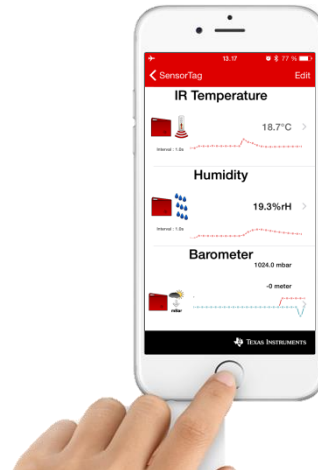
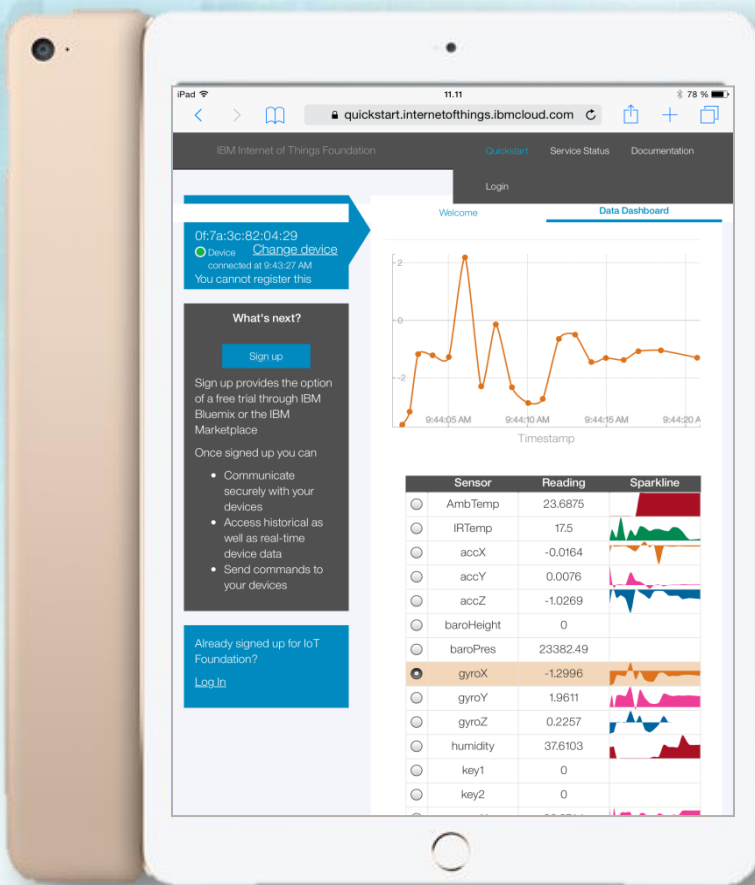


# SensorTag

- Connect to the Cloud and read your sensordata
  - in less than 3 minutes!
- With 10 sensors ready for you
- [www.ti.com/sensortag](http://www.ti.com/sensortag)



# Small, Simple & Splendid for the IoT – Next generation SimpleLink™ SensorTag!



View the sensor data in the **ready to use Cloud solution!**

# SensorTag Teardown

## Small size

1.97 x 2.64 x 0.55 inch  
5 x 6.7 x 1.4 cm  
(WxHxD)



## Benefits

- Low-power design, years of battery life
- Easy-to-use, get started in three minutes
- Download app and connect
- No programming required

# SensorTag Teardown

## Power Button

- Report to app: click once
- On/Off: hold three seconds
- RESET to Bluetooth Smart mode: hold power button + user button 10 seconds

## Keychain Mounting

## User Button

- Toggle (Bluetooth Smart/6LoWPAN/ZigBee): hold three seconds
- Beacon mode: hold six seconds
- RESET to Bluetooth Smart mode: hold power button + user button 10 seconds

