

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

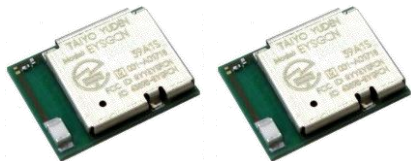
nRF52832 Module
nRF52810 Module

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



EYSHCN
ZWZ

EYSLCN
ZWW

RAM 64kB
SoftDevice
S132

RAM 24kB
SoftDevice
S112

EYSHJN Series

Small

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



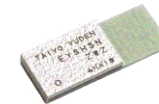
EYSHJN
ZWZ

RAM 64kB
SoftDevice
S132

EYSHSN Series

Ultra-small

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

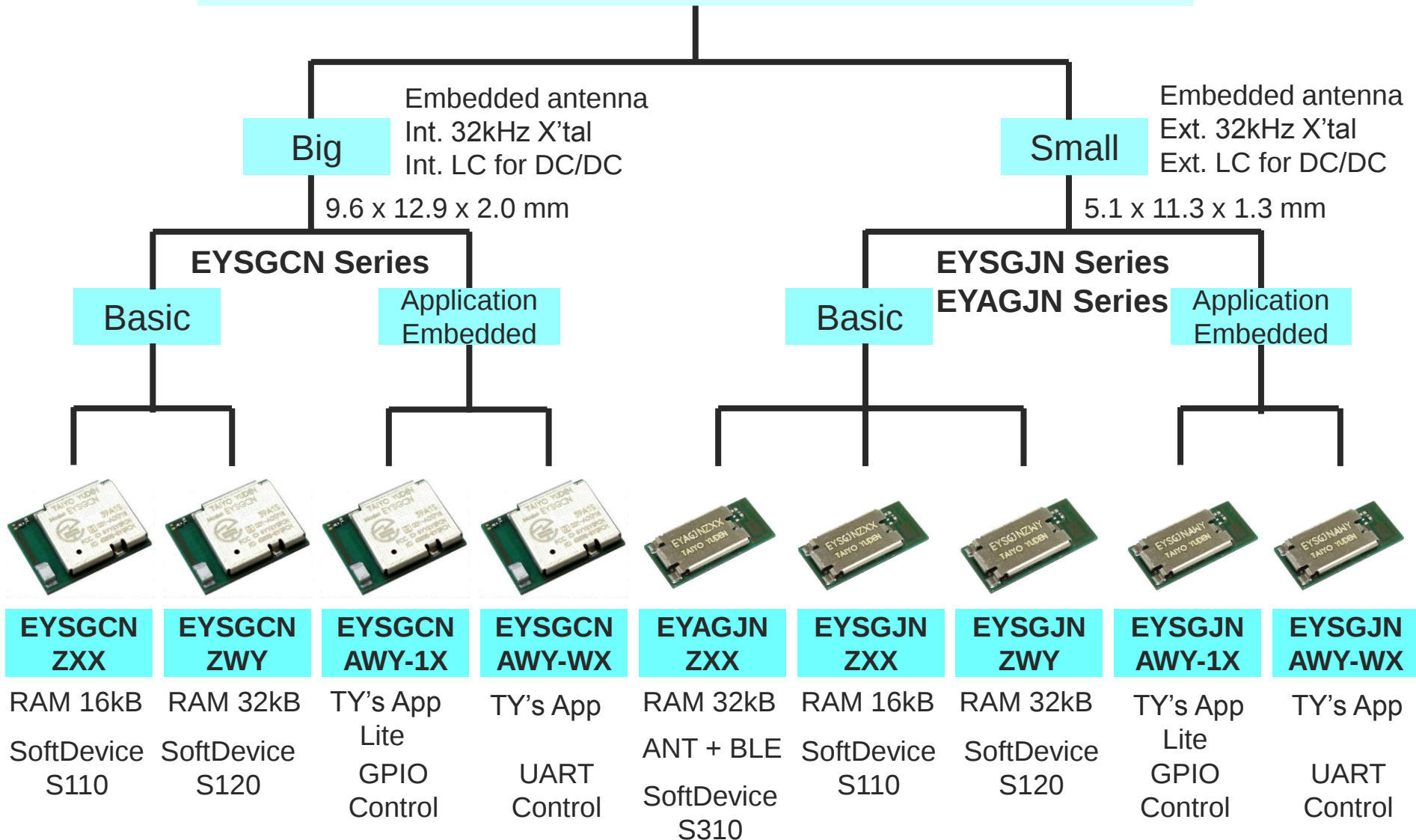


EYSHSN
ZWZ

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/EYSLCNZWZ.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
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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

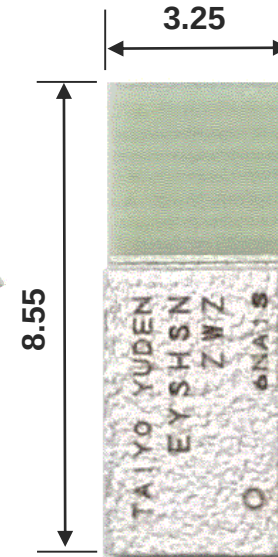
- The documents for the evaluation board and evaluation kit are also available on the above page.
- The Japanese documents are available on the following page.
<http://www.yuden.co.jp/jp/product/category/module/lineup.html#Bluetooth>

2Mbps Bluetooth® 5.0 low energy Module: EYSHSNZWZ

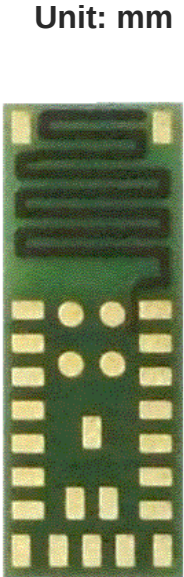
Features

- 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



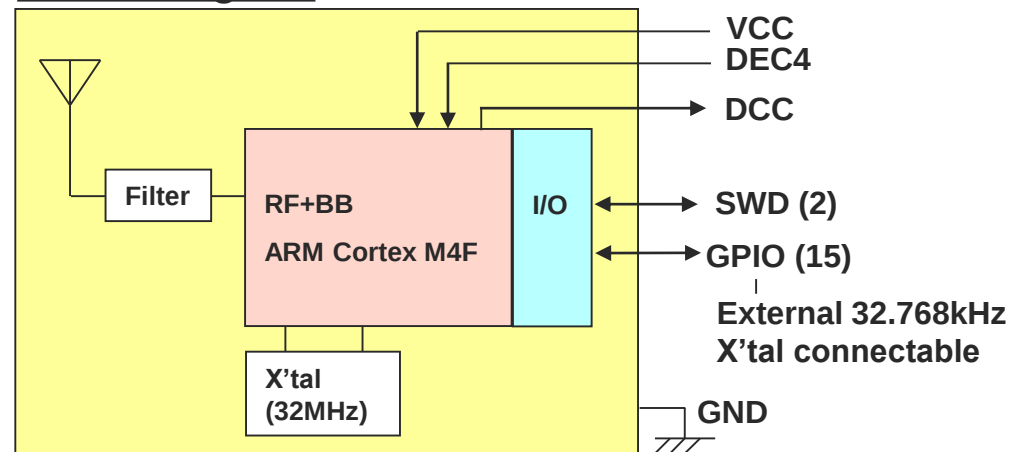
Bottom View

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



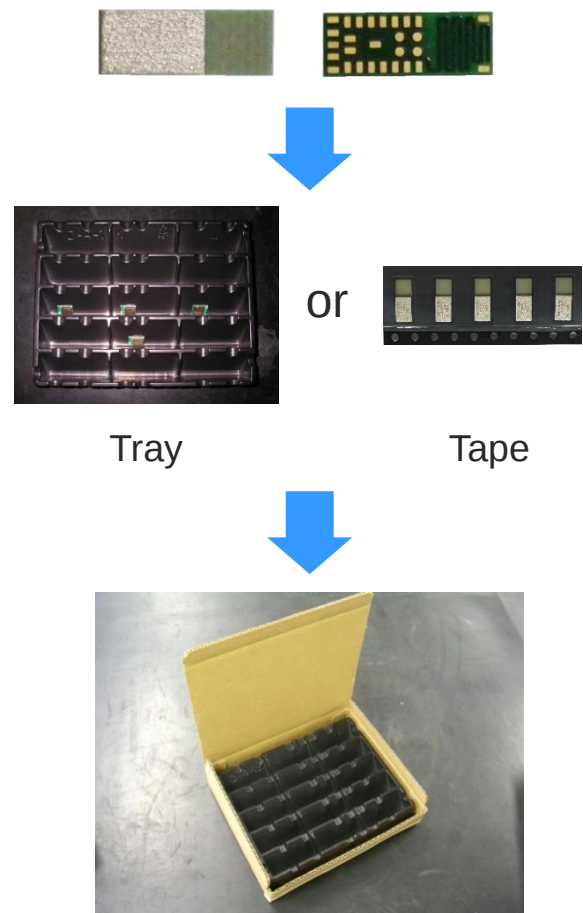
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

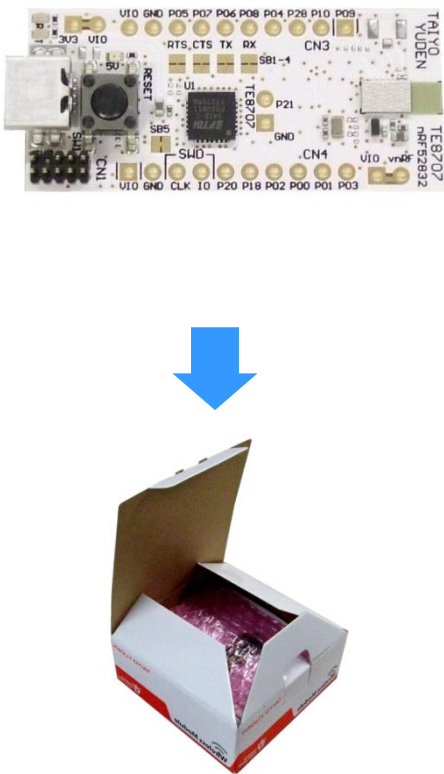
EYSHSNZWZ (Module)

