

QWX23105 Product Brief

2.4 GHz Wi-Fi 7 / Bluetooth Front-End IC

Applications

- Wi-Fi 7 / Bluetooth systems
- Smartphones and other portable, rechargeable battery-operated devices
- Modules for embedded systems

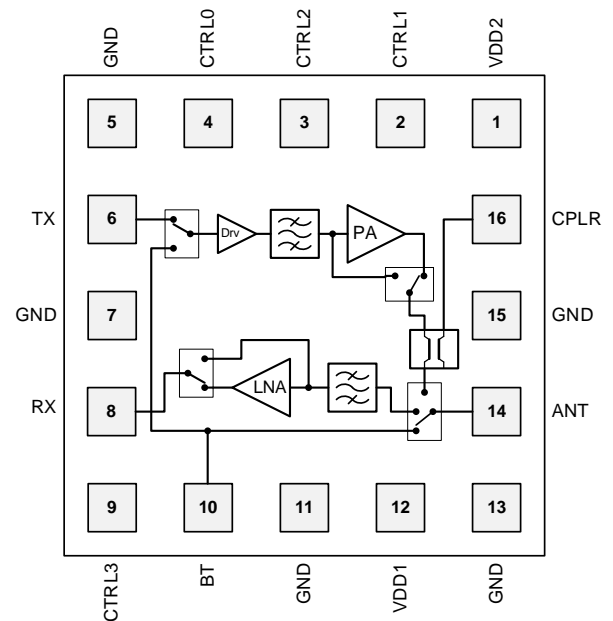
Features

- Single Wi-Fi 7 / Bluetooth combo front-end IC
- PA with superior linear output power and best-in-class power efficiency for Wi-Fi 7 high data rate applications
- LNA with bypass mode and industry leading current consumption
- Wi-Fi modes: high-performance, DPD, and ultra-low power
- Dedicated Bluetooth transmit and bypass modes
- LGA 2 mm x 2 mm or bare die with Cu pillars for flip chip assembly
- Directional coupler output
- Integrated RF filters offer superior interferer immunity

Key Specifications

- 2400 – 2500 MHz
- Single 3.85V supply voltage
- Pout = +24 dBm CCK11
- Pout = +23 dBm 6 Mbps 802.11g
- Pout = +19 dBm MCS8 HE20 -34 dB DEVM
- Pout = +17.5 dBm MCS11 HE40 -43 dB DEVM
- Pout = +16 dBm MCS13 EHT40 -45 dB DEVM
- Transmit gain = 31 dB
- Current consumption:
170 mA at 18.5 dBm output power
- Noise Figure (including on-chip filter) = 2 dB
- Receive gain = 16.5 dB

Functional Block Diagram



Pin description follows on the next page.

Description

The QuantalRF QWX23105 is a highly integrated single front-end IC designed for high performance Wireless Local Area Network (WLAN) and Bluetooth applications supporting all standards up to Wi-Fi 7. It features a patent pending PA architecture providing superior linearity, a low loss single-pole, double-throw (SPDT) switch and an LNA.

Support for Digital Pre-Distortion (DPD) is implemented in transmit modes for a further improved EVM performance.

All RF ports are matched on-chip to 50 ohms to minimize the external components and application layout area.

The QX23105 is fabricated as a single die in CMOS SOI technology.

Pin Configuration and Description

| Pin No. | Label | Description |
|------------------|-------|---|
| 1, 12 | VDD | 3.85 V supply |
| 5, 7, 11, 13, 15 | GND | Ground |
| 2 | CTRL1 | Control signal, see truth table in the datasheet. |
| 3 | CTRL2 | Control signal, see truth table in the datasheet. |
| 4 | CTRL0 | Control signal, see truth table in the datasheet. |
| 6 | TXIN | RF PA input port |
| 8 | RXOUT | RF LNA output port |
| 9 | CTRL3 | Control signal, see truth table in the datasheet. |
| 10 | BT | Bluetooth RF bidirectional port, matched to 50Ω |
| 14 | ANT | Bidirectional antenna port, matched to 50Ω |
| 16 | CPLR | Directional coupler output |

Handling Precautions

Proper caution must be exercised to prevent electrostatic (ESD) damage.

| Parameter | Rating | Condition |
|-----------|--------|--|
| HBM | 2000 V | Human body model contact discharge per ANSI/ESDA/JEDEC JS-001-2014 |
| CDM | 500 V | Charged device model contact discharge per ANSI/ESDA/JEDEC JS-002-2014 |

RoHS Compliance

The part is compliant with the 2011/65/EU RoHS directive, as amended by Directive 2015/863/EU.

Contact Information

For the latest specifications, additional product information and support:

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Learn more at [quantalrf.com](https://www.quantalrf.com)

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