

Wireless Module *Bluetooth[®] low energy* Module Overview

May 30, 2018 Version 1.8

TAIYO YUDEN Bluetooth® low energy Module Line-Up

Taiyo Yuden Bluetooth® low energy Module

nRF52832 Module
nRF52810 Module

nRF51422 Module
nRF51822 Module

EYSHCN Series
EYSLCN Series

Big

Embedded antenna
Int. 32kHz X'tal
Int. LC for DC/DC
9.6 x 12.9 x 2.0 mm

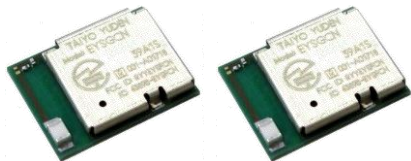
Small

Embedded antenna
Ext. 32kHz X'tal
Ext. LC for DC/DC
5.1 x 11.3 x 1.3 mm

Ultra-small

Embedded antenna
Ext. 32kHz X'tal
Ext. LC for DC/DC
3.25 x 8.55 x 0.85 mm

EYSHSN Series



EYSHCN
ZWZ

EYSLCN
ZWW

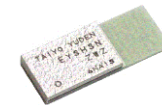
RAM 64kB
SoftDevice
S132

RAM 24kB
SoftDevice
S112



EYSHJN
ZWZ

RAM 64kB
SoftDevice
S132

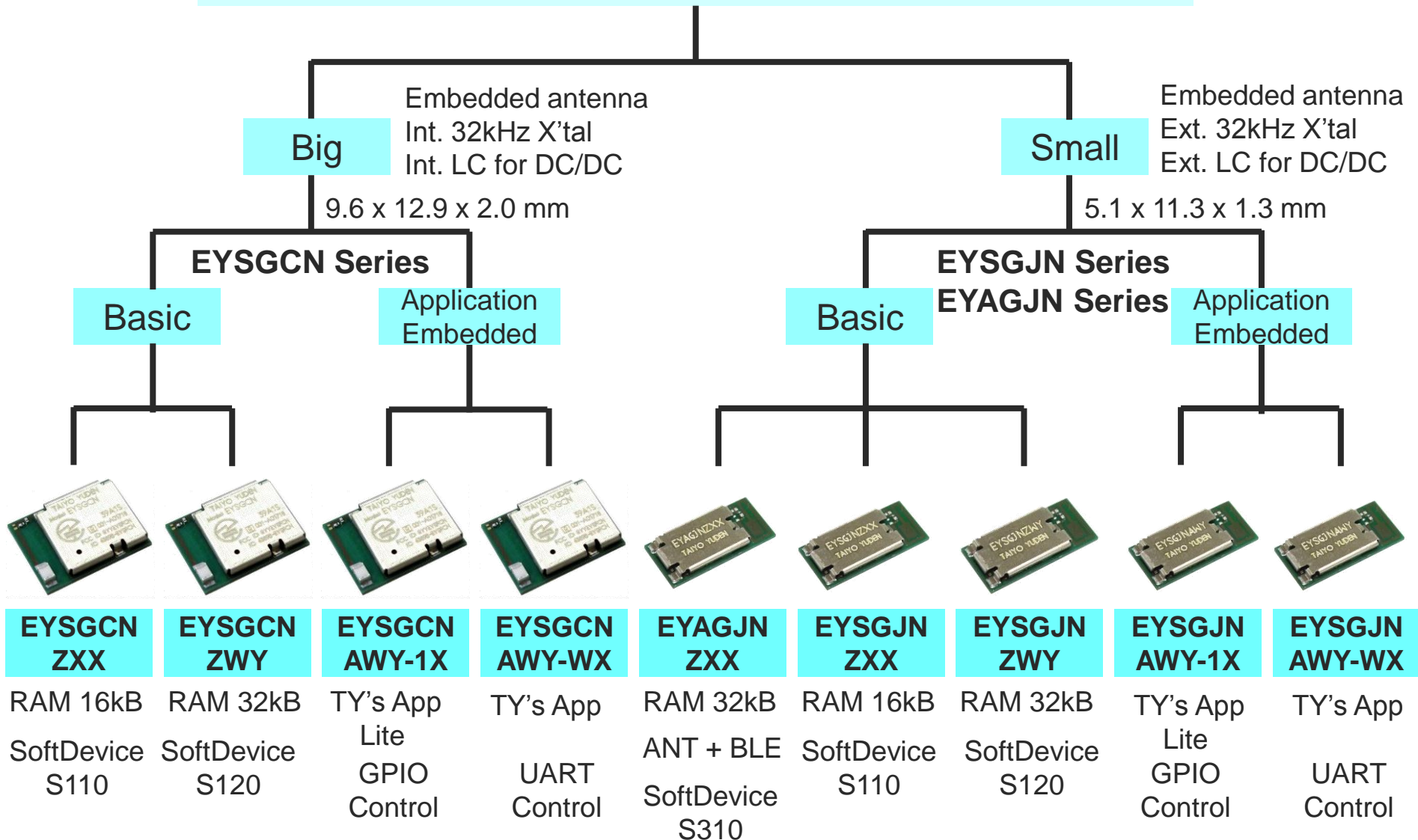


EYSHSN
ZWZ

RAM 64kB
SoftDevice
S132

TAIYO YUDEN Bluetooth® low energy Module Line-Up

nRF51x22 Bluetooth® low energy Module



Latest Documents for Bluetooth® low energy Module

EYSHSNZWZ	http://www.yuden.co.jp/or/product/category/module/EYSHSNZWZ.html
EYSHCNZWZ	http://www.yuden.co.jp/or/product/category/module/EYSHCNZWZ.html
EYSHJNZWZ	http://www.yuden.co.jp/or/product/category/module/EYSHJNZWZ.html
EYSLCNZWZ	http://www.yuden.co.jp/or/product/category/module/EYSLCNZWW.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/EYSGCNAWY-WX.html
EYSGJNAWY-WX	http://www.yuden.co.jp/or/product/category/module/EYSGJNAWY-WX.html
EYSHCNZXZ	http://www.yuden.co.jp/or/product/category/module/EYSHCNZXZ.html
EYSHJNZXZ	http://www.yuden.co.jp/or/product/category/module/EYSHJNZXZ.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.

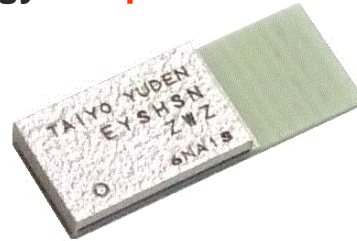
- The Japanese documents are available on the following page.

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

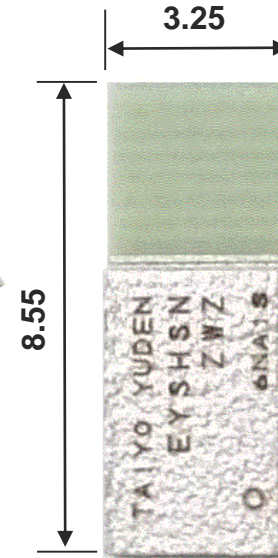
2Mbps Bluetooth® 5.0 low energy Module: EYSHSNZWZ

Features

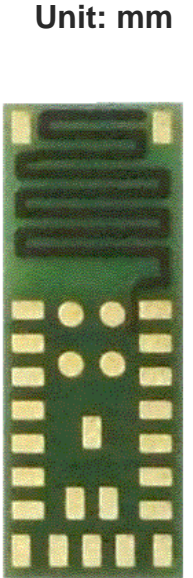
- Frequency: 2402 to 2480 MHz with +4dBm Output power
- Single power supply: 1.7– 3.6V
- Single Mode Bluetooth low energy (ANT™ Available)
- Chip: **nRF52832** (Nordic) with Bluetooth low energy **2Mbps** mode
- Integrated System Clock
- ARM Cortex M4F** 32bit processor
- 512kB Flash and 64kB RAM**
- Interface: SPI, UART, I2C, I2S, PDM and 12bit ADC
- Support **NFC-A Type-2** for Touch-to-Pair
- Integrated high performance PCB antenna
- Outline: **3.25 x 8.55 x 0.85**mm MAX
- Operating Temperature range: -40 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free



Outline



Top View



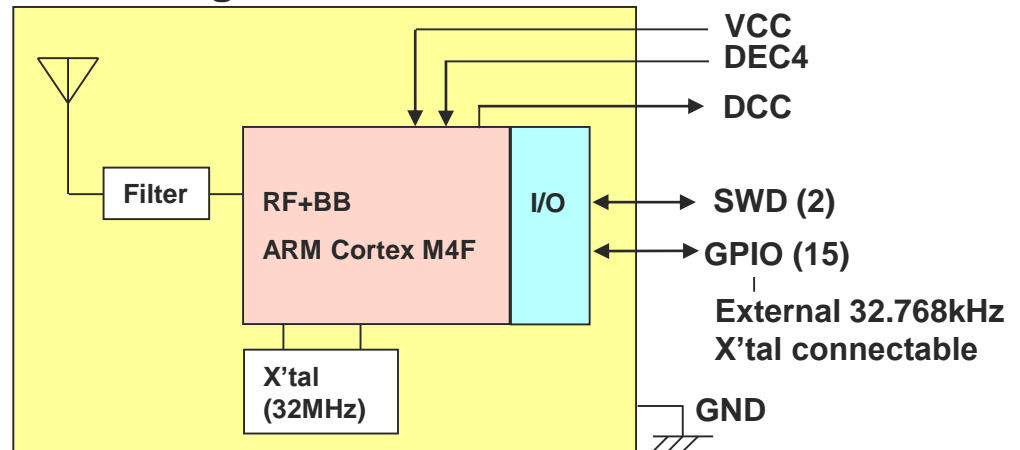
Bottom View

Unit: mm

Applications

- Smart wristband
- Smart glasses
- Remote control ring
- Smart pen
- Heart rate monitor
- pressure monitor
- Blood glucose meter
- Thermometer
- Mobile accessories

