

Wireless Module

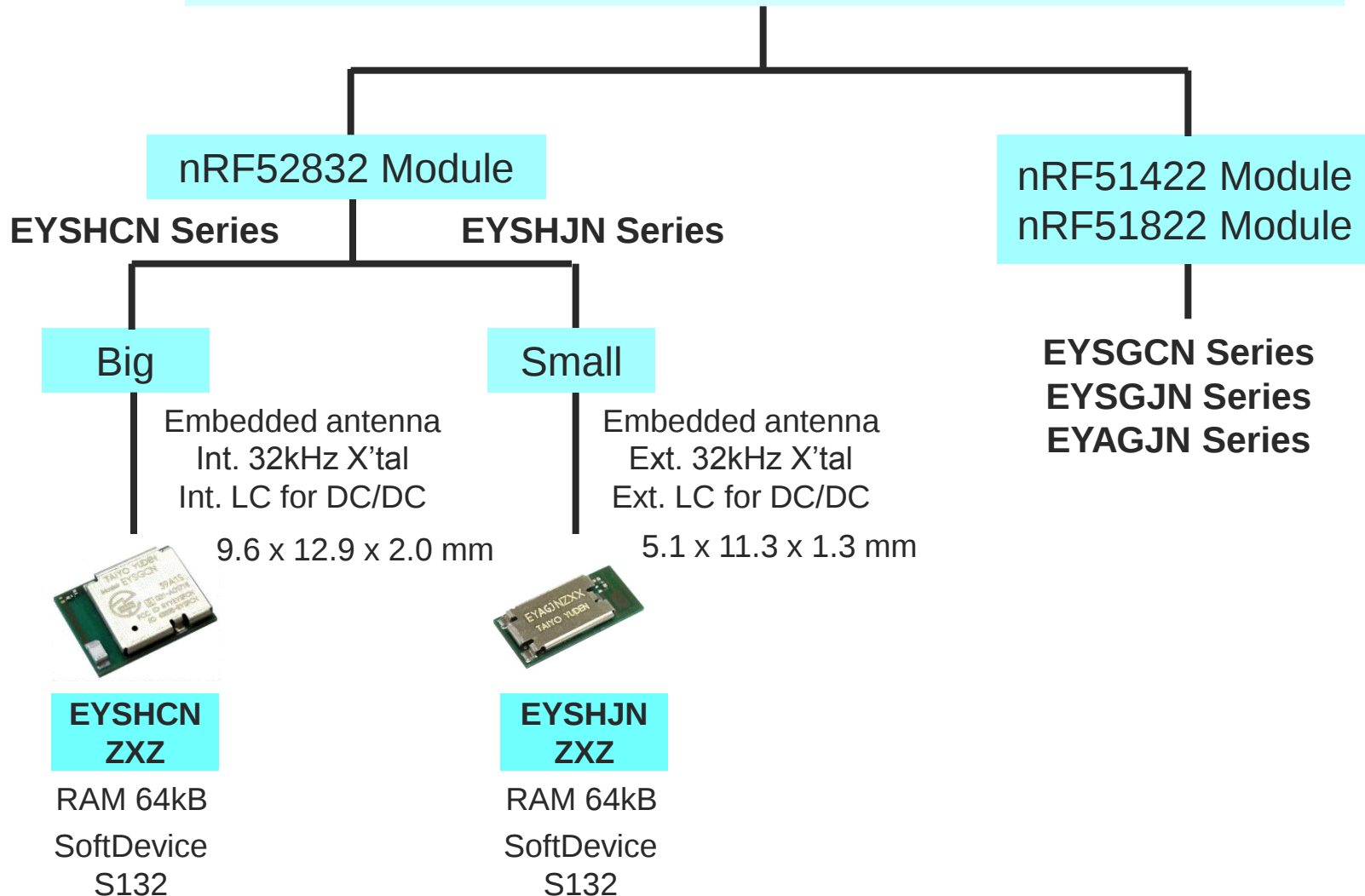
***Bluetooth® low energy* Module**

Overview

Dec. 9, 2016 Version 1.4

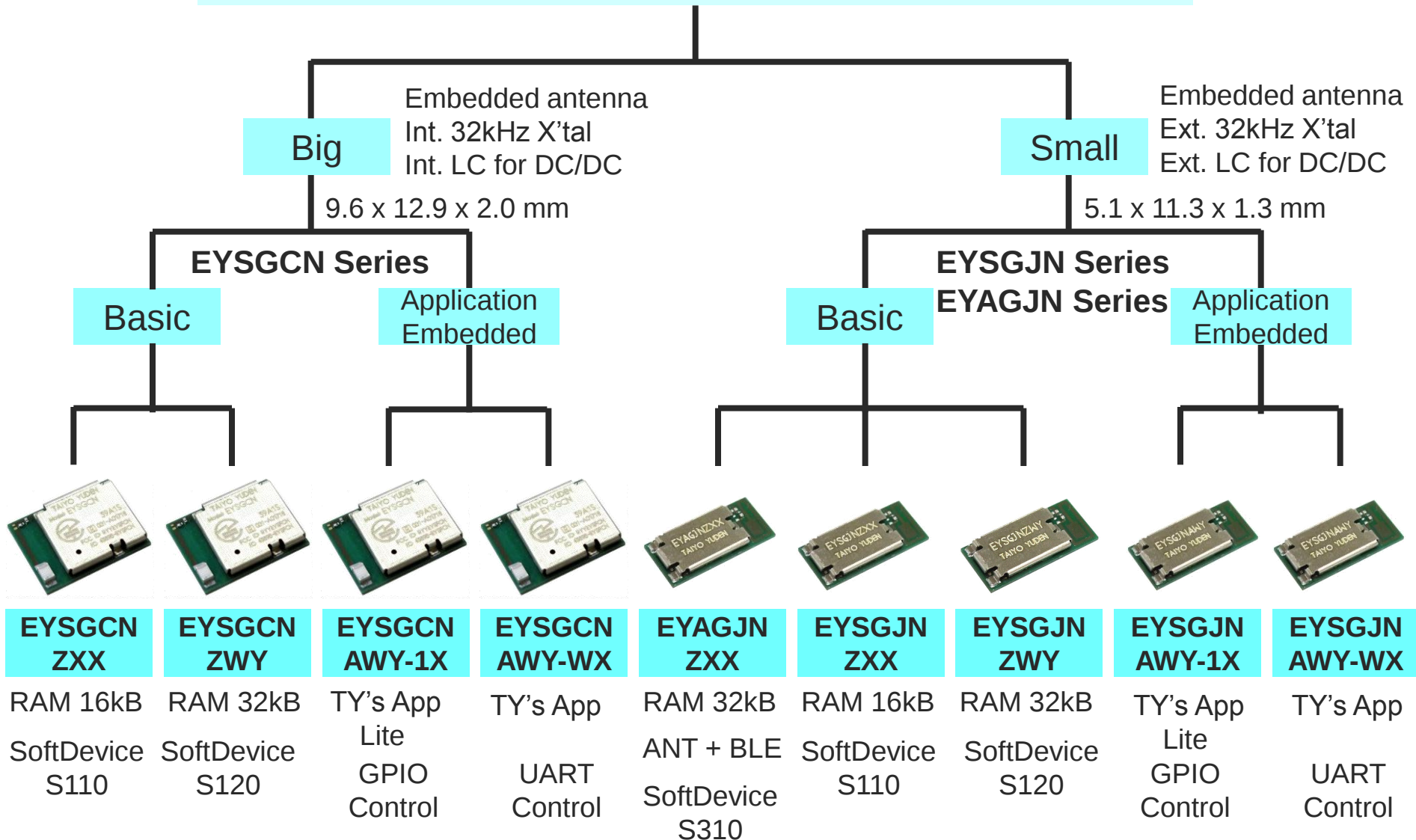
Taiyo Yuden Bluetooth® low energy Module Line-Up

Taiyo Yuden Bluetooth® low energy Module



Taiyo Yuden Bluetooth® low energy Module Line-Up

nRF51x22 Bluetooth® low energy Module



Latest Documents for Bluetooth® low energy Module

EYSHCNZXZ	http://www.yuden.co.jp/or/product/category/module/EYSHCNZXZ.html
EYSHJNZXZ	http://www.yuden.co.jp/or/product/category/module/EYSHJNZXZ.html
EYSGCNZXX	http://www.yuden.co.jp/or/product/category/module/EYSGCNZXX.html
EYSGCNZWY	http://www.yuden.co.jp/or/product/category/module/EYSGCNZWY.html
EYSGJNZXX	http://www.yuden.co.jp/or/product/category/module/EYSGJNZXX.html
EYSGJNZWY	http://www.yuden.co.jp/or/product/category/module/EYSGJNZWY.html
EYAGJNZXX	http://www.yuden.co.jp/or/product/category/module/EYAGJNZXX.html
EYSGCNAWY-1X	http://www.yuden.co.jp/or/product/category/module/EYSGCNAWY-1X.html
EYSGJNAWY-1X	http://www.yuden.co.jp/or/product/category/module/EYSGJNAWY-1X.html
EYSGCNAWY-WX	http://www.yuden.co.jp/or/product/category/module/EYSGJNAWY-WX.html
EYSGJNAWY-WX	http://www.yuden.co.jp/or/product/category/module/EYSGJNAWY-WX.html
EYSFCNZXX	http://www.yuden.co.jp/or/product/category/module/EYSFCNZXX.html

- The documents for the evaluation board and evaluation kit are also available on the above page.

