

# JODY-W5 series

## Host-based multiradio modules with Wi-Fi 6 and Bluetooth 5.4

Data sheet



### Abstract

Targeted towards system integrators and design engineers, this technical data sheet includes the functional description, pin definition, specifications, country approval status, handling instructions, and ordering information for JODY-W5 host-based multiradio modules. Supporting 802.11b/g/n/ac/ax and dual-mode Bluetooth 5.4 connectivity, JODY-W5 is ideal for in-vehicle infotainment and telematic applications that demand high data rates, such as in-car hotspots and Wi-Fi display applications like Apple CarPlay or video streaming across multiple clients. The module connects to the host through an SDIO interface for Wi-Fi and High-Speed UART for Bluetooth.

# Document information

|                               |  |             |
|-------------------------------|--|-------------|
| <b>Title</b>                  | <b>JODY-W5 series</b>  |             |
| <b>Subtitle</b>               | Host-based multiradio modules with Wi-Fi 6 and Bluetooth 5.4 |             |
| <b>Document type</b>          | Data sheet   |             |
| <b>Document number</b>        | UBX-23002865   |             |
| <b>Revision and date</b>      | R05  | 29-Jan-2025 |
| <b>Disclosure restriction</b> | C1-Public  |             |

| <b>Product status</b>                | <b>Corresponding content status</b> |  |
|--------------------------------------|-------------------------------------|--|
| <b>Functional Sample</b>             | Draft                               | For functional testing. Revised and supplementary data will be published later.        |
| <b>In Development / Prototype</b>    | Objective specification             | Target values. Revised and supplementary data will be published later.                 |
| <b>Engineering Sample</b>            | Advance information                 | Data based on early testing. Revised and supplementary data will be published later.   |
| <b>Initial Production</b>            | Early production information        | Data from product verification. Revised and supplementary data may be published later. |
| <b>Mass Production / End of Life</b> | Production information              | Document contains the final product specification.                                     |

This document applies to the following products:

| <b>Product name</b> | <b>Type number</b> | <b>Chipset</b> | <b>PCN reference</b> | <b>Product status</b> |
|---------------------|--------------------|----------------|----------------------|-----------------------|
| JODY-W562-A         | JODY-W562-00A-00   | AW611          | N/A                  | Initial Production    |
| JODY-W562-A         | JODY-W562-01A-00   | AW611          | N/A                  | Engineering Samples   |
| JODY-W562-A         | JODY-W562-21A-00   | AW611          | N/A                  | Engineering Samples   |

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# 1 Functional description

## 1.1 Overview

The JODY-W5 series comprises compact, host-based, multi-radio modules based on the NXP AW611 chipset. The modules enable Wi-Fi, Bluetooth, and Bluetooth Low Energy (LE) communication and are ideal for automotive and industrial applications. The chipsets used in the automotive grade JODY-W5 modules are AEC-Q100 compliant.

JODY-W5 modules can be operated in the following modes:

- Wi-Fi 1x1 802.11b/g/n/a/ac/ax in 2.4 GHz or 5 GHz
- Dual-mode Bluetooth 5.4 (including isochronous channels for LE audio) can be operated simultaneously with Wi-Fi

JODY-W5 modules undergo extended automotive qualification testing in accordance with u-blox Qualification Policy based on AEC-Q104 and are manufactured in line with ISO/TS 16949.

JODY-W5 connects to the host processor running Linux or Android, through SDIO and High-Speed UART interfaces.

## 1.2 Applications

JODY-W5 series modules are suitable for a broad range of automotive applications, including:

- Rapid sync-n-go applications and fast content download to vehicles
- In-vehicle infotainment systems
- Hands-free equipment (Bluetooth)
- Telematic systems (Control Units and Head Units)
- Two-wheel applications
- Remote diagnostic applications
- Communication for EV charging
- Applications for demanding operating environments up to 105 °C

### 1.3 Block diagram

Figure 1 shows the various components and interfaces supported in JODY-W5 series modules.

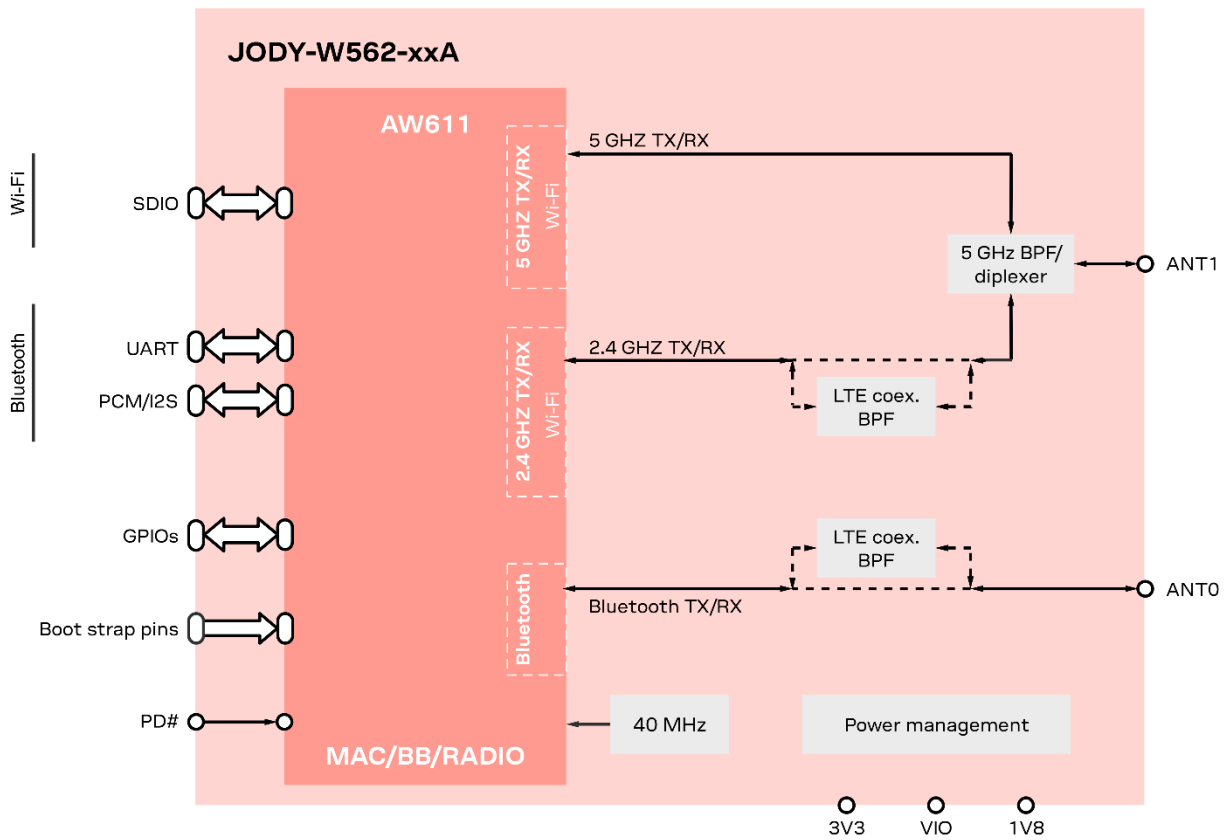


Figure 1: JODY-W562-A block diagram

JODY-W5 variants with a dedicated LTE Coexistence Filter (2.4 GHz BPF) are available on request. Coexistence band pass filters (BPF) are only needed when co-located with LTE devices operating in LTE bands 7, 38, 40, and 41.