Block Diagram



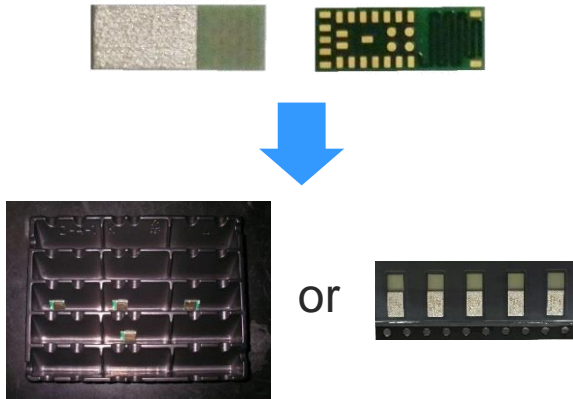
All specifications are subject to change without notice.

The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

Bluetooth® low energy Module Sample, Evaluation Board / Kit

EYSHSNZWZ (Module)

Module samples



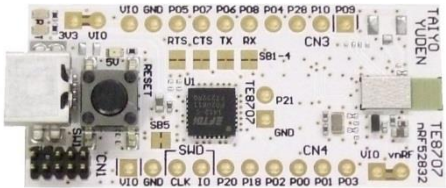
Tray

Tape



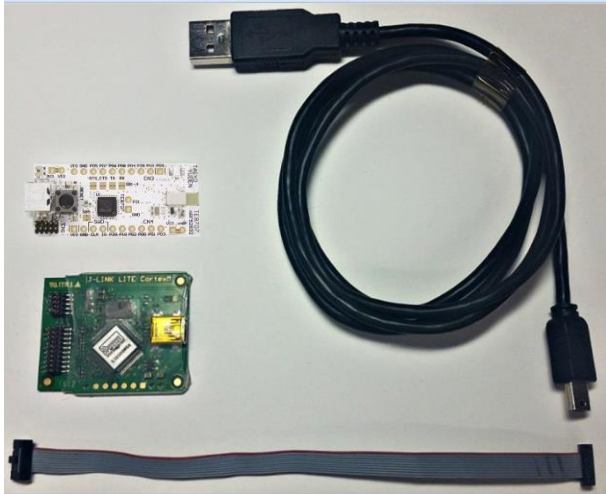
EBSHSNZWZ (EV-B)

Evaluation board



EKSHSNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSHCNZWZ

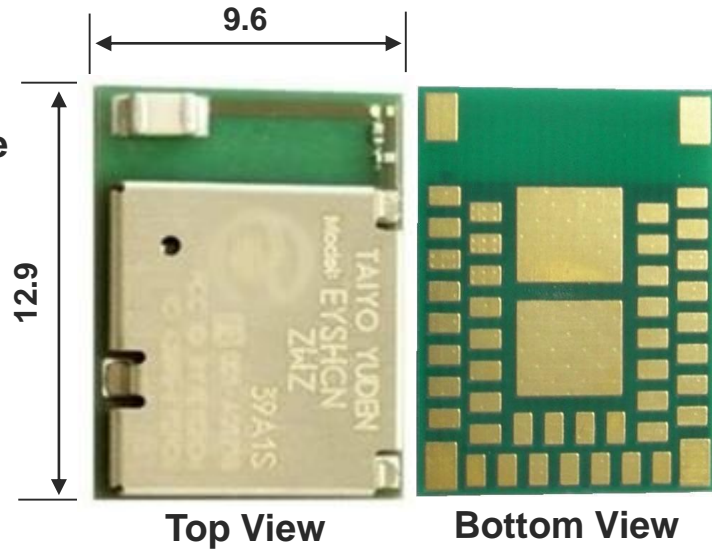
Features

- 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) with Bluetooth low energy 2Mbps mode
- 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
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

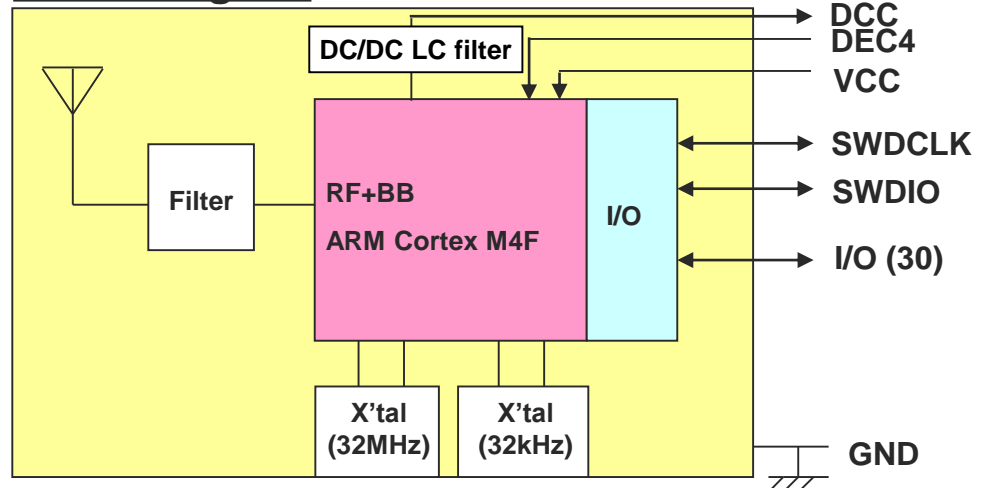
Applications

- 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.

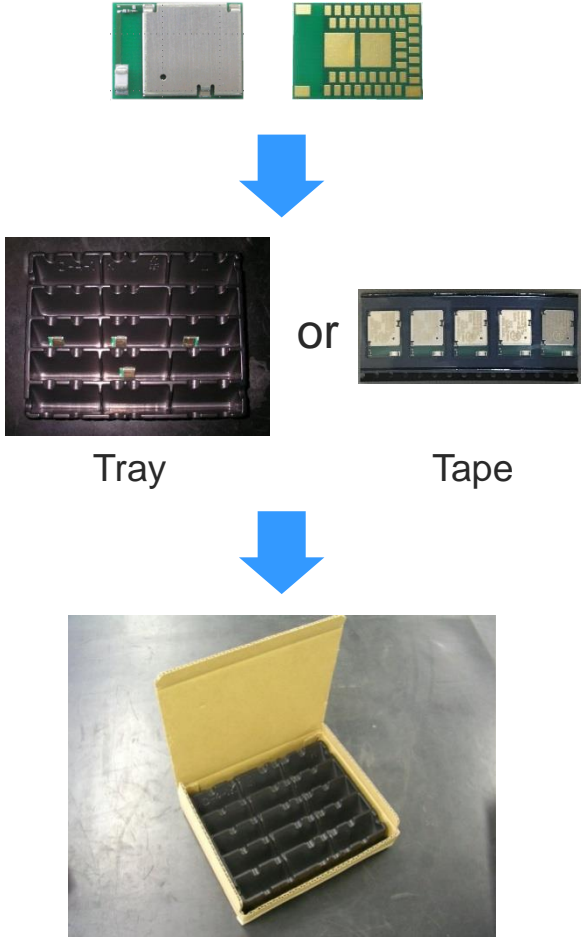
The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

TAIYO YUDEN

Bluetooth® low energy Module Sample, Evaluation Board / Kit

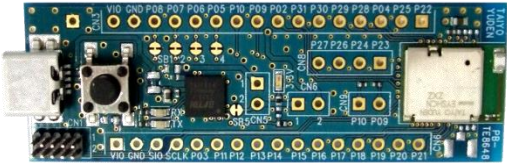
EYSHCNZWZ (Module)

Module samples



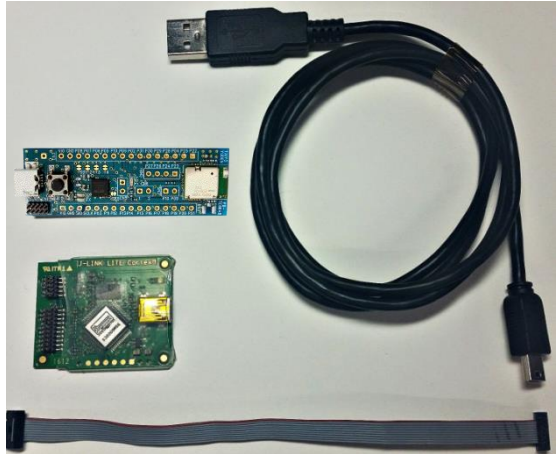
EBSHCNZWZ (EV-B)

