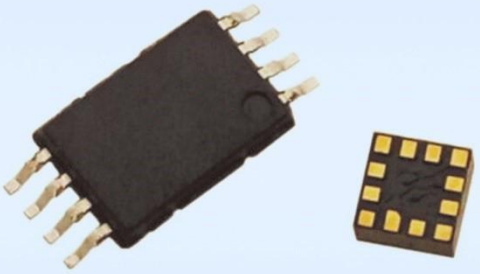
3D pedometer chipset
IIC interface for Wrist application

Product Specification



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Note: Revision History

Revision	Date	Comment
V1.0	2014-6-9	First release
V2.0	2016-8-9	Format updated

1. Description:

STP201 is a 3D pedometer module with functional IC chipset which include a G-sensor and MCU. It has adopted the standard IIC interface, with the 3D MEMS sensor (G sensor) and high precision of 3D pedometer algorithm, it can give a precisely pedometer in any direction. This chipset has the characteristics of small size, low power consumption and etc. The standard I2C digital interface ensures it can be easily embedded in various kinds of pedometer functional system.

★Note: The algorithm of our pedometer is adjustable according to customer's requirement. We can provide the pedometer for shoes, table class pedometer and bracelet pedometer wearing on wrist, pedometer wearing on waist and pedometer putting inside the pocket. Pls indicate clearly when purchasing.

2. Features:

- IIC interface
- Wrist application
- High precision 3D pedometer algorithm
- Ultra-low power/Ultra-small size

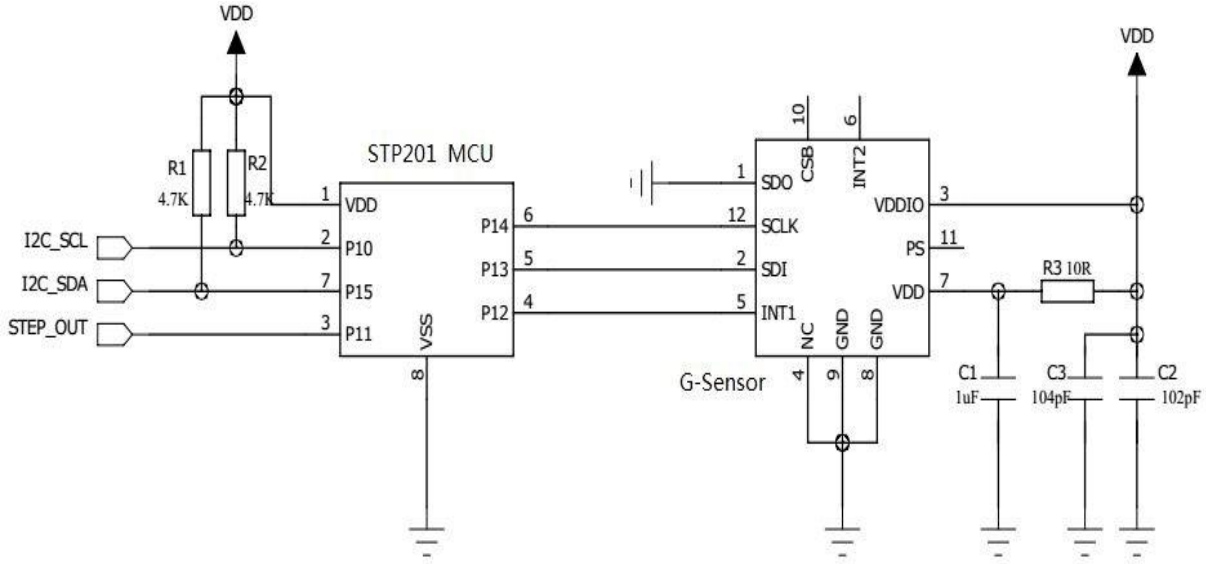
3. Application:

- Wrist Pedometer
- Outdoor handheld
- Sports watch
- Healthcare products

4. Specifications:

Parameters	Condition	Performance			Unit
		Min.	Typ.	Max.	
Working voltage		2.3	3	3.6	v
Working current	@3V		80		uA
Sleep current			< 5		uA
Step resolution			1		Step
Pedometer wrror	Uniform Working		± 3%		Step
Working temperature		-10		50	℃
Storage temperature		-10		50	℃