The type numbers and corresponding configuration options for JODY-W5 series modules are shown in Table 1.

| Type number      | Antenna configuration |                     | LTE Coexistence BPF |               |
|------------------|-----------------------|---------------------|---------------------|---------------|
|                  | ANT0                  | ANT1                | Wi-Fi BPF           | Bluetooth BPF |
| JODY-W562-00A-00 | Bluetooth             | 2.4 and 5 GHz Wi-Fi | No                  | No            |
| JODY-W562-01A-00 | Bluetooth             | 2.4 and 5 GHz Wi-Fi | No                  | No            |
| JODY-W562-21A-00 | Bluetooth             | 2.4 and 5 GHz Wi-Fi | Yes                 | Yes           |

Table 1: Supported JODY-W5 configurations

## 1.4 Product features

| Item                               | JODY-W562-00A   | JODY-W562-01A   | JODY-W562-21A   |
|------------------------------------|---|---|---|
| Grade                              | Automotive Grade 3  | Automotive Grade 2  | Automotive Grade 2  |
| Chipset                            | NXP AW611   | NXP AW611   | NXP AW611   |
| Antenna type                       | Two antenna pins for Wi-Fi and Bluetooth  | Two antenna pins for Wi-Fi and Bluetooth  | Two antenna pins for Wi-Fi and Bluetooth  |
| Supported Wi-Fi radio modes        | IEEE 802.11 b/g/n/a/ac/ax   | IEEE 802.11 b/g/n/a/ac/ax   | IEEE 802.11 b/g/n/a/ac/ax   |
| Supported Wi-Fi bands              | 2.4 / 5 GHz   | 2.4 / 5 GHz   | 2.4 / 5 GHz   |
| Max. Wi-Fi output power            | 20 dBm (at antenna pin)   | 20 dBm (at antenna pin)   | 18 dBm (at antenna pin)   |
| Bluetooth version                  | 5.4   | 5.4   | 5.4   |
| Bluetooth profiles                 | HCI   | HCI   | HCI   |
| Supported Bluetooth radio modes    | Bluetooth BR/EDR<br>Bluetooth Low Energy (LE)                                       | Bluetooth BR/EDR<br>Bluetooth Low Energy (LE)                                       | Bluetooth BR/EDR<br>Bluetooth Low Energy (LE)                                       |
| Supported BLE data rates           | 1 Mbps<br>2 Mbps<br>500 kbps<br>125 kbps  | 1 Mbps<br>2 Mbps<br>500 kbps<br>125 kbps  | 1 Mbps<br>2 Mbps<br>500 kbps<br>125 kbps  |
| LTE coexistence filters            | no  | no  | yes   |
| OS support                         | Linux / Android   | Linux / Android   | Linux / Android   |
| Interfaces                         | SDIO 3.0 (Wi-Fi/Bluetooth)<br>UART (Bluetooth)<br>PCM/I2S (Bluetooth digital audio) | SDIO 3.0 (Wi-Fi/Bluetooth)<br>UART (Bluetooth)<br>PCM/I2S (Bluetooth digital audio) | SDIO 3.0 (Wi-Fi/Bluetooth)<br>UART (Bluetooth)<br>PCM/I2S (Bluetooth digital audio) |
| Features                           | Micro access point with max. 16 connected clients                                   | Micro access point with max. 16 connected clients                                   | Micro access point with max. 16 connected clients                                   |
|                                    | Simultaneous client and access point mode   | Simultaneous client and access point mode   | Simultaneous client and access point mode   |
|                                    | WPA/WPA2/WPA3   | WPA/WPA2/WPA3   | WPA/WPA2/WPA3   |
|                                    | RF parameters/MAC addresses in OTP  | RF parameters/MAC addresses in OTP  | RF parameters/MAC addresses in OTP  |
| Max. ambient operating temperature | 85 °C   | 105 °C  | 105 °C  |
| Module size                        | 19.8 x 13.8 mm  | 19.8 x 13.8 mm  | 19.8 x 13.8 mm  |

**Table 2: JODY-W5 series product features**

For further information about the supported features, see the JODY-W5 product summary [\[3\]](#).

### 1.4.1 Wi-Fi features

- Standards: IEEE 802.11 a/b/g/n/ac/ax/d/h/e/i/w/mc/az/z, 802.11k/r/v in STA mode
- IEEE 802.11ax PHY data rates up to 480 Mbit/s (80 MHz, 1SS)
- Supports up to 16 stations in AP mode
- Support DFS radar pulse detection
- 20/40/80 MHz bandwidth
- SDIO 3.0 host interface for Wi-Fi
- Deep sleep low power mode
- 128-bit AES hardware crypto engine. BIP/GMAC, AES/CCMP, AES/CMAC, AES/GCMP
- WPA/WPA2/WPA3 and WAPI encryption
- Supports simultaneous station, access point and P2P modes
  - AP + AP
  - AP + STA
  - P2P + STA
  - P2P + AP

### 1.4.2 Bluetooth features

- Bluetooth 5.4 with Bluetooth Low Energy (LE)
- Bluetooth Class 1 and 2
- BR and EDR packet types – 1 Mbit/s (GFSK), 2 Mbit/s ( $\pi/4$ DQPSK), and 3 Mbit/s (8DPSK)
- Simultaneous active ACL connection support
- LE 2 Mbit/s PHY
- LE support up to 16 simultaneous central/peripheral connections
- LE secure connection
- LE Privacy 1.2
- LE Data Length Extension
- LE Advertising Extension
- LE long range
- LE power control
- Isochronous channels (ISOC) supporting LE Audio and Auracast™ Broadcast Audio
- Standard UART HCI transport layer
- PCM/I2S interface for voice applications (shared pins)

### 1.4.3 General product features

- Driver support for Linux and Android
- Coexistence with cellular and other on-chip radios
- Small footprint (19.8 mm x 13.8 mm), LGA package
- Automotive qualification according to u-blox Qualification Policy based on AEC-Q104 grade 3 (-40 °C to +85 °C) or grade 2 (-40 °C to +105 °C)



### 1.4.4 Reserved MAC addresses

JODY-W5 series modules have four consecutive MAC addresses that are unique for each module variant. The first two of these four addresses are configured during production.

