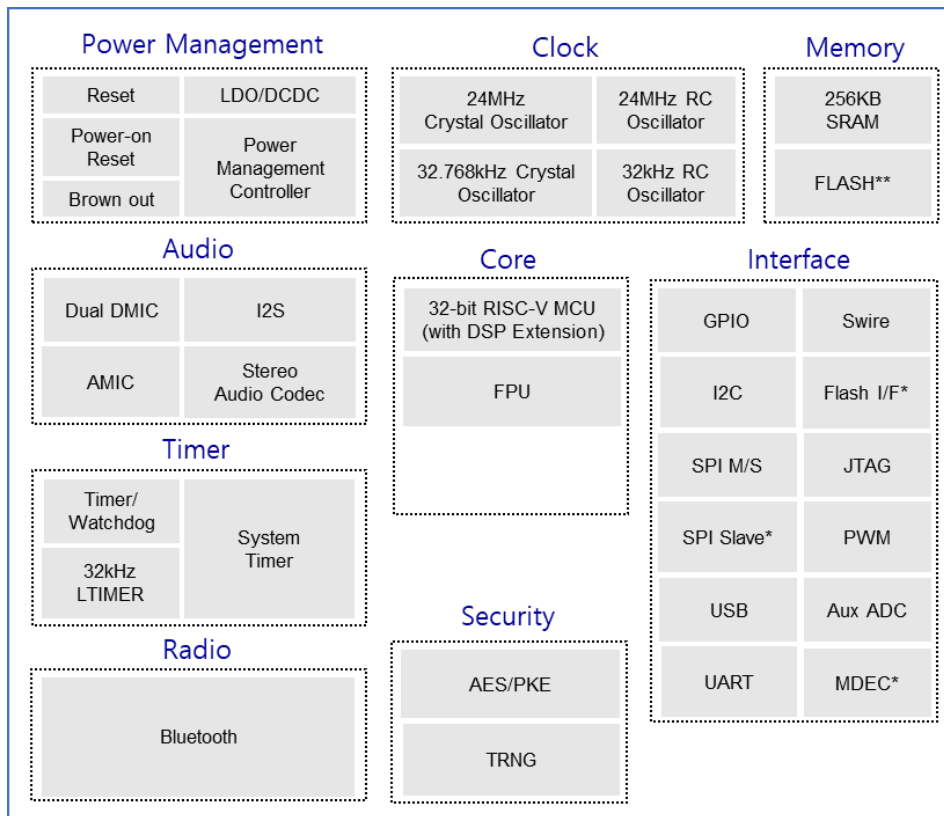


## Overview

The TLSR9515 supports standards and industrial alliance specifications including Bluetooth 5.2, Basic data rate (BR), Enhanced data rate (EDR), LE, indoor positioning and BLE Mesh standard. The TLSR9515 combines the features and functions needed for high quality wireless audio equipment into a single SoC. The TLSR9515 is designed to offer high integration, ultra-low power application capabilities.



\* applicable for TLSR9515D

\*\* applicable for TLSR9515A(1MB) and TLSR9515B(512KB)

## Applications

- Augmented reality glasses
- Smart watches
- Smart trackers
- Wristband
- Wireless headsets
- Earbuds

## Key Features

### 32-bit RISC-V MCU

- Max.96MHz operating frequency
- 2.59 DMIPS/MHz, 3.54 CoreMark/MHz
- DSP instruction set, floating-point unit

### Protocols

- Bluetooth 5.2 compliant
- BLE: 1Mbps/2Mbps/AoA/AoD/Mesh
- BT Classic: BR 1Mbps/EDR 2Mbps/EDR 3Mbps
- Multi-protocol concurrent mode
- HW OTA upgrade and multiple boot switch

### Memory

- Max. 256KB SRAM w/ max. 64KB retention
- Program memory: 1MB Flash or 16MB external Flash

### Power Consumption (@4.2V DCDC)

- EDR: Rx 5mA, Tx 13mA @ 0 dBm
- BLE: Rx 5mA, Tx 5.5mA @ 0 dBm
- Deep sleep: 0.7uA

## RF Specification

- Rx sensitivity (dBm): -92@BR, -92.5@EDR 2Mbps, -86@EDR 3Mbps, -96@BLE 1Mbps, -92.5@BLE 2Mbps, -99.5@LR 125kbps, -98.5@LR 500kbps
- Tx output power (max.): +10dBm@BR/BLE, +1.5dBm@EDR

## Audio Features

- High-performance stereo audio codec: 24-bit ADC/DAC, SNR >96dB, max. sampling rate 192kHz
- Patented proprietary technology for TWS and 1+N hearable devices with synchronized playback and balanced power on all devices
- Audio codec: SBC, OPUS, LC3
- Voice codec: G.711, a-Law, u-Law, CVSD, mSBC
- Bluetooth profiles: HFP 1.7, HSP 1.2, A2DP 1.3, AVRCP 1.6, SPP 1.2, PBAP 1.0, ANCS, DIS
- Apple iAP2 protocol
- EDR+BLE dual-mode operation
- Noise suppression and echo cancellation
- Supports packet loss concealment (PLC) for voice Processing

## Security

- HW AES and AES-CCM
- HW accelerator for Elliptical curve cryptography (ECC)
- Embedded TRNG

## Interface

- Max.27 GPIOs (TLSR9515D) or 15 GPIOs (TLSR9515A/B)
- Configurable to select 2-wire SDP or 5-wire JTAG debug interface
- Dual DMIC (applicable for TLSR9515A/D)
- AMIC
- I2S
- SPI, I2C, USB 2.0, Swire, UART with hardware flow control and 7816 protocol support (applicable for TLSR9515D)
- Max.6 channels of differential PWM
- IR transmitter with DMA
- 2-channel 14-bit auxiliary ADC
- Low-power comparator
- Packet Traffic Arbitrator (PTA) for Wi-Fi co-existence

## Supply Voltage

- 1.8V ~ 4.3V

## Operating Temperature

- -40°C ~ +85°C

## Package

- TLSR9515A/B, QFN40, 4x6mm
- TLSR9515D, QFN56, 7x7mm