Evaluation board



EKSHCNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSHJNZWZ

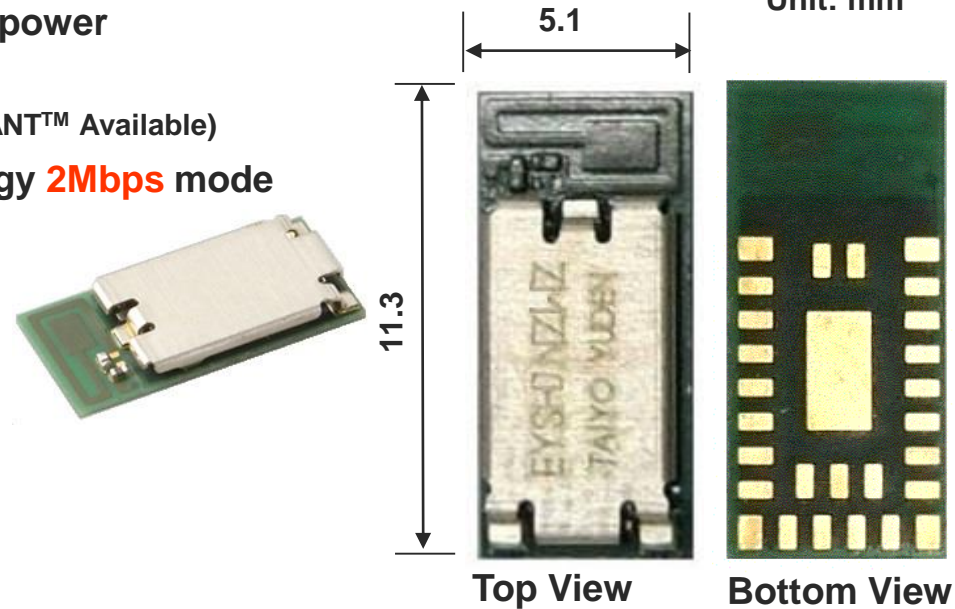
Features

- 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) with Bluetooth low energy **2Mbps** mode
- 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
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

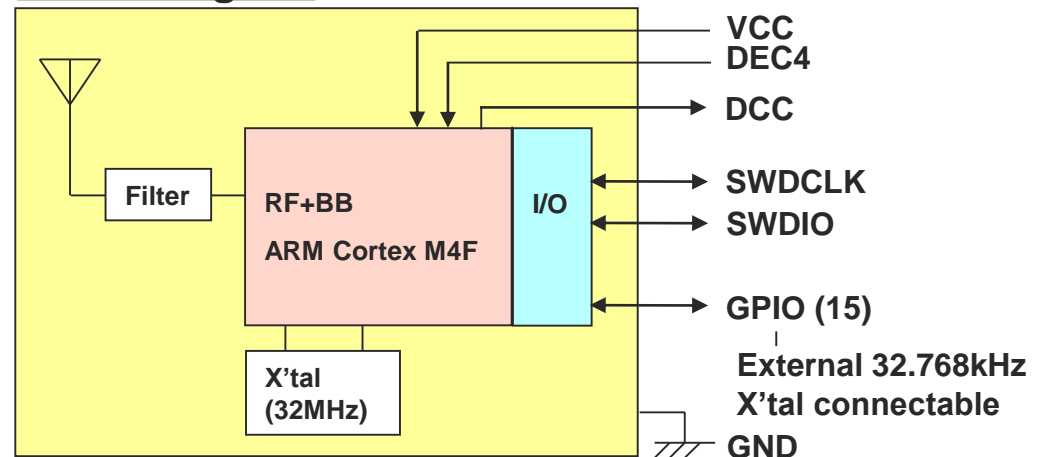
Applications

- 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



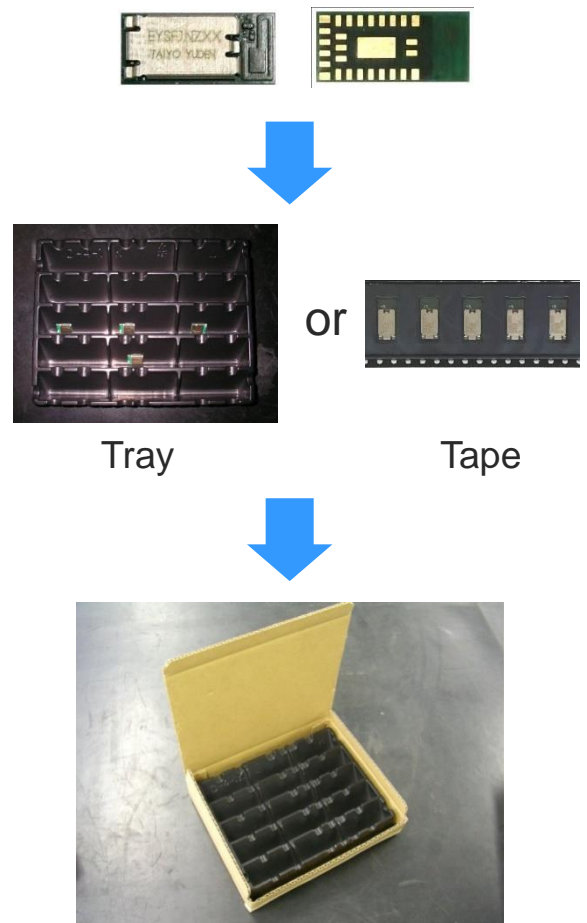
All specifications are subject to change without notice.

The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

Bluetooth® low energy Module Sample, Evaluation Board / Kit

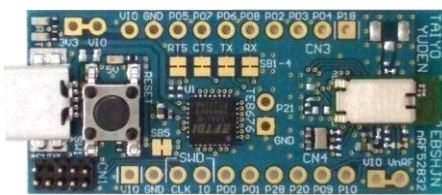
EYSHJNZWZ (Module)

Module samples



EBSHJNZWZ (EV-B)

Evaluation board



EKSHJNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSLCNZWW

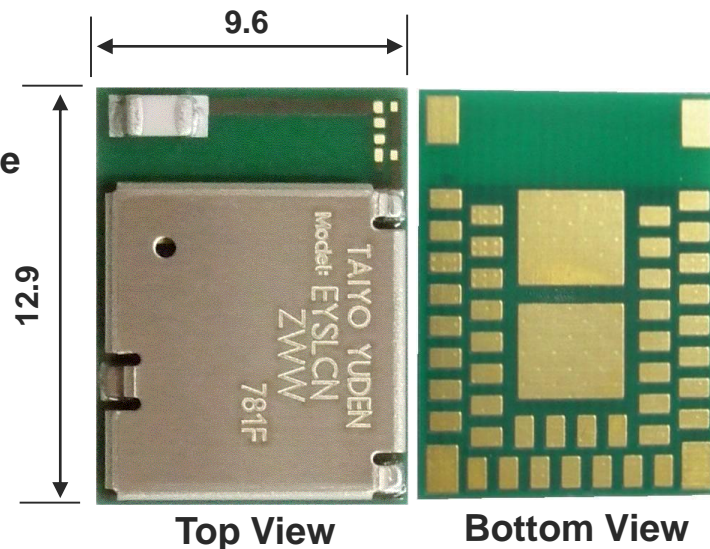
Features

- 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: nRF52810 (Nordic) with Bluetooth low energy 2Mbps mode
- Integrated System/Sleep Clock, LC for DC/DC
- Integrated high performance ceramic chip antenna
- ARM Cortex M4 32bit processor
- 192kB Flash and 24kB RAM
- Interface: SPI, UART, I2C, PDM and 12bit ADC
- 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
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

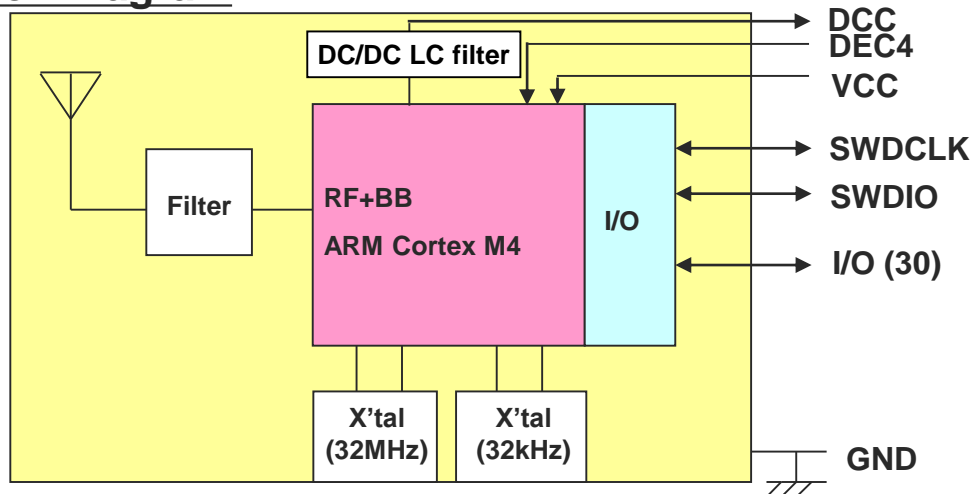
Applications

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

Outline



Block Diagram



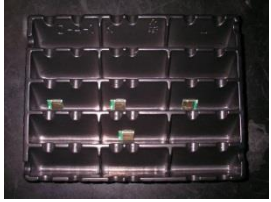
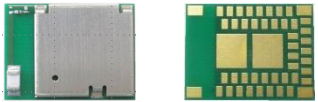
All specifications are subject to change without notice.