- The Japanese documents are available on the following page.

<http://www.yuden.co.jp/jp/product/category/module/lineup.html#Bluetooth>

Bluetooth® low energy Module: **EYSHCNZXZ**

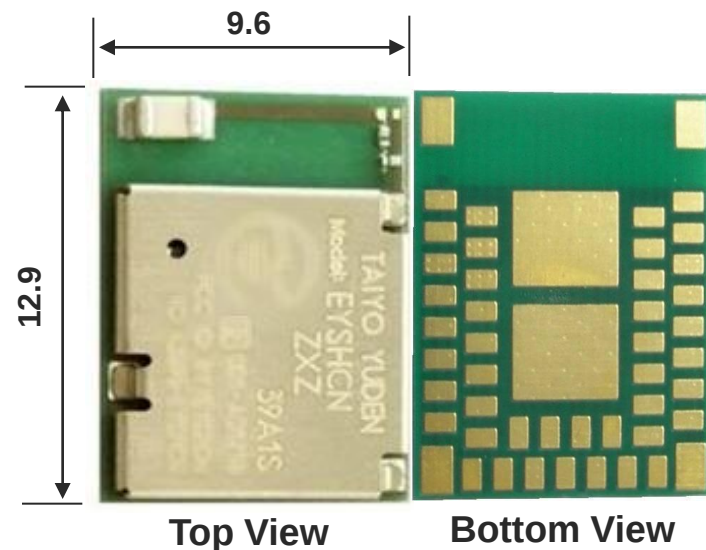
Features

- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7 – 3.6V
- Single Mode Bluetooth low energy Slave/Master (ANT™ Available)
- Chip: **nRF52832** (Nordic)
- Integrated System/**Sleep Clock, LC for DC/DC**
- Integrated high performance ceramic chip antenna
- ARM Cortex M4F** 32bit processor
- 512kB Flash** and **64kB RAM**
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support **NFC-A Type-2** for Touch-to-Pair
- Outline: **9.6 x 12.9 x 2.0** mm with **1mm** pad pitch
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

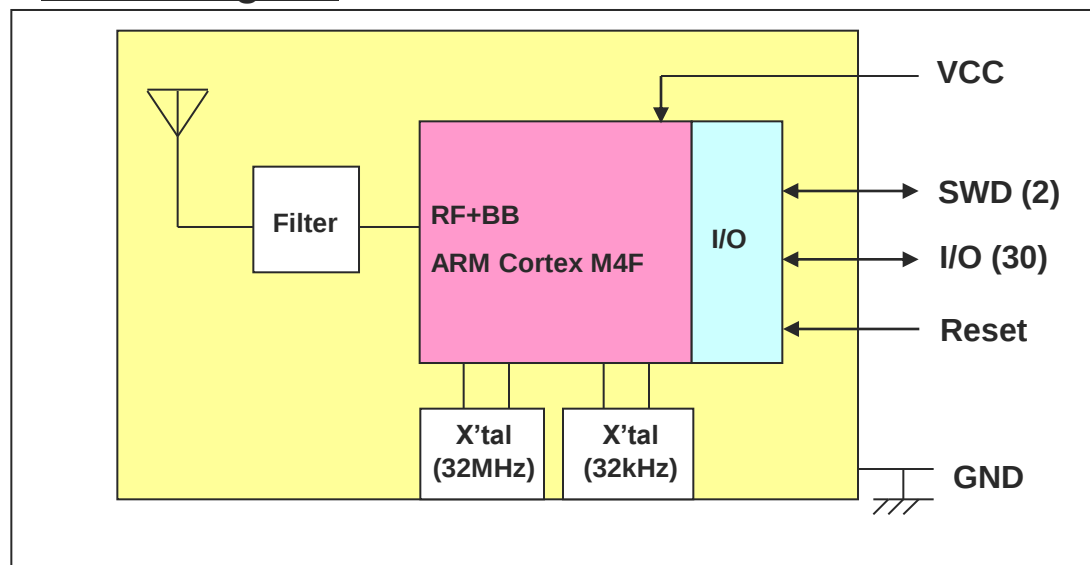
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



Block Diagram



All specifications are subject to change without notice.

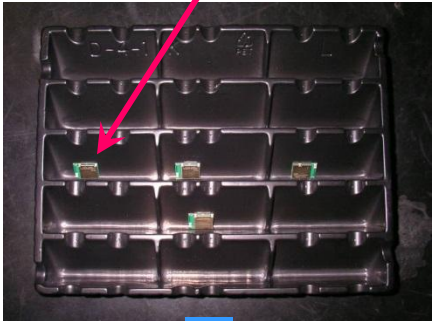
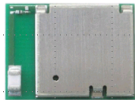
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

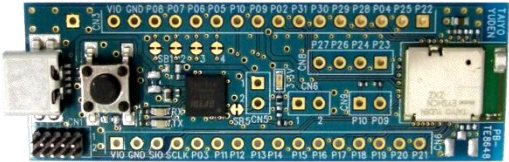
EYSHCNZXZ (Module)

Module samples



EBSHCNZXZ (EV-B)

Evaluation board



EKSHCNZXZ (EV-K)

Evaluation kit



Bluetooth® low energy Module: **EYSHJNZXZ**

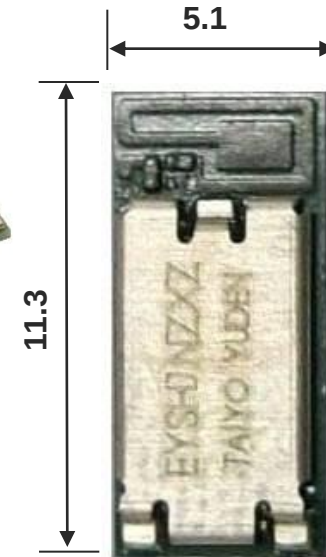
Features

- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7– 3.6V
- Single Mode Bluetooth low energy Slave (ANT™ Available)
- Chip: **nRF52832** (Nordic)
- Integrated System Clock
- ARM Cortex M4F** 32bit processor
- 512kB Flash and 64kB RAM**
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support **NFC-A Type-2** for Touch-to-Pair
- Integrated high performance pattern antenna
- Outline: **5.1 x 11.3 x 1.3**mm MAX
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

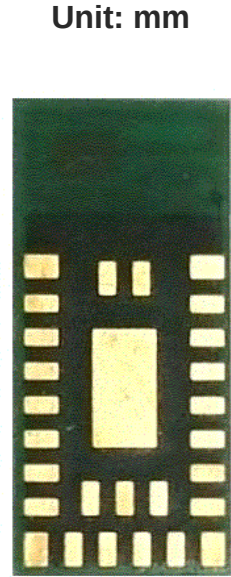
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



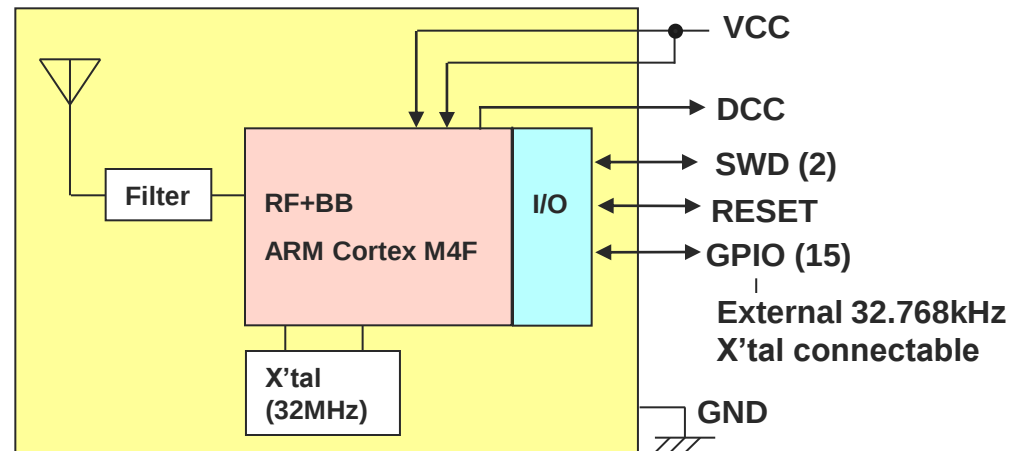
Top View



Bottom View

Unit: mm

Block Diagram



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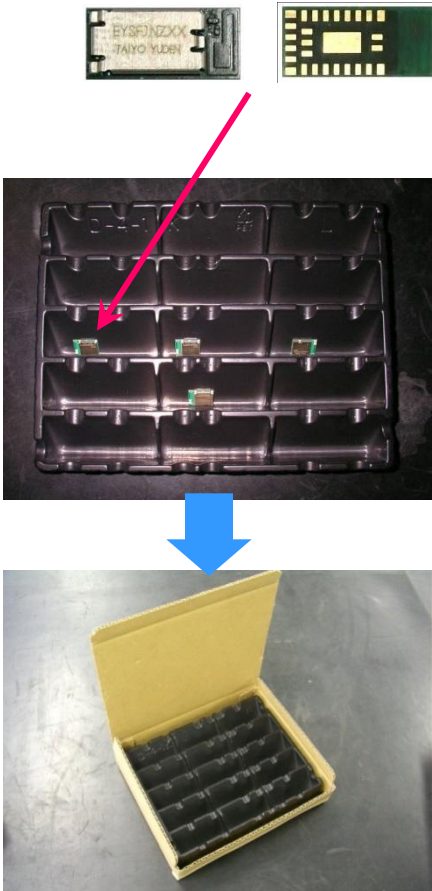
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