Module samples



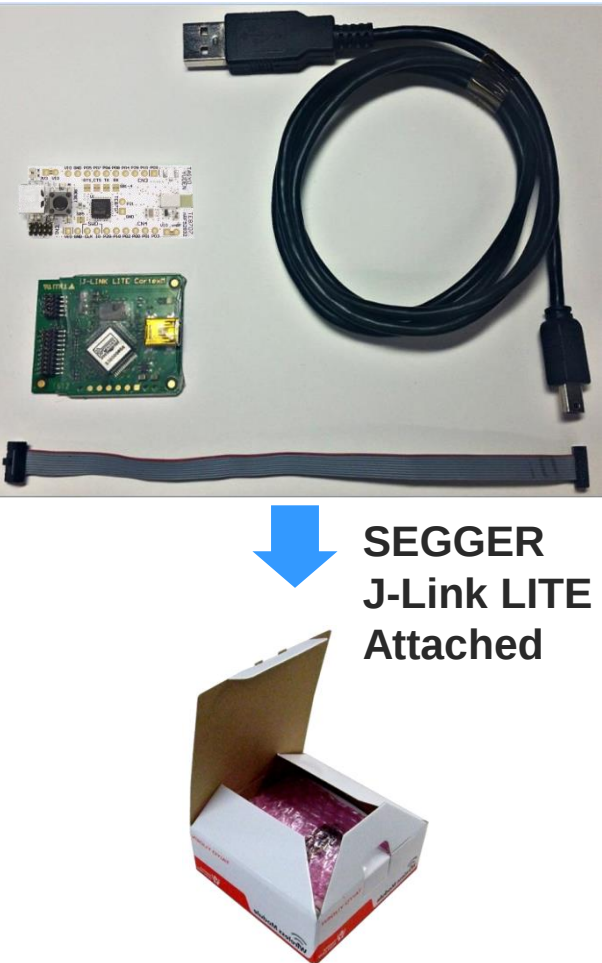
EBSHSNZWZ (EV-B)

Evaluation board



EKSHSNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSHCNZWZ

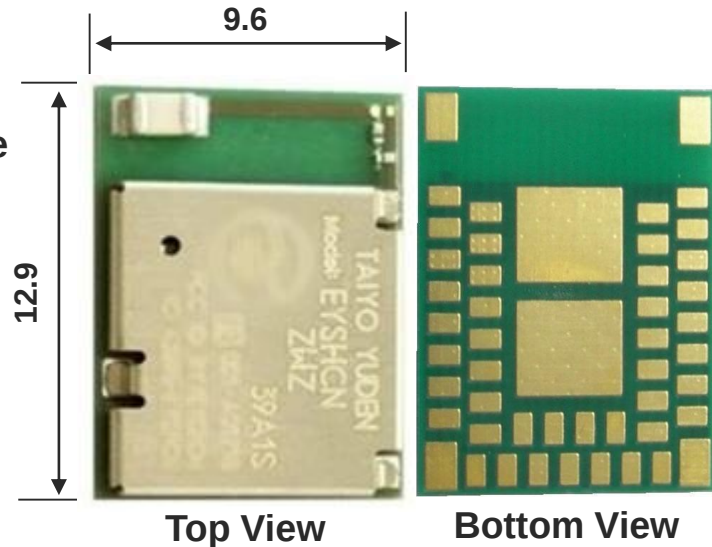
Features

- 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

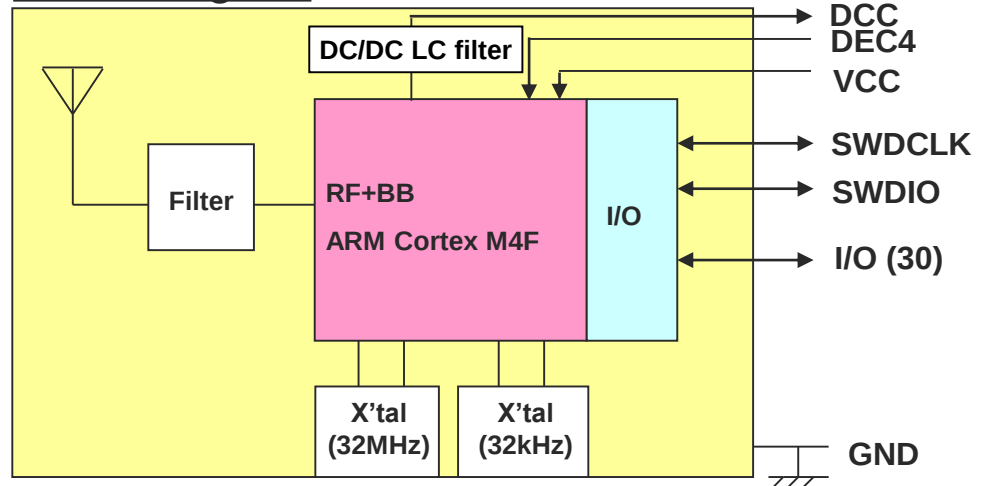
Applications

- 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.

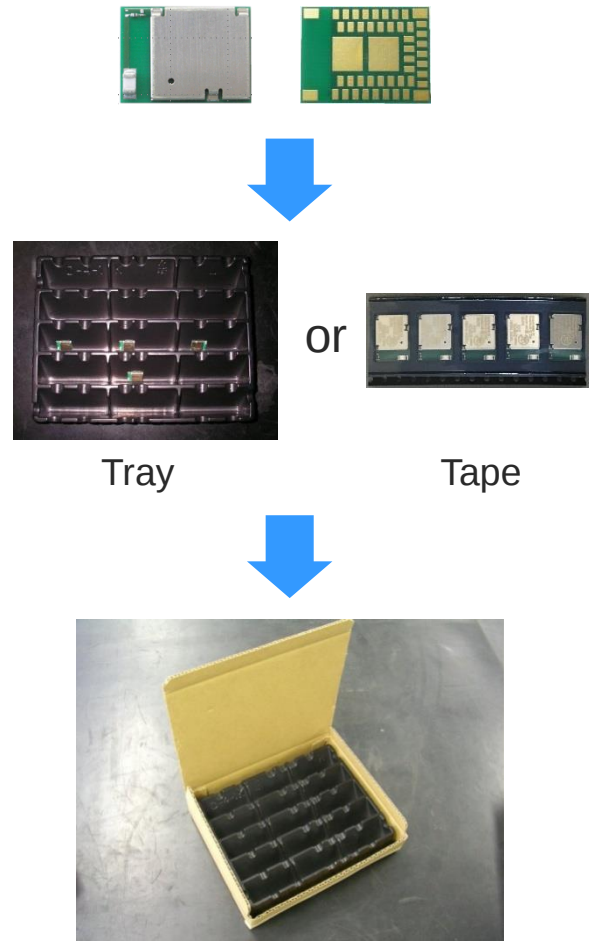
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

EYSHCNZWZ (Module)

Module samples



EBSHCNZWZ (EV-B)

Evaluation board



EKSHCNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSHJNZWZ

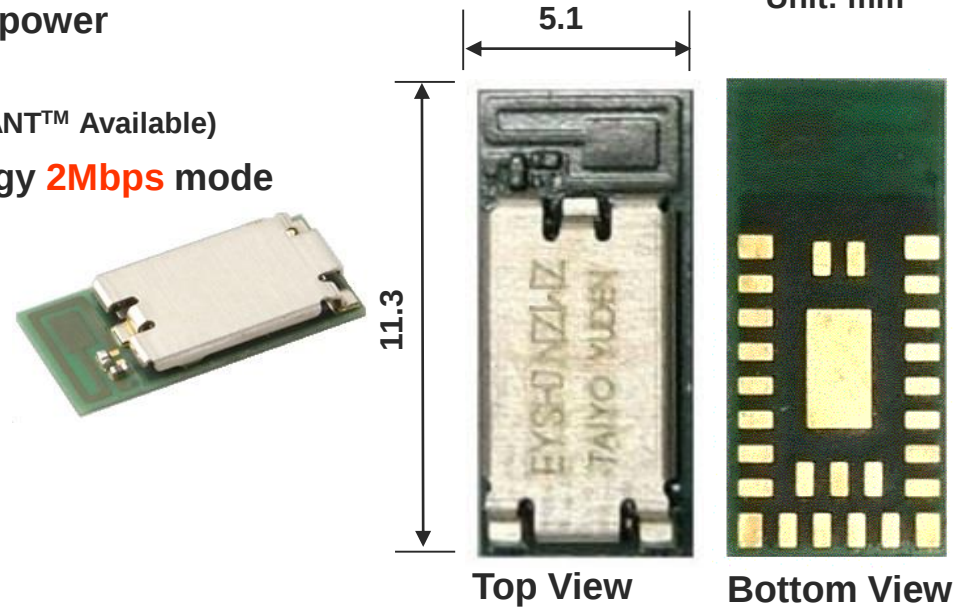
Features

- 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

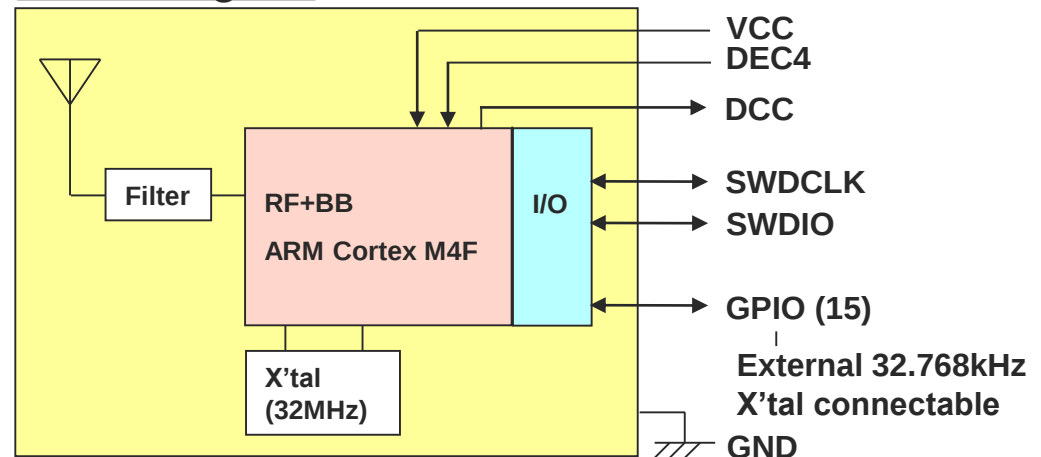
Applications

- 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.