## Sensors Interface

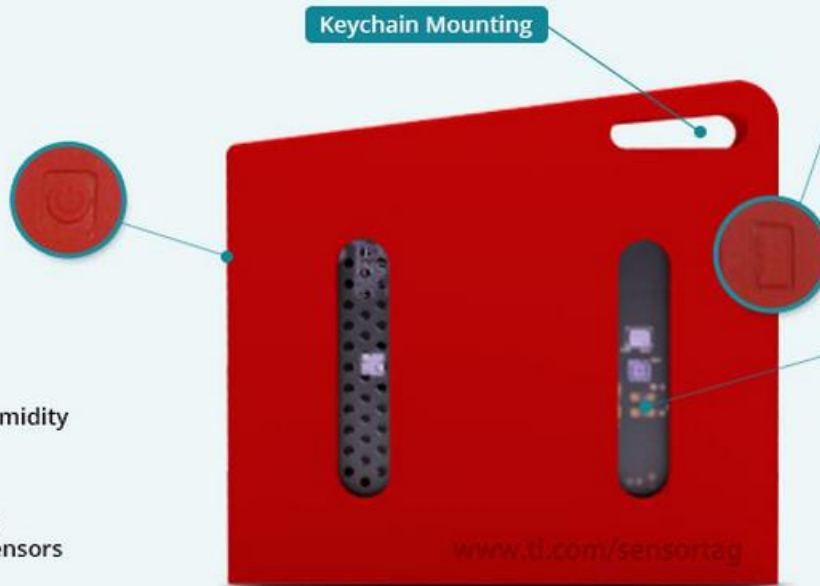
- Plastic material perforated for humidity sensor and microphone
- Optional Velcro strap mounting
- Clear plastic material for infrared temperature and ambient light sensors

## Green LED / Red LED

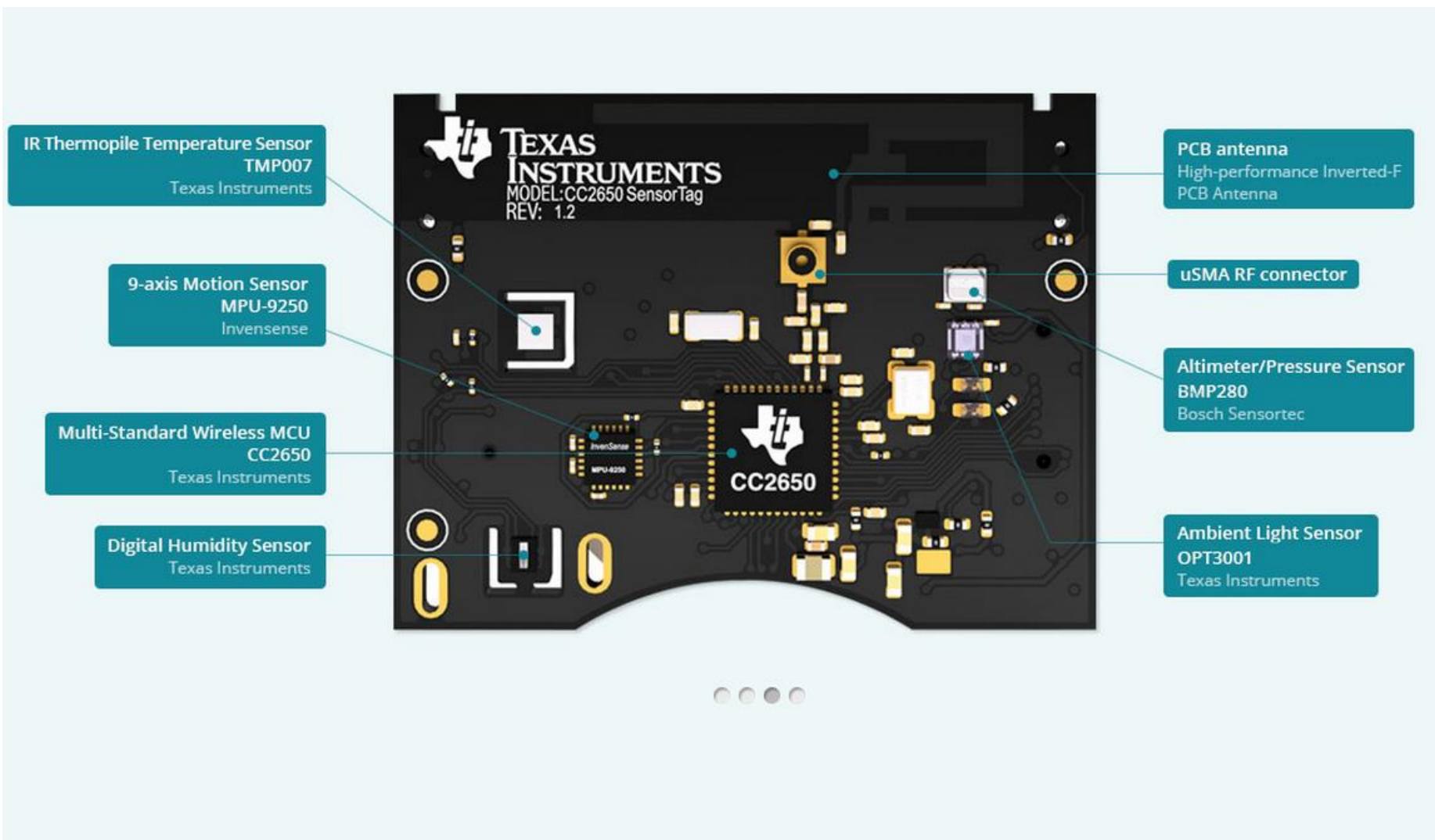
- Service discovery: Green blinking rapidly
- Advertising: Green blinking slowly
- Sensing: Red blinking quickly

