SP13808 Bluetooth Module User's Guide

An Integrated 2.4GHz Bluetooth SMART Compliant Transceiver Module

TDK Corporation
Thin Film Device Center
SESUB BU
Revision FC
2014.6.25

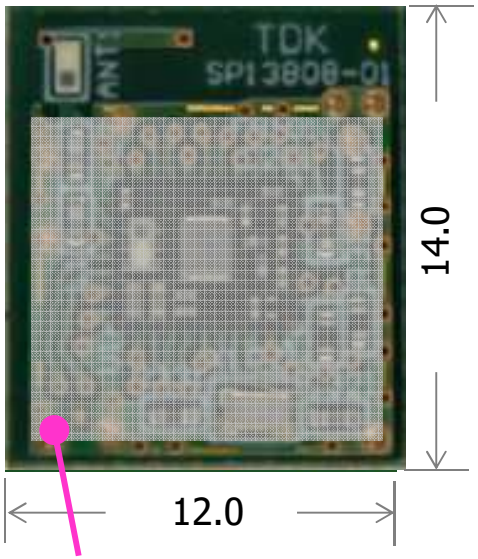
All specifications are subject to change without notice.

SP13808 Bluetooth Module

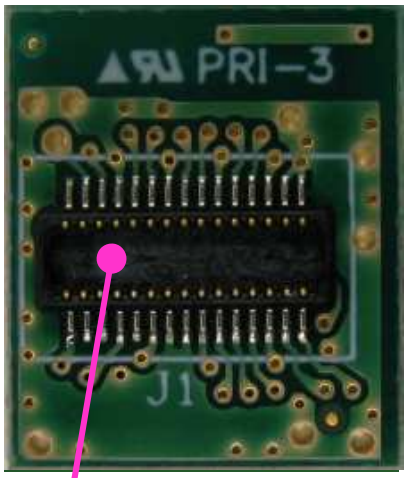
SP13808 is a Bluetooth Smart compliant Module which is composed by world smallest size of TDK module SESUB-PAN-T2541 and Chip Antenna.

SP13808 equips a 2.4GHz band chip antenna, a 32.768kHz sleep clock resonator. It is covered with a metal shield case on top.

SP13808 can be connected with SP13809 Adapter Board to for easy connection to user's application board.

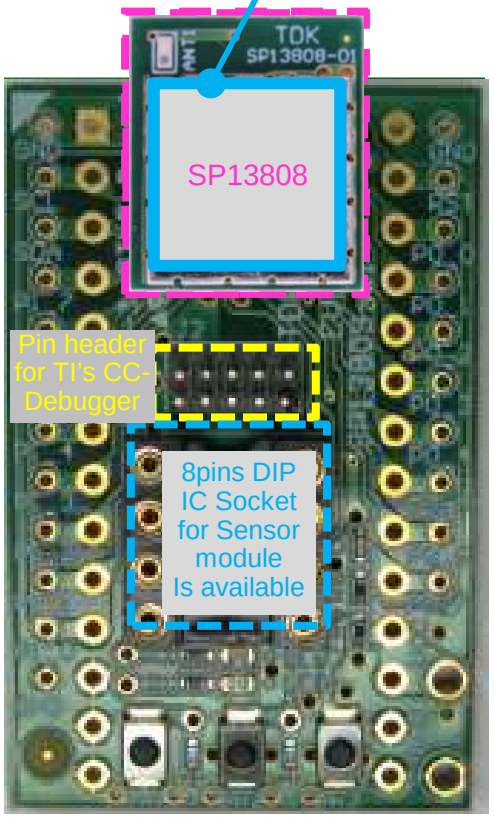


Covered with a metal shield case
Ready for radio certification



Connector
DF23C-30DS-0.5V(92) [Hirose]

