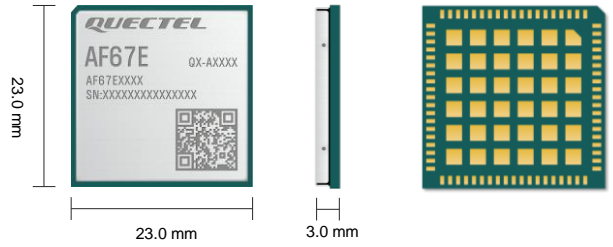


Quectel AF67E

Automotive Grade

Wi-Fi 6 & Bluetooth 5.3 Module

Compact LGA Package



AF67E is an automotive grade Wi-Fi 6 and Bluetooth 5.3 module with high performance and low cost. The module supports $2 \times 2 + 2 \times 2$ MIMO and dual MAC, and its maximum data rate can reach 1.8 Gbps. With a compact and unified form factor of 23.0 mm \times 23.0 mm \times 3.0 mm, AF67E is an ideal solution for size-sensitive applications, and helps customers reduce product size and optimize application design cost. AF67E is designed to be used in telematics and intelligent cockpit scenarios to establish WLAN and Bluetooth connections.

The surface-mount technology enhances its durability and robustness, and the LGA package ensures the module can be easily embedded into size-constrained applications and provide reliable connectivity with these applications. The advanced package allows for large-scale automated manufacturing which has strict requirements on cost and efficiency.

Designed with a reliable PCIe Gen 2 interface to provide WLAN capability, AF67E achieves low-power and high-speed data transmission. Coupled with its compact size and wide temperature range, the module can meet Wi-Fi/Bluetooth design requirements in automotive industry.



Key Features

- ✓ Supports 2.4 GHz and 5 GHz Wi-Fi and Bluetooth 5.3
- ✓ Supports IEEE 802.11a/b/g/n/ac/ax standards
- ✓ Supports Dual-band Simultaneous (DBS) with dual-MAC addresses
- ✓ Supports PCIe Gen 2 interface which provides higher data transmission rate and lower power consumption
- ✓ Supports LE Audio, 2 Mbps BLE and BLE Long Range
- ✓ Ideal for automotive applications with IATF 16949: 2016 requirements
- ✓ Compliant with automotive quality processes such as APQP and PPAP
- ✓ Wide operating temperature range (-40 °C to +85 °C), superior anti-electromagnetic interference capability to meet the requirements for automotive devices and other harsh-environment applications



Ultra-compact
Size



LGA Package



Operating Temperature
Range: -40 °C to +85 °C



Bluetooth 5.3



IEEE 802.11
a/b/g/n/ac/ax



DBS

| Wi-Fi 6 & Bluetooth 5.3 | AF67E |
|-----------------------------|--|
| Region | Global |
| Function | Wi-Fi 2.4 GHz/5 GHz; Bluetooth 5.3 |
| WLAN | IEEE 802.11a/b/g/n/ac/ax |
| Bluetooth | BLE (Bluetooth 5.3) |
| Wi-Fi Modulation Mode | DBPSK, DQPSK, CCK, BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM |
| Bluetooth Modulation Mode | GFSK, 8-DPSK, $\pi/4$ -DQPSK |
| Temperature Range | |
| Operating Temperature Range | -40 °C to +85 °C |
| Max. Data Rates | |
| 802.11a | 54 Mbps |
| 802.11b | 11 Mbps |
| 802.11g | 54 Mbps |
| 802.11n | 300 Mbps |
| 802.11ac | 866 Mbps |
| 802.11ax | 1200 Mbps |
| BLE (Bluetooth 5.3) | 2 Mbps |
| Interfaces | |
| PCIe Gen 2 | × 1 |
| UART | × 1 |
| PCM | × 1 |
| Coexistence Interface | × 1 |
| Antenna Interfaces | ANT_WIFI/BT: Wi-Fi 0 antenna and Bluetooth antenna ANT_WIFI1: Wi-Fi 1 antenna ANT_BT: dedicated Bluetooth antenna (Optional) |
| Electrical Features | |
| Power Supply Voltage | VDD_PA: 1.71 V–2.1 V, Typ. 1.8 V VDD_CORE: 1.90 V, 1.35 V, 0.95 V |
| I/O Power Supply Voltage | VDD_IO: 1.71 V–1.89 V, Typ. 1.8 V |
| Certifications | |
| Regulatory | Europe: CE America: FCC Canada: IC China: SRRC Australia/New Zealand: RCM |
| General Features | |
| Encryption Mode | WPA3 |
| Max. Access Points | 32 |
| Operating Mode | AP, STA |
| BLE Feature | LE Audio, 2M PHY, BLE Long Range |
| Dimension | 23.0 mm × 23.0 mm × 3.0 mm |
| Weight | Approx. 3.3 g |