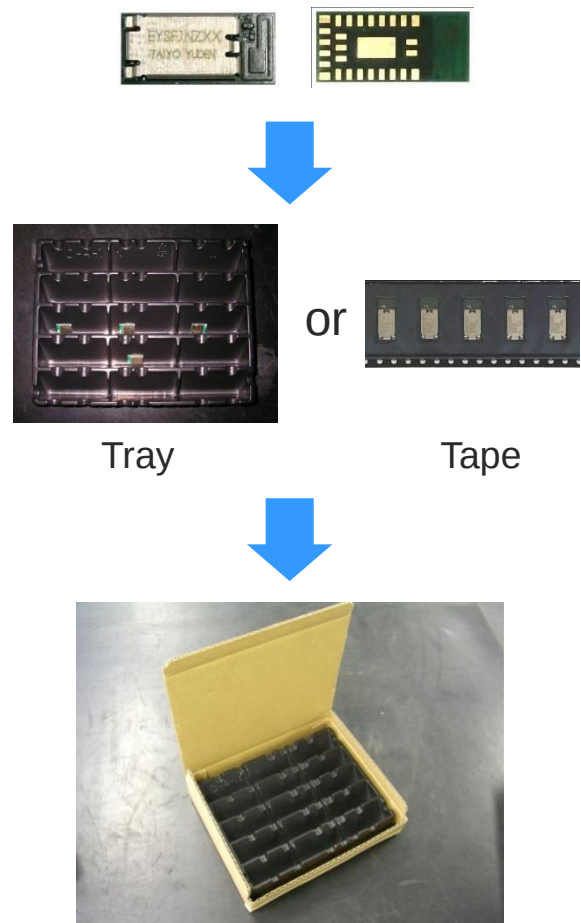
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

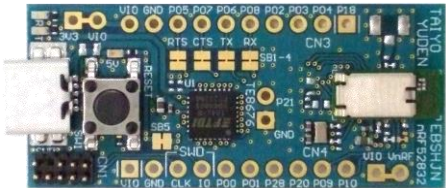
EYSHJNZWZ (Module)

Module samples



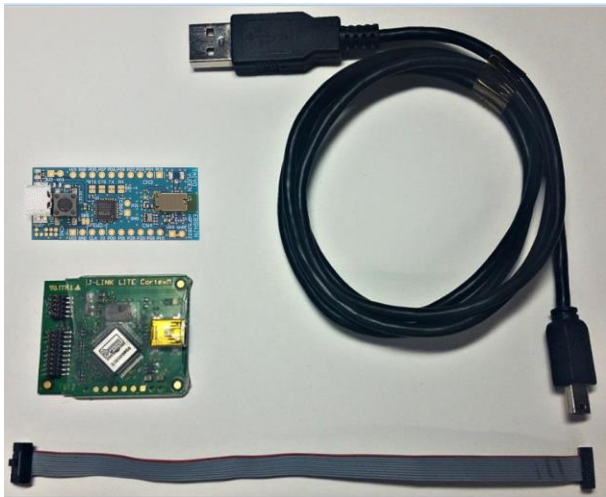
EBSHJNZWZ (EV-B)

Evaluation board



EKSHJNZWZ (EV-K)

Evaluation kit



2Mbps Bluetooth® 5.0 low energy Module: EYSLCNZWW

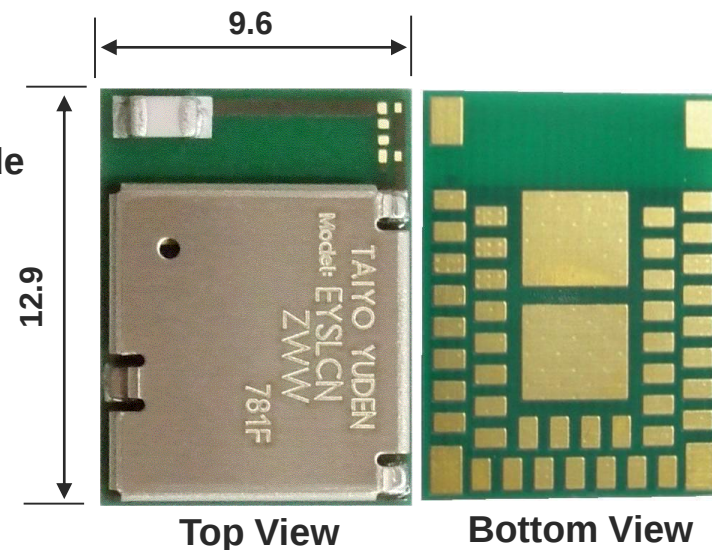
Features

- 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

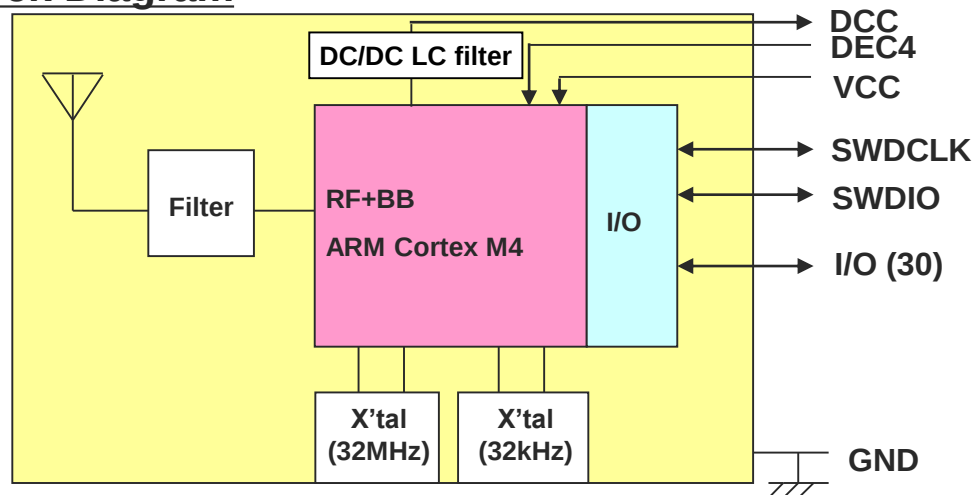
Applications

- 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



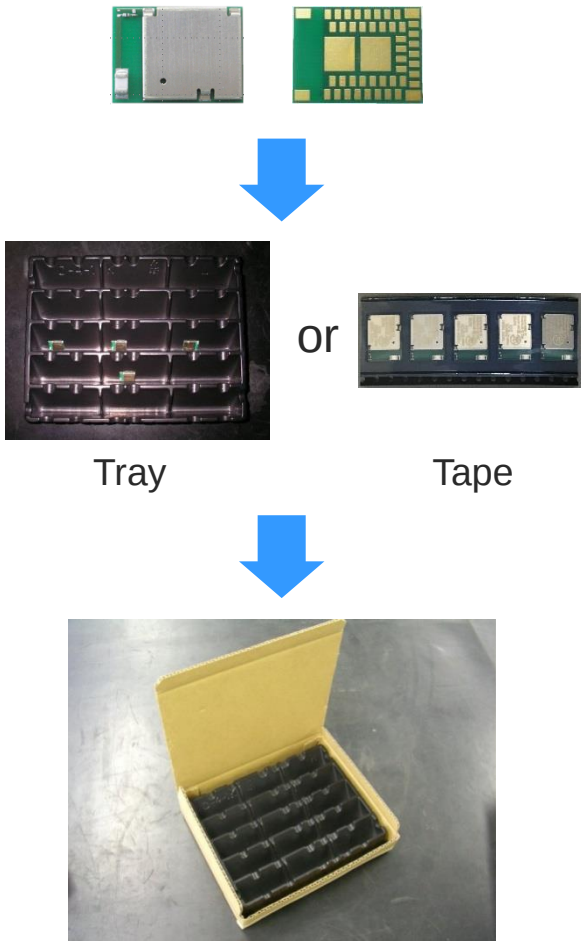
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

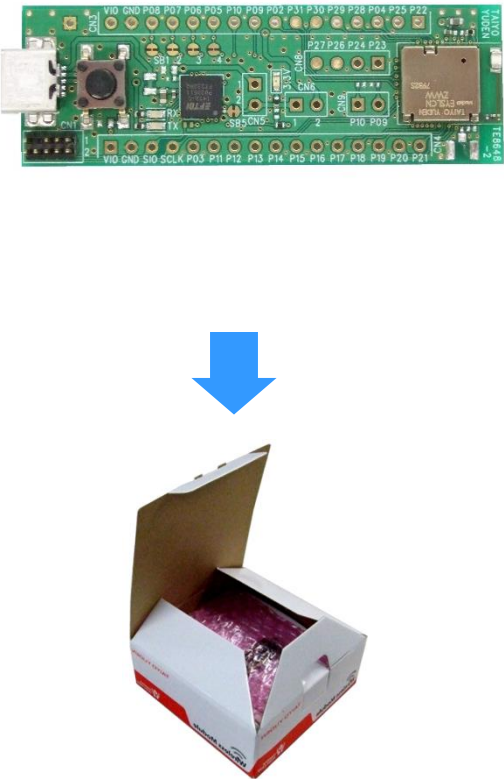
EYSLCNZWW (Module)

Module samples



EBSLCNZWW (EV-B)

Evaluation board



EKSLCNZWW (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: -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