The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

Bluetooth® low energy Module Sample, Evaluation Board / Kit

EYSLCNZWW (Module)

Module samples



or



Tray

Tape



EBSLCNZWW (EV-B)

Evaluation board



EKSLCNZWW (EV-K)

Evaluation kit



SEGGER
J-Link LITE
Attached



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: -40 to 85 deg-C**
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications

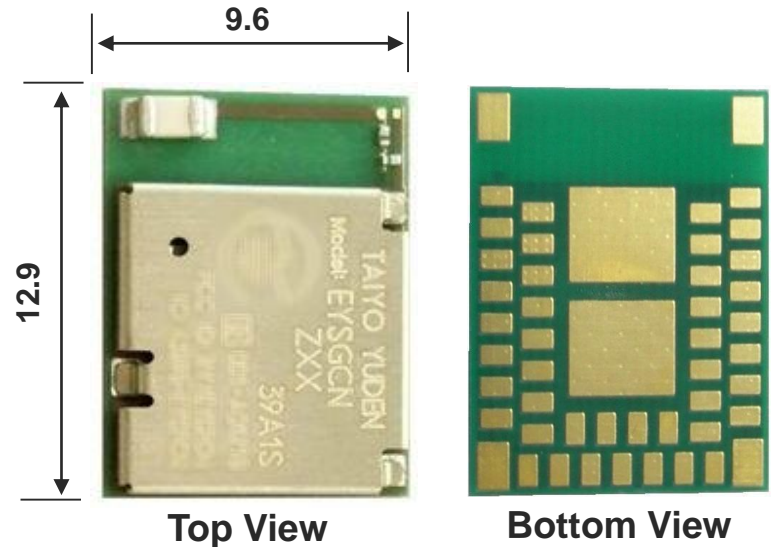
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

All specifications are subject to change without notice.

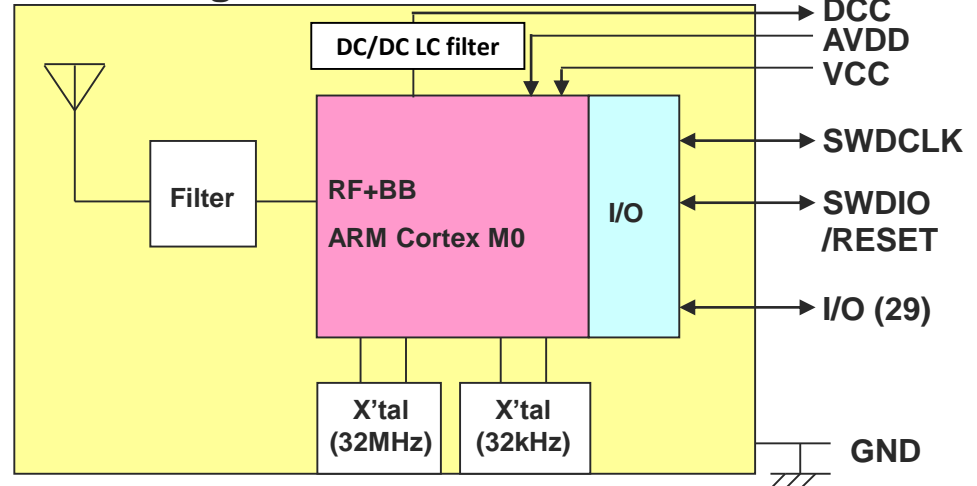
The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

Outline

Unit: mm



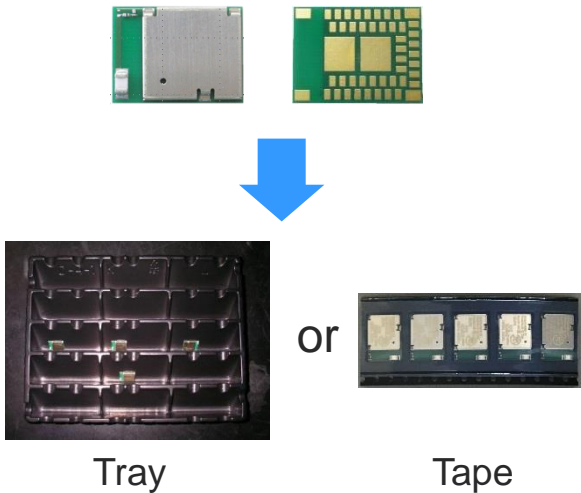
Block Diagram



Bluetooth® low energy Module Sample, Evaluation Board / Kit

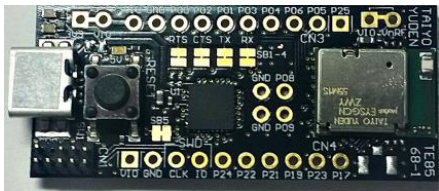
EYSGCNZXX, EYSGCNZWY (Module)

Module samples



EBSGCMZWY (EV-B)

Evaluation board



EKSGCMZWY (EV-K)

Evaluation kit

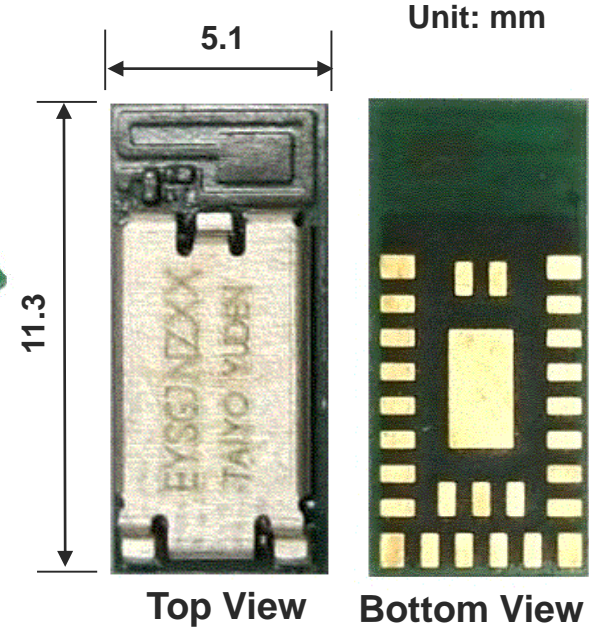


Bluetooth® low energy Module **EYSGJNZXX**

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 1.3mm MAX**
- Operating Temperature range: -40 to 85 deg-C**
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

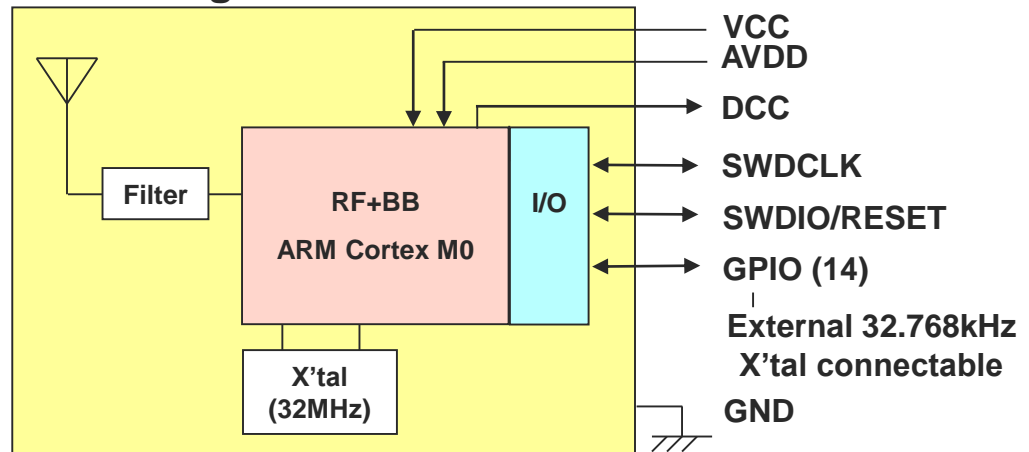
Outline



Applications

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

Block Diagram



All specifications are subject to change without notice.