The first address is used for Bluetooth communication, while the second address is configured for Wi-Fi communication. The Data Matrix Code shown on the product label includes the Bluetooth MAC address, as described in the [Labeling and ordering information](#). The remaining two MAC addresses are not used in the manufacturing configuration but are reserved for module usage.

| MAC address        | Assignment     | Last two bits of MAC address | Example                  |
|--------------------|----------------|------------------------------|--------------------------|
| Module1, address 1 | Bluetooth      | 0b00                         | <i>D4:CA:6E:44:00:04</i> |
| Module1, address 2 | Wi-Fi          | 0b01                         | <i>D4:CA:6E:44:00:05</i> |
| Module1, address 3 | (free for use) | 0b10                         | <i>D4:CA:6E:44:00:06</i> |
| Module1, address 4 | (free for use) | 0b11                         | <i>D4:CA:6E:44:00:07</i> |
| Module2, address 1 | Bluetooth      | 0b00                         | <i>D4:CA:6E:44:00:08</i> |
| Module2, address 2 | Wi-Fi          | 0b01                         | <i>D4:CA:6E:44:00:09</i> |
| Module2, address 3 | (free for use) | 0b10                         | <i>D4:CA:6E:44:00:0A</i> |
| Module2, address 4 | (free for use) | 0b11                         | <i>D4:CA:6E:44:00:0B</i> |

**Table 3: MAC address assignment**

For further information about using the MAC address for secondary Wi-Fi interfaces, see also “*Assigning MAC addresses*” in the JODY-W5 system integration manual [\[2\]](#).

## 2 Interfaces

### 2.1 Host interface configuration

JODY-W5 series provides two configuration pins, **CONFIG[0]** and **CONFIG[1]**, for selecting the host interface configuration. Additional configuration pins are used to set parameters following a reset. To set a configuration bit to 0, attach a 51 kΩ resistor to GND. No external pull-up resistor is required to set a configuration bit to 1. [Table 4](#) and [Table 5](#) show all strapping options.

| CONFIG[1] | CONFIG[0] | Wi-Fi    | Bluetooth/<br>Bluetooth LE | Firmware download           |
|-----------|-----------|----------|----------------------------|-----------------------------|
| 1         | 1         | SDIO     | UART                       | SDIO+UART (parallel/serial) |
| Others    |           | Reserved |                            |                             |

**Table 4: Host interface configuration options**

Additional configuration pins are listed in [Table 5](#).

| Pin | Name       | Description  |
|-----|------------|--|
| 81  | RF_CNTL3_P | Reference clock frequency selection. Must be set to 1 or do not connect. |
| 80  | RF_CNTL4_N | Reserved. Set to 1 or do not connect.                                    |

**Table 5: Additional configuration pins**

### 2.2 SDIO interface

JODY-W5 supports an SDIO device interface that conforms to the industry standard SDIO 3.0 specification, including default speed (25 MHz), high-speed (50 MHz), SDR12/25/50/104 (12/25/50/104 MB/s), and DDR50 (50 MB/s) modes. The interface supports 1-bit and 4-bit SDIO transfer modes at the full clock range up to 208 MHz for SDR104. All mandatory SDIO commands are supported.

Host controllers access the Wi-Fi functions of JODY-W5 series modules using the SDIO bus protocol.

All bus speed modes are supported with a signal voltage of 1.8 V only.

| Bus speed mode    | Max clock frequency [MHz] | Signal voltage [V] | Max. bus speed [MB/s] |
|-------------------|---------------------------|--------------------|-----------------------|
| DS: Default Speed | 25                        | 1.8                | 12.5                  |
| HS: High Speed    | 50                        | 1.8                | 25                    |
| SDR12             | 25                        | 1.8                | 12.5                  |
| SDR25             | 50                        | 1.8                | 25                    |
| SDR50             | 100                       | 1.8                | 50                    |
| SDR104            | 208                       | 1.8                | 104                   |
| DDR50             | 50                        | 1.8                | 50                    |

**Table 6: Supported SDIO bus speed modes**

## 2.2.1 Default speed and high-speed modes (1.8 V)

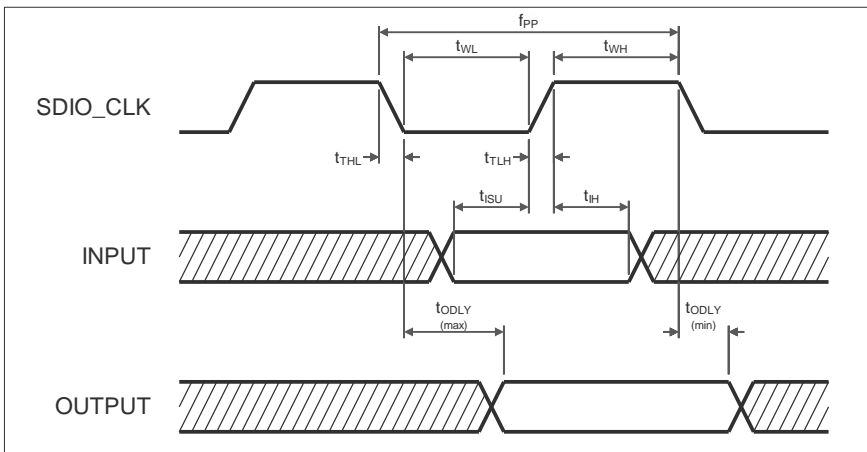


Figure 2: SDIO Protocol timing diagram - default speed mode (1.8 V)