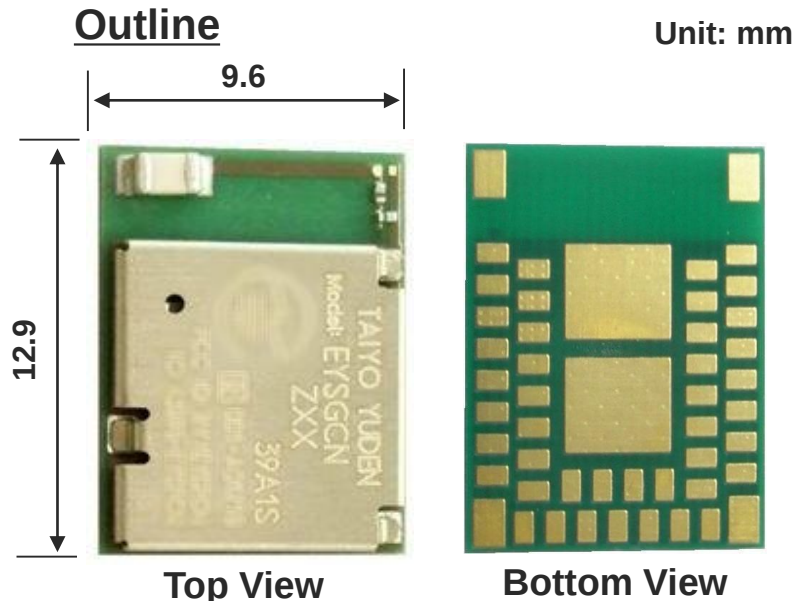
Applications

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

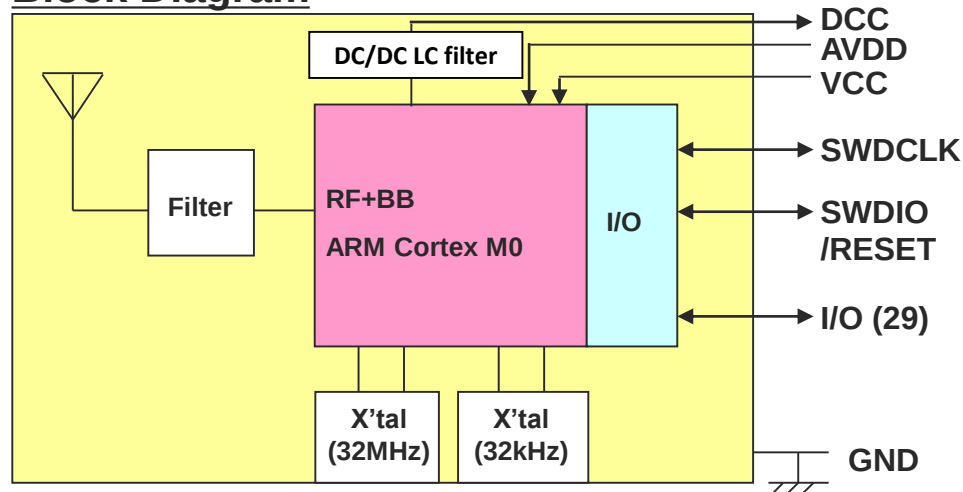
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Block Diagram



Bluetooth® low energy Module: **EYSGCNZWY**

Features

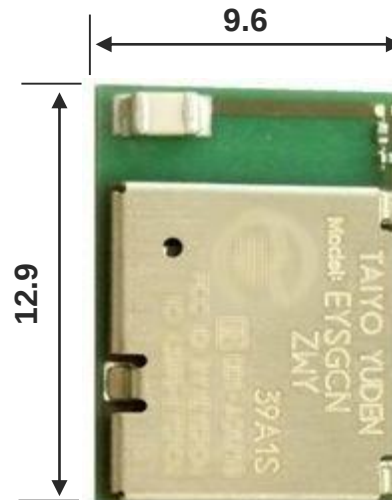
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 **Rev.3** (Nordic)
- Integrated System/**Sleep Clock**
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- 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 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

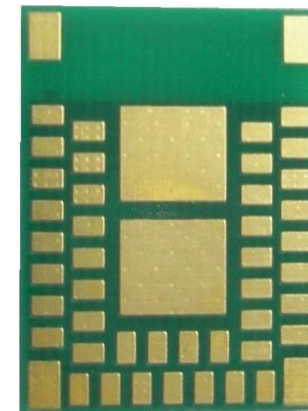
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

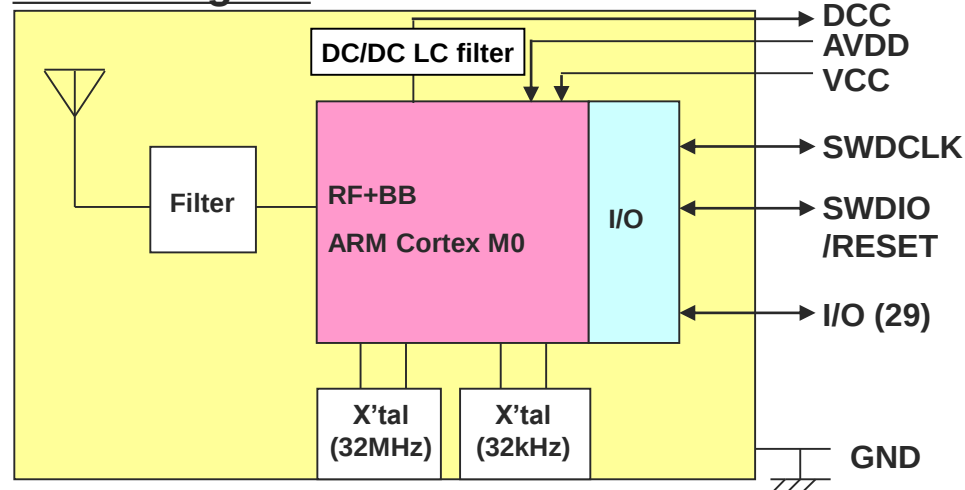


Top View



Bottom View

Block Diagram



All specifications are subject to change without notice.

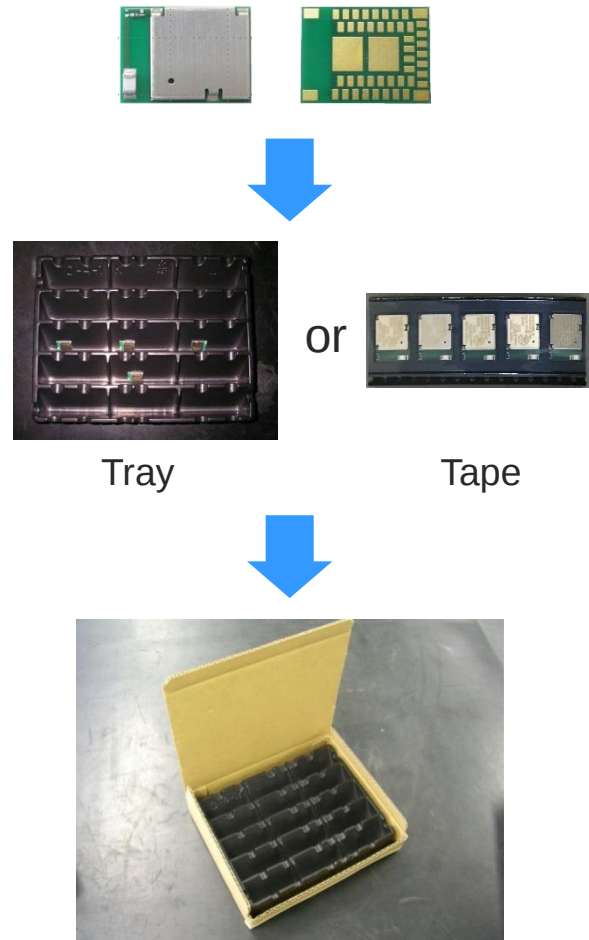
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

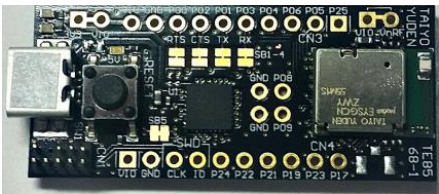
EYSGCNZXX, EYSGCNZWY (Module)

Module samples



EBSGCMZWY (EV-B)

Evaluation board



EKSGCMZWY (EV-K)

Evaluation kit

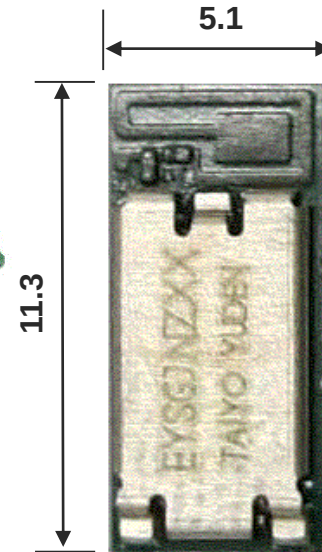


Bluetooth® low energy Module **EYSGJNZXX**

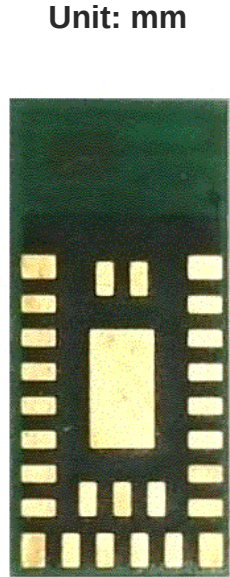
Features

- 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



Top View



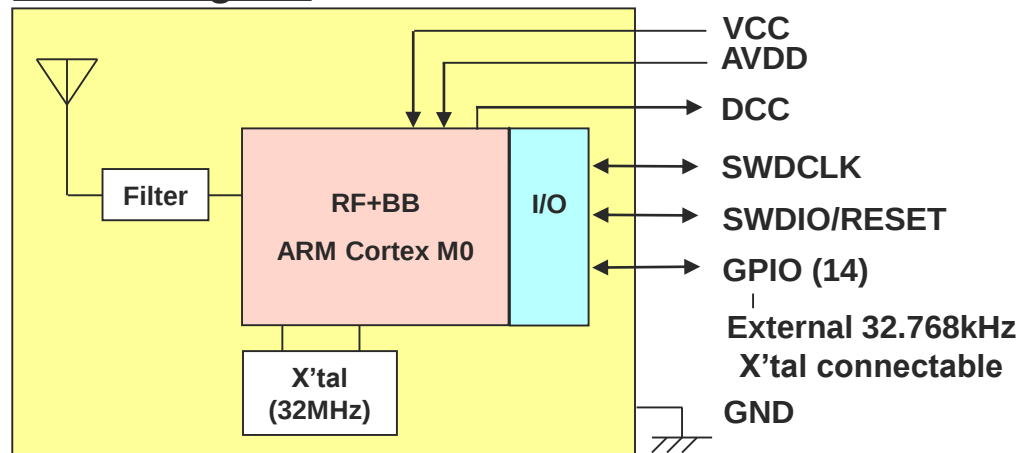
Bottom View

Unit: mm

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.