RF Performance

| | | Receiver Sensitivity (Typ.) | Transmit Power (Typ.) |
|---------|----------------------|-----------------------------|-----------------------|
| 2.4 GHz | 802.11b/1 Mbps | -97 dBm | 15.5 dBm |
| | 802.11b/11 Mbps | -89 dBm | 15.5 dBm |
| | 802.11g/6 Mbps | -93 dBm | 14.5 dBm |
| | 802.11g/54 Mbps | -75 dBm | 13 dBm |
| | 802.11n/HT20 MCS 0 | -93 dBm | 14.5 dBm |
| | 802.11n/HT20 MCS 7 | -73 dBm | 12.5 dBm |
| | 802.11n/HT40 MCS 0 | -89.5 dBm | 14 dBm |
| | 802.11n/HT40 MCS 7 | -70 dBm | 12 dBm |
| | 802.11ax/HE20 MCS 0 | -93 dBm | 14.5 dBm |
| | 802.11ax/HE20 MCS 11 | -63.5 dBm | 11 dBm |
| | 802.11ax/HE40 MCS 0 | -90 dBm | 14 dBm |
| | 802.11ax/HE40 MCS 11 | -60 dBm | 9.5 dBm |
| | | Receiver Sensitivity (Typ.) | Transmit Power (Typ.) |
| 5 GHz | 802.11a/6 Mbps | -90 dBm | 13 dBm |
| | 802.11a/54 Mbps | -72 dBm | 11 dBm |
| | 802.11n/HT20 MCS 0 | -89.5 dBm | 13 dBm |
| | 802.11n/HT20 MCS 7 | -70 dBm | 10.5 dBm |
| | 802.11n/HT40 MCS 0 | -87 dBm | 12.5 dBm |
| | 802.11n/HT40 MCS 7 | -66.5 dBm | 10 dBm |
| | 802.11ac/VHT20 MCS 0 | -89.5 dBm | 13 dBm |
| | 802.11ac/VHT20 MCS 8 | -66 dBm | 10.5 dBm |
| | 802.11ac/VHT40 MCS 0 | -87 dBm | 12.5 dBm |
| | 802.11ac/VHT40 MCS 9 | -62 dBm | 9.5 dBm |
| | 802.11ac/VHT80 MCS 0 | -84 dBm | 12 dBm |
| | 802.11ac/VHT80 MCS 9 | -59 dBm | 9 dBm |
| | 802.11ax/HE20 MCS 0 | -90 dBm | 13 dBm |
| | 802.11ax/HE20 MCS 11 | -61 dBm | 8.5 dBm |
| | 802.11ax/HE40 MCS 0 | -88 dBm | 12.5 dBm |
| | 802.11ax/HE40 MCS 11 | -58 dBm | 8 dBm |
| | 802.11ax/HE80 MCS 0 | -84 dBm | 12 dBm |
| | 802.11ax/HE80 MCS 11 | -56 dBm | 7 dBm |