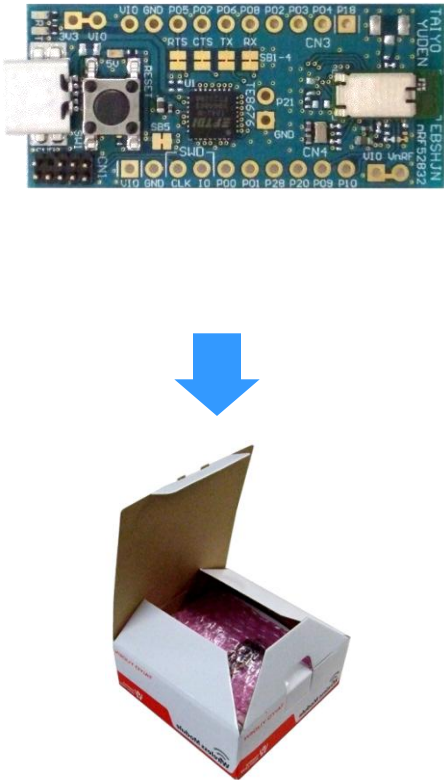
EYSHJNZXZ (Module)

Module samples



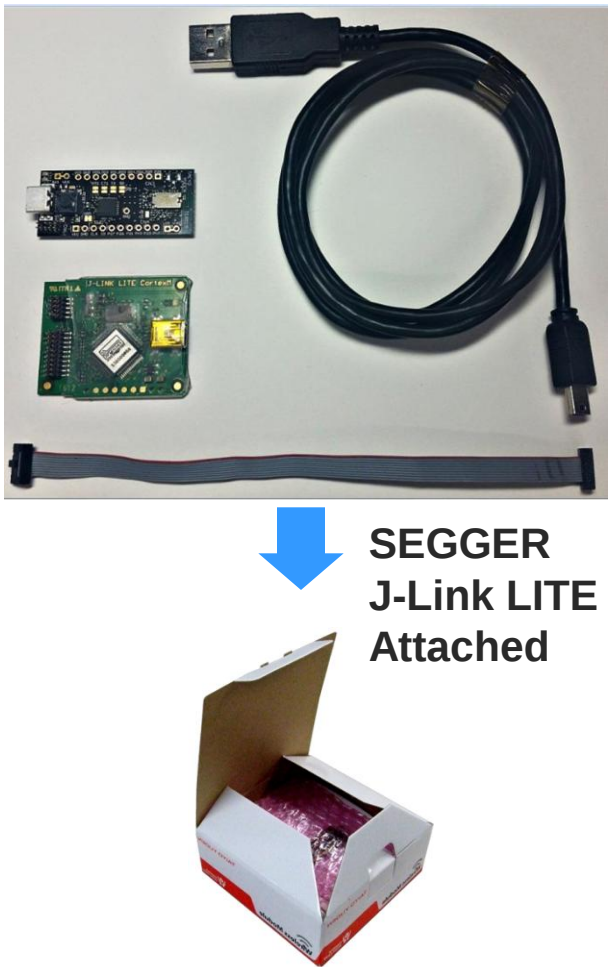
EBSHJNZXZ (EV-B)

Evaluation board



EKSHJNZXZ (EV-K)

Evaluation kit



Bluetooth® low energy Module: **EYSGCNZXX**

Features

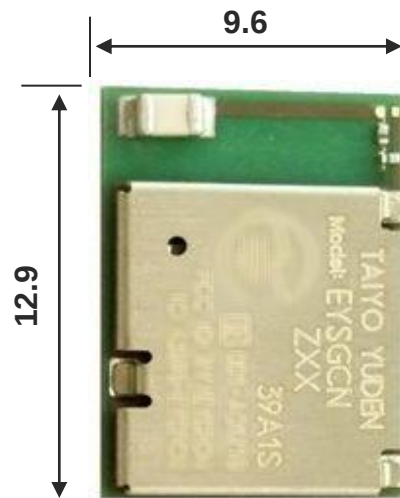
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave
- Chip: nRF51822 **Rev.3** (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- 256kB Flash** and **16kB RAM**
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Outline: **9.6 x 12.9 x 2.0** mm with **1mm** pad pitch
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications

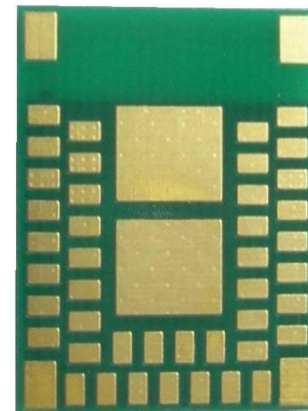
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

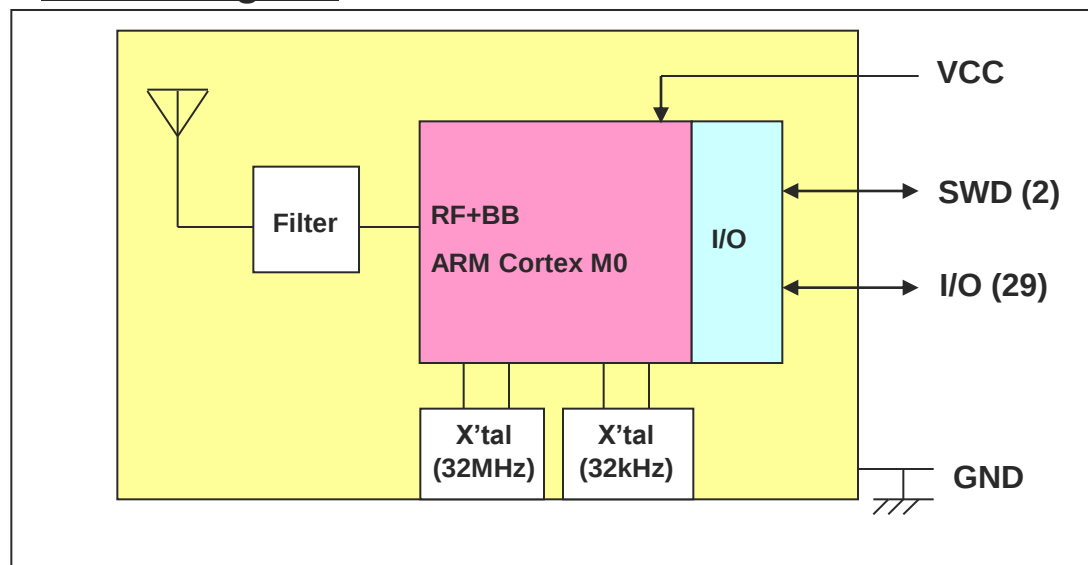


Top View



Bottom View

Block Diagram



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Bluetooth® low energy Module: **EYSGCNZWY**

Features

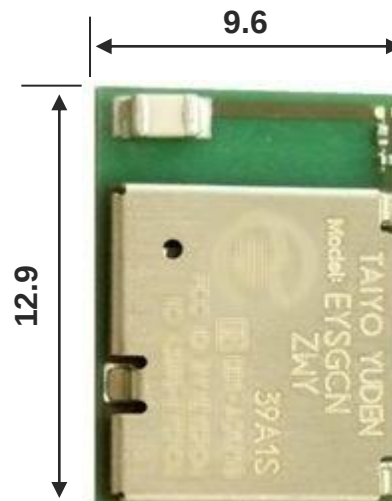
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 **Rev.3** (Nordic)
- Integrated System/**Sleep Clock**
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- 256kB Flash** and **32kB RAM**
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Outline: **9.6 x 12.9 x 2.0** mm with **1mm** pad pitch
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications

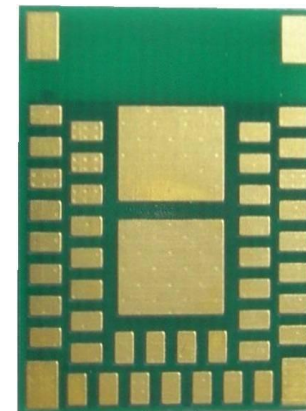
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