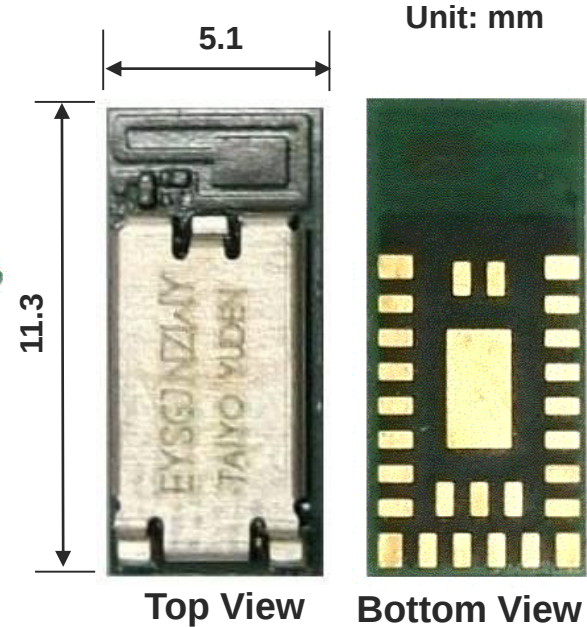
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Bluetooth® low energy Module **EYSGJNZWY**

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 **Rev3** (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

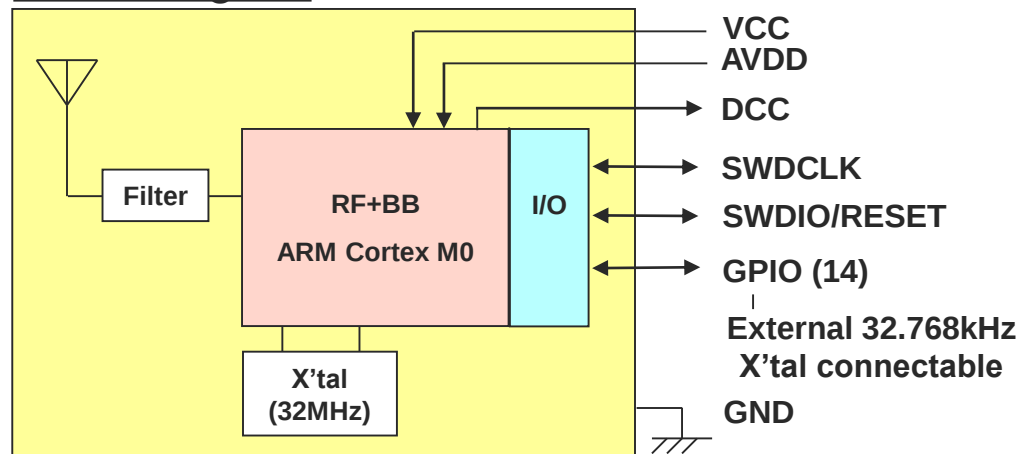
Outline



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.

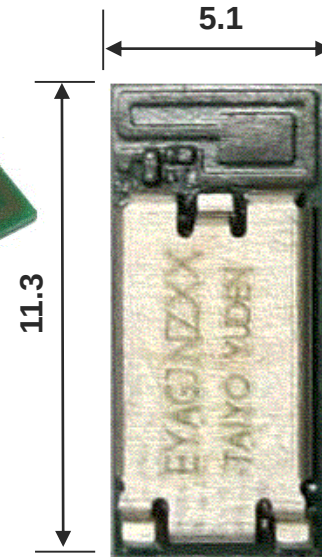
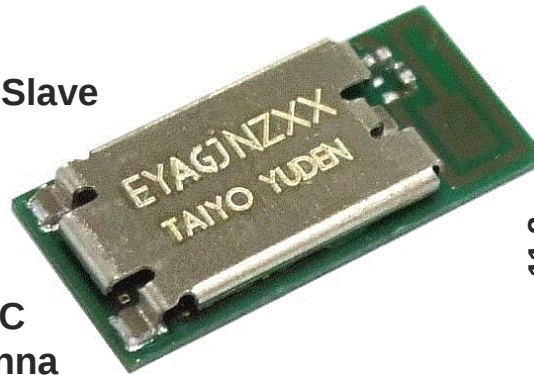
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ANT + Bluetooth® low energy Module **EYAGJNZXX**

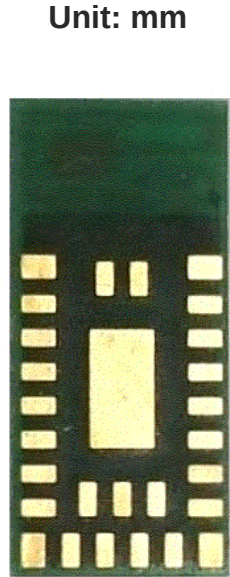
Features

- 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 1.3mm** 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



Top View



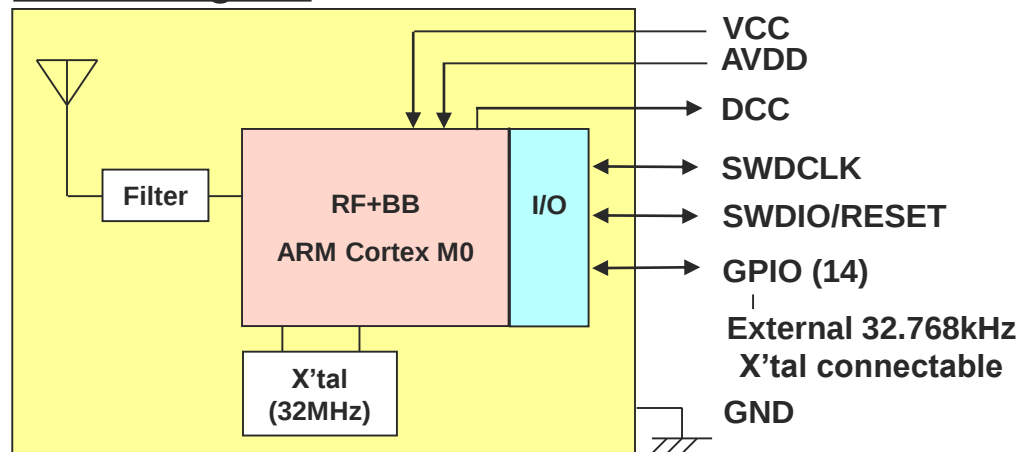
Bottom View

Unit: mm

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.

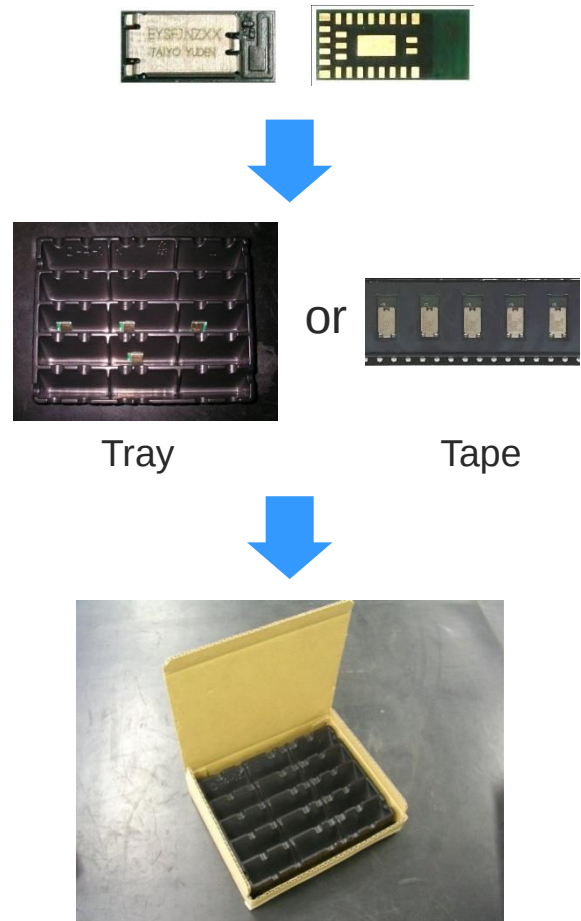
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

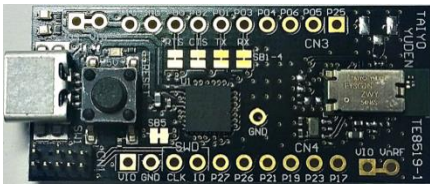
EYSGJNZXX, EYSGJNZWY,
EYAGJNZXX (Module)

Module samples



EBSGJNZWY, EBAGJNZXX
(EV-B)