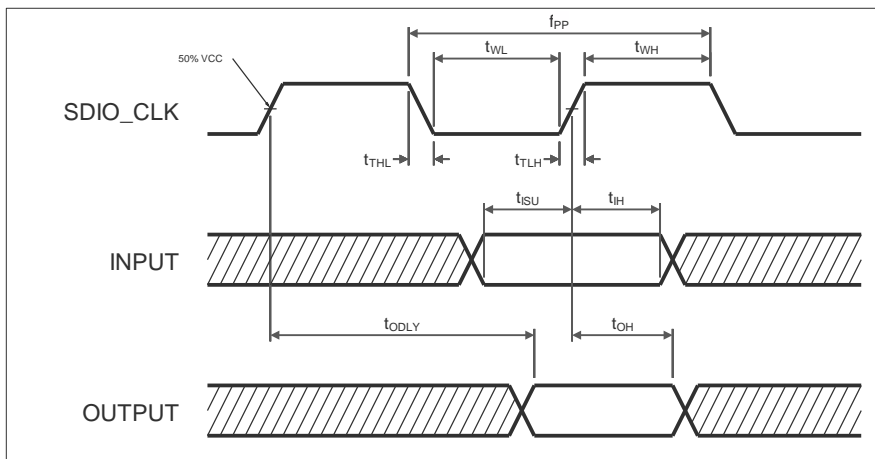


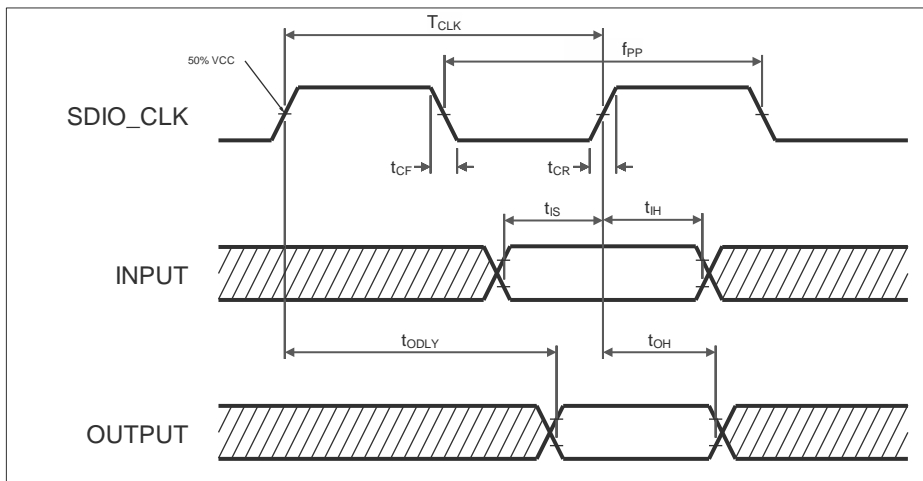
Figure 3: SDIO Protocol timing diagram - high speed mode (1.8 V)

| Symbol    | Parameter                             | Condition  | Min. | Typ. | Max. | Units |
|-----------|---------------------------------------|------------|------|------|------|-------|
| $f_{PP}$  | Clock frequency – Data Transfer Mode  | Normal     | 0    | -    | 25   | MHz   |
|           |                                       | High speed | 0    | -    | 50   | MHz   |
| $f_{OD}$  | Clock frequency – Identification Mode | Normal     | 0    | -    | 400  | kHz   |
|           |                                       | High speed | 0    | -    | 400  | kHz   |
| $t_{WL}$  | Clock low time                        | Normal     | 10   | -    | -    | ns    |
|           |                                       | High speed | 7    | -    | -    | ns    |
| $t_{WH}$  | Clock high time                       | Normal     | 10   | -    | -    | ns    |
|           |                                       | High speed | 7    | -    | -    | ns    |
| $t_{TLH}$ | Clock rise time                       | Normal     | -    | -    | 10   | ns    |
|           |                                       | High speed | -    | -    | 3    | ns    |
| $t_{THL}$ | Clock fall time                       | Normal     | -    | -    | 10   | ns    |
|           |                                       | High speed | -    | -    | 3    | ns    |
| $t_{ISU}$ | Input setup time                      | Normal     | 5    | -    | -    | ns    |
|           |                                       | High speed | 6    | -    | -    | ns    |

| Symbol     | Parameter                                  | Condition  | Min. | Typ. | Max. | Units |
|------------|--|------------|------|------|------|-------|
| $t_{IH}$   | Input hold time                            | Normal     | 5    | -    | -    | ns    |
|            |  | High speed | 2    | -    | -    | ns    |
| $t_{ODLY}$ | Output delay time                          | Normal     | -    | -    | 14   | ns    |
| $t_{ODLY}$ | Output delay time $CL \leq 40$ pF (1 card) | High speed | -    | -    | 14   | ns    |
| $t_{OH}$   | Output hold time                           | High speed | 2.5  | -    | -    | ns    |

**Table 7: SDIO timing data – Default speed, High speed modes (1.8 V)**

### 2.2.2 SDR12, SDR25, SDR50 modes (up to 100 MHz, 1.8 V)


**Figure 4: SDIO protocol timing diagram – SDR12, SDR25, SDR50 modes (up to 100 MHz, 1.8 V)**

| Symbol           | Parameter  | Condition   | Min.     | Typ. | Max.                | Units |
|------------------|--|-------------|----------|------|---------------------|-------|
| $f_{PP}$         | Clock frequency  | SDR12       | 0        | -    | 25                  | MHz   |
|                  |  | SDR25       | 0        | -    | 50                  | MHz   |
|                  |  | SDR50       | 0        | -    | 100                 | MHz   |
| $t_{IS}$         | Input setup time   | SDR12/25/50 | 5/6/3    | -    | -                   | ns    |
| $t_{IH}$         | Input hold time  | SDR12/25/50 | 5/2/0.8  | -    | -                   | ns    |
| $T_{CLK}$        | Clock time   | SDR12/25/50 | 40/10/10 | -    | -                   | ns    |
| $t_{CR}, t_{CF}$ | Rise time, fall time<br>$T_{CR}, T_{CF} < 2$ ns (max) at 100 MHz<br>$C_{CARD} = 10$ pF | SDR12/25/50 |          | -    | $0.2 \cdot T_{CLK}$ | ns    |
| $t_{ODLY}$       | Output delay time<br>$C_L \leq 30$ pF  | SDR12/25/50 | -        | -    | 14/14/7.5           | ns    |
| $t_{OH}$         | Output hold time<br>$C_L = 15$ pF  | SDR12/25/50 | 1.5      | -    | -                   | ns    |

