

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)



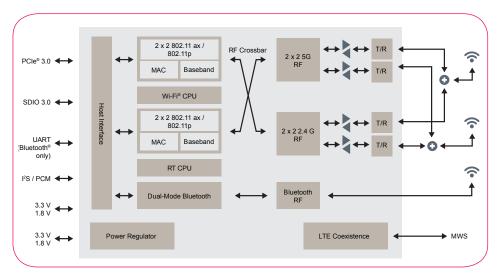
# **TARGET APPLICATIONS**

- ▶ 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	<ul> <li>Concurrent dual Wi-Fi® operating modes for various automotive applications</li> <li>AEC-Q100 grade 2 support (from -40° C up to + 105° C) with external power amplifiers</li> <li>11 x 11 mm, 148-pin DR-QFN package</li> </ul>
WLAN	<ul> <li>2 x 2 IEEE® 802.11ax</li> <li>2 x 2 IEEE 802.11ac</li> <li>Support 20/40/80/(80+80) MHz channel bandwidths</li> <li>Uplink and downlink OFDMA and MU-MIMO</li> <li>1024 QAM</li> <li>Instantaneous 0-DFS</li> </ul>
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	<ul> <li>2 x wide band speech (WBS) calls</li> <li>2 Mbit/s LE</li> <li>Long range</li> <li>LTE coexistence arbitration</li> </ul>
Precision Location	<ul> <li>802.11mc</li> <li>Bluetooth LE angle of arrival (AoA)/angle of departure (AoD)</li> <li>Distance: within 1 meter</li> <li>Angle: within 10 degree</li> </ul>
Host Interfaces	<ul> <li>PCle® 3.0</li> <li>SDIO 3.0</li> <li>high speed UART (for Bluetooth only)</li> </ul>

# 88Q9098X BLOCK DIAGRAM



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