a) SP13808 Bluetooth Module



b) SP13809 Adapter Board

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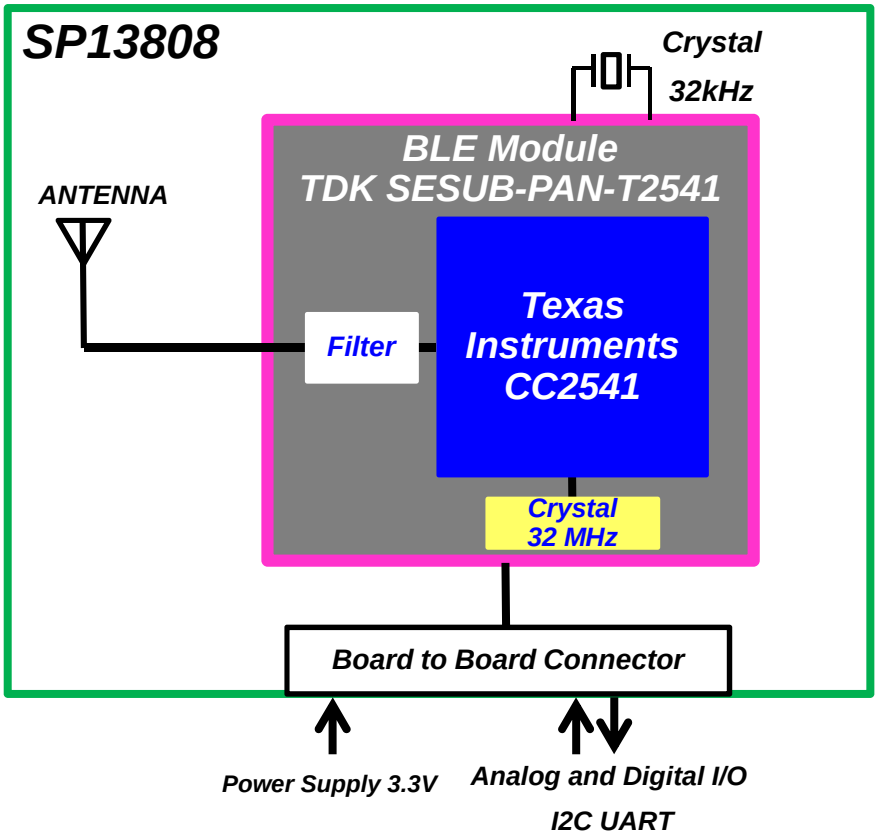
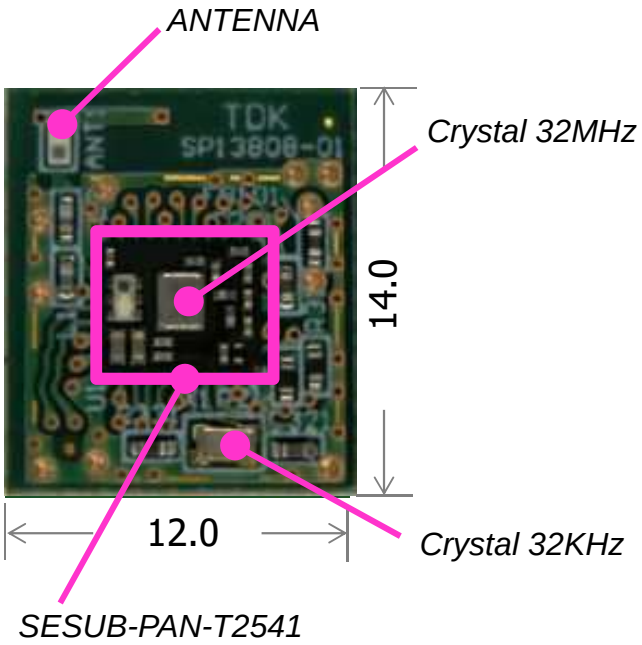
SP13808 Bluetooth Module

SP13808 is composed by BLE Module(SESUB-PAN-T2541) ,Antenna, Crystal, and some more passive components (Capacitors, Inductors, Connector).