## Buzzer

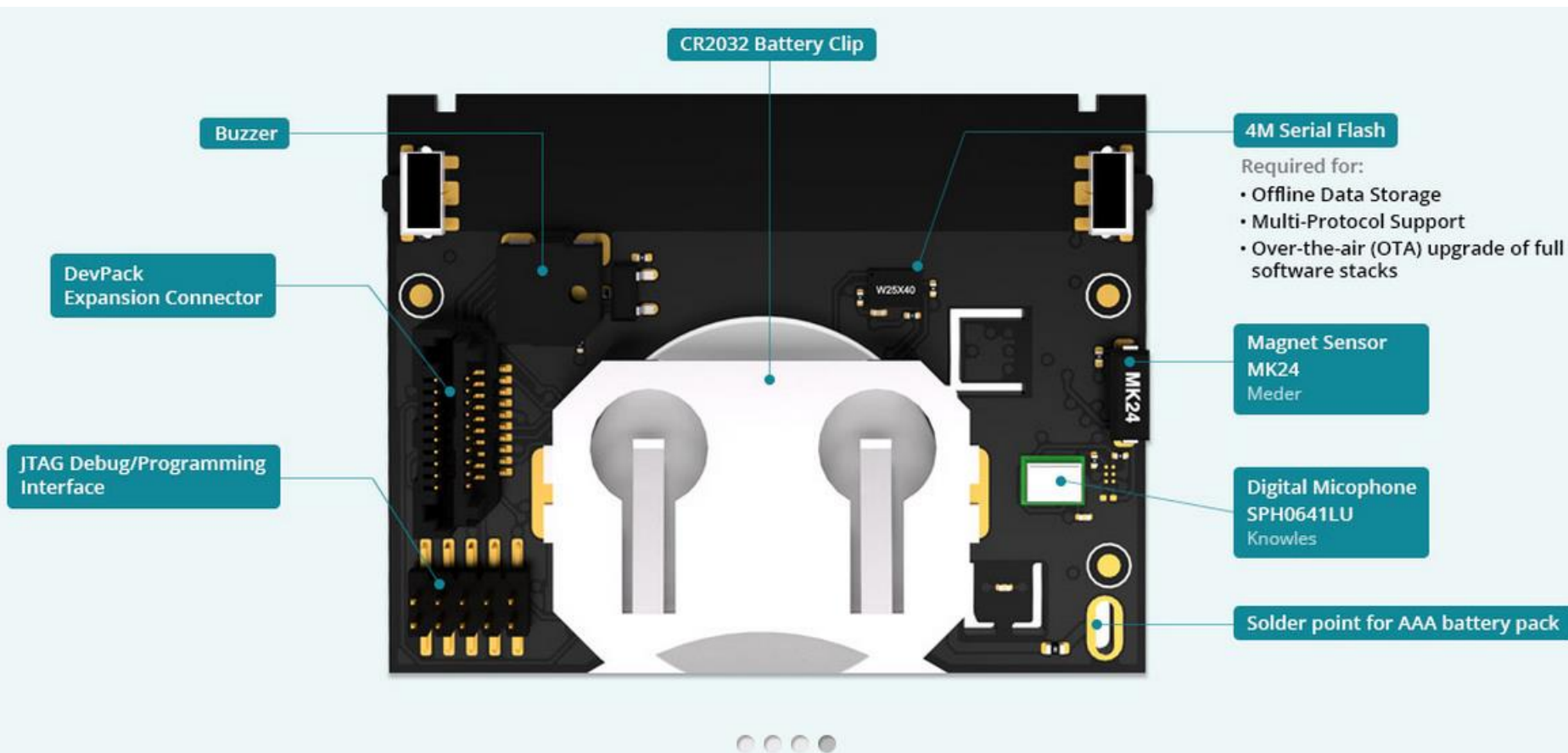
- Connect/Disconnect: Short beep



# SensorTag Teardown



# SensorTag Teardown





# SensorTag *Development Kit*

Supported by accompanying iOS/Android apps

## New SensorTag



**CC2650STK**

**\$29**

## New Debugger



**CC-DEVPACK-DEBUG**

**\$15**

## More DevPacks



**CC2650STK**

**\$15+**

Powered by CR2032 Coin Cell Battery

Native sensor support for:

- 6-axis MEMS motion tracking (Invensense)
- Humidity (TI) – HDC1000
- IR temperature (TI) – TMP007
- Light Sensor (TI) – OPT3001
- Buzzer (Changzhou Tianyin)
- Microphone (Knowles)
- Pressure (Bosch)
- Reed Relay (Meder)

Complete designs at [www.ti.com/tidesign](http://www.ti.com/tidesign)

- Including 3D files
- Print your own SensorTag

Debug DevPack

TI Cloud Tools support

- Compile SensorTag firmware on [dev.ti.com](http://dev.ti.com)
- CCS and IAR IDE support

