ppm
Input Voltage	DC 6.0V ~ DC12.0V
Power Consumption	≤ 7.0mA
Digital Signal Output	I2C
Warm up Time	≤ 1 minutes
Resolution	≤ 0.01 ppm
Environmental	
Operating Temperature	-10℃ to 40℃
Operating Humidity Range	15% to 90% Rh (Non condensation)
Pressure Range	800 to 1200 mbar
Recommended Storage Temperature	0℃ to 30℃
Interface Connector (SMAW250-05) Pin Map	
Pin 1	VCC
Pin 2	SCL
Pin 3	SDA
Pin 4	INT
Pin 5	GND

Dimension

- Size : 22.0mm(w) x 37.0mm (d) x 14.0mm(h)
- Weight : 7g







Due to ongoing research and product improvement, specifications are subject to change without notice

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I2C DC-Interface

(T_A= -40°C ~ +85°C, VDD= 1.8V ~ 5.5V, VSS= 0V, f_{XIN}= 12MHz)

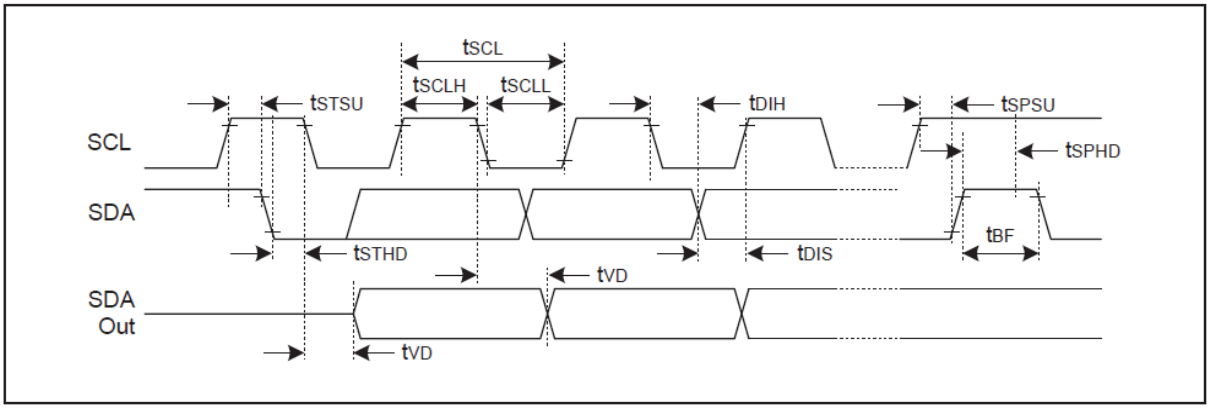
Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Input High Voltage	V_{IH}	All input pins, RESETB	0.8VDD	–	VDD	V
Input Low Voltage	V_{IL}	All input pins, RESETB	–	–	0.2VDD	V
Output High Voltage	V_{OH1}	VDD= 4.5V, I_{OH}= -2mA, All output ports	VDD-1.0	–	–	V
Output Low Voltage	V_{OL1}	VDD=4.5V, I_{OL}= 15mA; All output ports	–	–	1.0	V

- I2C Characteristics

(T_A=-40°C ~ +85°C, VDD=1.8V ~ 5.5V)

Parameter	Symbol	Standard Mode		High-Speed Mode		Unit
		MIN	MAX	MIN	MAX	
Clock frequency	t_{SCL}	0	100	0	400	kHz
Clock High Pulse Width	t_{SCLH}	4.0	–	0.6	–	us
Clock Low Pulse Width	t_{SCLL}	4.7	–	1.3	–	
Bus Free Time	t_{BF}	4.7	–	1.3	–	
Start Condition Setup Time	t_{STSU}	4.7	–	0.6	–	
Start Condition Hold Time	t_{STHD}	4.0	–	0.6	–	
Stop Condition Setup Time	t_{SPSU}	4.0	–	0.6	–	
Stop Condition Hold Time	t_{SPHD}	4.0	–	0.6	–	
Output Valid from Clock	t_{VD}	0	–	0	–	
Data Input Hold Time	t_{DIH}	0	–	0	1.0	
Data Input Setup Time	t_{DIS}	250	–	100	–	ns

- I2C Timing



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I2C Read/Write Flow

- Sensor module address format : I2C Address + Direction bit
- I2C Address : 7bit, 0x5A(101 0101)
- Read/Write bit : Read(1), Write(0)
- Transmission order : MSB prior transfer

> Read command mode

S	Slave Address							W	A	Command								A
	1	0	1	0	1	0	1	0	0	b7	b6	b5	b4	b3	b2	b1	b0	0

S	Slave Address							R	A	Data 0								A
	1	0	1	0	1	0	1	1	0	b7	b6	b5	b4	b3	b2	b1	b0	0

Data 1								A	BCC 0								A
b7	b6	b5	b4	b3	b2	b1	b0	0	b7	b6	b5	b4	b3	b2	b1	b0	0

BCC 1								A	P
b7	b6	b5	b4	b3	b2	b1	b0	1	

> Write command mode

S	Slave Address							W	A	Command								A
	1	0	1	0	1	0	1	0	0	b7	b6	b5	b4	b3	b2	b1	b0	0

Data 0								A	Data 1								A
b7	b6	b5	b4	b3	b2	b1	b0	0	b7	b6	b5	b4	b3	b2	b1	b0	0

BCC 0								A	BCC 1								A	P
b7	b6	b5	b4	b3	b2	b1	b0	0	b7	b6	b5	b4	b3	b2	b1	b0	0	

Mark	Meaning
□	Master → Slave
■	Slave → Master
S	Start
P	stoP
A	Acknowledge 0 - low, 1 - high
R, W	Read - 1, Wirt - 0
Data 0, 1	Data 0 - High byte Data 1 - Low byte
BCC 0, 1	CRC16 - CCITT(0x1021, XModem) BCC 0 - CRC16 High Byte BCC 1 - CRC16 Low Byte Calculation range : Command, Data 0, Data 1

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