SESUB-PAN-T2541 is BLE Module from TDK and it contains Texas Instruments BLE IC (CC2541) inside. Please refer to Technical Information Document from TDK and also refer to the datasheet and Software developer's guide of CC2541(TI) for further detail.





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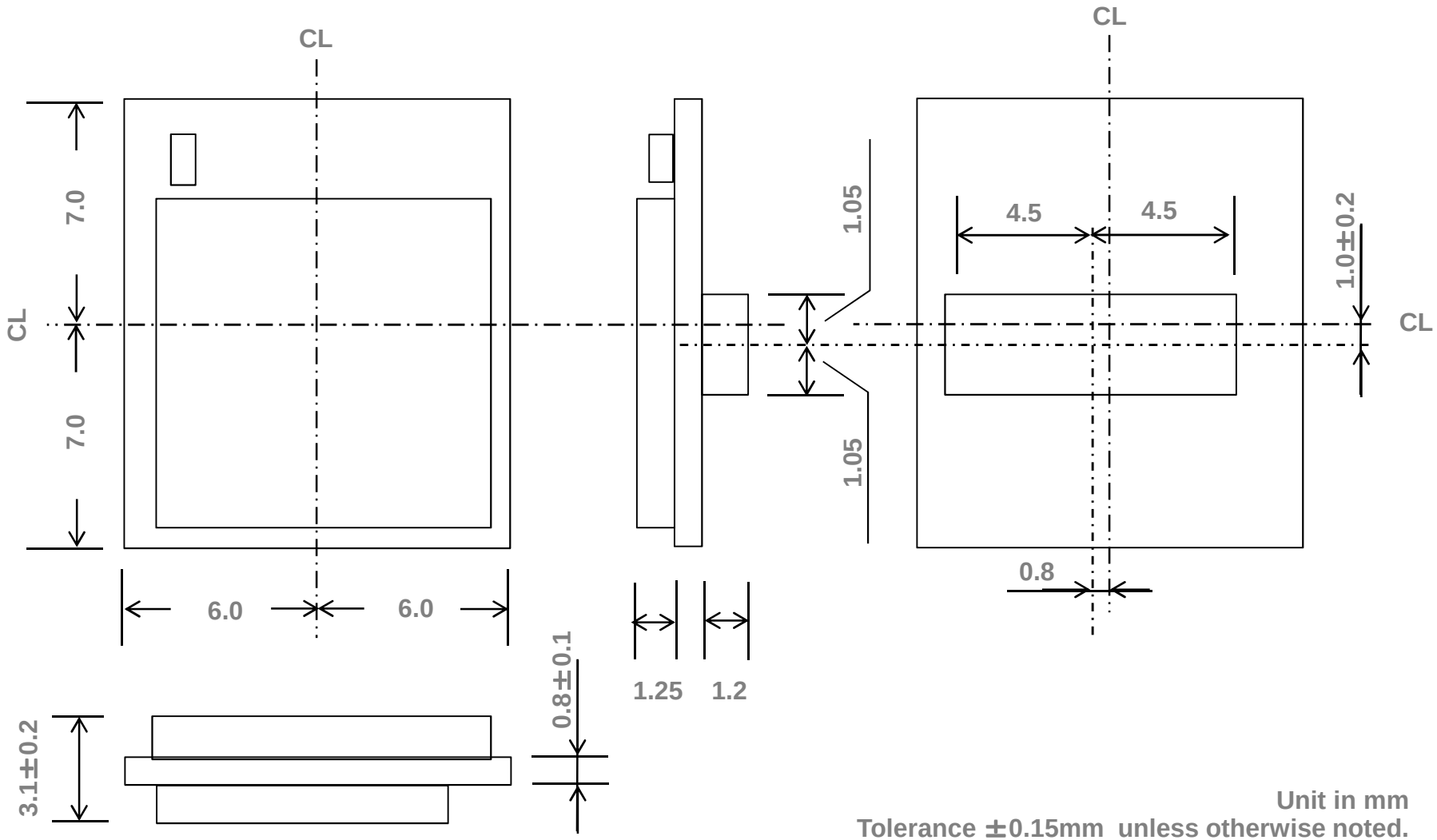
SP13808 Mechanical Dimensions



Unit in mm
Tolerance ±0.15mm unless otherwise noted.

