BROADCOM®

Product Brief

BCM49438

Quad-Core ARM v8 10 Gb Accelerated Processing Unit with AI for Premium Wi-Fi 8 Enterprise Access Points

Features

- Quad-core ARM v8-compatible CPU
- Integrated Broadcom Neural Engine (BNE) AI/ML core
- Dual Issue Runner Packet Processor
- Offload of both wired and wireless data paths
- Integrated cryptographic protocol acceleration
- Integrated multi-gig Ethernet PHY interfaces, including 2x10 Gb with MACsec
- Advanced memory standard support DR4-3200, LPDDR4-4267, DDR5-5600, LPDDR5-5500
- Quad PCIe controllers
- Dual USB ports
- Secure boot and enhanced encryption support, including post-quantum cryptography CNSA 2.0 support
- Telemetry engine with 1588 support and wireless TSN

Overview

The Broadcom® Wi-Fi 8 Accelerated Processing Unit (APU) is a next-generation system-on-chip designed to unify high-performance computing, networking, and AI acceleration in single, tightly integrated silicon. This SoC dramatically expands upon the capabilities of previous generations by integrating a powerful Broadcom Neural Engine (BNE) for on-device AI/ML inference and acceleration, transforming the access point into an intelligent edge computing platform.

The integrated quad-core ARM v8 CPU complex provides robust performance for dedicated customer applications, while the advanced networking engines offload both wired and wireless data paths. This engine architecture enables complete CPU bypass of all networking traffic for ultra-low latency and maximum throughput.