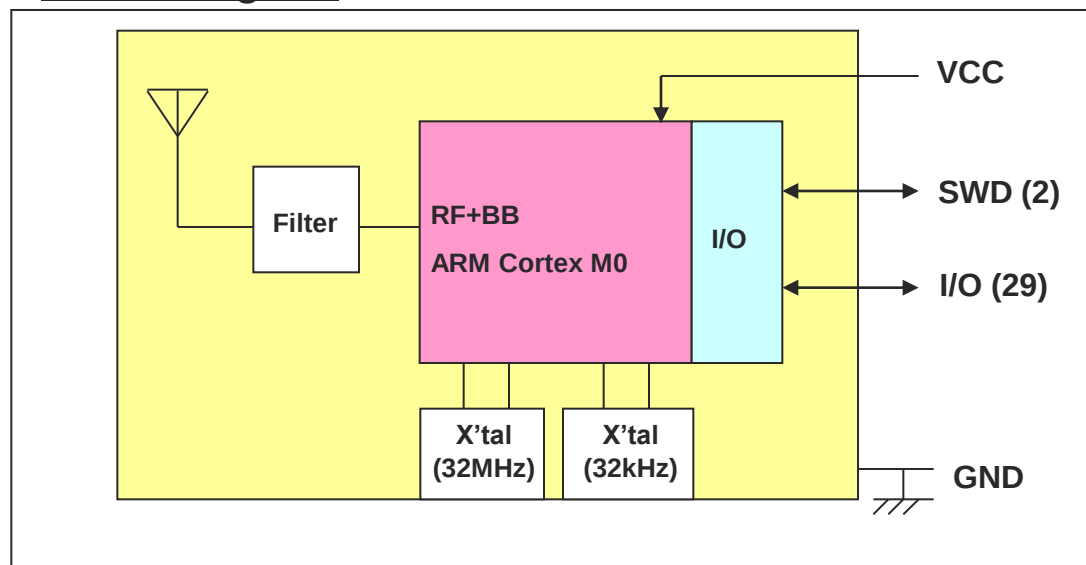


Top View



Bottom View

Block Diagram



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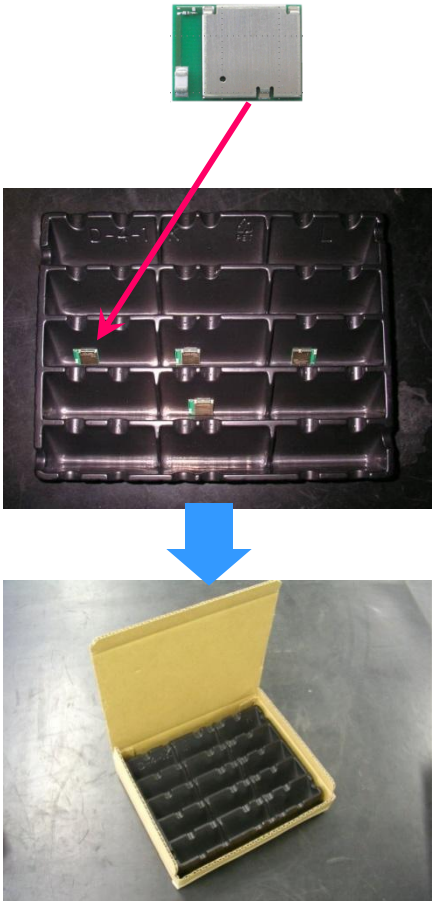
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

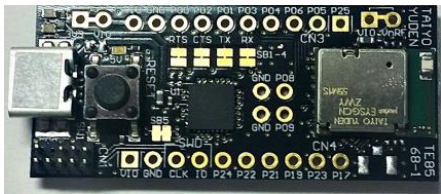
EYSGCNZXX, EYSGCNZWY (Module)

Module samples



EBSGCNZWY (EV-B)

Evaluation board



EKSGCNZWY (EV-K)

Evaluation kit



Bluetooth® low energy Module **EYSGJNZXX**

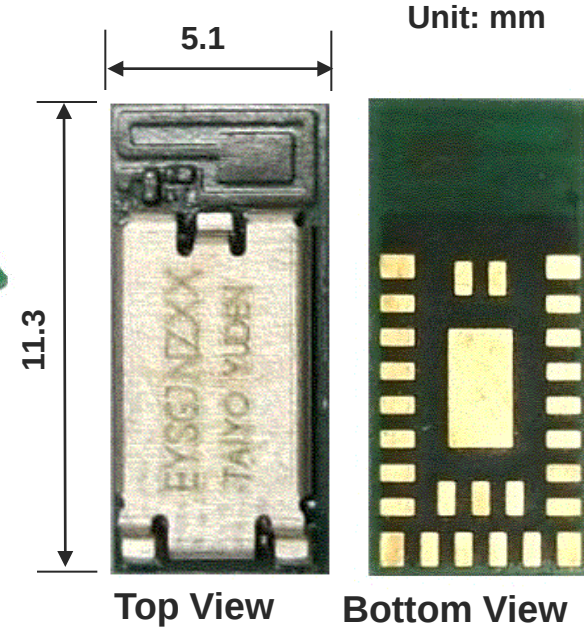
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy Slave
- Chip: nRF51822 **Rev.3** (Nordic)
- Integrated System Clock
- ARM Cortex M0** 32bit processor
- 256kB Flash** and **16kB RAM**
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: **5.1** x **11.3** x **1.3**mm MAX
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

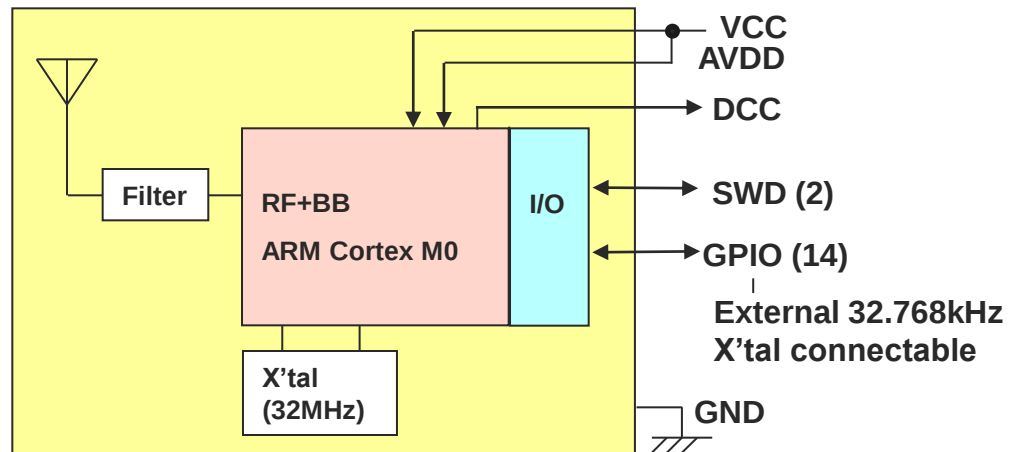
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



Block Diagram



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Bluetooth® low energy Module **EYSGJNZWY**

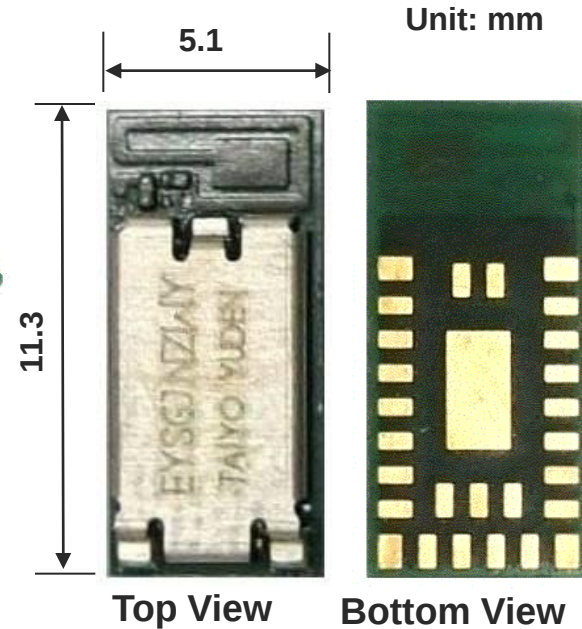
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 **Rev.3** (Nordic)
- Integrated System Clock
- ARM Cortex M0** 32bit processor
- 256kB Flash** and **32kB RAM**
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: **5.1** x **11.3** x **1.3**mm MAX
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

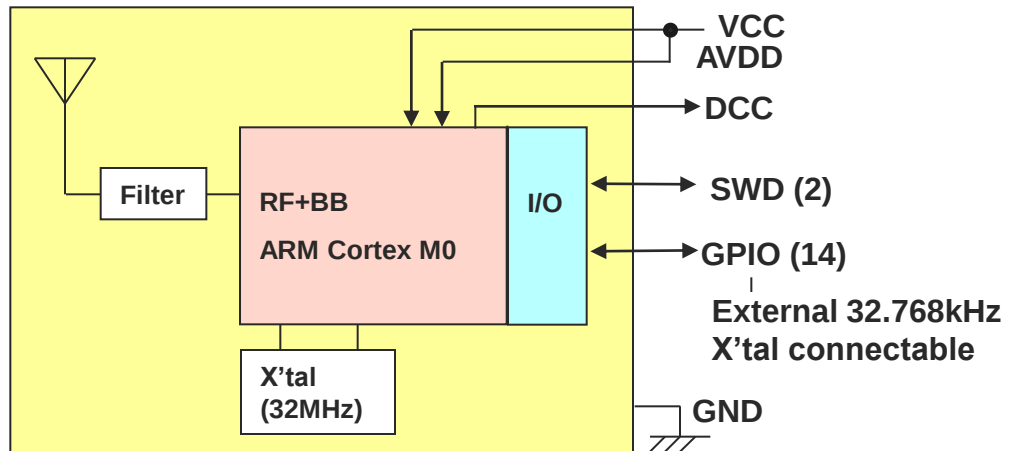
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