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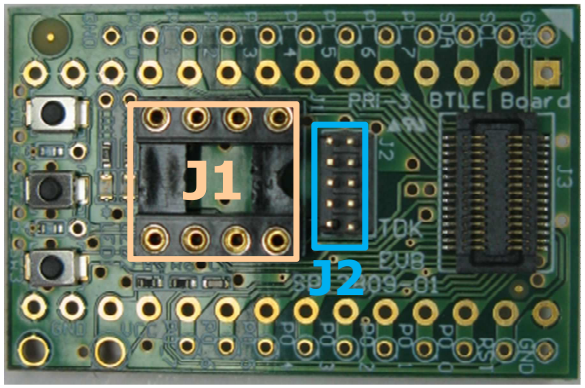
SP13808 PCB Connector Pin Assignment

Pin #	Description	Pin #	Descpription
A01	VDD	B01	SCL
A02	VDD3V3	B02	P2_1
A03	RST	B03	P2_0
A04	GND	B04	SDA
A05	P0_0	B05	GND
A06	P0_1	B06	P2_2
A07	P0_2	B07	GND
A08	P0_3	B08	GND
A09	P0_4	B09	P1_7
A10	P0_5	B10	P1_6
A11	P0_6	B11	P1_1
A12	P0_7	B12	P1_2
A13	P1_0	B13	P1_3
A14	GND	B14	P1_4
A15	GND	B15	P1_5

SP13809 Peripherals Pin Assignment

a) J1 8Pins DIP IC Socket

Pin #	Description
01	P1_4
02	P1_3
03	P1_2
04	GND
05	SDA
06	SCL
07	P1_3
08	VDD3V3



b) J2 1.27mm pitch Pin Header

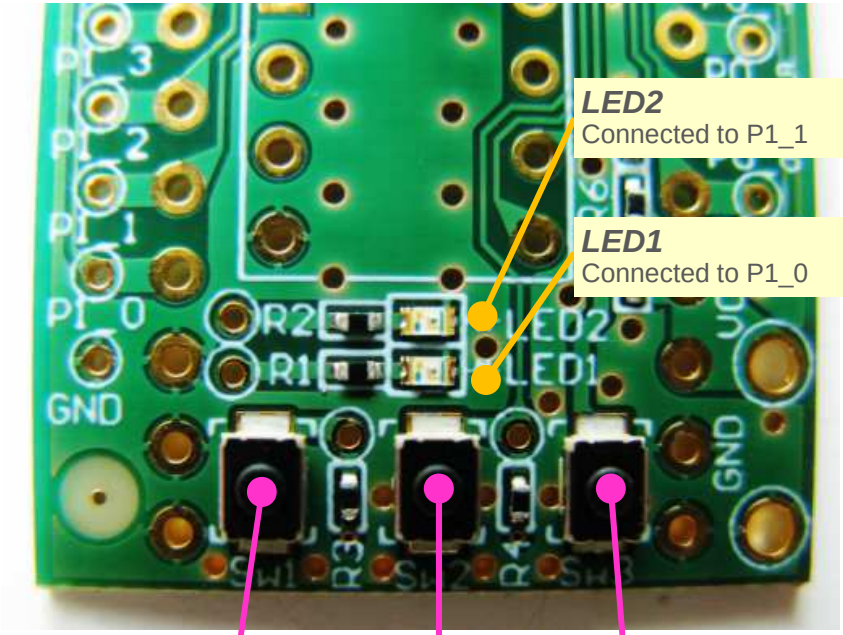
Pin #	Description
01	GND
02	VDD
03	P2_2
04	P2_1
05	P2_0
06	P0_5
07	RST
08	P0_3
09	VDD3V3
10	P0_2

Remark

J1 : User can install additional sensor module PCB (e.g. Pressure Sensor, Accelerometer, Gyro)

J2 : User can connect TI's CC-Debugger connector for install user FW or debugging thru this connector.