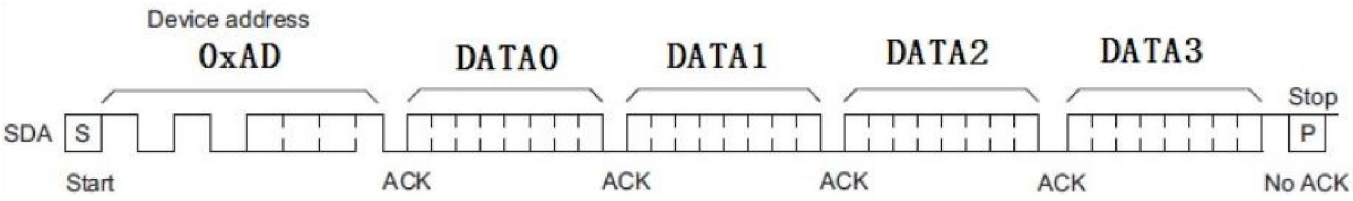
5. Typical application circuit:



6. Working mode:

1) **Normal work**

When detected step action, module will enter normal working mode, users can read the step value by I2C interface. The I2C communication protocol is as below:



DATA0：step lower byte　　DATA1：step high byte

DATA2：= DATA0 + DATA1　　DATA3：= DATA2

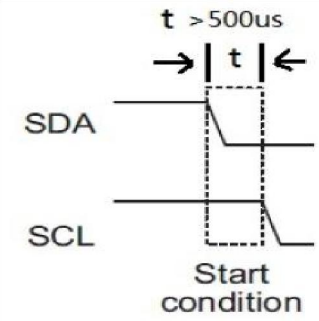
When the steps overflow（0xFFFF）, it count from 0.

The steps will be cleared when DATA3 is read.

Note: All the bytes are hexadecimal

2) **Sleeping mode**

The chipset will enter normal working mode when step action is detected, and enter sleeping mode if no step action is detected for 20s. In sleep mode the G sensor doesn't work, the MCU will enter deep sleeping mode and the whole is in low power consumption.

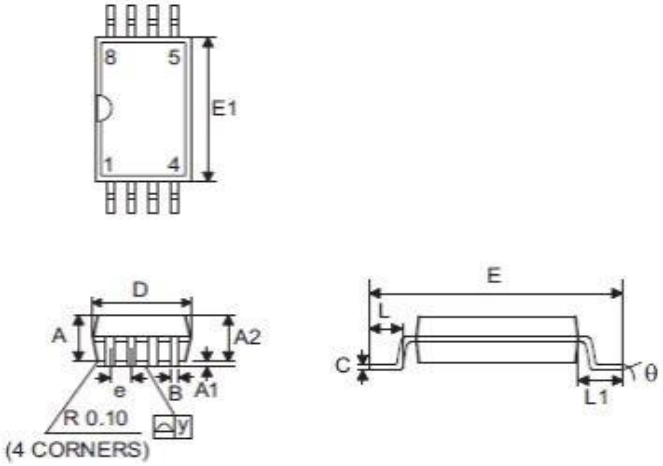


Note: This module can be wakeup by I2C interface. There are some limitations when the module is wakeup by I2C interface. For the first “start” command of the I2C protocol, the SCL will have to hold at least 500us to wake up MCU. The maximum I2C clock is 100 KHz.

Also: STEP_OUT: The chipset can output the pulse for each step action, the high level of the pulse signal is around 50ms.

