Wireless Module

Bluetooth® low energy Module Overview

Jun. 30, 2017 Version 1.6
TAIYO YUDEN Bluetooth® low energy Module Line-Up

Taiyo Yuden Bluetooth® low energy Module

- **nRF52832 Module**
  - EYSHCN Series
    - **Big**
      - Embedded antenna
        - Int. 32kHz X’tal
        - Int. LC for DC/DC
      - 9.6 x 12.9 x 2.0 mm
      - EYSHCN ZWZ
      - RAM 64kB
      - SoftDevice S132
    - 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 0.9 mm
        - EYSHSN ZWZ
        - RAM 64kB
        - SoftDevice S132

- **nRF51422 Module**
  - **nRF51822 Module**
Latest Documents for Bluetooth® low energy Module

<table>
<thead>
<tr>
<th>Product Code</th>
<th>URL</th>
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<tbody>
<tr>
<td>EYSHSNZWZ</td>
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- 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](http://www.yuden.co.jp/jp/product/category/module/lineup.html#Bluetooth)
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 0.9mm 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

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

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TAIYO YUDEN
Bluetooth® low energy Module Sample, Evaluation Board / Kit

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- **Tray**
- **Tape**

- **ESEHHNZWZ (EV-B)**
- **ESEHHNZWZ (EV-K)**

- **SEGGER J-Link LITE Attached**

**TAIYO YUDEN**
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
- 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

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**Outline**
- Unit: mm
- Top View
- Bottom View

**Block Diagram**

**Outline**
- 9.6 mm
- 12.9 mm

**Features**
- DC/DC LC filter
- DCC
- DEC4
- VCC
- SWDCLK
- SWDIO
- I/O (30)
- GND
- RF+BB
- ARM Cortex M4F
- X’tal (32MHz)
- X’tal (32kHz)

**Applications**
- Cycle computer
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TAIYO YUDEN
**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
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- 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 1.3mm MAX
- Operating Temperature range: -40 to 85 deg-C
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**Applications**

- Cycle computer
- Heart rate monitor
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Bluetooth® low energy Module Sample, Evaluation Board / Kit

- **EYSHJNZWZ (Module)**
  - Module samples
  - or
  - Tray
  - Tape

- **EBSHJNZWZ (EV-B)**
  - Evaluation board

- **EKSHJNZWZ (EV-K)**
  - Evaluation kit
    - SEGGER J-Link LITE Attached

TAIYO YUDEN
**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
- CE Conducted Test Report Available
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**Applications**
- Cycle computer
- Heart rate monitor
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**Unit:** mm

**Bluetooth® low energy Module: EYSGCNZXX**
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
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

Applications
- Cycle computer
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- Mobile accessories
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TAIYO YUDEN
Bluetooth® low energy Module Sample, Evaluation Board / Kit

- **EYSGCNZXX, EYSGCNZWY** (Module)
  - Module samples
  - Tray
    - or
  - Tape

- **EBSGCNZWY (EV-B)**
  - Evaluation board

- **EKSGCNZWY (EV-K)**
  - Evaluation kit
    - SEGGER J-Link LITE Attached

*TAIYO YUDEN*
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
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Outline

Applications
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Block Diagram

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TAIYO YUDEN
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
• CE Conducted Test Report Available
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Outline

Applications
• Cycle computer
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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 1.3mm MAX
- Operating Temperature range: -25 to 85 deg-C
- Bluetooth and Japan, FCC, IC qualified
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TAIYO YUDEN
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</table>

- **Module samples**: Tray or Tape
- **Evaluation board**: 
- **Evaluation kit**: SEGGER J-Link LITE Attached

*TAIYO YUDEN*
Application Layer image for **Basic Module**

**Bluetooth® low energy Device**

- Switch
- Sensors
- Clock
- LED
- Data

**nRF51822, 422 module**

- Temperature Sensor
- Power Regulator
- 32MHz X’tal
- 32kHz X’tal (EYSGCN)

**Application (Profiles)**

- Generic Attribute Server
- Generic Attribute Client
- SM
- ATT
- L2CAP
- LL
- PHY
- DTM

**Antenna**

**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

**Nordic SDK**

- Alert Notification
- 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.**

**EYSGCN, EYSGJN, EYAGJN**

**Basic Module**

TAIYO YUDEN
**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
- CE Conducted Test Report Available
- RoHS compliant / Complete Lead Free

**Applications**

- Cycle computer
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<td><img src="image3" alt="Tape tray" /></td>
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TAIYO YUDEN
Bluetooth® low energy Module  EYSNWAHY-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)
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Bluetooth® low energy Module: EYSGCNAYW-WX

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• Chip: nRF51822 (Nordic)
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Bluetooth low energy Module Sample, Evaluation Board

- **EYSGCNAWY-WX (Module)**
  - Module samples
  - Tray
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- **EBSGCNAWY-WX (EV-B)**
  - Evaluation board

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  - EYSGJNAWY-WX (Module)
  - EBSGJNAWY-WX (EV-B)

- **Evaluation board**
  - EBSGJNAWY-WX (EV-B)

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### Tray or Tape

- **Tray**
  - EYSGJNAWY-WX (Module)
  - EBSGJNAWY-WX (EV-B)

- **Tape**
  - EYSGJNAWY-WX (Module)
  - EBSGJNAWY-WX (EV-B)

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**TAIYO YUDEN**
EYSGCN, EYSGJN
Application Embedded Module

-1X module for Module - Module only
-WX module for Module – Module
Module – Smart phone

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

<table>
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<tr>
<th>Type</th>
<th>Part No.</th>
<th>Size (LxWxH)</th>
<th>Specification</th>
<th>ANT™ Support</th>
<th>I/F</th>
<th>RAM</th>
<th>Certification</th>
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※ CE conducted test report available

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