Integrated multi-gig Ethernet PHYs with MACsec support for comprehensive end-to-end security, advanced telemetry and analytics engine, along with support for advanced memory standards and integrated edge AI capabilities, make the BCM49438 the unparalleled platform for the most secure and intelligent multi-gigabit broadband networks of the future. This powerful combination is engineered to simplify design, minimize PCB footprints, and ensure industry-leading throughput and power efficiency, creating a new class of secure, AI-ready Wi-Fi 8 platform for the connected world.
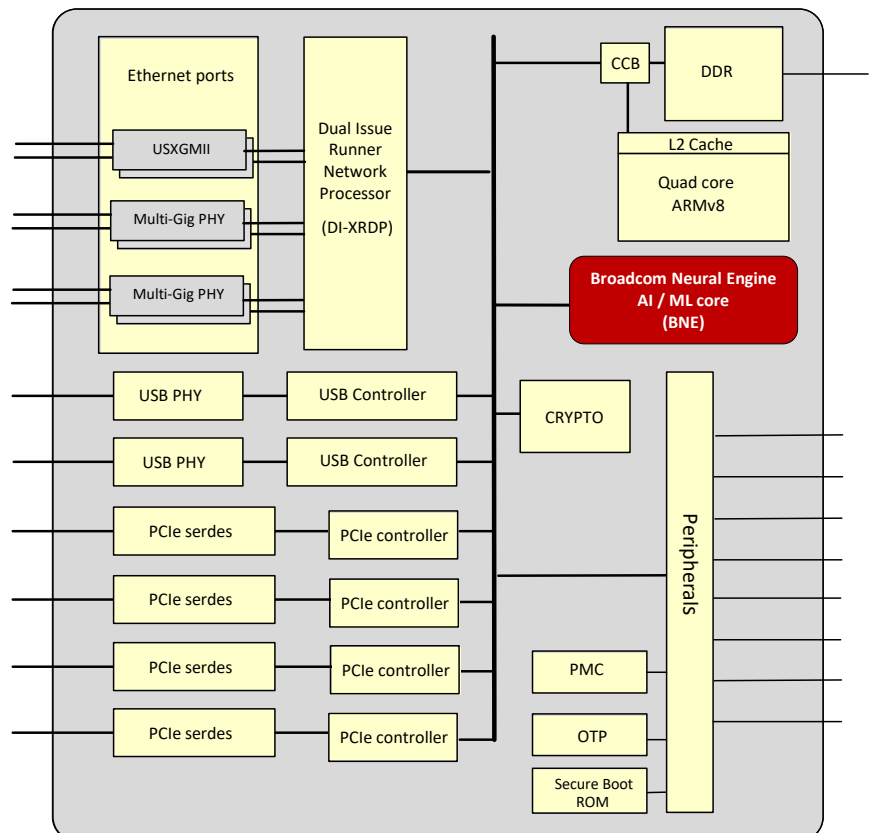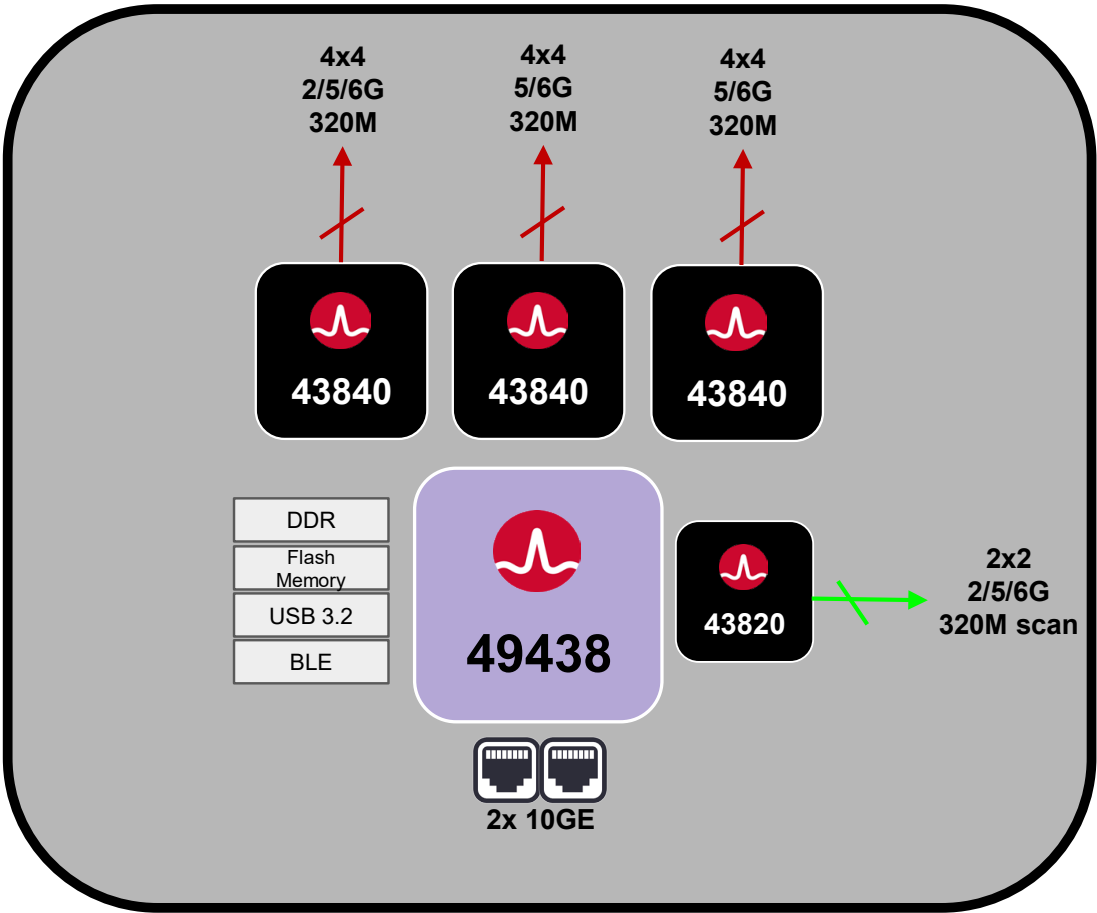
Figure 1: BCM49438 Block Diagram

Next-Generation Network Processor with Integrated AI

Figure 2: Typical Wi-Fi 8 Access Point Block Diagram

Ordering Information		
Part Number	Package	Ambient Temperature Range
BCM49438A0KFBEG	19 mm x 19 mm FCBGA	0°C to 70°C
BCM49438A0IFBEG	19 mm x 19 mm FCBGA	–40°C to 85°C