IW623
2x2 Tri-Band Wi-Fi® 6E and Bluetooth® Combo Solution

The IW623 is a highly integrated Wi-Fi 6E device enabling Tri-Band (2.4 GHz, 5 GHz and 6 GHz) Wi-Fi 6E and Bluetooth/BLE operation. Supporting a 2x2 MIMO configuration in the 2.4 GHz and 5-7 GHz bands, the IW623 system-on-chip (SoC) implements advanced features including MU-MIMO, OFDMA, target wake-up time (TWT), and Bluetooth LE Audio.

With integrated 2.4 GHz and 5-7 GHz TX power amplifiers (PA), RX low noise amplifiers (LNA) and TX/RX switches (T/R SW) as well as a full Bluetooth/Bluetooth Low Energy radio, it simplifies design.

The IW623 implements advanced real-time Wi-Fi and Bluetooth arbitration hardware with software algorithms to optimize coexistence performance. NXP's Edgelock technology is integrated. The embedded security subsystem supports hardware crypto accelerated secure boot, key management firmware authentication, secure life cycle management and anti-rollback protection. The IW623 integrates dedicated CPUs and memories for both the Wi-Fi and Bluetooth subsystems for real time, independent protocol processing. The interfaces to external host processors include PCIe and SDIO for Wi-Fi and UART for Bluetooth.

The IW623 is a performance-oriented 2x2 Wi-Fi 6E + Bluetooth wireless connectivity solution to meet the needs for smart home applications supporting high-performance or visually connected services and advanced Bluetooth/Bluetooth LE audio capabilities.

For industrial and commercial applications, the IW623 brings high-bandwidth, long-reaching Wi-Fi connectivity to support high-concurrency networks serving many clients and to gain access to 6 GHz Wi-Fi networks that can relieve congestion from campus or corporate Wi-Fi deployments.

Wi-Fi 6E support enables offload from crowded 2.4 GHz or channel-limited 5 GHz network spectrum and provides maximum forward longevity next-generation Wi-Fi networks. Bluetooth LE Audio enables support for a leap in Bluetooth-audio capabilities, enabling multiple streams of user-specific content and broadcast or one-to-many audio sharing services.

The IW623 delivers high-performance multi-radio connectivity that enables devices to benefit from the latest global Wi-Fi and Bluetooth network deployments and services. It provides high-integration multi-radio connectivity with extended temperature (-40° to +85°C) support and flexible design options. NXP solutions provide built-in coexistence management for both integrated and external radios on the same PCB.

NXP's connectivity solutions also enable accelerated certification for both Wi-Fi Alliance and Bluetooth standards and help ensure global regulatory emissions and cybersecurity conformance in a fast-changing regulatory compliance landscape.

IW623 Feature Overview

Wi-Fi key features

- 2x2 radios
- Wi-Fi 6E Tri-Band (2.4 GHz, 5 GHz and 6 GHz)
- STA and mobile AP
- Wireless multi-streaming
- Adaptive scheduler
- Agile channel switching
- Wi-Fi TSF host clock sync between AP and STA
- PCIe and SDIO host interface

Bluetooth key features

- High speed, long range, advertising extensions
- Isochronous channels supporting LE Audio
- Integrated PA (+13 dBm)/LNA/SW
- UART host interface

Operating Characteristics

- Supply voltage: 1.8 V and 3.3 V
- Operating temperature:
- Automotive AEC-Q100 Grade 2: -40ºC to 105ºC
- Storage temperature: -55ºC to 125ºC

Package options

- HVQFN148 (dual-row) 11 mm x 11 mm x 0.85 mm with 0.5 mm pitch

Modules

- Broad array of module offering from industry leading global suppliers

Target applications

- Wireless power over Ethernet (POE) hub
- Smart home hub
- Internet of things (IoT) gateways
- Wireless IP and security cameras
- Video-enabled smart appliances
- Wireless Edge Connectivity
- Visual Smart Home
- Wireless Medical Connectivity
- Industrial Connectivity

Orderable Part Numbers	Operation Mode	Host Interface	Package Type
IW623LPHN/ A1ZDIMP	2x2 (2.4/5/6 GHz) Wi-Fi 6E TB	PCIe	DRQFN
IW623LSHN/ A1ZDIMP	2x2 (2.4/5/6 GHz) Wi-Fi 6E TB	SDIO	DRQFN

IW623 Internal Block Diagram

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