Block Diagram



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ANT + Bluetooth® low energy Module **EYAGJNZXX**

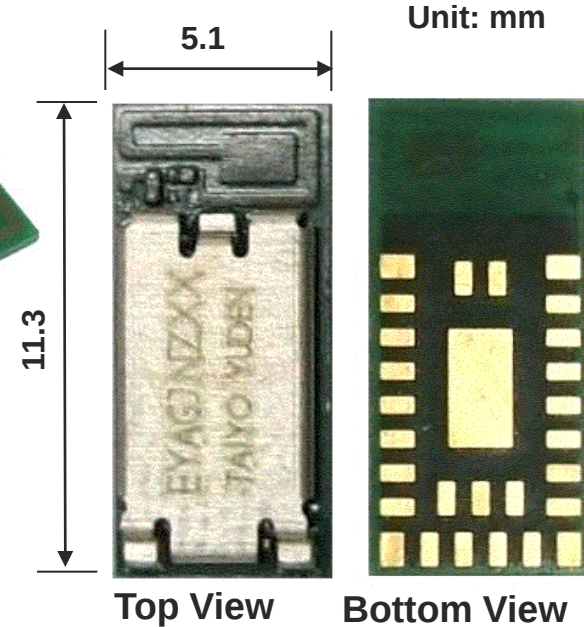
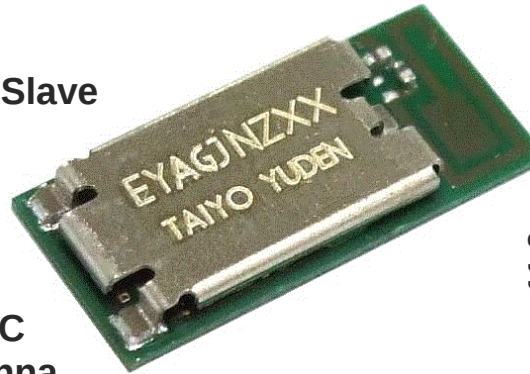
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- ANT** + Single Mode Bluetooth low energy Slave
- Chip: **nRF51422 Rev 3** (Nordic)
- Integrated System Clock
- ARM Cortex M0** 32bit processor
- 256kB Flash and 32kB RAM**
- Interface: SPI, UART, I2C and 8/9/10bit ADC
- Integrated high performance pattern antenna
- Outline: **5.1 x 11.3 x 1.3**mm MAX
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

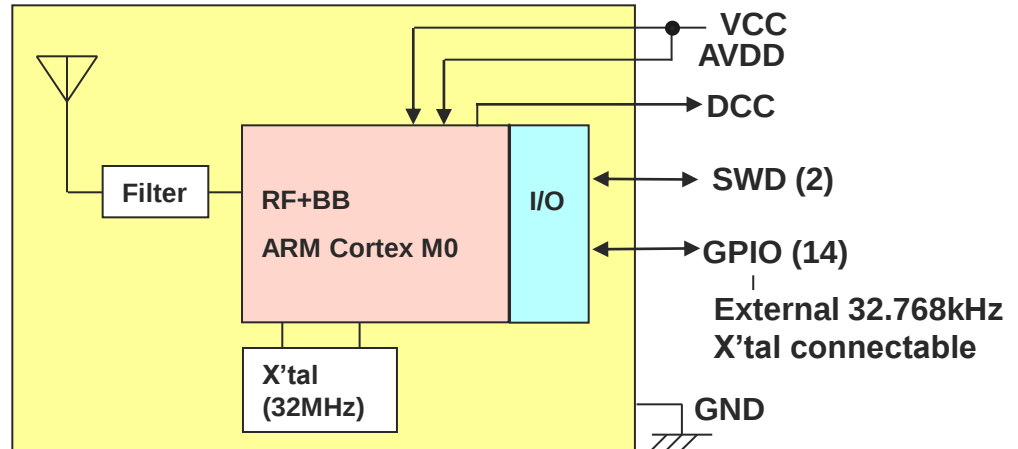
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



Block Diagram



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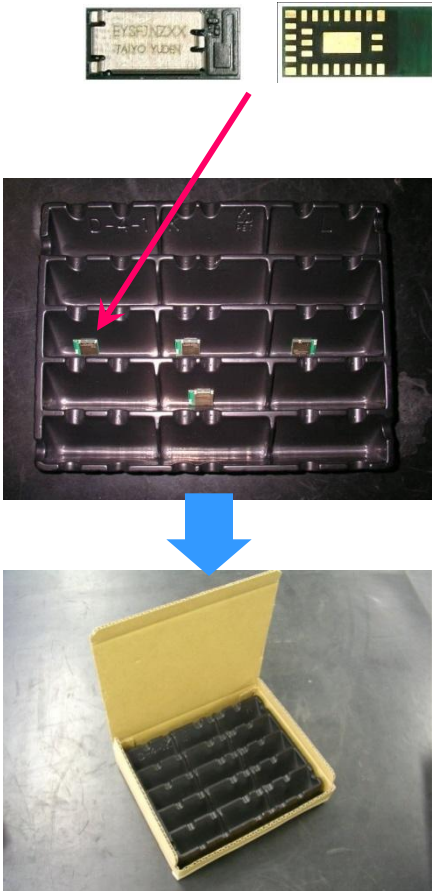
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

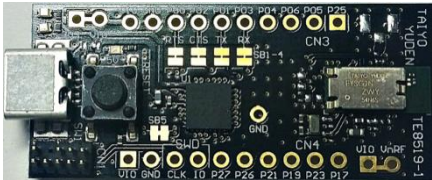
EYSGJNZXX, EYSGJNZWY,
EYAGJNZXX (Module)

Module samples



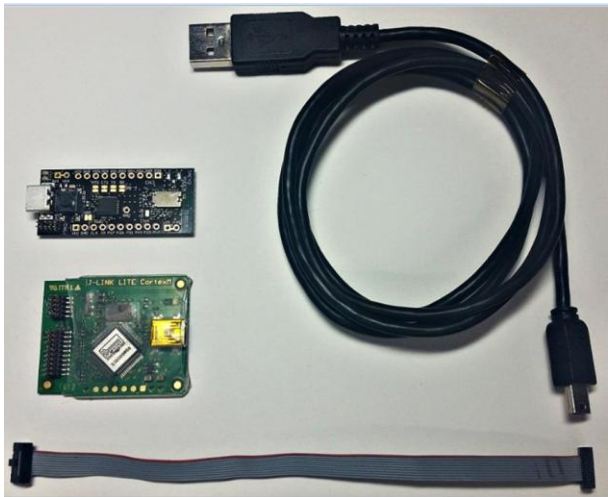
EBSGJNZWY, EBAGJNZXX
(EV-B)

Evaluation board

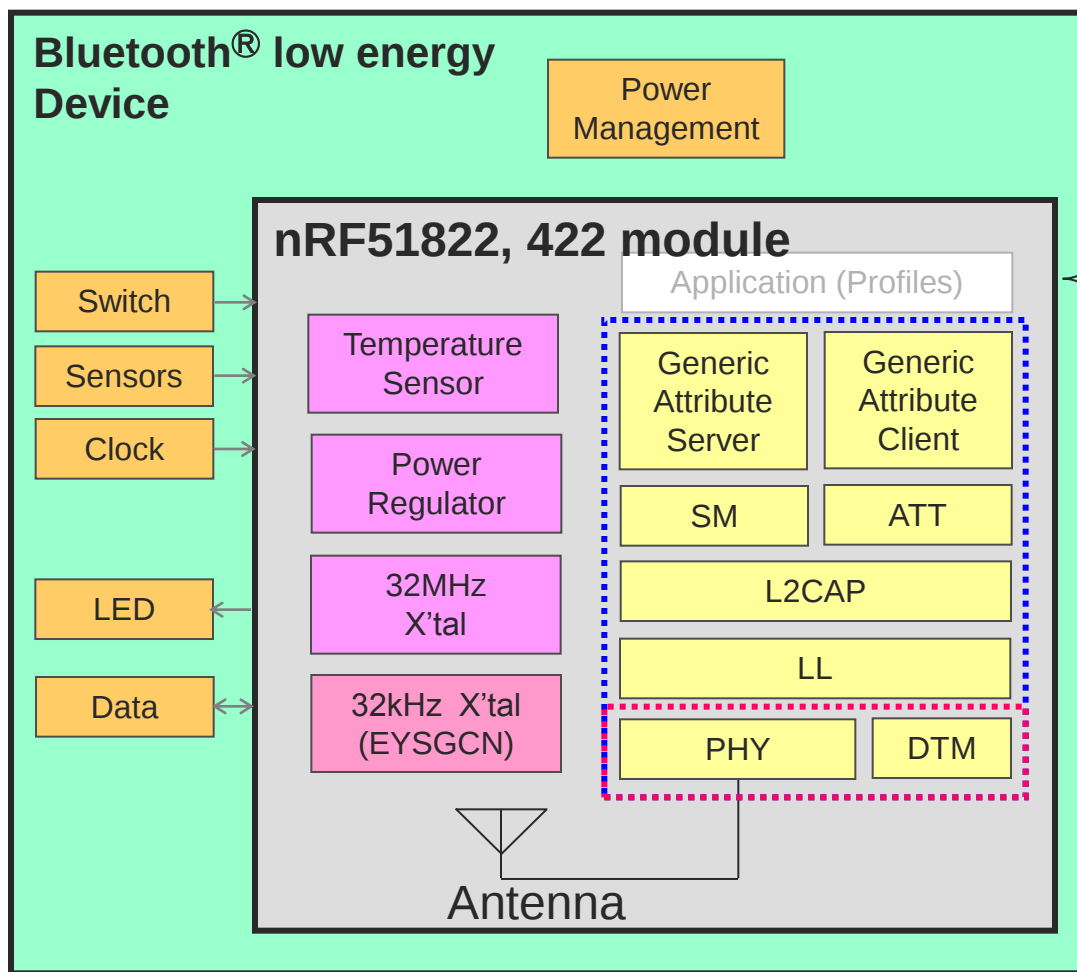


EKSGJNZWY, EKAGJNZXX
(EV-K)

Evaluation kit



Application Layer image for Basic Module



- Alert Notification
 - Blood Pressure
 - Cycling Speed and Cadence
 - Glucose
 - HID Mouse
 - Heart Rate
 - Phone Alert Status
 - Proximity
 - Running Speed and Cadence
 - Time
- Nordic SDK**

Basic module will be written under GATT.

