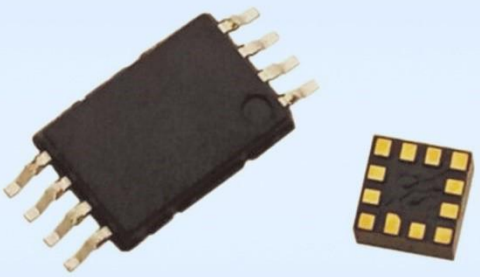
3D pedometer chipset

IIC interface for Non-Wrist application

Product Specification



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Note: Revision History

Revision	Date	Comment
V1.0	2015-10-16	First release
V2.0	2016-8-5	Updated layout

1. Description:

STP200 is a 3D pedometer functional chipset which is applied to non-wrist 3D pedometer with interface IIC. This chipset includes a G-sensor and MCU. It has adopted the pulse-type interface, with the 3D MEMS sensor (G sensor) and high precision of 3D pedometer algorithm, which can give a precisely pedometer in any direction. This module has the characteristics of small size, low power and etc. The simple pulse-type interface ensures it can be easily used in 3D pedometer, USB Multi function Pedometer, and embedded in various kinds of pedometer functional system.

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

2. Features:

- IIC interface
- High precision 3D pedometer algorithm
- Non-wrist application
- Ultra-low power consumption
- Ultra-small size

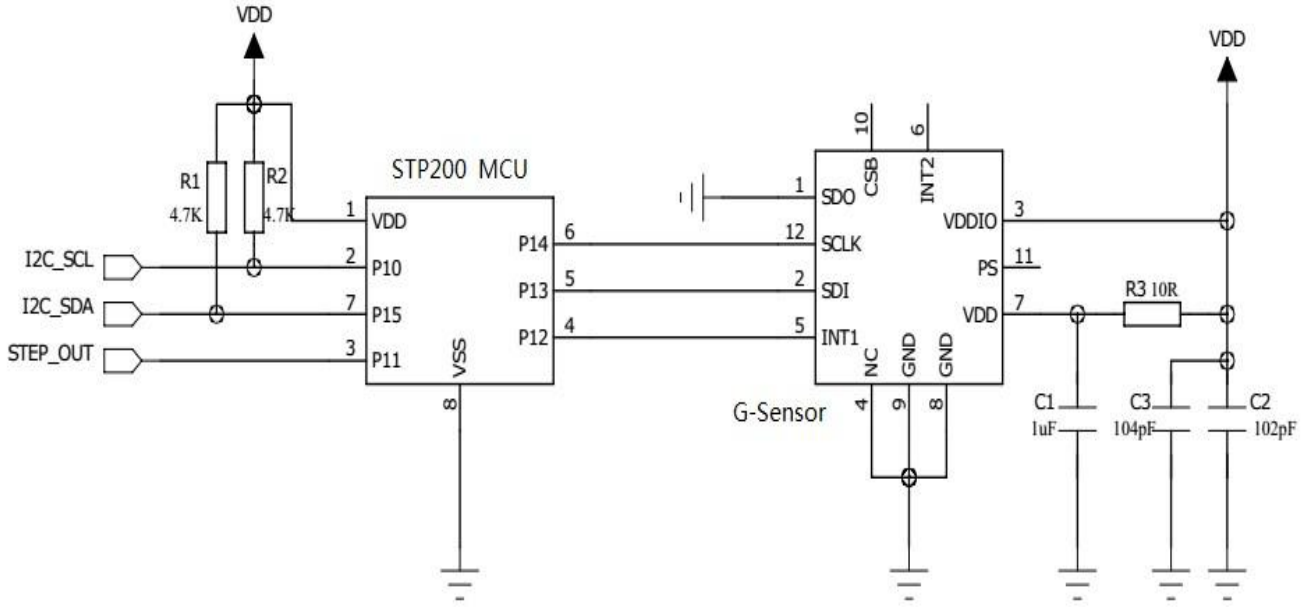
3. Application:

- Pocket pedometer
- MP3 pedometer
- Outdoor handheld
- 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	℃