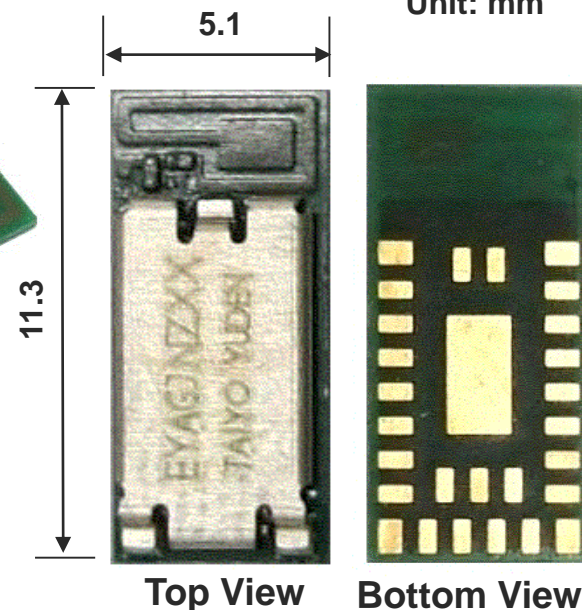
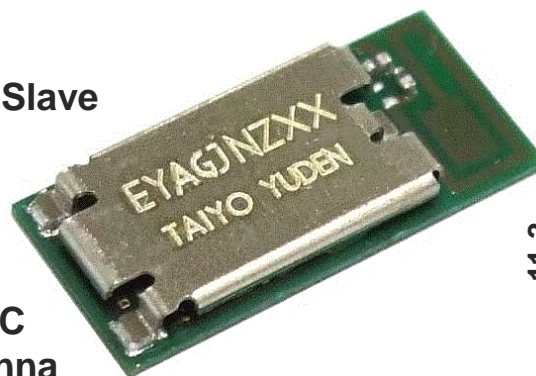
The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

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 1.3mm MAX**
- Operating Temperature range: -25 to 85 deg-C**
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

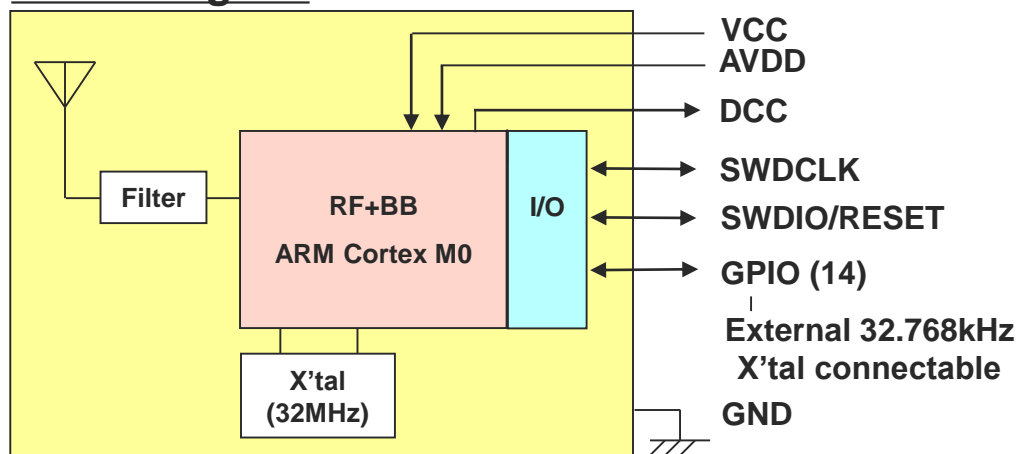
Outline



Applications

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

Block Diagram



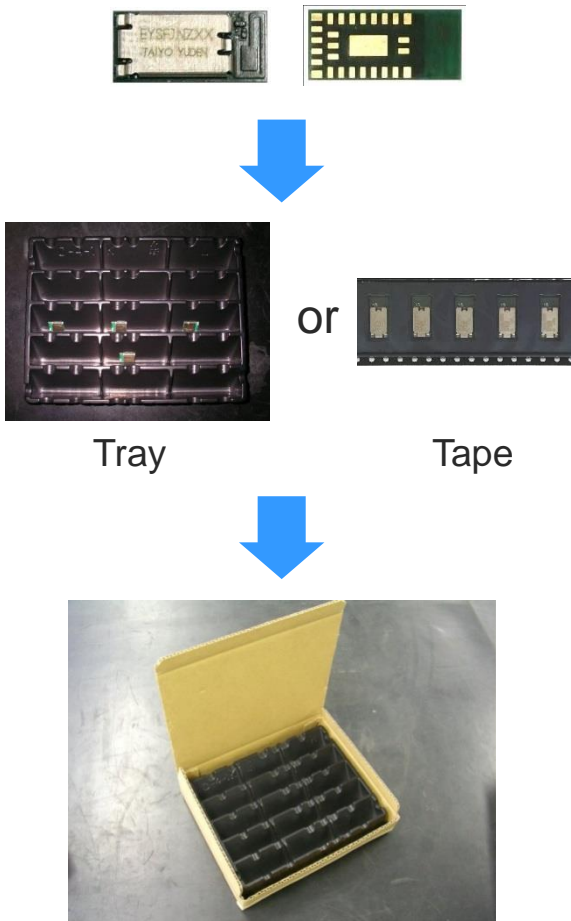
All specifications are subject to change without notice.

The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

Bluetooth® low energy Module Sample, Evaluation Board / Kit

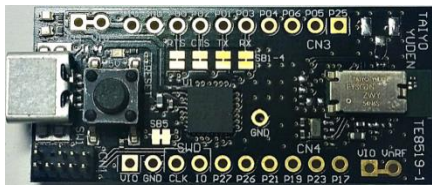
EYSGJNZXX, EYSGJNZWY, EYAGJNZXX (Module)

Module samples



EBSGJNZWY, EBAGJNZXX (EV-B)

Evaluation board

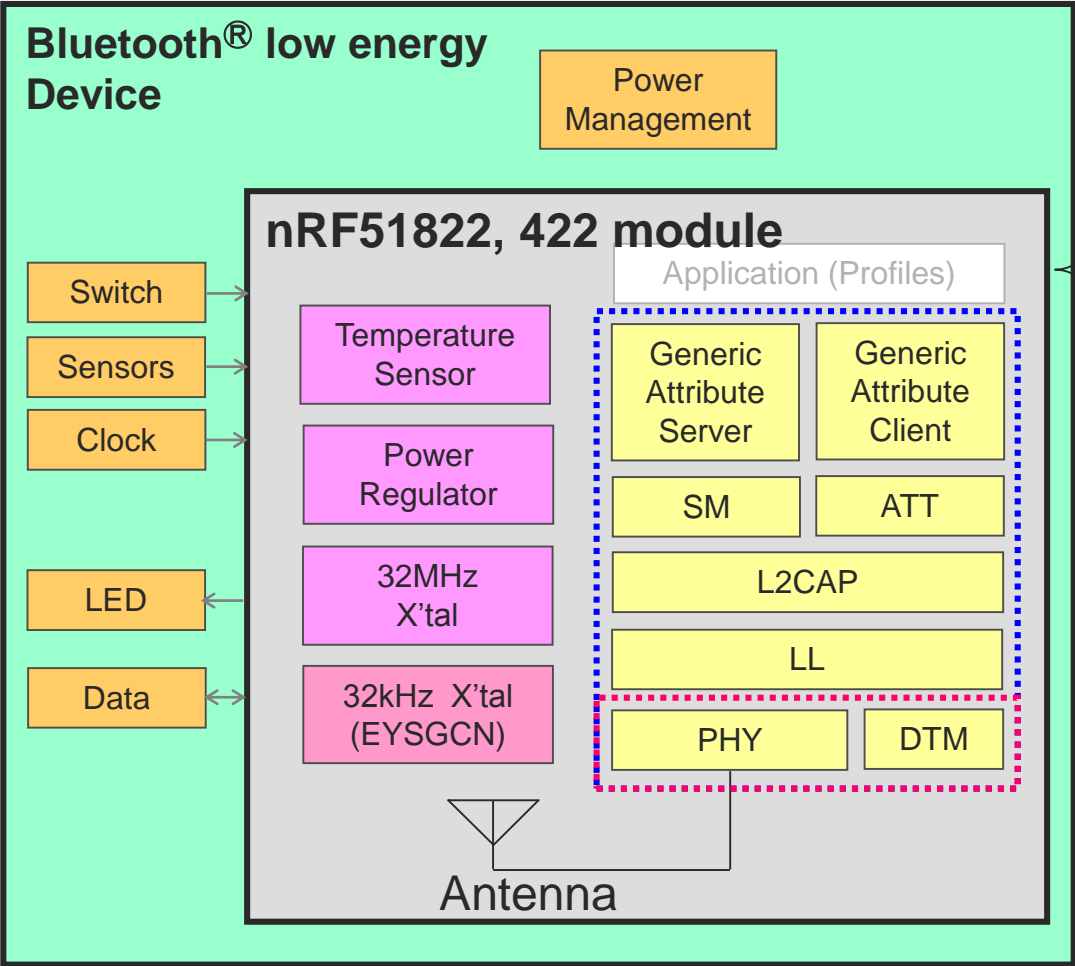


EKSGJNZWY, EKAGJNZXX (EV-K)

Evaluation kit



Application Layer image for Basic Module



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

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 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