**Table 8: SDIO timing data – SDR12, SDR25, SDR50 modes (up to 100 MHz, 1.8 V)**

### 2.2.3 SDR104 mode (208 MHz, 1.8 V)

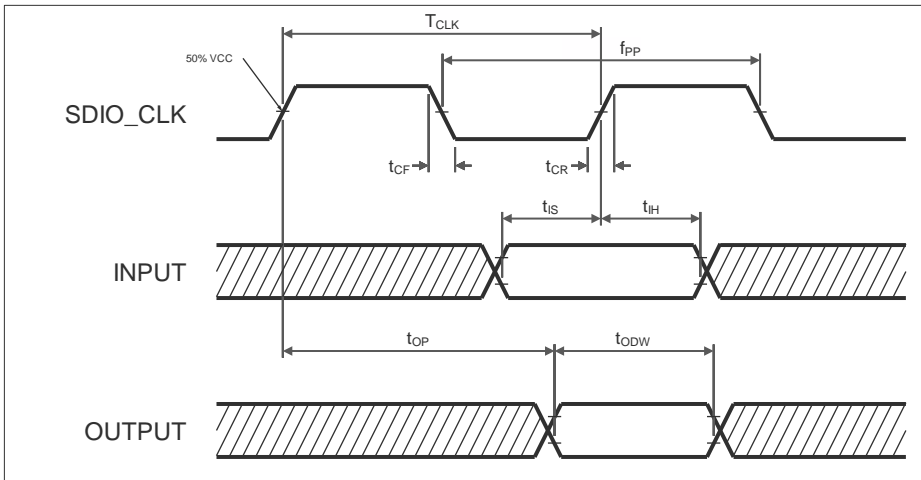


Figure 5: SDIO protocol timing diagram – SDR104 mode (208 MHz, 1.8 V)

| Symbol           | Parameter   | Condition | Min. | Typ | Max.                | Units |
|------------------|---|-----------|------|-----|---------------------|-------|
| $f_{PP}$         | Clock frequency   | SDR104    | 0    | -   | 208                 | MHz   |
| $t_{IS}$         | Input setup time  | SDR104    | 1.4  | -   | -                   | ns    |
| $t_{IH}$         | Input hold time   | SDR104    | 0.8  | -   | -                   | ns    |
| $T_{CLK}$        | Clock time  | SDR104    | 4.8  | -   | -                   | ns    |
| $t_{CR}, t_{CF}$ | Rise time, fall time<br>$T_{CR}, T_{CF} < 0.96$ ns (max) at 208 MHz<br>$C_{CARD} = 10$ pF | SDR104    | -    | -   | $0.2 \cdot T_{CLK}$ | ns    |
| $t_{OP}$         | Card output phase   | SDR104    | 0    | -   | 2                   | ns    |
| $t_{ODW}$        | Output timing of variable data window   | SDR104    | 2.88 | -   | -                   | ns    |

Table 9: SDIO timing data – SDR104 mode (208 MHz) (1.8 V)

### 2.2.4 DDR50 Mode (50 MHz, 1.8 V)

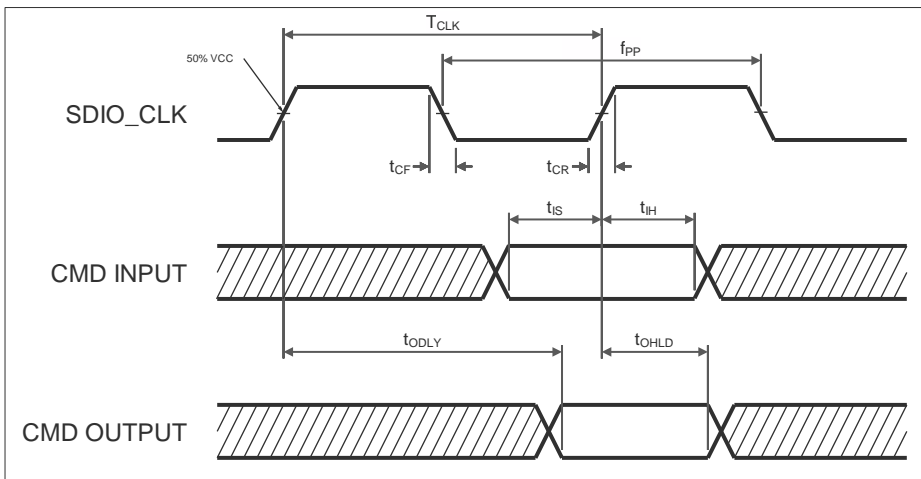
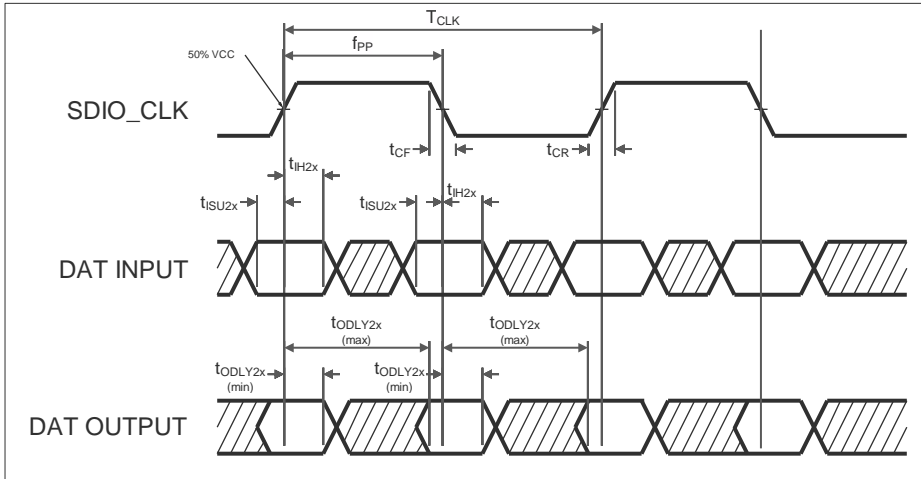


Figure 6: SDIO CMD timing diagram – DDR50 mode (50 MHz, 1.8 V)


