Quectel FC909A
Wi-Fi&Bluetooth Module
Ultra-compact LCC Package

FC909A is a high-performance Wi-Fi 4 and BLE (Bluetooth 5.2) module in LCC package. It can be used to establish WLAN and Bluetooth connections. With an ultra-compact size of 12.0 mm × 12.0 mm × 1.95 mm, FC909A optimizes the size and cost for end-products. Designed with a reliable SDIO 2.0 interface to provide WLAN capability, it also provides an integrated power management unit (PMU), power amplifiers (PAs), and a low noise amplifier to address the needs of mobile devices requiring low power consumption and compact size.

FC909A is a Bluetooth 5.2 compliant module. The Bluetooth transmitter also features a Class 1 power amplifier. FC909A supports extended Synchronous Connection Oriented link (eSCO) for enhancing voice quality by allowing for retransmission of dropped packets and Adaptive Frequency Hopping (AFH) for reducing radio frequency interference.

Surface-mount Technology (SMT) makes FC909A an ideal solution for durable and rugged designs. The low profile and small size of LCC package ensure that it can be easily embedded into size-constrained applications and provide reliable connectivity with these applications. The advanced package and the laser-engraved label with better heat dissipation and indelible markings allow for large-scale automated manufacturing which has strict requirements on cost and efficiency.

Key Features

- Single band 2.4 GHz Wi-Fi and BLE (Bluetooth 5.2)
- SDIO 2.0 interface that supports higher data transmission rate and enables lower power consumption
- Faster time-to-market: simple design minimizes design-in time and development efforts
- Wide operating temperature range: -30 °C to +85 °C
<table>
<thead>
<tr>
<th><strong>Wi-Fi &amp; Bluetooth</strong></th>
<th><strong>FC909A</strong></th>
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<tbody>
<tr>
<td><strong>WLAN Protocol</strong></td>
<td>IEEE 802.11b/g/n</td>
</tr>
<tr>
<td><strong>Wi-Fi Frequency Band</strong></td>
<td>2.4 GHz</td>
</tr>
<tr>
<td><strong>Wi-Fi Antenna</strong></td>
<td>1 × 1</td>
</tr>
<tr>
<td><strong>Wi-Fi Modulation Mode</strong></td>
<td>DSSS, OFDM, DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM</td>
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<tr>
<td><strong>Bluetooth Protocol</strong></td>
<td>Bluetooth 5.2</td>
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<td><strong>Bluetooth Antenna</strong></td>
<td>Share antenna with Wi-Fi</td>
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<tr>
<td><strong>Encryption Mode</strong></td>
<td>WPA3</td>
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<td><strong>Operating Mode</strong></td>
<td>AP/STA</td>
</tr>
<tr>
<td><strong>Dimension</strong></td>
<td>12.0 mm × 12.0 mm × 1.95 mm</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>Approx. 0.6 g</td>
</tr>
<tr>
<td><strong>Temperature Range</strong></td>
<td><strong>Operating Temperature Range</strong>: -30 °C to +85 °C①</td>
</tr>
</tbody>
</table>

### Data Rate (Max.)

- **802.11b**: 11 Mbps
- **802.11g**: 54 Mbps
- **802.11n**: 72 Mbps

### Interfaces

- **PCM**: × 1 (for Bluetooth)
- **SDIO 2.0**: × 1 (for Wi-Fi)
- **UART**: × 1 (for Bluetooth)

### Wi-Fi/Bluetooth Antenna

- **Wi-Fi/Bluetooth Antenna**: × 1

### Electrical Features

- **Power Supply Voltage**: VBAT: 3.0–4.8 V, Typ. 3.3 V
- **I/O Power Supply Voltage**: VDDIO: 1.71–3.63 V, Typ. 1.8/3.3 V
- **Power Consumption (Max.)**: Max. current at Tx mode: 300 mA @ VBAT, 0.7 mA @ VIO

### Certification

- **Europe**: CE
- **America**: FCC
- **Canada**: IC
- **China**: SRRC

### Wi-Fi Performance

#### Receiving Sensitivity (Typ.)

- **2.4 GHz**
  - 802.11b/1 Mbps: -95 dBm
  - 802.11b/11 Mbps: -88 dBm
  - 802.11g/6 Mbps: -90 dBm
  - 802.11g/54 Mbps: -75 dBm
  - 802.11n/HT20 MCS0: -89 dBm
  - 802.11n/HT20 MCS7: -72 dBm

#### Transmitting Power (Typ.)

- **2.4 GHz**
  - 802.11b/1 Mbps: 16 dBm
  - 802.11b/11 Mbps: 16 dBm
  - 802.11g/6 Mbps: 15 dBm
  - 802.11g/54 Mbps: 15 dBm
  - 802.11n/HT20 MCS0: 14 dBm
  - 802.11n/HT20 MCS7: 14 dBm

### Bluetooth Performance

#### Receiving Sensitivity

- **BR**: -88 dBm
- **EDR (π/4-DQPSK)**: -90 dBm
- **EDR (8-DPSK)**: -84 dBm
- **BLE**: -90 dBm

#### Transmitting Power

- **BR**: 9 dBm
- **EDR (π/4-DQPSK)**: 8 dBm
- **EDR (8-DPSK)**: 8 dBm
- **BLE**: 8 dBm

**NOTE:** Functionality is guaranteed across this ambient temperature range. Optimum RF performance is guaranteed only in the temperature range from -30 °C to 75 °C.

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