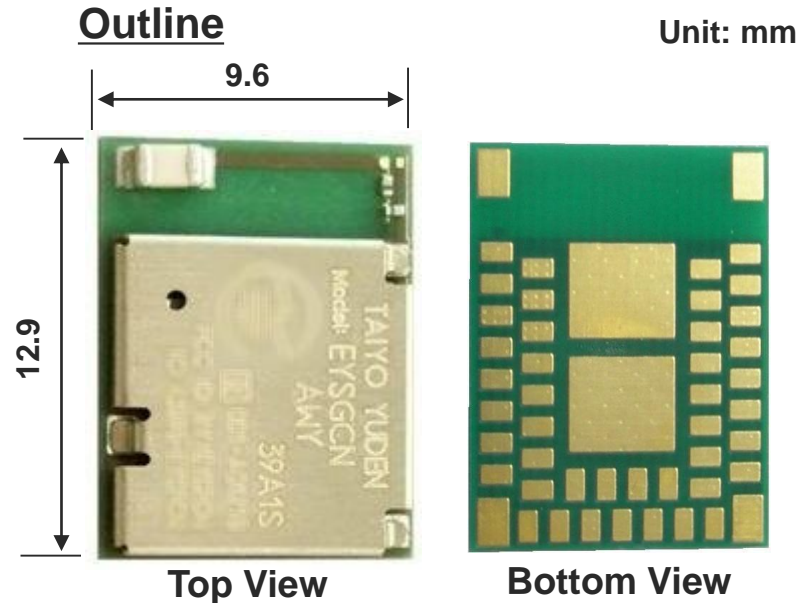
Applications

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

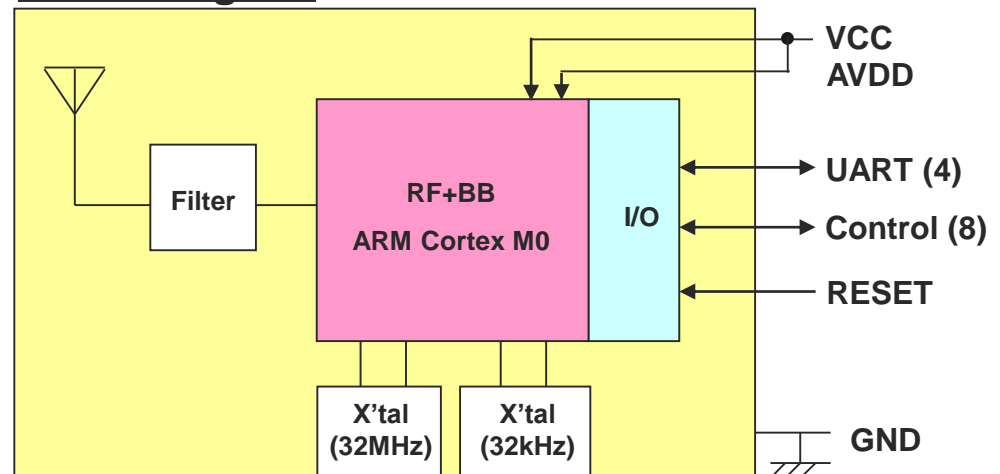
All specifications are subject to change without notice.

The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

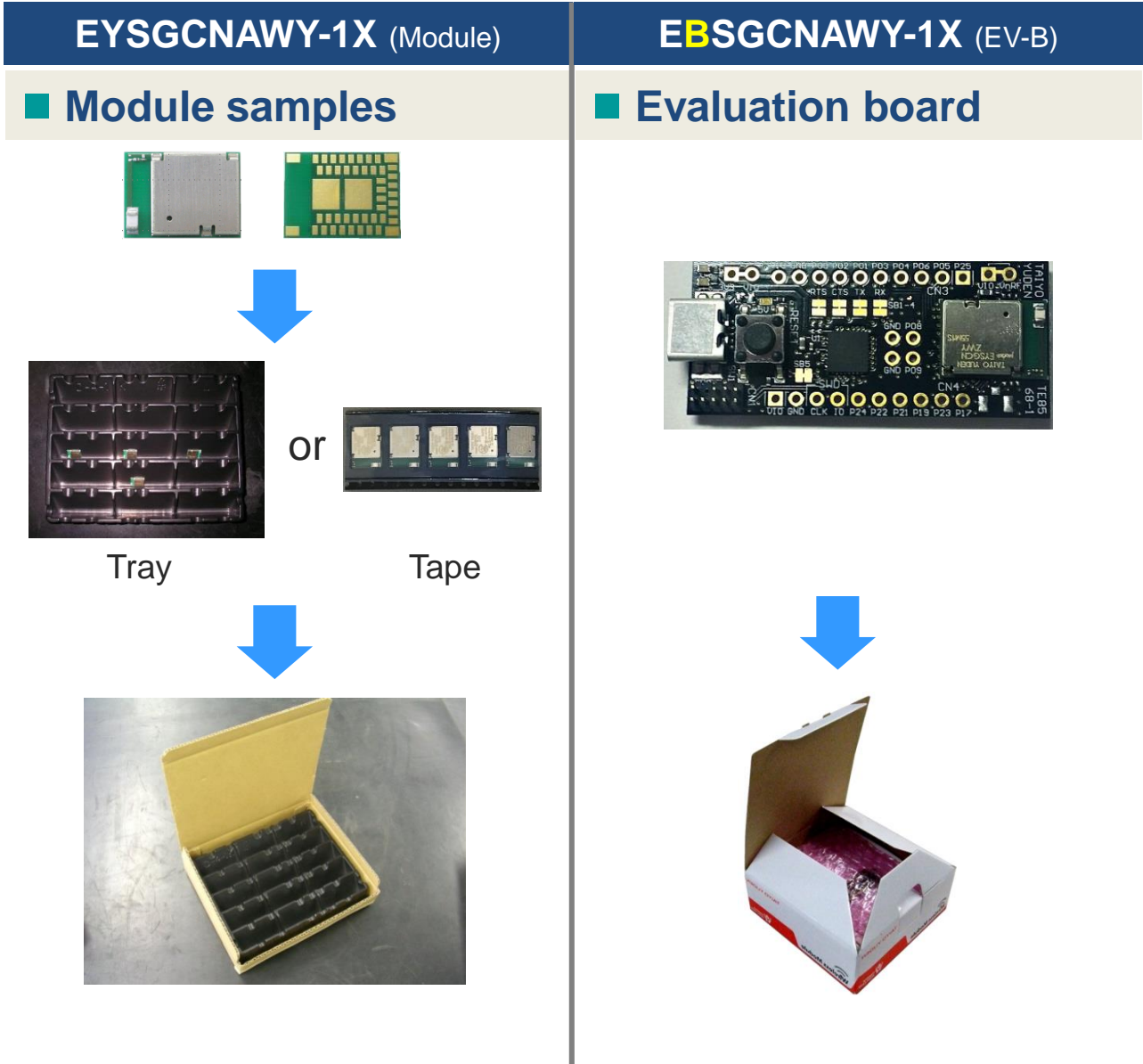
TAIYO YUDEN



Block Diagram



Bluetooth low energy Module Sample, Evaluation Board



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

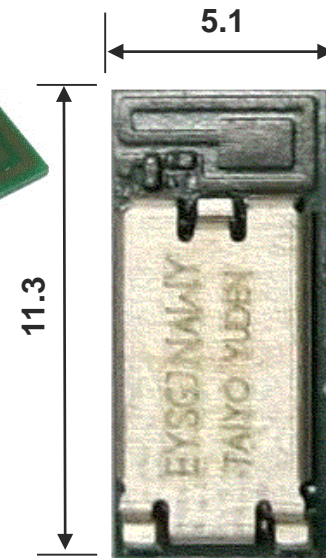
Features

- 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 Lite : 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 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