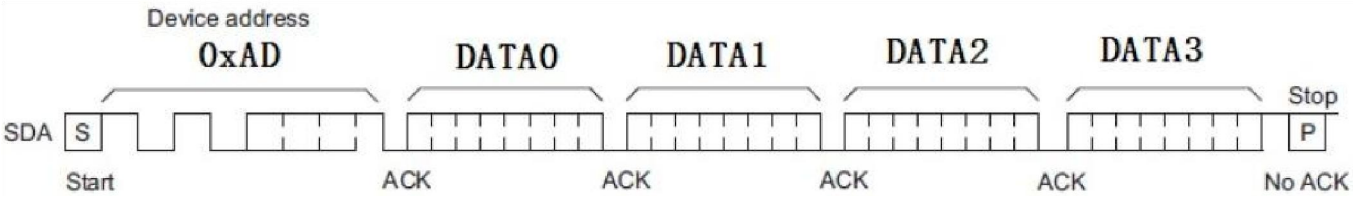
5. Schematic:



6. Working mode:

1) Normal work

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



DATA0：step lower byte DATA1：step high byte

DATA2：= DATA0 + DATA1 DATA3：= DATA2

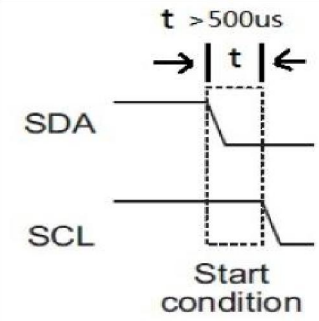
When the steps overflow（0xFFFF）, it count from 0.

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.

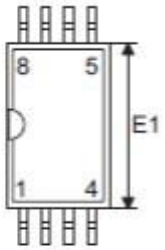


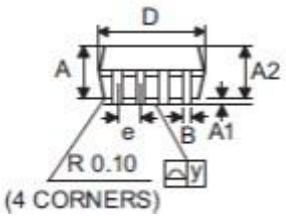
Note: This module can be wake up by IIC interface. There are some limitations when the module is wake up by IIC interface. For the first “start” command of the IIC protocol, the SCL will have to hold at least 500us to wake up MCU. The maximum IIC clock is 100KHz.

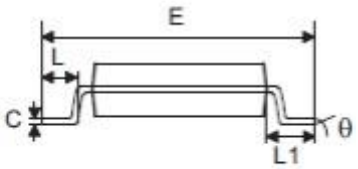
Also: STEP_OUT: The chipset can output the pulse for each step action, the high level of the pulse signal is around 50ms.