**Figure 7: SDIO DAT [3:0] timing diagram – DDR50 mode (50 MHz, 1.8 V)**

| Symbol   | Parameter   | Condition | Min. | Typ | Max.            | Units |
|--|---|-----------|------|-----|-----------------|-------|
| Clock  |   |           |      |     |                 |       |
| $T_{CLK}$  | Clock time<br>50 MHz (max) between rising edges                             | DDR50     | 20   | -   | -               | ns    |
| $t_{CR}, t_{CF}$   | Rise time, fall time<br>TCR, TCF < 4.00 ns (max) at 50 MHz<br>CCARD = 10 pF | DDR50     | -    | -   | $0.2 * T_{CLK}$ | ns    |
| Clock Duty   |   | DDR50     | 45   | -   | 55              | %     |
| CMD Input (referenced to clock rising edge)                    |   |           |      |     |                 |       |
| $t_{IS}$   | Input setup time<br>CCARD ≤ 10 pF (1 card)                                  | DDR50     | 6    | -   | -               | ns    |
| $t_{IH}$   | Input hold time<br>CCARD ≤ 10 pF (1 card)                                   | DDR50     | 0.8  | -   | -               | ns    |
| CMD Output (referenced to clock rising edge)                   |   |           |      |     |                 |       |
| $t_{ODLY}$   | Output delay time during data transfer<br>mode CL ≤ 30 pF (1 card)          | DDR50     | -    | -   | 13.7            | ns    |
| $t_{OHL D}$  | Output hold time<br>CL ≥ 15 pF (1 card)                                     | DDR50     | 1.5  | -   | -               | ns    |
| DAT[3:0] Input (referenced to clock rising and falling edges)  |   |           |      |     |                 |       |
| $t_{IS2x}$   | Input setup time<br>CCARD ≤ 10 pF (1 card)                                  | DDR50     | 3    | -   | -               | ns    |
| $t_{IH2x}$   | Input hold time<br>CCARD ≤ 10 pF (1 card)                                   | DDR50     | 0.8  | -   | -               | ns    |
| DAT[3:0] Output (referenced to clock rising and falling edges) |   |           |      |     |                 |       |
| $t_{ODLY2x} (max)$   | Output delay time during data transfer<br>mode CL ≤ 25 pF (1 card)          | DDR50     | -    | -   | 7.0             | ns    |
| $t_{ODLY2x} (min)$   | Output hold time<br>CL ≥ 15 pF (1 card)                                     | DDR50     | 1.5  | -   | -               | ns    |

**Table 10: SDIO timing data – DDR50 mode (50 MHz, 1.8 V)**

## 2.3 High Speed UART interface

JODY-W5 series modules support a high-speed Universal Asynchronous Receiver/Transmitter (UART) interface as the host interface for Bluetooth/Bluetooth Low Energy with a baud rate up to 3.0 Mbit/s. The default baud rate after reset is 115.2 Kbps. The acceptable deviation from the UART Rx target baud rate is  $\pm 3\%$ . The UART supports RX/TX pins and mandatory RTS/CTS flow control signals.

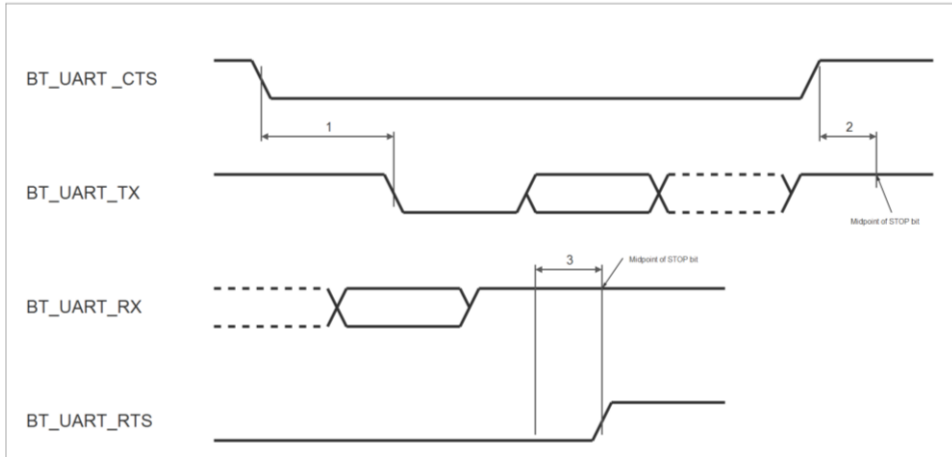


Figure 8: UART timing characteristics

| Reference | Characteristic   | Min. | Typ. | Max. | Units      |
|-----------|--|------|------|------|------------|
| 1         | Delay time, BT_UART_CTS low to BT_UART_TX valid          | -    | -    | 1.5  | Bit period |
| 2         | Setup time, BT_UART_CTS high before midpoint of stop bit | -    | -    | 0.5  | Bit period |
| 3         | Delay time, midpoint of stop bit to BT_UART_RTS high     | -    | -    | 0.5  | Bit period |

Table 11: UART timing specification

## 2.4 PCM/I2S interfaces

JODY-W5 series modules include a Pulse Code Modulation (PCM) interface that supports:

- Central or peripheral modes
- PCM bit width size of 16 bits
- Up to four slots with configurable bit width and start positions
- Tri-state PCM interface capability
- PCM short frame synchronization
- PCM pins shared with I2S pins
- I2S central and peripheral modes for I2S-justified audio interfaces

In PCM central mode, the interface generates a 2 MHz or 2.048 MHz **PCM\_CLK** and 8 kHz or 16 kHz **PCM\_SYNC** signal. In Peripheral mode, the interface has both **PCM\_CLK** and **PCM\_SYNC** inputs that allow another unit on the PCM bus to generate the signals.

In I2S central mode, the interface uses an audio input clock of 4.096 MHz or 2.048 MHz to provide the appropriate main clock and bit clock (**I2S\_BCLK**) frequency to match the sampling rates of each audio data format. The sampling rates can be 8 kHz or 16 kHz.

Full PCM (I2S) pin description can be found in [Table 14](#).