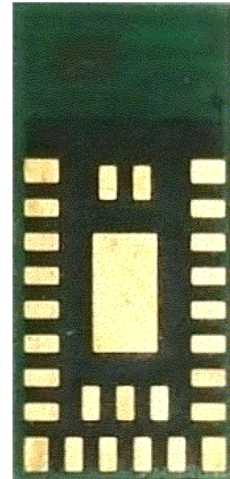
Applications

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

Outline



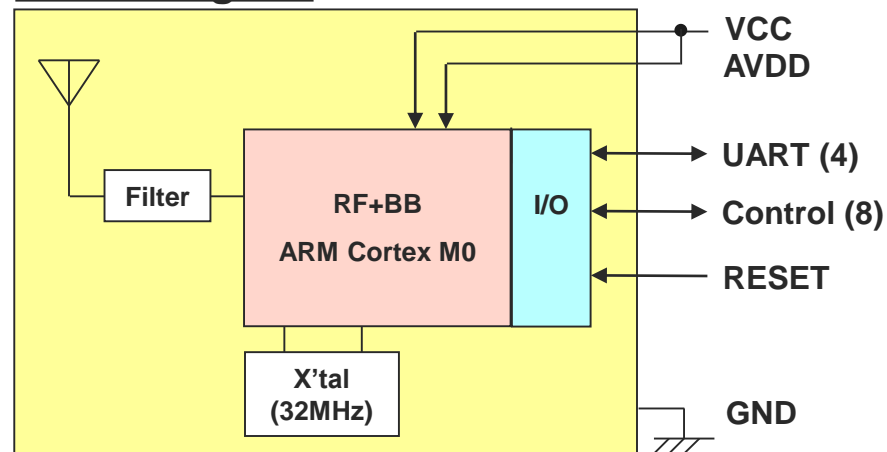
Unit: mm



Top View

Bottom View

Block Diagram

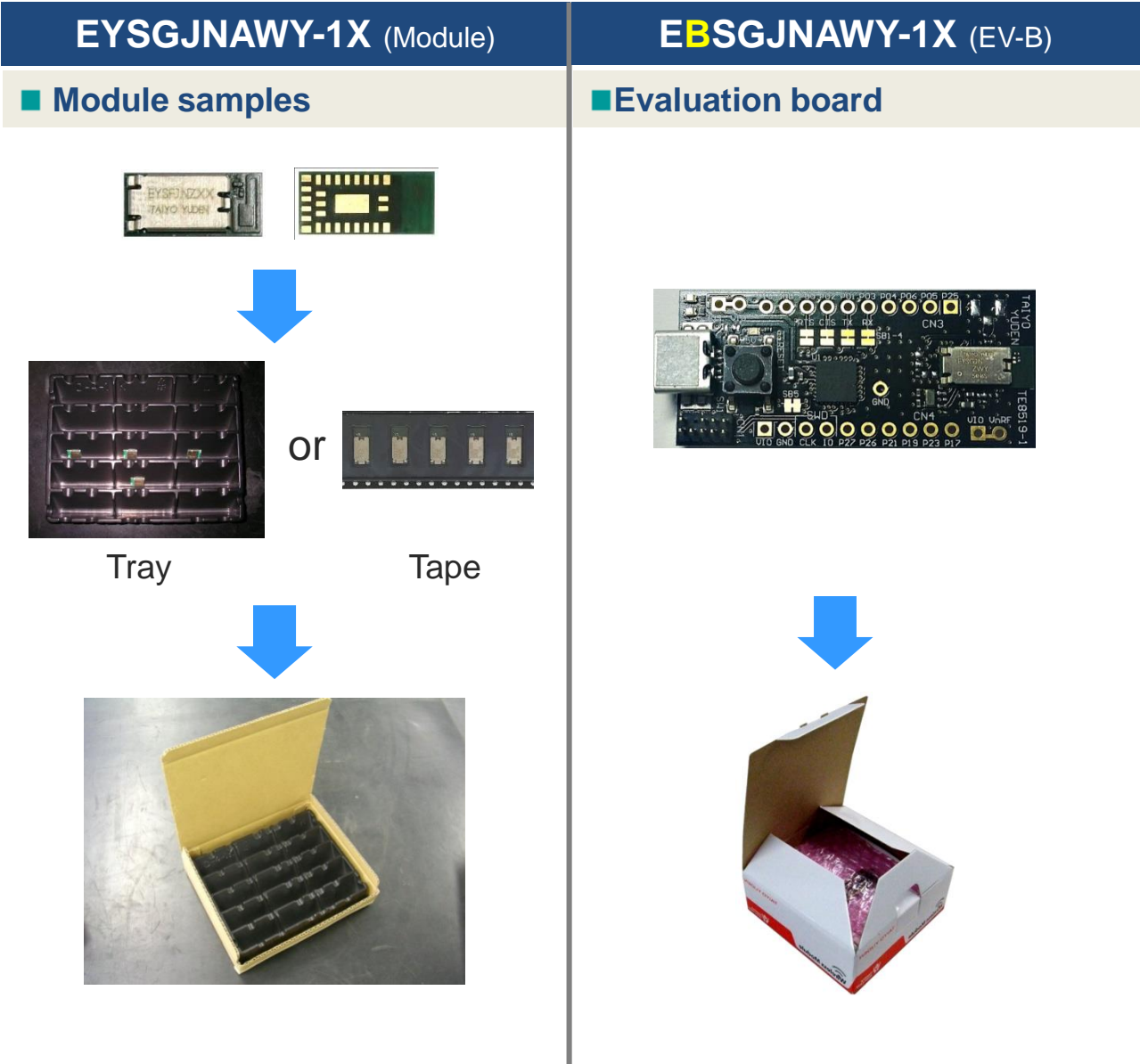


All specifications are subject to change without notice.

The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

TAIYO YUDEN

Bluetooth low energy Module Sample, 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 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

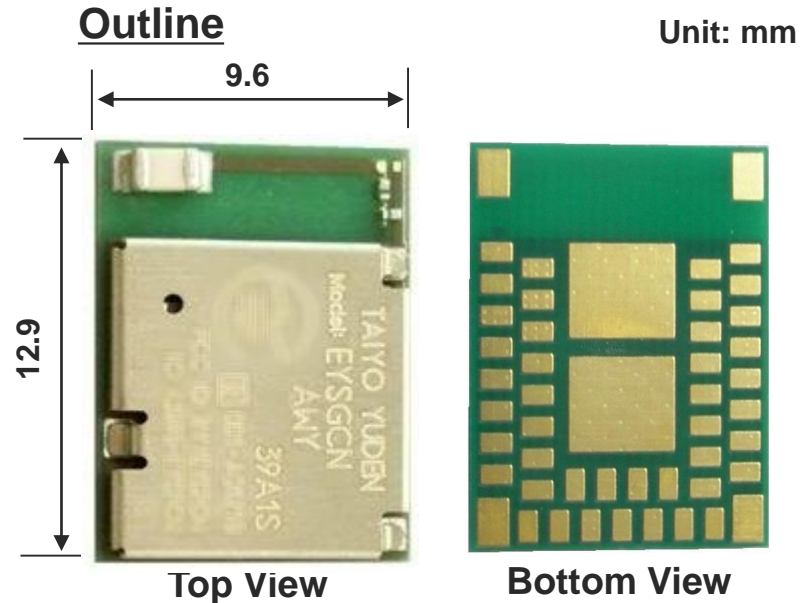
Applications

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

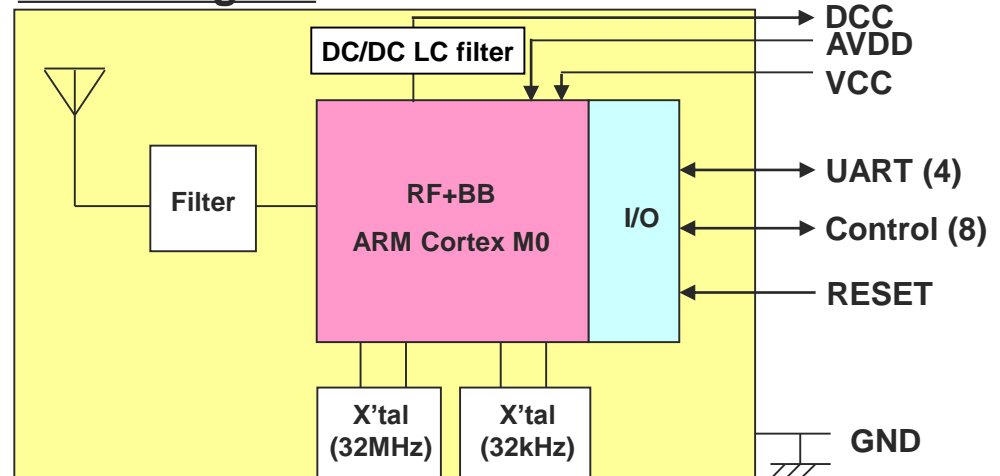
All specifications are subject to change without notice.

The *Bluetooth*® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

TAIYO YUDEN



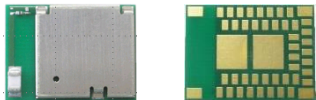
Block Diagram



Bluetooth low energy Module Sample, Evaluation Board

EYSGCNAWY-WX (Module)

Module samples



Tray

or



Tape



EBSGCNAWY-WX (EV-B)

Evaluation board

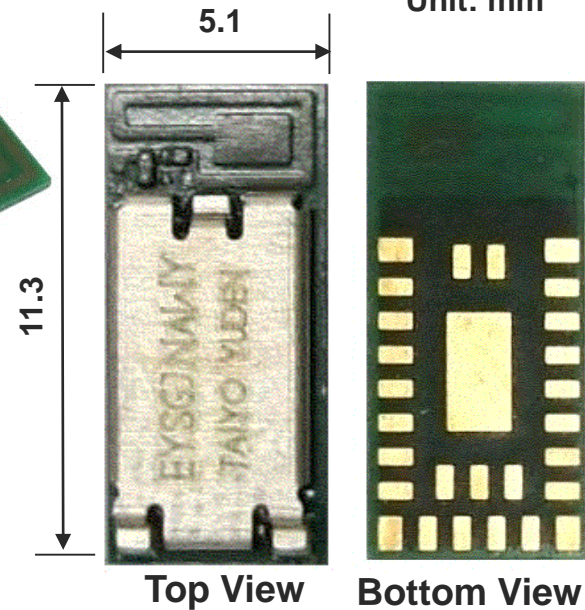


Bluetooth® low energy Module **EYSGJNAWY-WX**

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 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
- ETSI EN 300 328 v2.1.1 Conducted Test Report Available
- RoHS compliant / Complete Lead Free