7. IC encapsulation:

MCU：TSSOP8



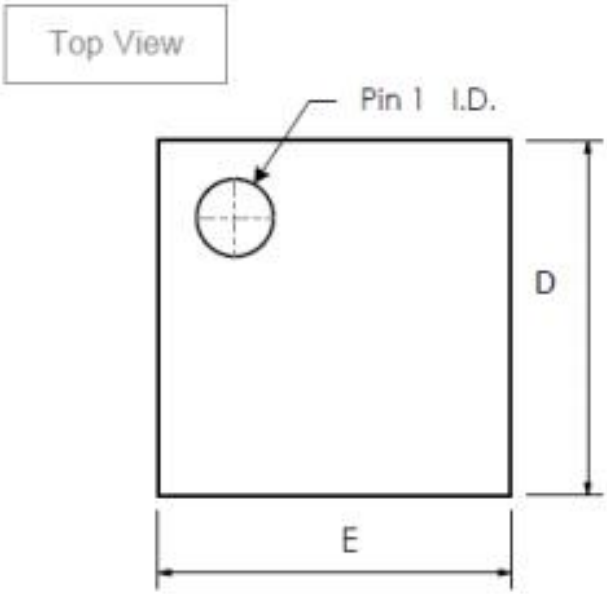




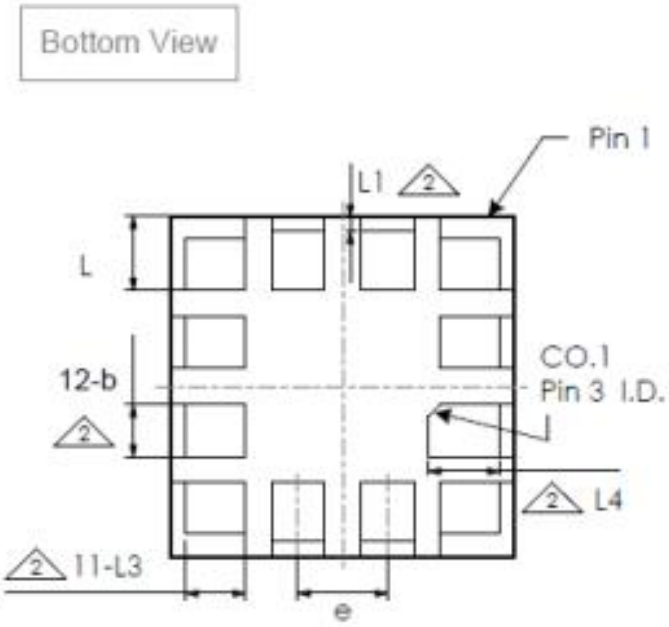
Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	0.041		0.047
A1	0.002		0.006
A2	0.031		0.041
B		0.010	
C	0.004		0.006
D	0.114		0.122
E	0.244		0.260
E1	0.169		0.177
e		0.026	
L	0.020		0.028
L1	0.035		0.043
y			0.004
°	0°		8°

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

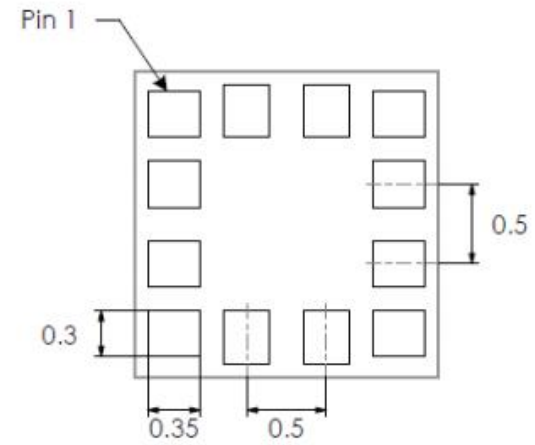






SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN.	NOM.	MAX
A	0.95	1.00	1.05
A3	---	0.82 REF.	---
b	0.23	0.28	0.33
c	---	0.18 REF.	---
D	1.90	2.00	2.10
E	1.90	2.00	2.10
e	---	0.50	---
L	0.325	0.375	0.425
L1	---	0.05	---
L3	0.275	0.325	0.375
L4	0.375	0.425	0.475
y	0.00	---	0.10

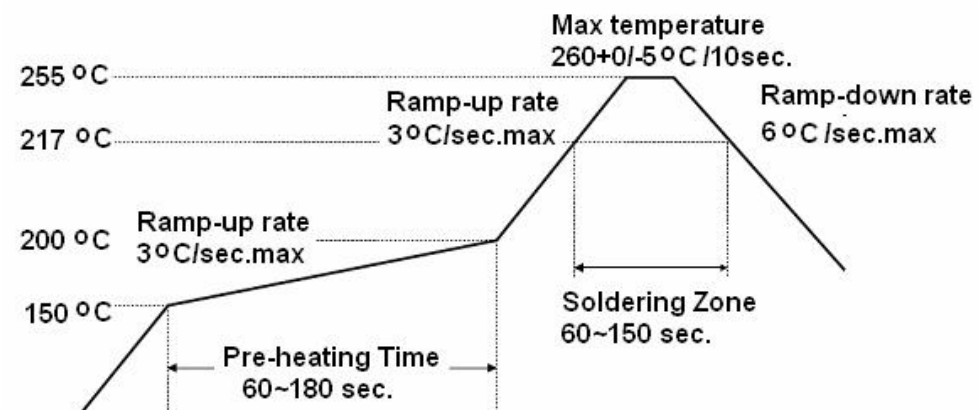
Recommended PCB Layout



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.