7. IC encapsulation:

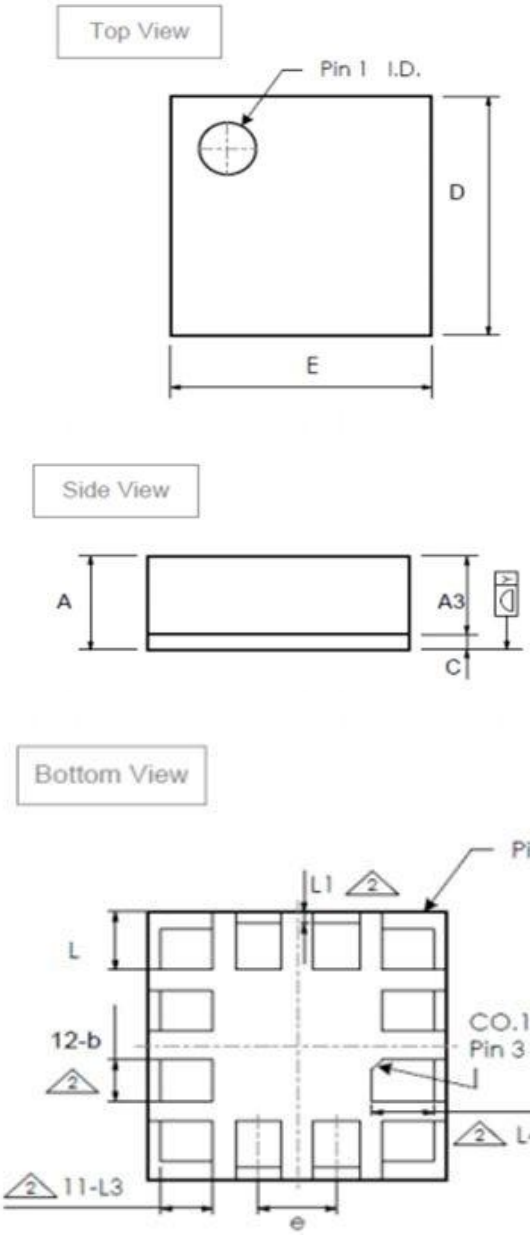
MCU:TSSOP8



Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	0.041		0.047
A1	0.002		0.006
A2	0.031		0.041
B		0.010	
C	0.004		0.006
D	0.114		0.122
E	0.244		0.260
E1	0.169		0.177
e		0.026	
L	0.020		0.028
L1	0.035		0.043
y			0.004
°	0°		8°

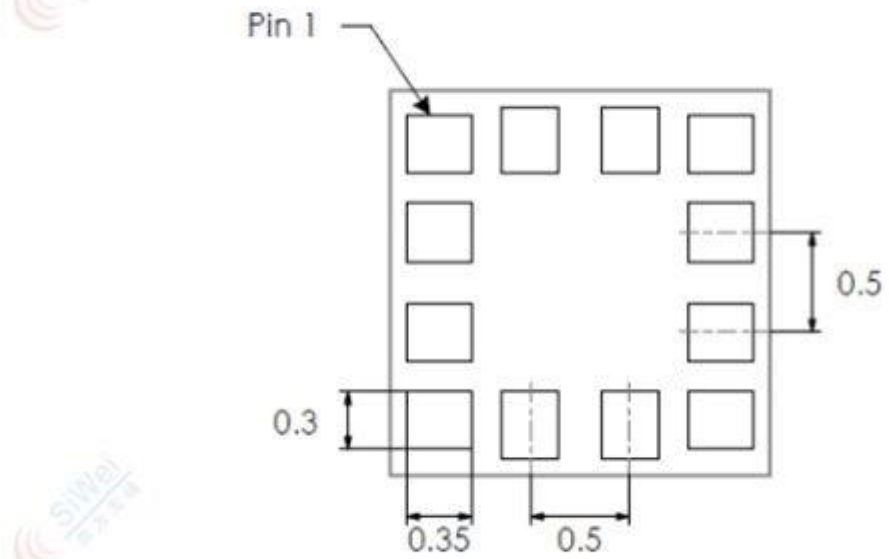
Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	1.05		1.20
A1	0.05		0.15
A2	0.80		1.05
B		0.25	
C	0.11		0.15
D	2.90		3.10
E	6.20		6.60
E1	4.30		4.50
e		0.65	
L	0.50		0.70
L1	0.90		1.10
y			0.10
°	0°		8°

G-Sensor:QFN12



SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN.	NOM.	MAX
A	0.95	1.00	1.05
A3	---	0.82 REF.	---
b	0.23	0.28	0.33
c	---	0.18 REF.	---
D	1.90	2.00	2.10
E	1.90	2.00	2.10
e	---	0.50	---
L	0.325	0.375	0.425
L1	---	0.05	---
L3	0.275	0.325	0.375
L4	0.375	0.425	0.475
y	0.00	---	0.10

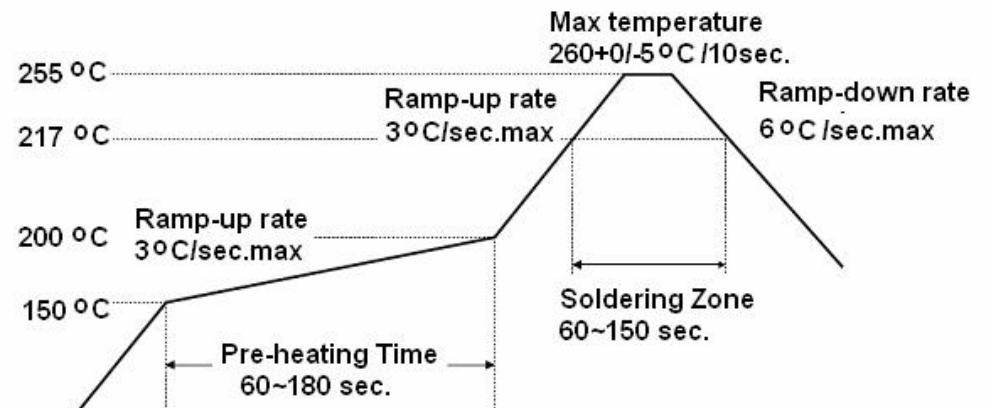
Recommended PCB Layout



All dimensions are in millimeters (mm)

8. Soldering condition:

1) Soldering temperature curve;



2) Don't reflow more than twice;

3) Don't press the chip when during the soldering;

4) Don't bent circuit board after the soldering.