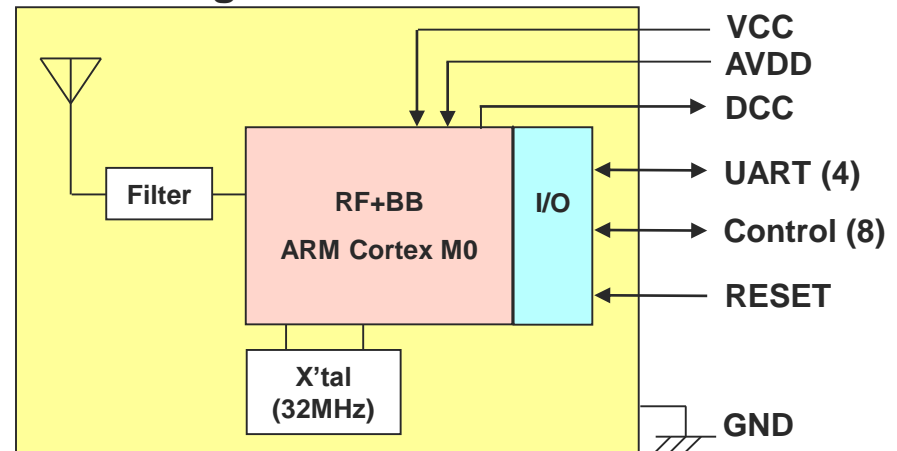
Outline



Applications

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

Block Diagram

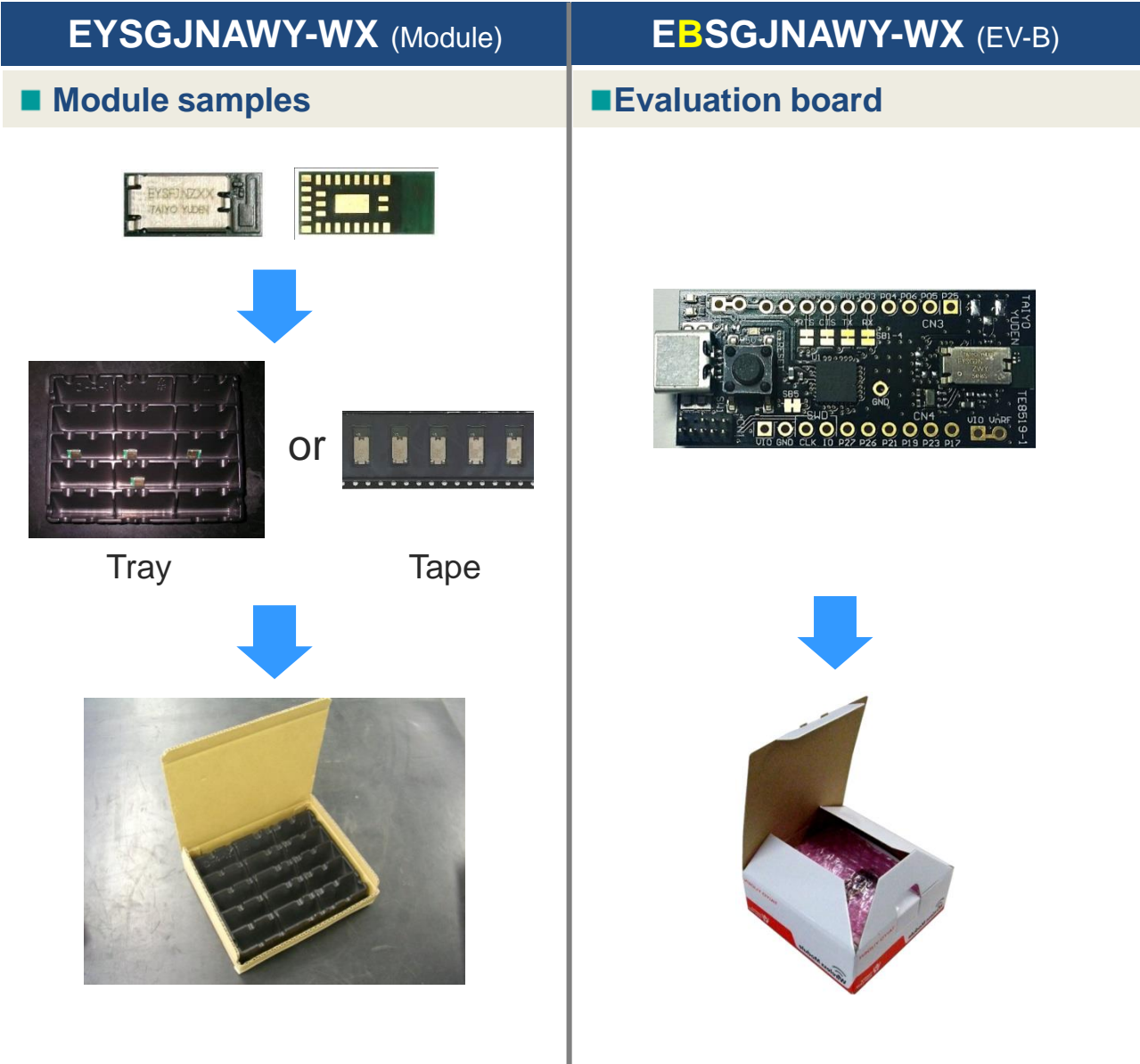


All specifications are subject to change without notice.

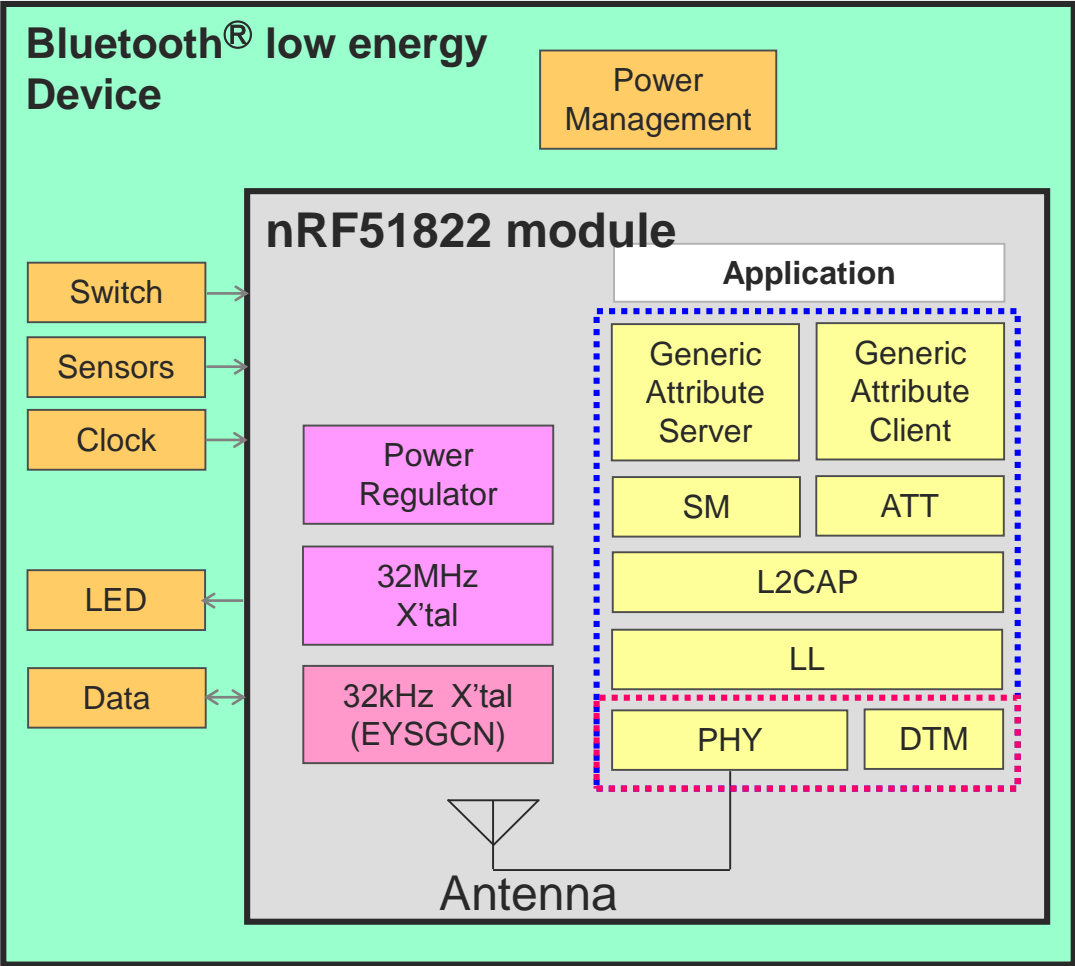
The Bluetooth® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

TAIYO YUDEN

Bluetooth low energy Module Sample, Evaluation Board



Application Layer image for Application Embedded Module



Connection option

-1X module for Module - Module only

-WX module for 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

EYSGCN, EYSGJN
Application Embedded Module

Bluetooth® low energy standard module

Type	Part No.	Size (LxWxH)	Specification	ANT™ Support	I/F	RAM	Certification	Temperature
High Performance Basic (Software Support : Nordic)	EYSHSNZWZ	3.25x8.55 X0.85mm	Bluetooth V5.0 BLE Single Slave/ Master	✓	UART SPI I2C	64kB	Japan FCC IC (CE) ^{※2}	-40~+85 deg-C
	EYSHCNZWZ	9.6x12.9 X2.0mm		✓		64kB		
	EYSLCNZWW	5.1x11.3 X1.3mm		✓		24kB		
	EYSHJNZWZ	9.6x12.9x 2.0mm				64kB		
Basic (Software Support : Nordic)	EYSGCNZXX	9.6x12.9x 2.0mm	Bluetooth V4.2 ^{※1} BLE Single Slave/ Master		UART	16kB	Japan FCC IC (CE) ^{※2}	-40~+85 deg-C (EYSGCN ZXX, EYSGJN ZXX)
	EYSGCNZWY					32kB		
	EYSGJNZXX	5.1x11.3x 1.3mm				16kB		
	EYSGJNZWY			✓		32kB		
	EYAGJNZXX					32kB		
Application Embedded – Module (Software Support : TAIYO YUDEN)	EYSGCNAWY-1X	9.6x12.9x 2.0mm	Bluetooth V4.1 BLE Single Slave/ Master		UART	N/A		-25~+85 deg-C (other than the above)
	EYSGCNAWY-WX							
	EYSGJNAWY-1X	5.1x11.3x 1.3mm						
	EYSGJNAWY-WX							

※1 Supported by S130 SoftDevice, ※2 ETSI EN 300 328 v2.1.1 conducted test report available

TAIYO YUDEN