Dev. Pack for custom functionality

Watch Devpack

- Prototype wearable applications
- 96 x 96 graphical display

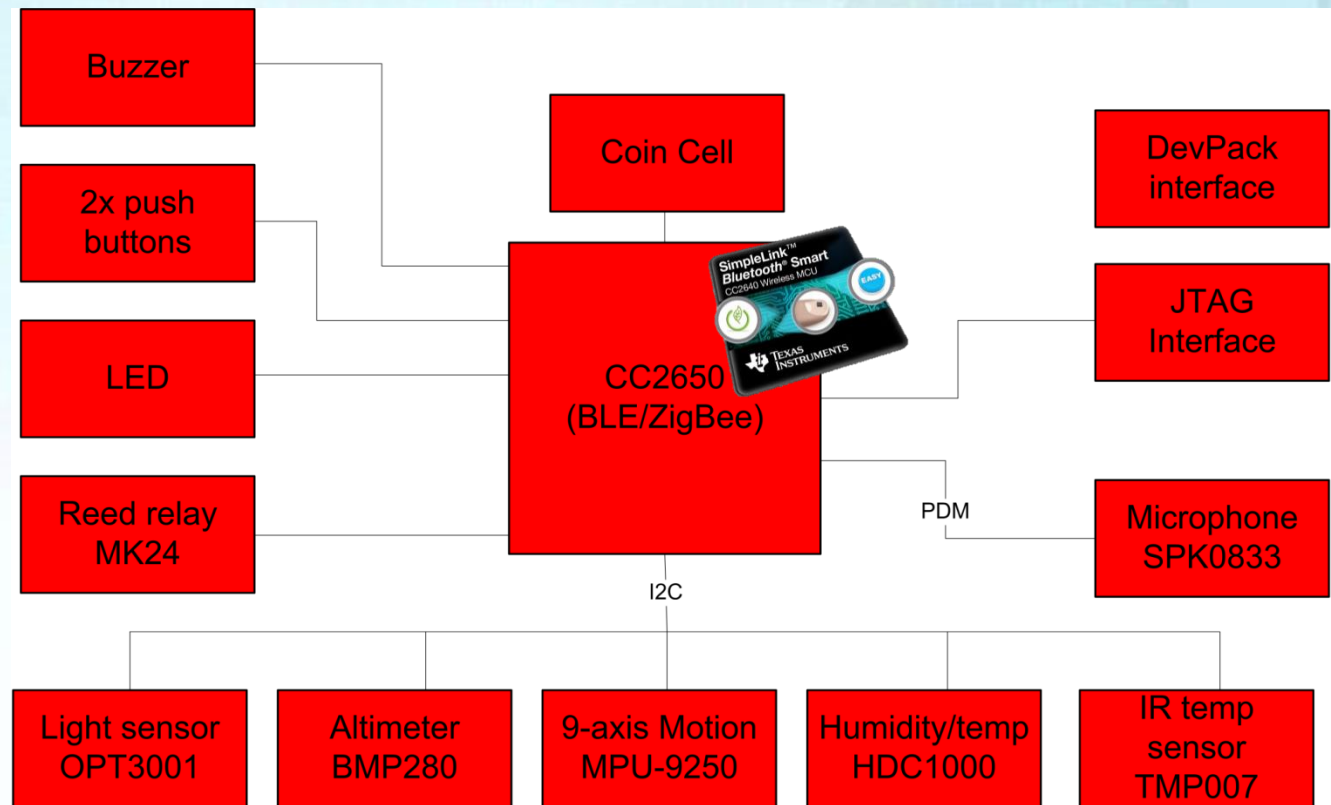
LED DevPack

- Enable lighting applications
- 4 color high power LEDs

# Block Diagram

## SensorHub - SensorTag

- 10 Low power sensors
- Humidity/Temperature
  - HDC1000
- Object Temperature
  - TMP007
- Ambient Light
  - OPT3001
- Pressure
- Accelerometer
- Gyro
- Magnetometer
- Digital Microphone
- Magnet sensor





# Power Consumption *Benchmark*



## CC2650: new SensorTag **Peak power consumption reduced by 75%**

- Multi-year on a coin cell
- Faster processing
- Optimized radio
- Ultra low sleep current
- Unique integrated Sensor Controller

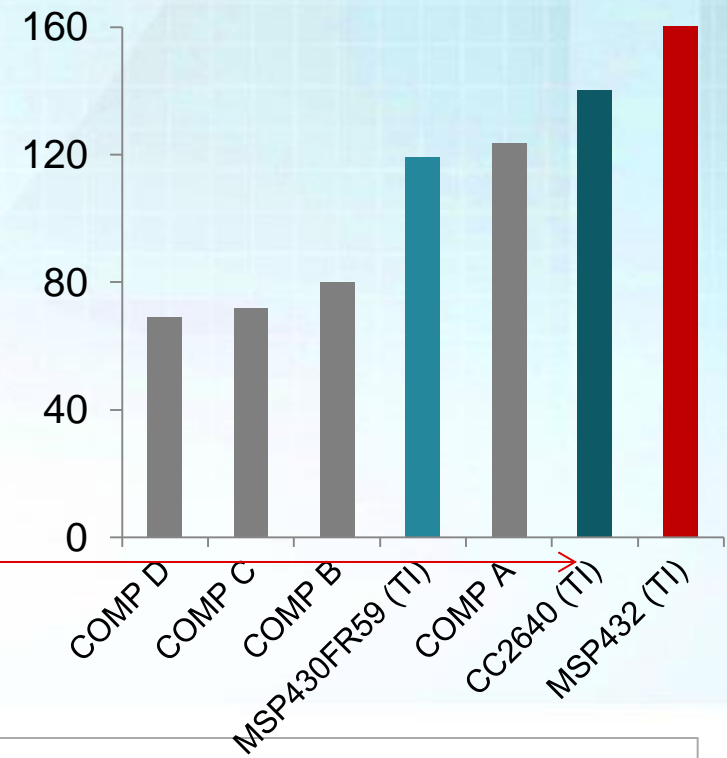


### Ultra-low power

When	Parameter @ 3V	Value
While processing	$\mu\text{A}/\text{MHz}$ on ARM® Cortex®-M3	61 $\mu\text{A}/\text{MHz}$
	Coremark / mA	48.5
	Coremark @ 48MHz CPU	142
While communicating	Peak current RX	5.9 mA
	Peak current TX	6.1 mA
While sleeping	$\mu\text{A}/\text{MHz}$ on Sensor Controller	8.2 $\mu\text{A}/\text{MHz}$
	Sleep mode with RTC and full memory retention	1 $\mu\text{A}$

ULPBench score of 143.6

### ULPBench Scores



TEXAS INSTRUMENTS

# Resources for the whole developer team



## Web/App Developers

### Web/App developers

Access data from your SensorTag through our cloud partners or directly using JavaScript and jquery examples. Use our mobile app examples as a starting point for your own IoT projects, or write your own HTML5 platform-independent code based on the source code from the sample projects.

