Built for Next-Generation Connected Vehicles

NXP® 88Q9098 Concurrent Wi-Fi® 6 with Bluetooth® 5 BLE SoC

The new 88Q9098 wireless SoC family extends NXP leadership in providing comprehensive 802.11ax solutions by enabling gigabit-level performance, superior reliability and enhanced security for automotive applications.

PRODUCT OVERVIEW

Delivering reliable, high-performance wireless connectivity is becoming more difficult in today's increasingly congested automobile environment. To meet this challenge, the new NXP 88Q9098x product line features 802.11ax solutions with 2 x 2 plus 2 x 2 concurrent dual Wi-Fi, dual-mode Bluetooth® 5/ Bluetooth LE and 802.11p for connected vehicles. Our innovative concurrent dual Wi-Fi architecture sets a new technology precedent, integrating two complete Wi-Fi subsystems into a single SoC and enabling two independent 2 x 2 data streams to run concurrently and at full throughput.

The wireless combo solution also has a robust set of features including 802.11p with an on-chip elliptic curve cryptography (ECC) hardware accelerator and Bluetooth LE long-range. ECC enables safe and secure vehicle-to-everything (V2X) communication and Bluetooth LE long-range provides long-distance mobile connectivity for a wide variety of automotive applications from IVI to TCU.

The 88Q9098x family of footprint-compatible wireless solutions include:

▶ 2 x 2 + 2 x 2 concurrent dual Wi-Fi with Bluetooth 5 (88Q9098A)

▶ 2 x 2 Wi-Fi + 2 x 2 802.11p concurrent operation with Bluetooth 5 (88Q9098P)

▶ 2 x 2 + 2 x 2 concurrent dual Wi-Fi or 2 x 2 Wi-Fi + 2 x 2 802.11p concurrent operation with Bluetooth 5 (88Q9098S)

TARGET APPLICATIONS

▶ In-Vehicle infotainment (IVI)

▶ Telecommunications control unit (TCU)

▶ Remote diagnostics

▶ Advanced driver assistance systems (ADAS)

▶ Connected gateway (C-GW)

▶ Vehicle-to-Everything (V2X) communication

KEY FEATURES AND BENEFITS

FEATURES	BENEFITS
General Features	• Concurrent dual Wi-Fi® operating modes for various automotive applications • AEC-Q100 grade 2 support (from -40° C up to + 105° C) with external power amplifiers • 11 x 11 mm, 148-pin DR-QFN package
WLAN	• 2 x 2 IEEE® 802.11ax • 2 x 2 IEEE 802.11ac • Support 20/40/80/(80+80) MHz channel bandwidths • Uplink and downlink OFDMA and MU-MIMO • 1024 QAM • Instantaneous 0-DFS
DSRC	• On-chip elliptic curve cryptography (ECC) hardware acceleration for secure V2X applications • Maximum ratio combining (MRC) and cyclic shift diversity (CSD) technologies to maximize range and performance of 802.11p for V2X communication
Bluetooth 5	• 2 x wide band speech (WBS) calls • 2 Mbit/s LE • Long range • LTE coexistence arbitration
Precision Location	• 802.11mc • Bluetooth LE angle of arrival (AoA)/angle of departure (AoD) • Distance: within 1 meter • Angle: within 10 degree
Host Interfaces	• PCIe® 3.0 • SDIO 3.0 • high speed UART (for Bluetooth only)

88Q9098X BLOCK DIAGRAM
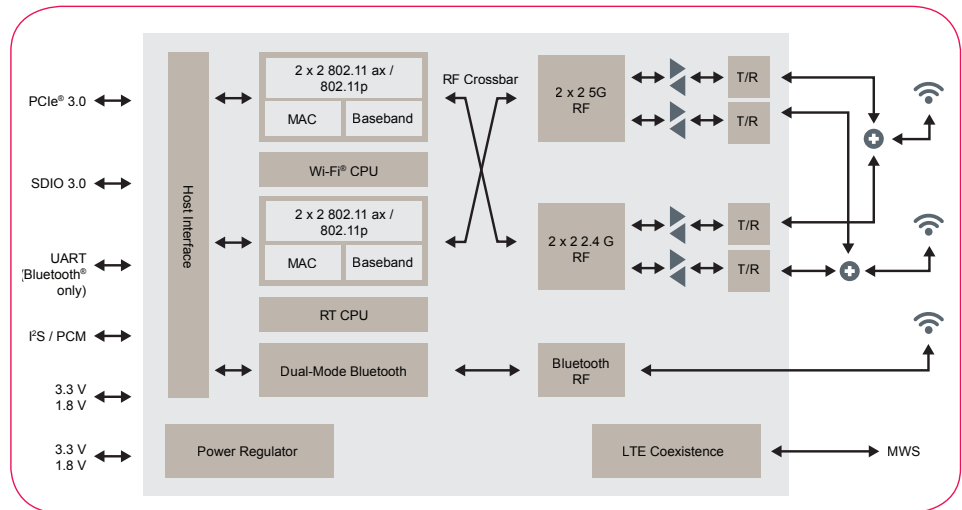
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