Softdevice



- GAP:** Generic Access Profile
SM: Security Manager
ATT: Attribute Protocol
L2CAP: Logical Link Control and Adaptation Protocol
LL: Link Layer
PHY: Physical Layer
DTM: Direct Test Mode

EYSGCN, EYSGJN, EYAGJN
Basic Module

Bluetooth® low energy Module: **EYSGCNAWY-1X**

Features

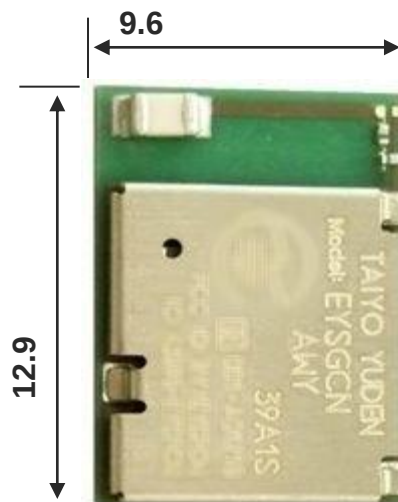
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- Application Embedded by Taiyo Yuden**
- (TY's App Lite Generic Data transfer, Battery Service)**
- Interface: UART
- Outline: **9.6 x 12.9 x 2.0** mm with **1mm** pad pitch
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications

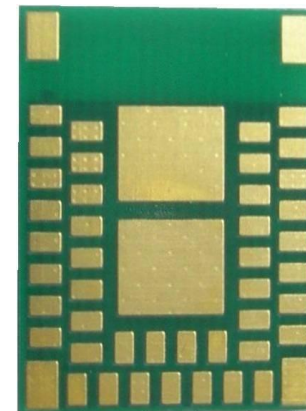
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

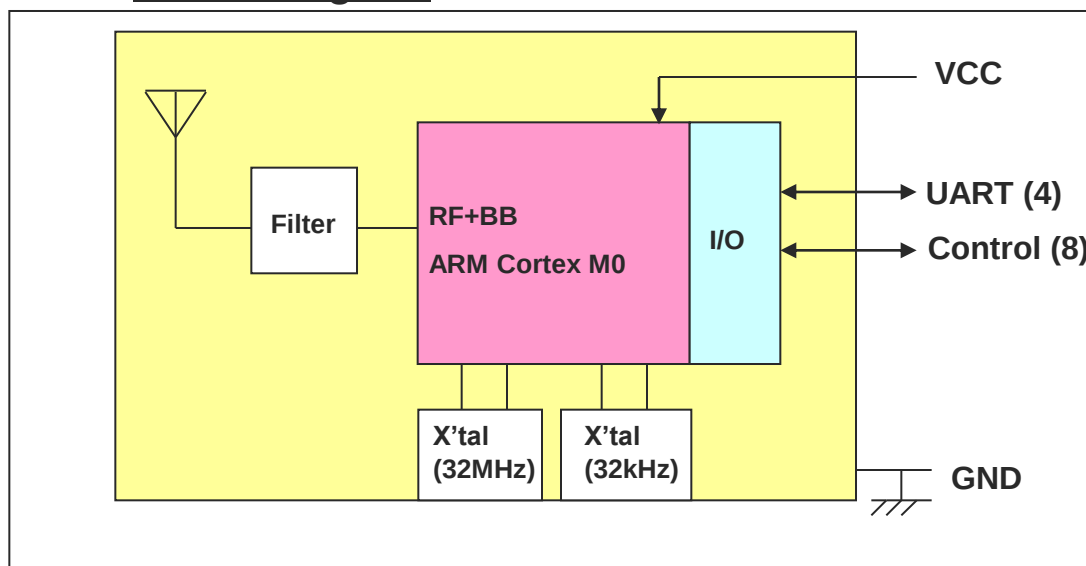


Top View



Bottom View

Block Diagram



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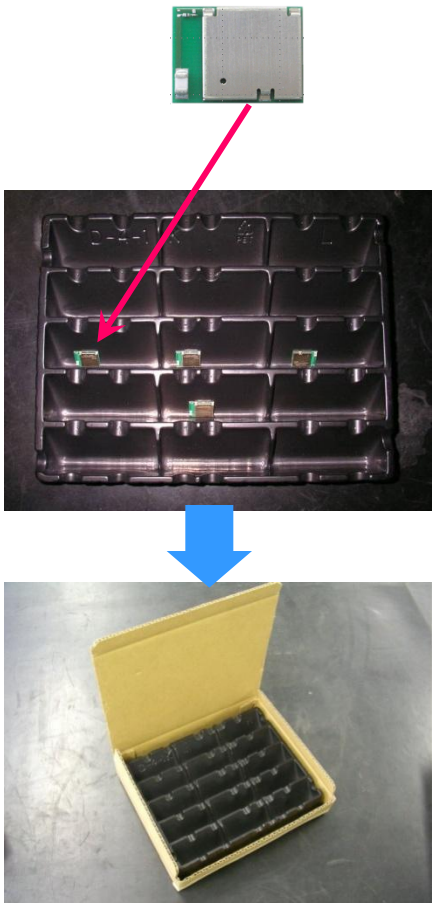
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Bluetooth® low energy Module Sample, Evaluation Board

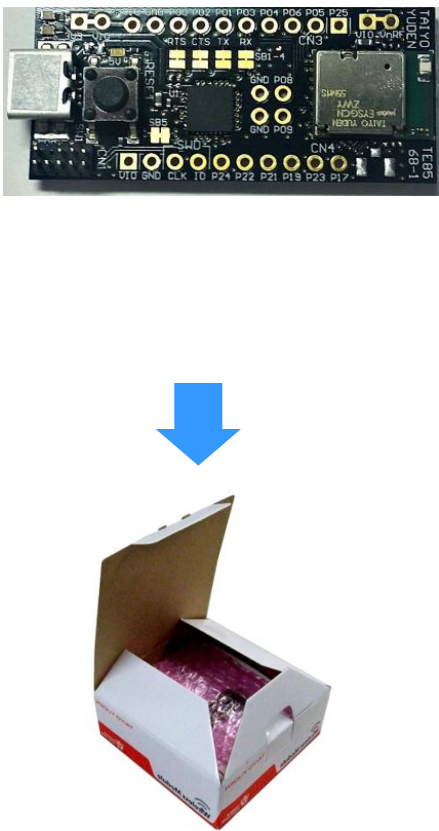
EYSGCNAWY-1X (Module)

■ Module samples



EBSGCNAWY-1X (EV-B)

■ Evaluation board



Bluetooth® low energy Module **EYSGJNAWY-1X**

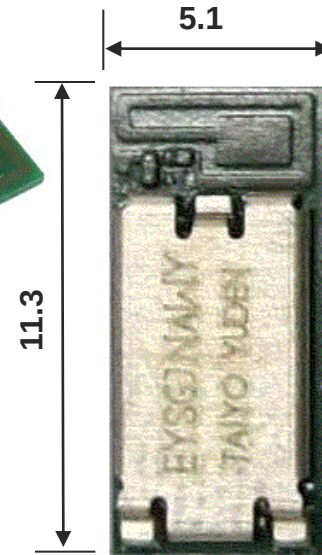
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 Rev3 (Nordic)
- Integrated System Clock
- ARM Cortex M0** 32bit processor
- Application Embedded by Taiyo Yuden**
- (TY's App : Generic Data transfer, Battery Service)**
- Interface: UART
- Integrated high performance pattern antenna
- Outline: **5.1** x **11.3** x **1.3**mm MAX
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

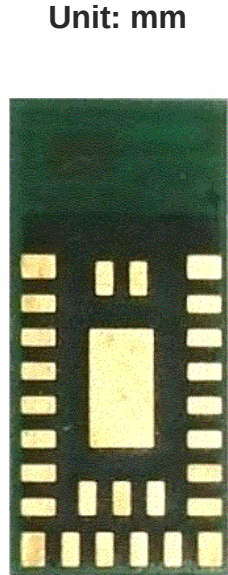
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