[Learn more](#)



## Embedded Software Developers

### Embedded Software Developers

The SensorTag includes open source hardware and software reference designs for low-cost and low-power IoT nodes. Use the SensorTag with the Debug DevPack for low-cost hardware development. The SensorTag application can easily be ported between Bluetooth Smart, 6LoWPAN and ZigBee to allow you to quickly evaluate which wireless connectivity technology is right for your design.

[Learn more](#)



## Hardware Developers

### Hardware Developers

Use the SensorTag hardware as the development platform for your first IoT project. The open source hardware demonstrates the use of 10 low-power sensors. Also, the DevPack interface makes it easy to hook up your own sensors and actuators into the IoT cloud. Use the 3D SensorTag enclosure design files to print your own variants of the SensorTag.

[Learn more](#)

# CC2650STK Support

[www.ti.com/sensortag](http://www.ti.com/sensortag)

**TI Home** > Wireless Connectivity > Sensortag

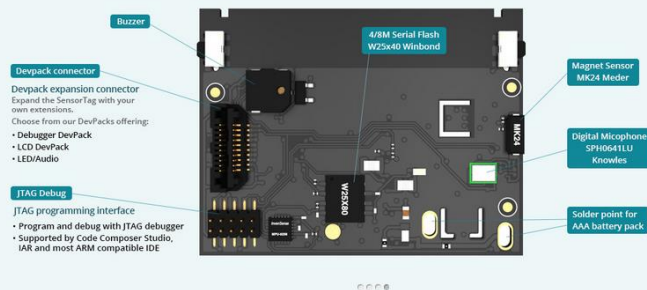
## IoT made easy

By 2020 there will be 50 billion IoT devices - Get yours today!

The SensorTag allows quick and easy prototyping of IoT devices. It simply works - Connect your sensor solution to the Cloud in 3 minutes. Get started with Wi-Fi, Bluetooth smart, or 6LoWPAN development for only \$29.

[The SensorTag Story](#) [Getting Started](#) [Teardown](#) [DevPacks](#) [Apps and Partners](#) [Community & Buzz](#)

## Teardown



## SensorTag for:

**HW design files**

**SW files**

**Development Tools**

### Bluetooth Smart SensorTag

- Test Report
- BOM
- Schematic
- CAD files
- Gerbers
- Assembly Drawing
- iOS App
- Android App
- Git.ti.com Android source code
- BLE stack for SensorTag firmware
- Wi-Fi SDK for Wi-Fi firmware
- CCS
- IAR
- Device Monitor

## Compare SensorTags

	Wi-Fi	Bluetooth Smart	6LoWPAN
Price	\$29	\$29	\$29
Battery type	AAA	Coin Cell	Coin Cell
Connects to Internet	Wi-Fi	Smartphone	Low cost gateway
Beacon support	✓	✓	✓
DevPack support	✓	✓	✓
Mesh network	✓	✓	✓
Range	100m/300ft	50m/150ft	100m/300ft (extended with mesh network)
Max number of devices	64	8	200
Battery lifetime*	1 year (1 second report interval)	1 year (1 second report interval)	1 year (1 second report interval)
User Interface	App, Web	App	App, Web

# Summary

[www.ti.com/sensortag](http://www.ti.com/sensortag)



## More sensors!

- 10 low-power sensors, including light, microphone and magnetic sensors



## Lower Power

- Peak power consumption reduced by 75%



## 10x higher performance with ARM® Cortex®-M3



## Multiple wireless connectivity standards

- Bluetooth Smart
- 6LoWPAN
- ZigBee
- Wi-Fi (coming soon)



## Complete development system

- \$15 emulator/Debug DevPack
- Free Code Composer Studio™ compiler license included
- CCS Cloud IDE support



## DevPacks expand the SensorTag to fit your designs

- Find available DevPacks [here](#)



## Cloud connectivity

- Access and control your SensorTag from anywhere
- Seamless integration with mobile apps and web pages through JavaScript
- Support from the TI IoT cloud ecosystem

# Whats next?