Evaluation board

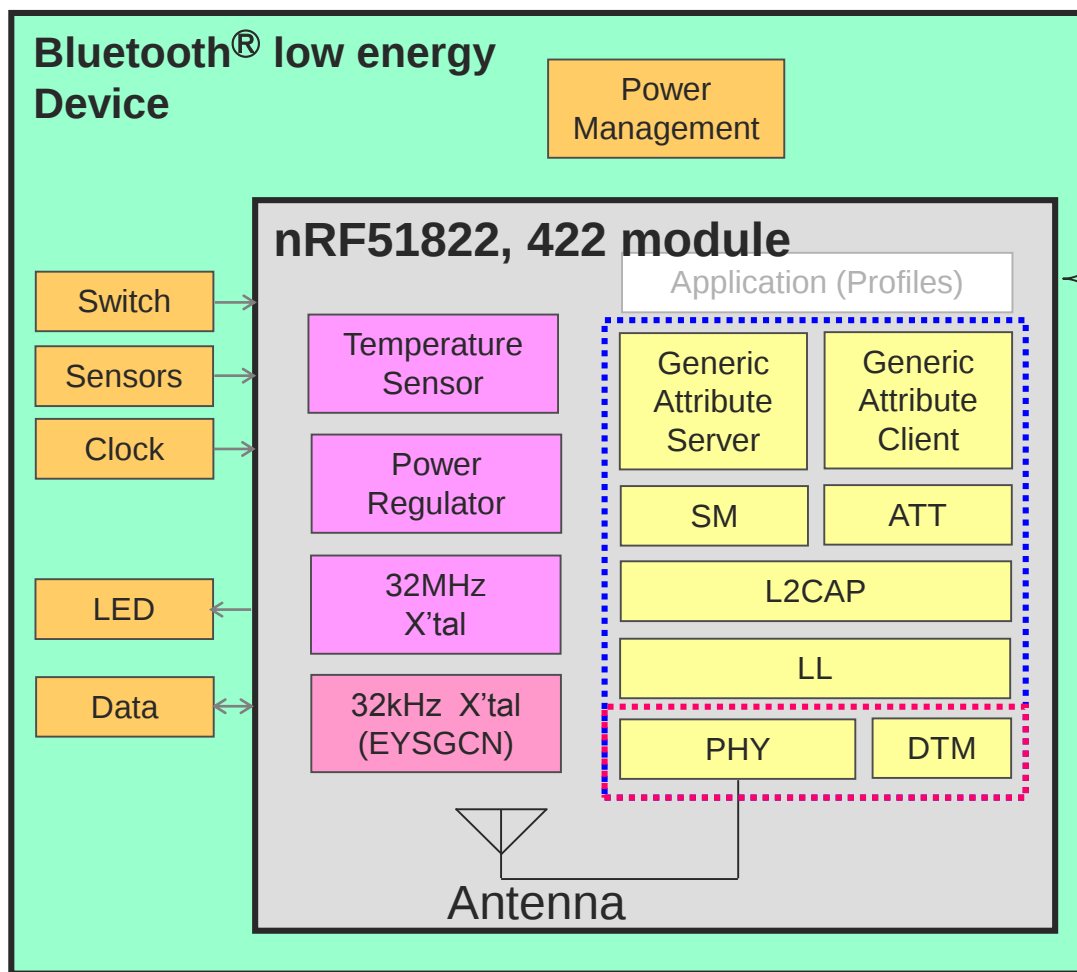


EKSGJNZWY, EKAGJNZXX
(EV-K)

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

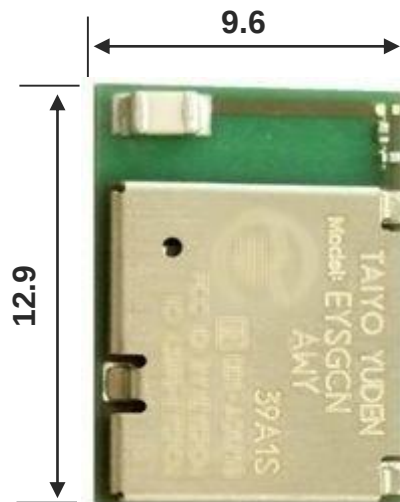
- Frequency: 2402 to 2480 MHz
- Output power: +4dBm typ.
- Single power supply: 1.8 – 3.6V
- Single Mode Bluetooth low energy **Slave / Master**
- Chip: nRF51822 (Nordic)
- Integrated System/Sleep Clock
- Integrated high performance ceramic chip antenna
- ARM Cortex M0** 32bit processor
- Application 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 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

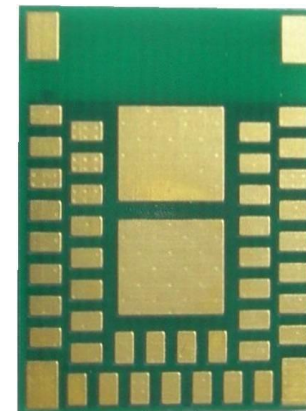
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline

Unit: mm

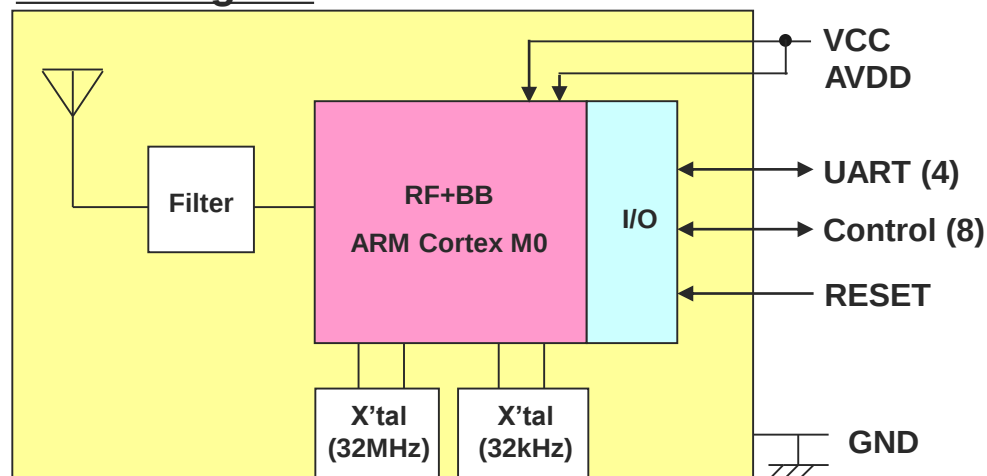


Top View



Bottom View

Block Diagram

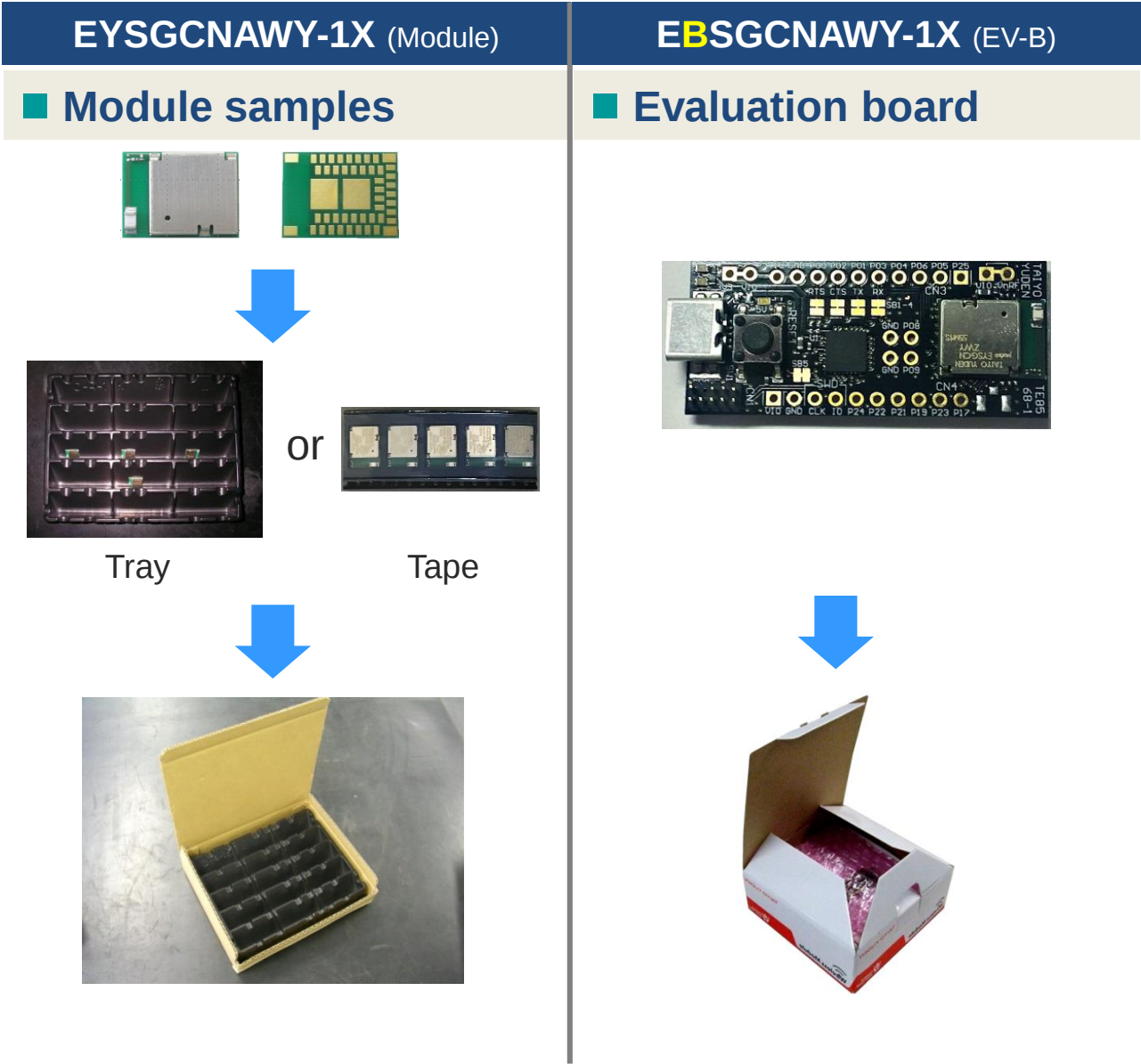


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Bluetooth low energy Module Sample, Evaluation Board