### 2.4.1 PCM interface specifications

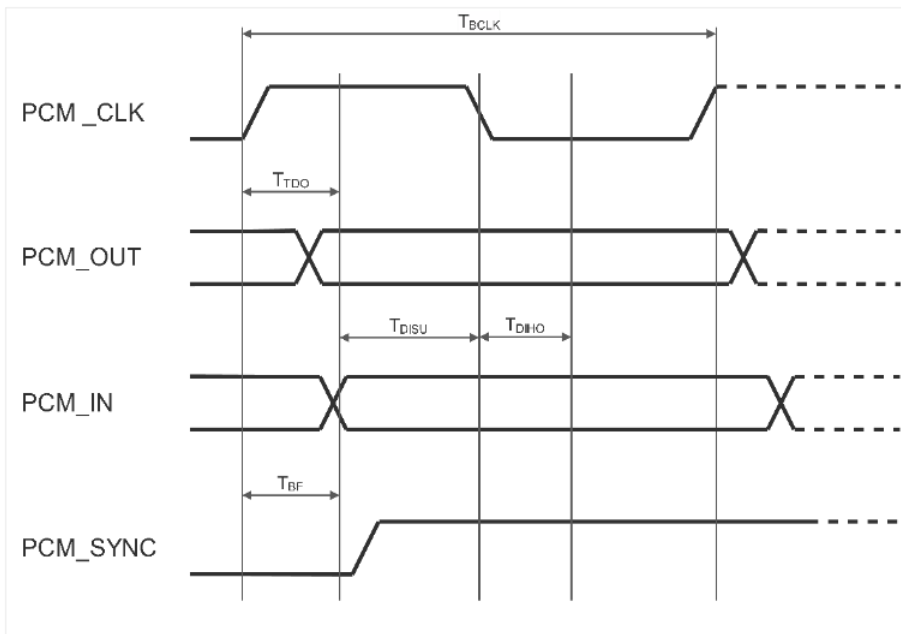
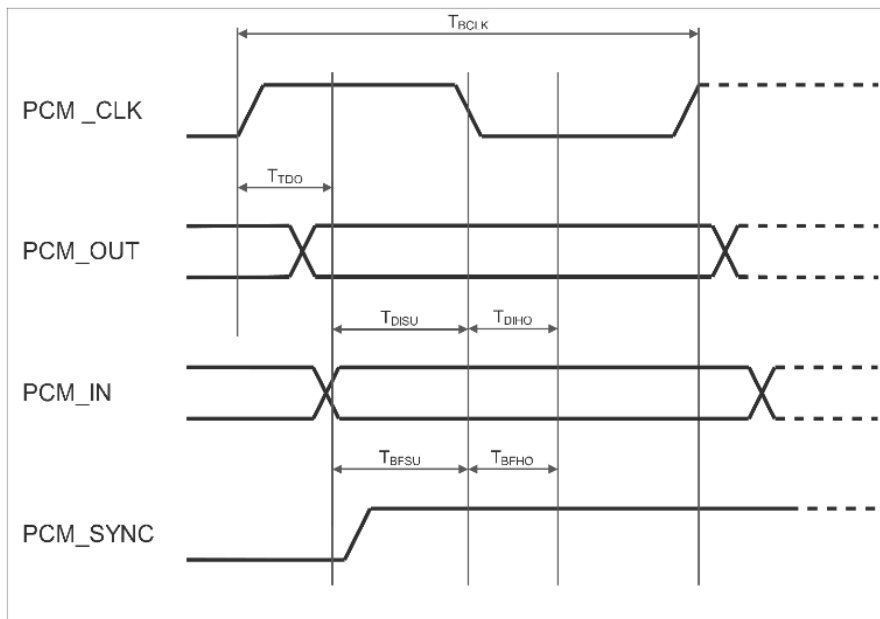


Figure 9: PCM timing specification – Central mode



| Symbol                      | Parameter           | Condition | Min. | Typ     | Max. | Units |
|-----------------------------|---------------------|-----------|------|---------|------|-------|
| FBCLK                       | PCM clock frequency | -         | -    | 2/2.048 | -    | MHz   |
| Duty Cycle <sub>BCLK</sub>  | -                   | -         | 0.4  | 0.5     | 0.6  | -     |
| T <sub>BCLK rise/fall</sub> | -                   | -         | -    | 3       | -    | ns    |
| T <sub>DO</sub>             | -                   | -         | -    | -       | 15   | ns    |
| T <sub>DISU</sub>           | -                   | -         | 20   | -       | -    | ns    |
| T <sub>DIHO</sub>           | -                   | -         | 15   | -       | -    | ns    |
| T <sub>BF</sub>             | -                   | -         | -    | -       | 15   | ns    |

**Table 12: PCM timing specification – Central mode**

**Figure 10: PCM timing specification – Peripheral mode**

| Symbol                      | Parameter           | Condition | Min.  | Typ     | Max. | Units |
|-----------------------------|---------------------|-----------|-------|---------|------|-------|
| FBCLK                       | PCM clock frequency | -         | 0.512 | 2/2.048 | 4    | MHz   |
| Duty Cycle <sub>BCLK</sub>  | -                   | -         | 0.4   | 0.5     | 0.6  | -     |
| T <sub>BCLK rise/fall</sub> | -                   | -         | -     | 3       | -    | ns    |
| T <sub>DO</sub>             | -                   | -         | -     | -       | 30   | ns    |
| T <sub>DISU</sub>           | -                   | -         | 15    | -       | -    | ns    |
| T <sub>DIHO</sub>           | -                   | -         | 10    | -       | -    | ns    |
| T <sub>BFSU</sub>           | -                   | -         | 15    | -       | -    | ns    |
| T <sub>BFHO</sub>           | -                   | -         | 10    | -       | -    | ns    |