LED and Push SW Configuration in SP13809



LED2
Connected to P1_1

LED1
Connected to P1_0

SW1
Connected to P0_0

SW2
Connected to P1_6

SW3
Connected to RST

Connect Power Supply here
Vcc : 3.3V (2.2~3.6V)

GND

Remark

Power Supply has to be connected.
Supplying voltage range is 3.0 ~ 3.6V is preferable for operation properly.

Reference Information

1. **Bluetooth Core Technical Specification document, version 4.0**
   http://www.bluetooth.com/SiteCollectionDocuments/Core_V40.zip

2. **Texas Instruments CC2541 2.4GHz Bluetooth Low Energy System-on-Chip Datasheet (swrs110c)**

3. **Texas Instruments CC2541 System-on-Chip Solution for 2.4GHz Bluetooth low energy Applications User's Guide (swru191d)**

4. **Texas Instruments Bluetooth Low Energy Software Development Kit (SDK)**
   http://www.ti.com/tool/ble-stack

5. **Texas Instruments SmartRF Studio**
   http://focus.ti.com/docs/toolsw/folders/print/smartrftm-studio.html

6. **IAR Embedded Workbench for 8051 devices programming**
   http://www.iar.com

7. **For all other related technical documents, visit Texas Instruments Low-Power RF web site.**
   http://www.ti.com/lprf-forum
   http://www.ti.com/lprfnetwork

Certain Instructions.

User shall operate SP138098 within TDK's recommended specifications and environmental considerations per the user's guide, accompanying documentation, and any other applicable requirements. Exceeding the specified ratings (including but not limited to input and output voltage, current, power, and environmental ranges) for SP13808 may cause property damage, personal injury or death.

If there are questions concerning these ratings, user should contact a TDK field representative prior to connecting interface electronics including input power and intended loads.
Any loads applied outside of the specified output range may result in unintended and/or inaccurate operation and/or possible permanent damage to the SP13808 and/or interface electronics.

Please consult the applicable user's guide prior to connecting any load to the SP13808 output. If there is uncertainty as to the load specification, please contact a TDK field representative.

Agreement to Defend, Indemnify and Hold Harmless.
User agrees to defend, indemnify, and hold TDK, its directors, officers, employees, agents, representatives, affiliates, licensors and their representatives harmless from and against any and all claims, damages, losses, expenses, costs and liabilities (collectively, "Claims") arising out of, or in connection with, any handling and/or use of SP13808.
User's indemnity shall apply whether Claims arise under law of tort or contract or any other legal theory, and even if SP13808 fail to perform as described or expected.

Safety-Critical or Life-Critical Applications.
User agrees that SP13808 shall not be used as, or incorporated into, all or any part of safety critical applications (such as life support), and a failure of a TDK product considered for purchase by user for use in user's product would reasonably be expected to cause severe personal injury or death such as devices which are classified as FDA Class III or similar classification.

REGULATORY COMPLIANCE INFORMATION

Caution

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radio-Frequency Exposure and Approval Conditions:

1. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this transmitter must not be collocated or operating in conjunction with any other antenna or transmitter within a host device, except in accordance with FCC multi-transmitter product procedures..

2. The regulatory label on the final system must include the statement: "Contains FCC ID:2ACNB13808" or using electronic labeling method as documented in KDB784748.

3. The final system integrator must ensure there is no instruction provided in the user manual or customer documentation indicating how to install or remove the transmitter module except such device has implemented two-ways authentication between module and the host system.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