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

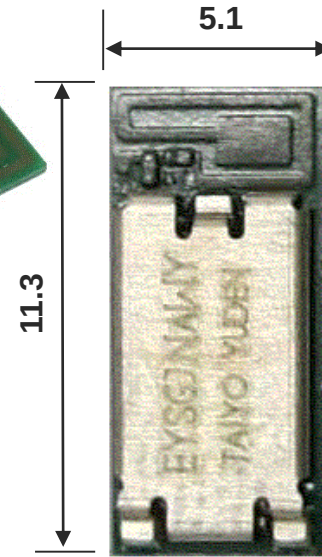
Features

- 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

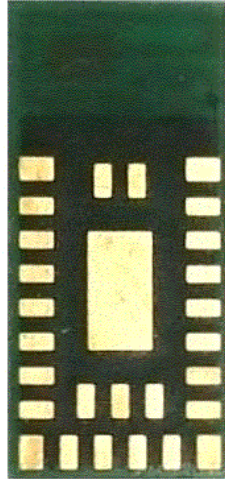
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



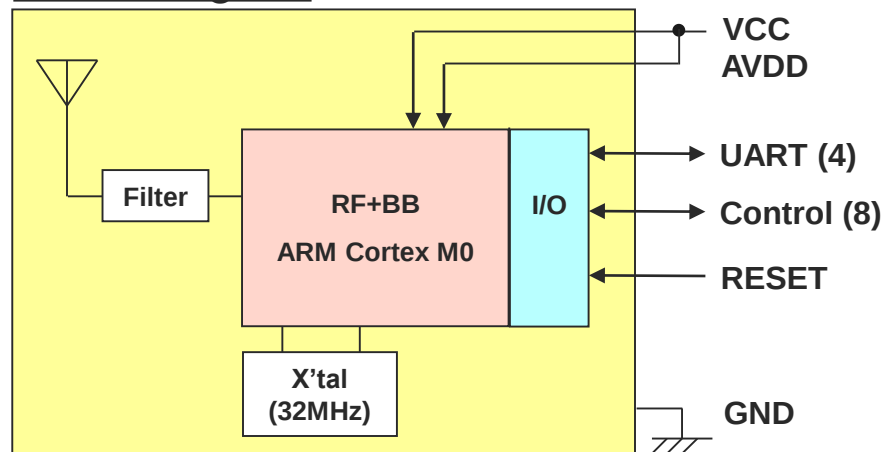
Top View

Unit: mm



Bottom View

Block Diagram

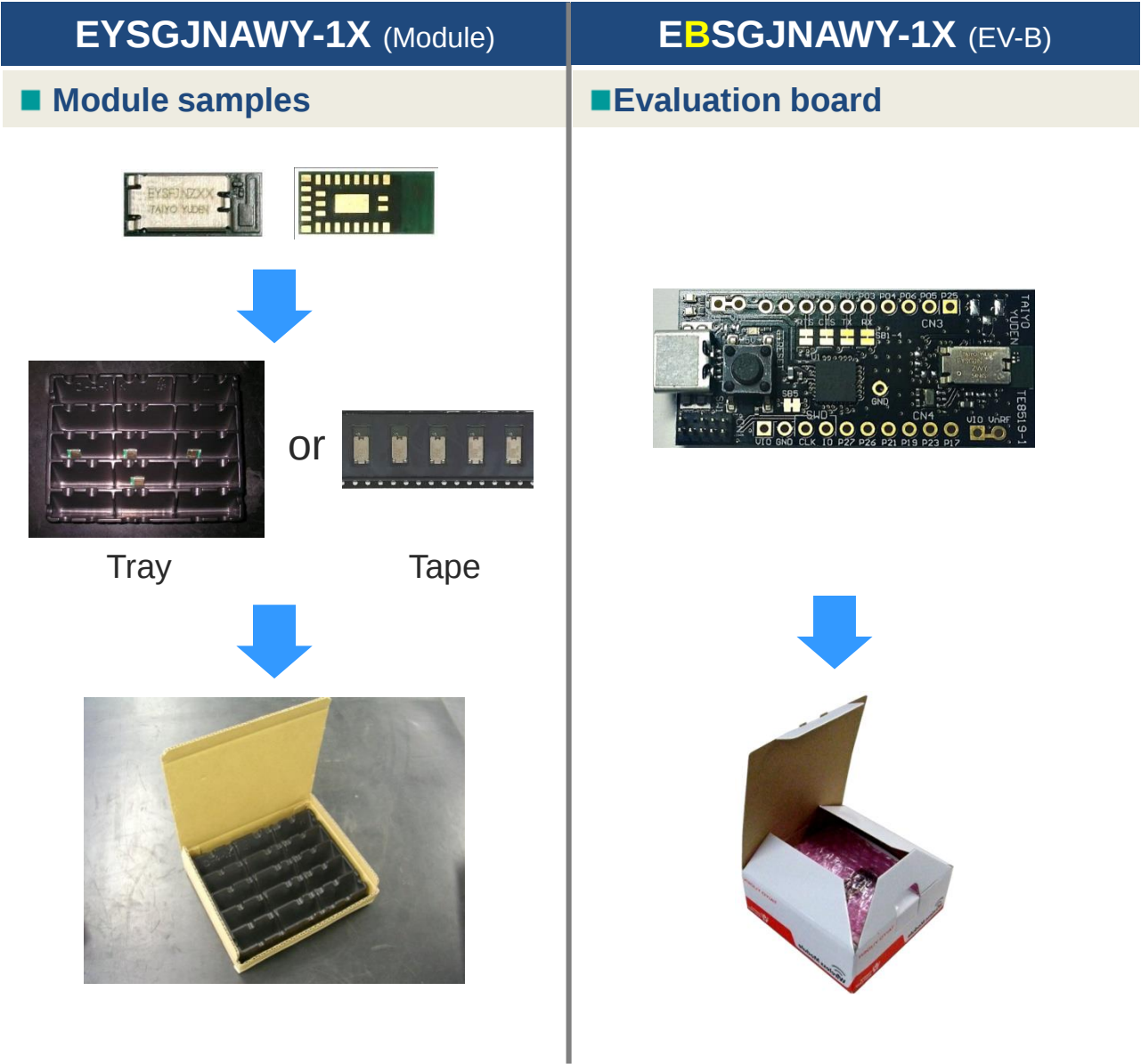


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Bluetooth low energy Module Sample, Evaluation Board



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

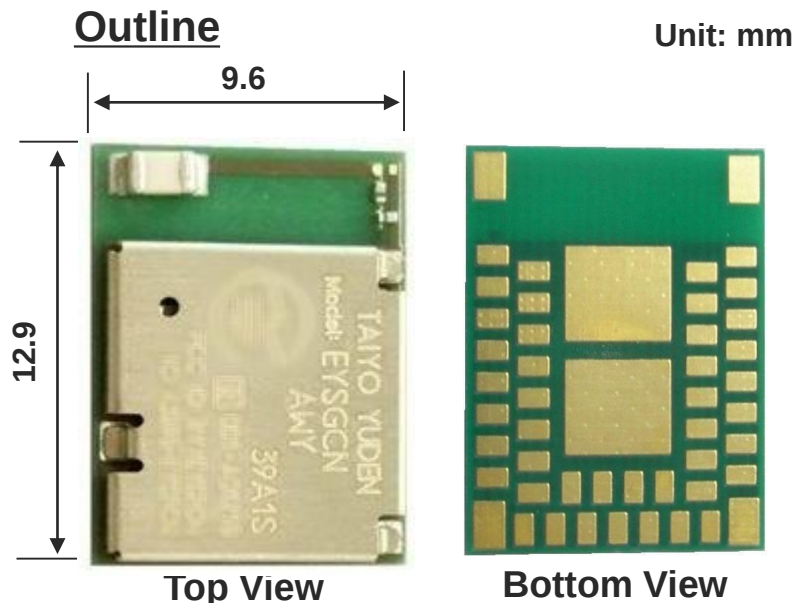
Applications

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

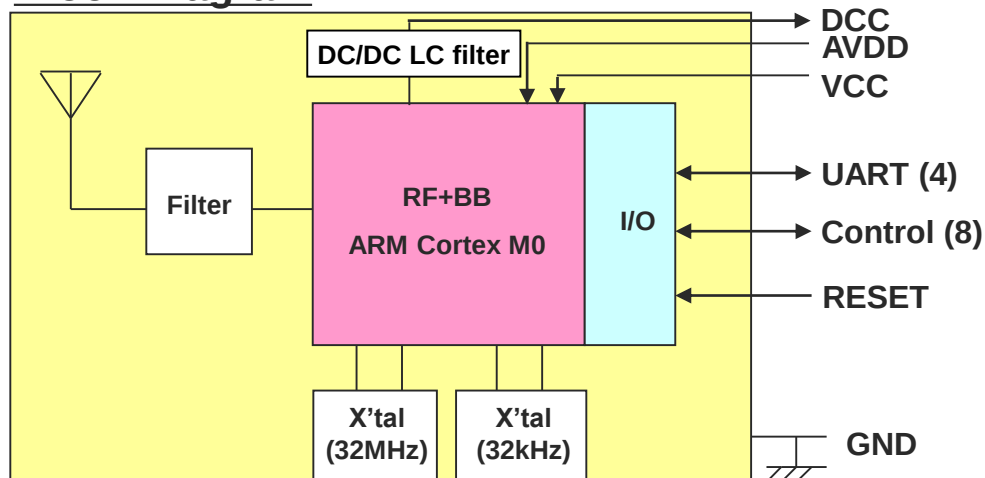
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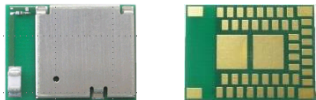
Block Diagram



