

Features

- Supports Bluetooth 5.3 dual-mode (BDR/EDR/ BLE) specifications
- ARM® Cortex®-M33 with Floating Point Unit (FPU) and Memory Protection Unit (MPU)
Maximum speed: 260MHz
- Cadence® HiFi5® Audio Engine DSP coprocessor with Neural Network Extension
Maximum speed: 520MHz
- low latency 1MB system RAM (SYSRAM) with maximum speed 260MHz
- USB 2.0 device
- Support maximum three I2C Master mode 400kbps Up to 3.4Mbps
- Support maximum three I3C Master mode up to 12Mbps
- Support maximum three UART interface Up to 3Mbps
- Support maximum three SPI master interface, Clock up to 52MHz
- EMMC4.41/SDIO v2.0, up to 52MHz, 1-bit/4-bit mode eMMC4.41,
- Stand-alone module with on-board PWB antenna and Bluetooth stack
- Supports high resolution up to 24-bit, 192 kHz audio data format
- Supports 14 PWM channels
- Supports 12-bit AUXADC channels
- Supports maximum four I2S interface
- Supports SPDIF receiver
- Supports to connect max three hosts with HFP/A2DP profiles simultaneously
- Supports smart phone applications by Bluetooth SPP or BLE link
- Supports firmware field upgrade by USB/OTA
- Supports four microphones
- Compact surface mount module: 28.28 * 15.60 * 4.0 mm
- LGA package 122pin, Flatness is less than 0.05mm
- RoHS compliant
- Ideal for portable battery operated devices
- Internal battery regulator circuitry DSP Audio Processing
- Support for single SCO or Esco link with CVSD/mSBC coding.

Peripherals

- Integrated 1.8V and 3V configurable switching regulator and low-dropout (LDO) regulator
- Built-in ADC for battery monitoring and voltage sense
- Built-in ADC for charger thermal protection
- Built-in under voltage protection (UVP)
- An AUX-In port for external audio input
- Multiple I/O pins for control and status

HCI Interface

- High-speed HCI-UART interface (supports up to 3M bps)

BMS003P BT5.3 LE Audio Module



MT2833D

(This Photos are for reference only)

RF/Analog

- Frequency spectrum: 2.402 GHz to 2.480 GHz
- Receive sensitivity: -97 dBm (2 Mbps EDR)
- Crystal : 26MHZ ± 20 PPM@-20°C~+80°C
- AVG Output Power:
10 $\pm$ 2dBm (BDR) , 8 $\pm$ 2dBm (EDR)
5 $\pm$ 2dBm (BLE1M) 14.5 $\pm$ 2dBm (BLE2M)
- Antenna gain: 2.73dBi(Peak)

Audio Codec

- SBC, AAC, LDAC
- 24-bit digital-to-analog converter (DAC) with 105dB SNR
- 24-bit analog-to-digital converter (ADC) with 95dB SNR
- Supports up to 24-bit, 192 kHz I2S digital audio

MAC/Baseband Processor

- Supports Bluetooth 5.3 dual-mode
- BDR/EDR transport for audio, voice, and SPP data exchange
- BLE transport for proprietary transparent service and Apple Notification Center Service (ANCS) data exchange

Operating Condition

- Operating voltage: 3.2V to 4.6V
- Operating temperature: -20°C to +80°C

Description

The BMS003P LE Audio module is made in China, a fully qualified Bluetooth 5.3 dual-mode (BDR/EDR/BLE) module for designers to add wireless audio and voice applications to their products. The BMS003P products is a Bluetooth module that provides a complete wireless solution with Bluetooth stack, integrated PWB antenna, and worldwide radio certifications in a compact surface-mount package.

Applications

- Sound bar and Subwoofer (FW dependent)
- Bluetooth portable speaker phone
- Multi-speaker (FW dependent)
- Bluetooth headset

FCC Statement

§ 15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

§ 15.21 Information to user.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.105 Information to the user.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. Country Code selection feature to be disabled for products marketed to the US.

This device is intended only for OEM integrators under the following conditions:

1. The antenna must be installed such that 20 cm is maintained between the antenna and users, and
2. The transmitter module may not be co-located with any other transmitter or antenna,

Requirement per KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies.

DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.³

Explanation: This module meets the requirements of FCC part 15.247.

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

2.7 Antennas

This radio transmitter FCC ID: 2BHC6BMS003 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna	2.73dbi
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2.8 Label and compliance information

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: Contains Transmitter Module FCC ID: 2BHC6BMS003.

2.9 Information on test modes and additional testing requirements

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for

the system such as Part 15 B.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for

the system such as Part 15 B.

ISED Statement

- English: This device complies with Innovation, Science, and Economic Development Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device. The digital apparatus complies with Canadian CAN ICES-3(B)/NMB-3(B).

- French: Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter (ISED certification number: 32740-BMS003) has been approved by Innovation, Science, and Economic Development Canada to operate with the antenna types listed with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (ISED certification number: 32740-BMS003) a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Radiation Exposure Statement

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Déclaration d'exposition aux radiations

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

This device is intended only for OEM integrators under the following condition:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as the condition above is met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes:

Le module émetteur ne peut pas être co-implanté avec un autre émetteur ou antenne.

Tant que les 1 condition ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the ISED cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

Note Importante:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considérée comme valide et l'ISED ne peut pas être utilisé sur le produit final.

Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

End Product Labeling

The final end product must be labeled in a visible area with the following: Contains

IC: 32740-BMS003

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: Contient des

IC: 32740-BMS003

Manual Information to the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.