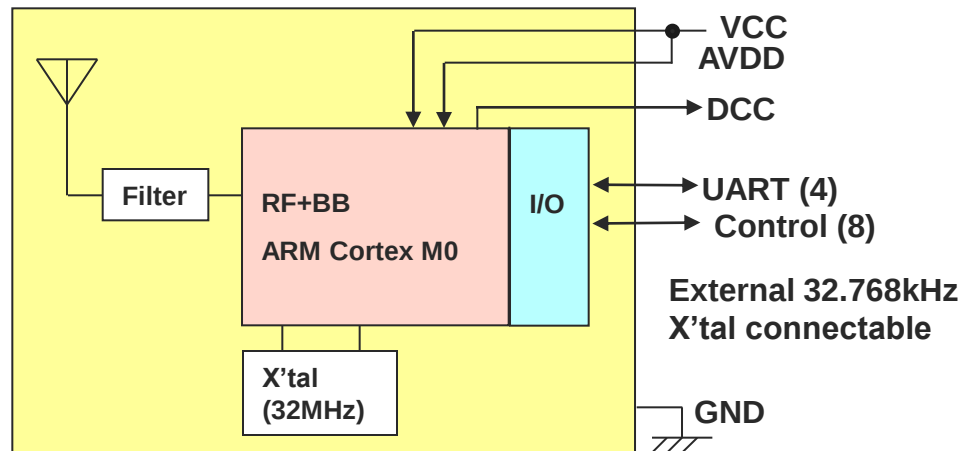
Top View



Bottom View

Unit: mm

Block Diagram



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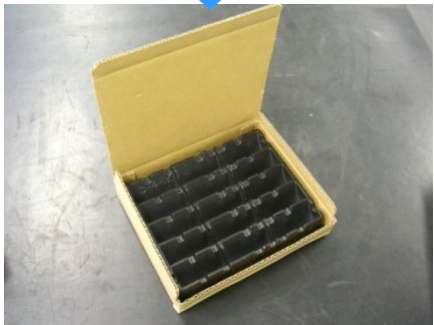
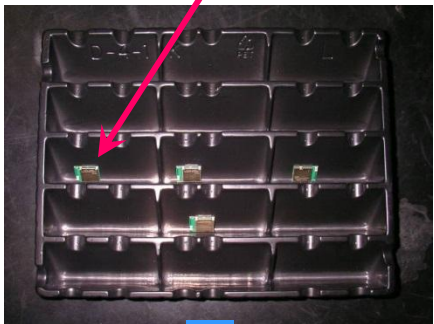
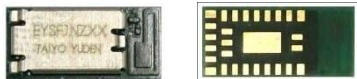
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Bluetooth® low energy Module Sample, Evaluation Board

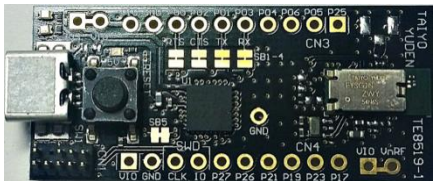
EYSGJNAWY-1X (Module)

■ Module samples



EBSGJNAWY-1X (EV-B)

■ Evaluation board



Bluetooth® low energy Module: **EYSGCNAWY-WX**

Features

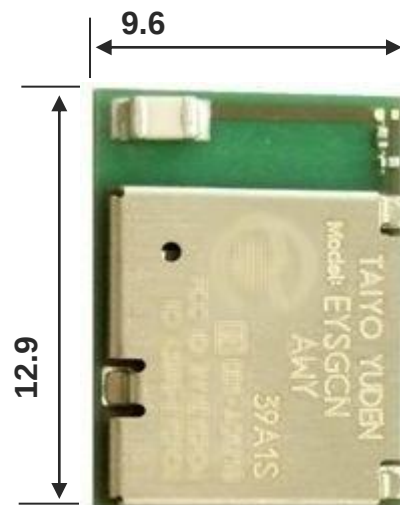
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- Application Embedded by Taiyo Yuden**
- (TY's App : Generic Data transfer, Battery Service)**
- Interface: UART
- Outline: **9.6 x 12.9 x 2.0** mm with **1mm** pad pitch
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications

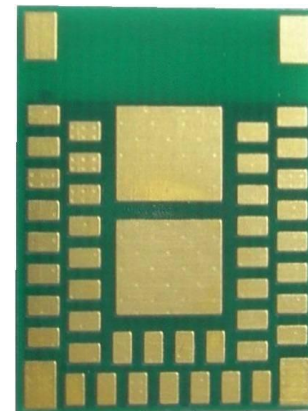
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

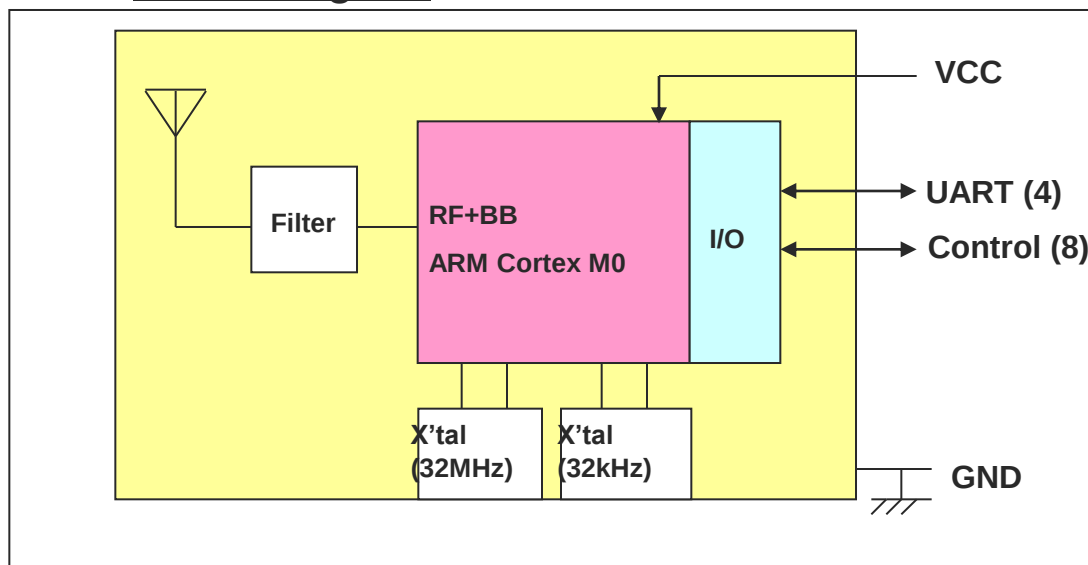


Top View



Bottom View

Block Diagram



All specifications are subject to change without notice.

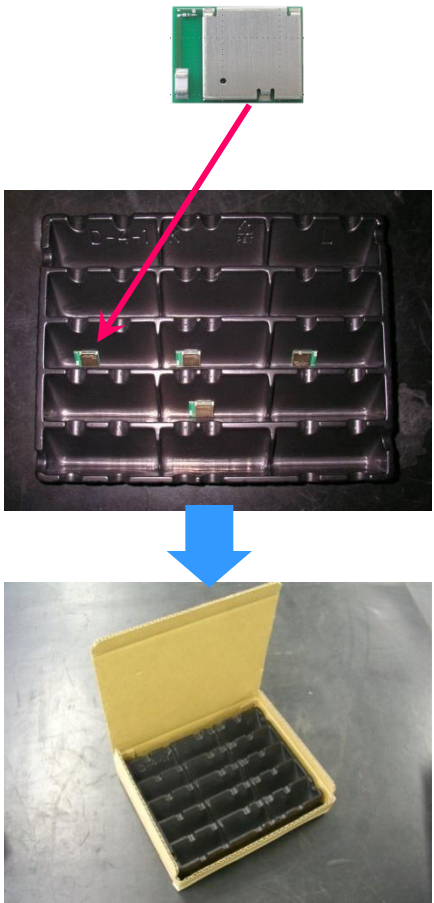
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Bluetooth® low energy Module Sample, Evaluation Board

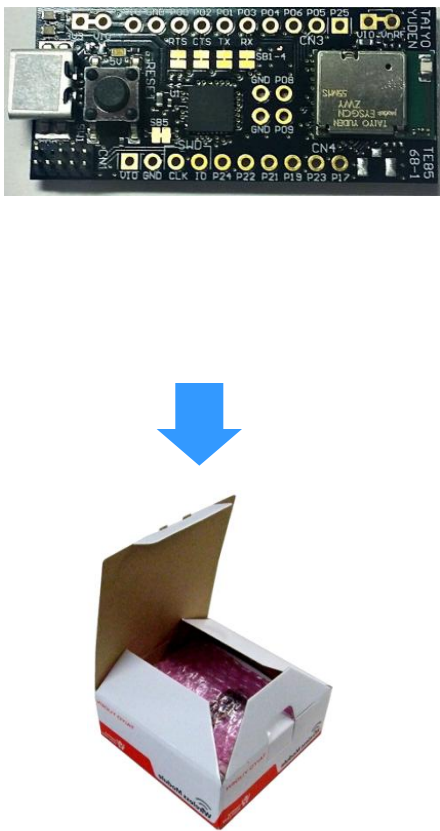
EYSGCNAWY-WX (Module)