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**

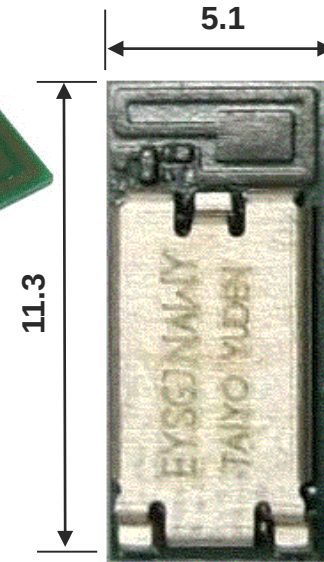
Features

- 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

Applications

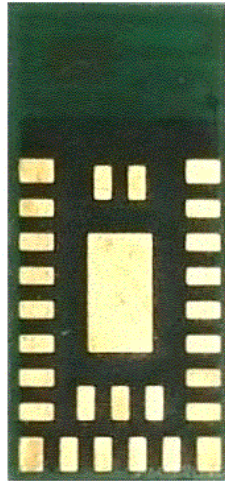
- Cycle computer
- Heart rate monitor
- Blood pressure monitor
- Blood glucose meter
- Weighing machine
- Thermometer
- Mobile accessories
- Sports and fitness sensors
- Remote controllers / Toys

Outline



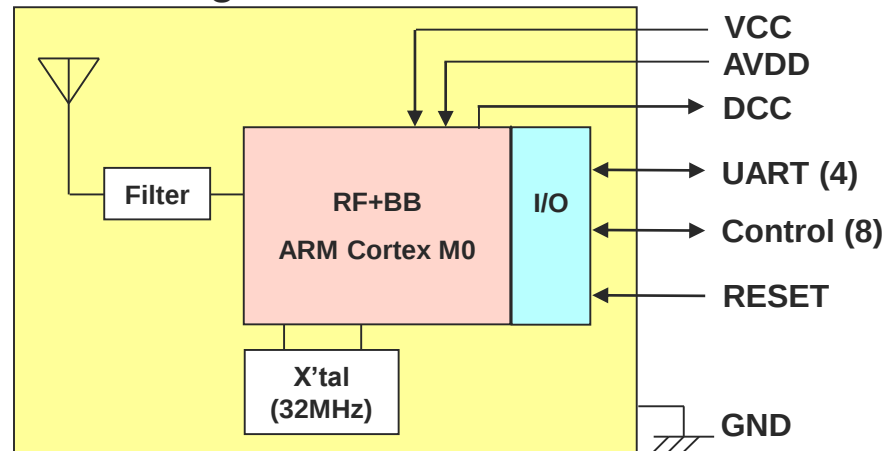
Top View

Unit: mm



Bottom View

Block Diagram

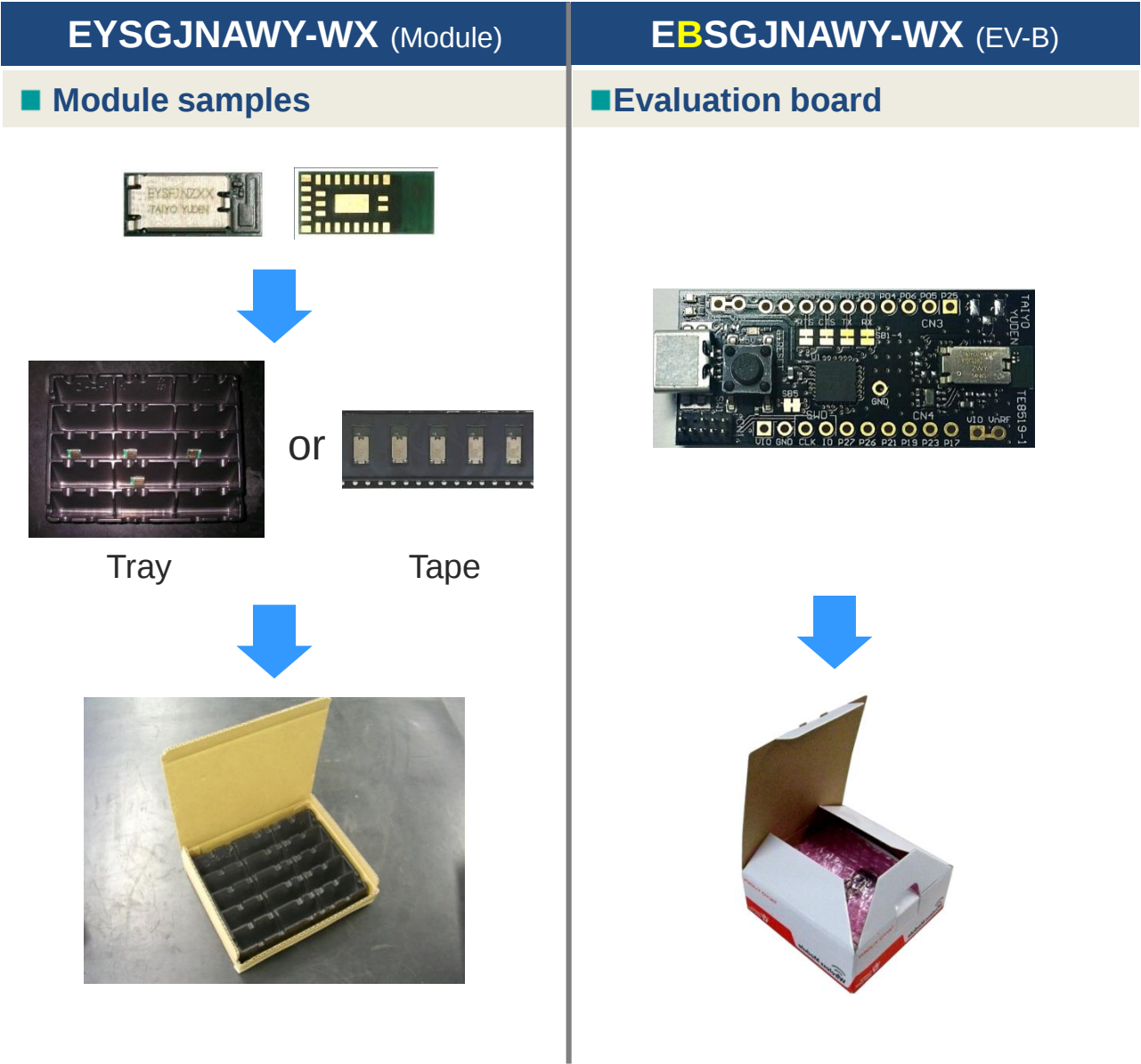


All specifications are subject to change without notice.

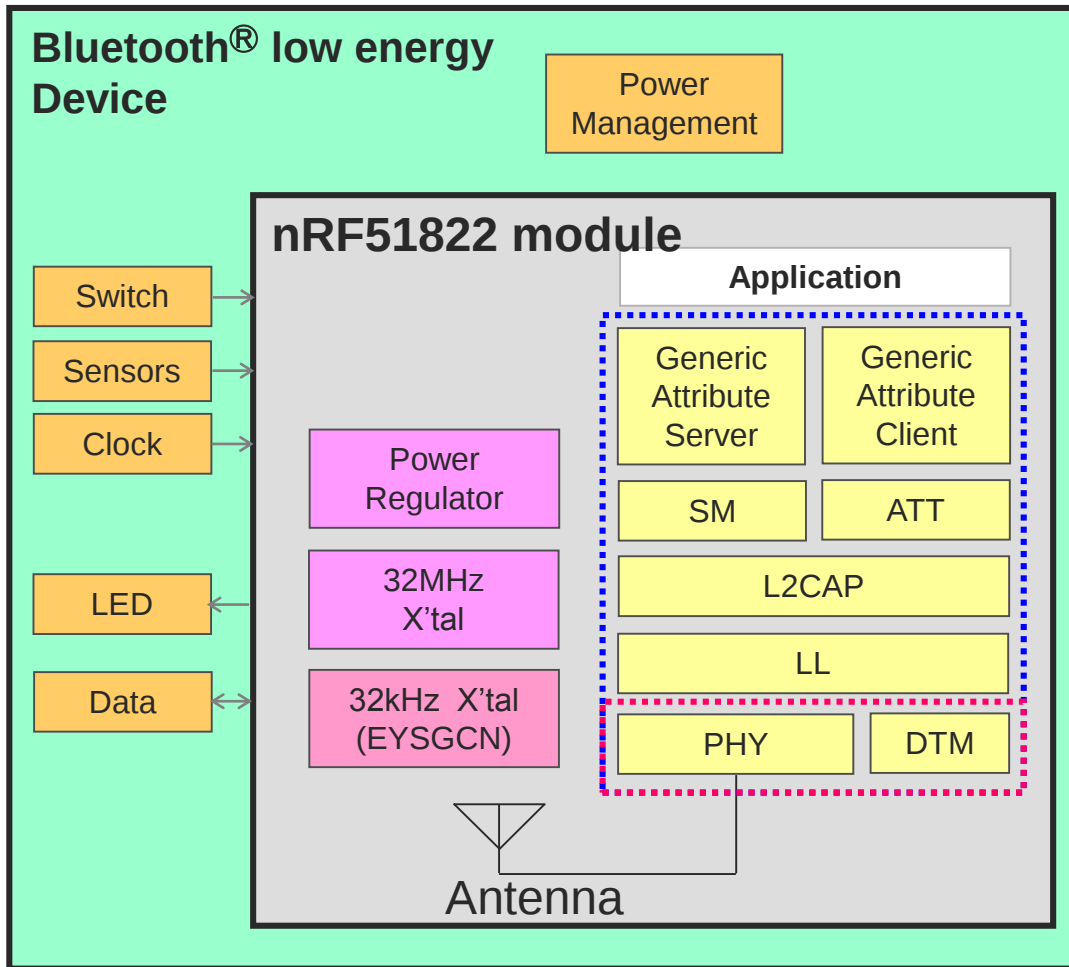
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Bluetooth low energy Module Sample, Evaluation Board



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 (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					24kB			
	EYSHJNZWZ	5.1x11.3 X1.3mm		✓		64kB			
Basic (Software Support : Nordic)	EYSGCNZXX	9.6x12.9x 2.0mm	Bluetooth V4.2*1 BLE Single Slave/ Master			16kB			-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

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