■ Module samples



EBSGCNAWY-WX (EV-B)

■ Evaluation board



Bluetooth® low energy Module **EYSGJNAWY-WX**

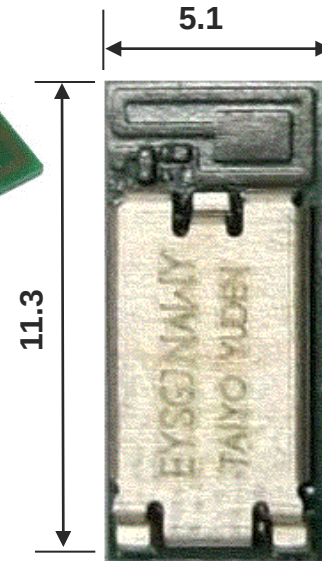
Features

- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 Rev3 (Nordic)
- Integrated System Clock
- ARM Cortex M0** 32bit processor
- Application Embedded by Taiyo Yuden**
- (TY's App : Generic Data transfer, Battery Service)**
- Interface: UART
- Integrated high performance pattern antenna
- Outline: **5.1** x **11.3** x **1.3**mm MAX
- Operating Temperature range: -25 to 75 deg-C
- Bluetooth and Japan, FCC, IC qualified
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

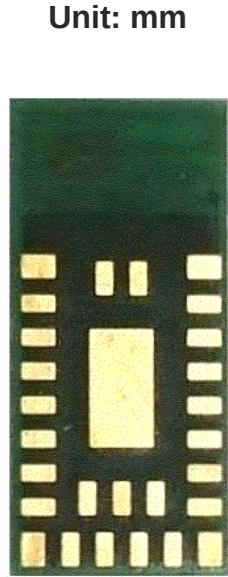
Applications

- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



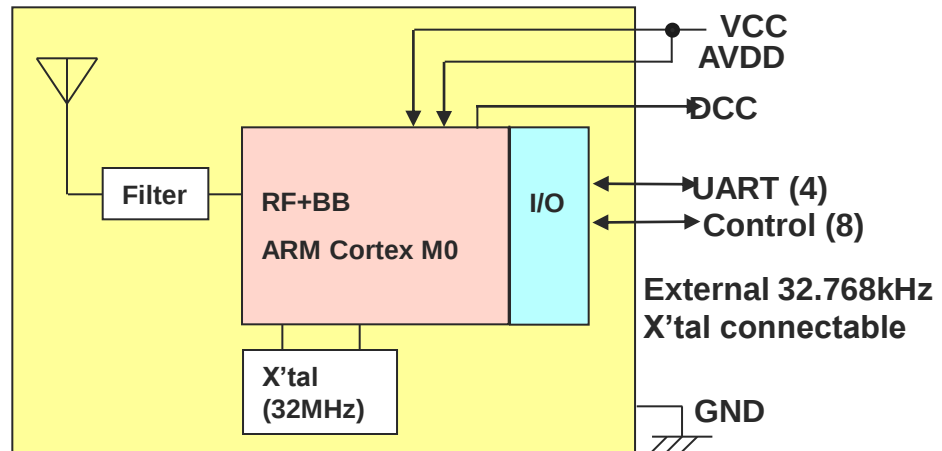
Top View



Bottom View

Unit: mm

Block Diagram



All specifications are subject to change without notice.

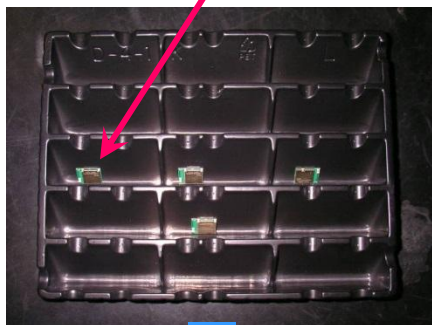
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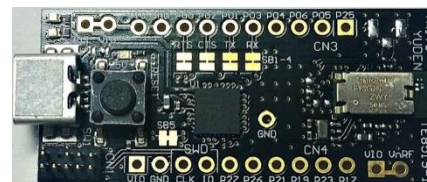
EYSGJNAWY-WX (Module)

■ Module samples



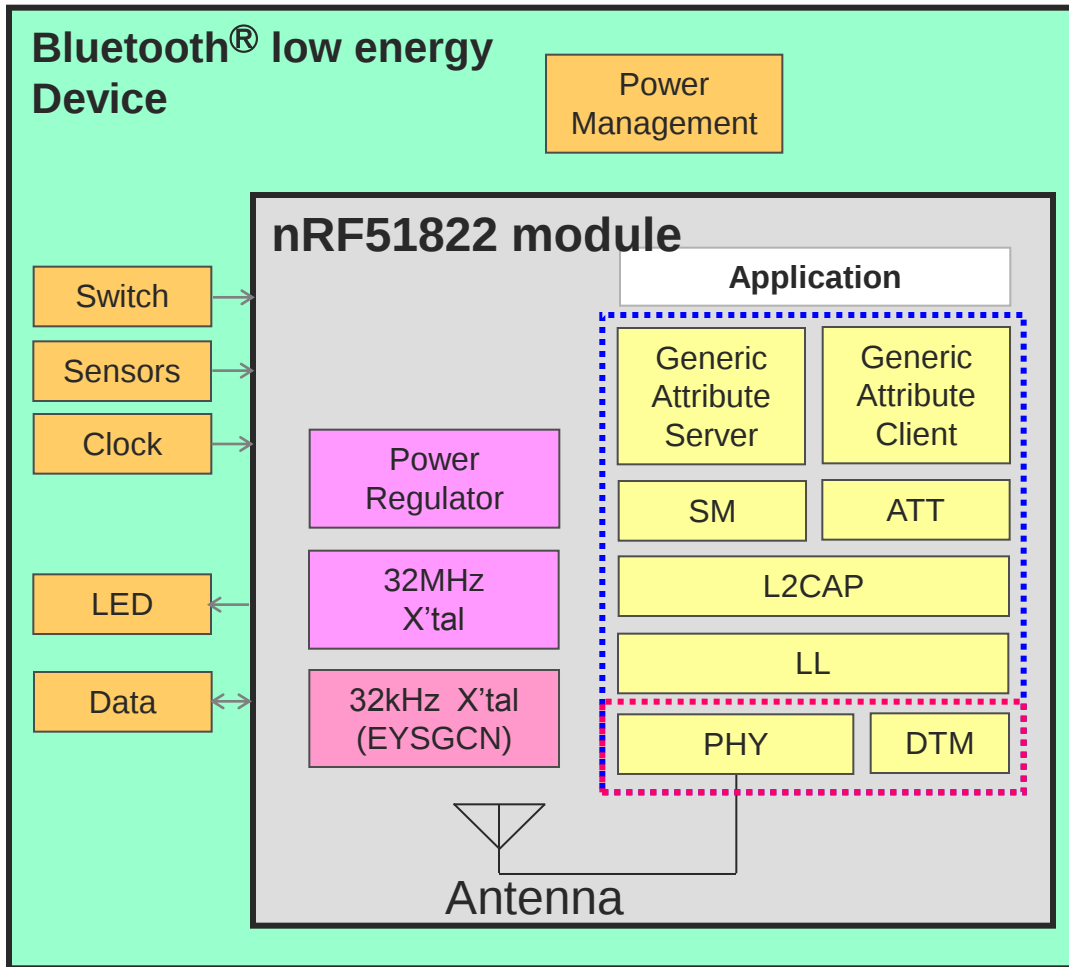
EBSGJNAWY-WX (EV-B)

■ Evaluation board



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Application Layer image for **Application Embedded Module**



EYSGCN, EYSGJN
Application Embedded Module

Connection option

-1X module for
Module - Module only

-WX module for
Module – Module
Module – Smart phone

Softdevice



GAP: Generic Access Profile
SM: Security Manager
ATT: Attribute Protocol
L2CAP: Logical Link Control and Adaptation Protocol
LL: Link Layer
PHY: Physical Layer
DTM: Direct Test Mode

Bluetooth® low energy standard module

Type	Part No.	Size (LxWxH)	Specifi- cation	ANT™ Support	I/F	RAM	Certifi- cation	Tempera- ture					
High Performance Basic	EYSHCNZXZ	9.6x12.9 X2.0mm	Bluetooth V4.2 BLE Single Slave/ Master	✓	UART SPI I2C	64kB	Japan FCC IC (CE)※	-40~+85 deg-C					
	EYSHJNZXZ	5.1x11.3 X1.3mm		✓		64kB							
Basic (Software Support : Nordic)	EYSGCNZXX	9.6x12.9 x2.0mm		✓		32kB							
	EYSGCNZWY							16kB					
	EYSGJNZXX	32kB											
	EYSGJNZWY	16kB											
	EYAGJNZXX	32kB											
Application Embedded Module – Module (Software Support : Taiyo Yuden)	EYSGCNAWY-1X	9.6x12.9 x2.0mm			UART	N/A		-25~+75 deg-C					
	EYSGJNAWY-1X	5.1x11.3 x1.3mm											
Application Embedded Module – Smart phone (Software Support : Taiyo Yuden)	EYSGCNAWY-WX	9.6x12.9 x2.0mm											
	EYSGJNAWY-WX	5.1x11.3 x1.3mm											

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