**Table 13: PCM timing specification – Peripheral mode**

### 3 Pin definition

#### 3.1 Pin description

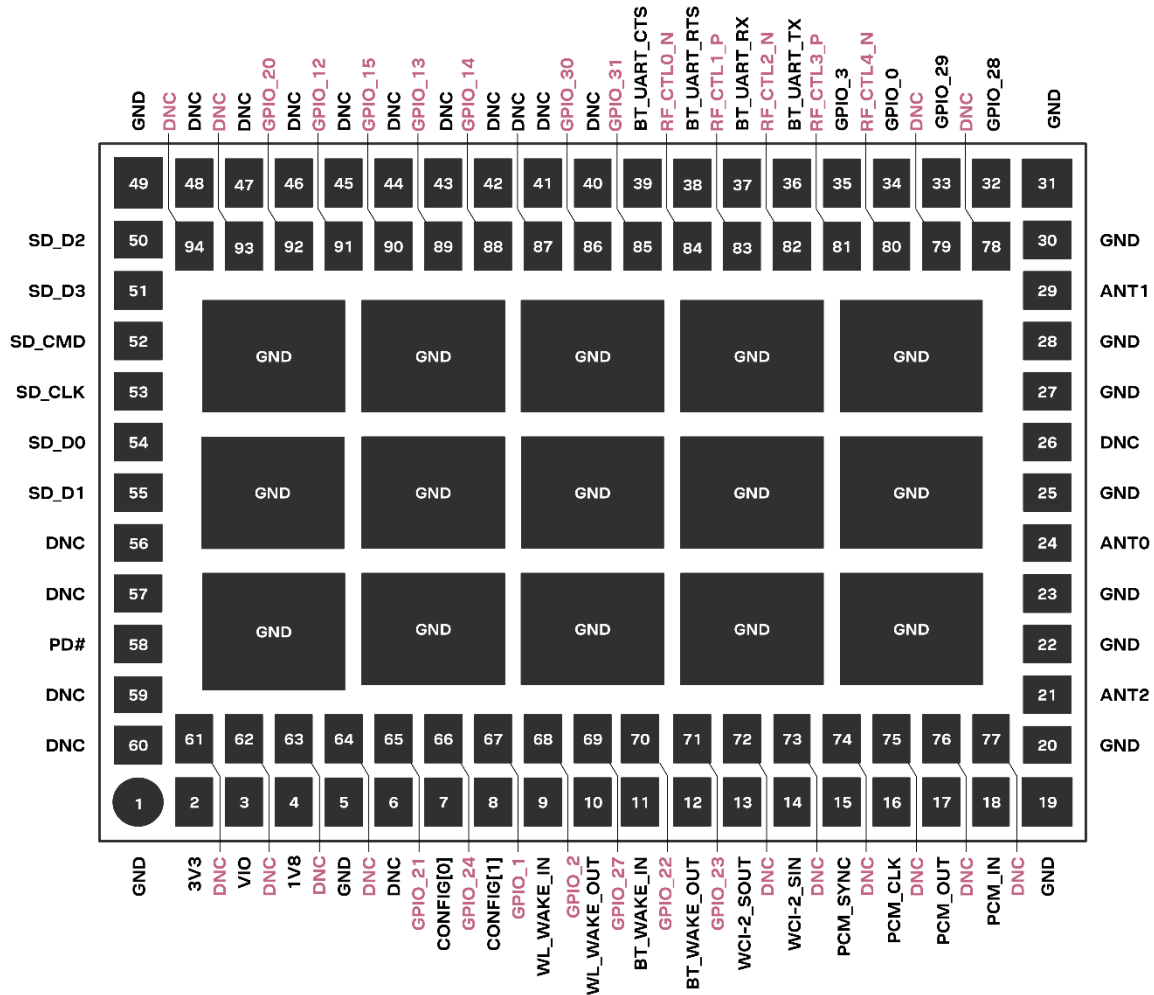


Figure 11: JODY-W5 pin assignment (top view)

| No. | Name | Pin type <sup>1</sup> | Chipset pin | Description   | Power-down state | Power domain |
|-----|------|-----------------------|-------------|---|------------------|--------------|
| 1   | GND  | GND                   |             | Ground  | -                |              |
| 2   | 3V3  | PWR                   |             | 3.3 V analog power supply   | -                | 3V3          |
| 3   | VIO  | PWR                   |             | Digital I/O power supply (1.8 V or 3.3 V)                         | -                | VIO          |
| 4   | 1V8  | PWR                   |             | 1.8 V analog power supply<br>Digital I/O SDIO and RF power supply | -                | 1V8          |
| 5   | GND  | GND                   |             | Ground  | -                |              |

<sup>1</sup> I/O notations: I=Input, O=Output, I/O=Input or Output, OD=Open Drain, NC=Not Connected, DNC=Do not connect, PWR=Power, GND=Ground, RF=Radio i/f

| No. | Name        | Pin type <sup>1</sup> | Chipset pin                         | Description  | Power-down state | Power domain |
|-----|-------------|-----------------------|-------------------------------------|--|------------------|--------------|
| 6   | DNC         | DNC                   |                                     | Reserved for CONFIG[2]   | -                |              |
| 7   | CONFIG[0]   | I                     | CONFIG_HOST_BOOT[0]                 | Firmware boot options.<br>See also <a href="#">Configuration pins</a> .  | Tristate         | 1V8          |
| 8   | CONFIG[1]   | I                     | CONFIG_HOST_BOOT[1]                 | Firmware boot options.<br>See also <a href="#">Configuration pins</a> .  | Tristate         | 1V8          |
| 9   | WL_WAKE_IN  | I/O                   | WL_WAKE_IN /<br>GPIO[16]            | Multi-functional pin: <ul style="list-style-type: none"> <li>• Wi-Fi radio wake-up input signal</li> <li>• GPIO [16]</li> </ul>  | Tristate         | VIO          |
| 10  | WL_WAKE_OUT | I/O                   | WL_WAKE_OUT /<br>GPIO[17]           | Multi-functional pin: <ul style="list-style-type: none"> <li>• Wi-Fi radio wake-up output signal</li> <li>• GPIO [17]</li> </ul>   | Drive low        | VIO          |
| 11  | BT_WAKE_IN  | I/O                   | BT_WAKE_IN /<br>GPIO[18]            | Multi-functional pin: <ul style="list-style-type: none"> <li>• Bluetooth radio wake-up input signal</li> <li>• GPIO [18]</li> </ul>  | Tristate         | VIO          |
| 12  | BT_WAKE_OUT | I/O                   | BT_WAKE_OUT /<br>GPIO[19]           | Multi-functional pin: <ul style="list-style-type: none"> <li>• Bluetooth radio wake-up output signal</li> <li>• GPIO [19]</li> </ul>   | Drive low        | VIO          |
| 13  | WCI-2_SOUT  | I/O                   | WCI-2_SOUT /<br>GPIO[26]            | Multi-functional pin: <ul style="list-style-type: none"> <li>• WCI-2 Transmit signal to external radio (output)</li> <li>• GPIO[26]</li> </ul>   | Drive low        | VIO          |
| 14  | WCI-2_SIN   | I/O                   | WCI-2_SIN /<br>GPIO[25]             | Multi-functional pin: <ul style="list-style-type: none"> <li>• WCI-2 Transmit signal to external radio (input)</li> <li>• GPIO[25]</li> </ul>  | Tristate         | VIO          |
| 15  | PCM_SYNC    | I/O                   | GPIO[7] /<br>PCM_SYNC/<br>I2S_LRCLK | Multi-functional pin: <ul style="list-style-type: none"> <li>• GPIO[7]</li> <li>• PCM sync can be output (central) or input (peripheral mode)</li> <li>• I2S word select / left-right clock can be output (central) or input (peripheral mode).</li> </ul> | Tristate         | VIO          |
| 16  | PCM_CLK     | I/O                   | GPIO[4] /<br>PCM_CLK /<br>I2S_BCLK  | Multi-functional pin: <ul style="list-style-type: none"> <li>• GPIO[4]</li> <li>• PCM clock can be output (central) or input (peripheral mode)</li> <li>• I2S bit clock can be output (central) or input (peripheral mode)</li> </ul>                      | Tristate         | VIO          |
| 17  | PCM_OUT     | I/O                   | GPIO[5] /<br>PCM_DOUT /<br>I2S_DOUT | Multi-functional pin: <ul style="list-style-type: none"> <li>• GPIO[5]</li> <li>• PCM data output</li> <li>• I2S data output</li> </ul>  | Tristate         | VIO          |
| 18  | PCM_IN      | I/O                   | GPIO[6] /<br>PCM_DIN /<br>I2S_DIN   | Multi-functional pin: <ul style="list-style-type: none"> <li>• GPIO[6]</li> <li>• PCM data input</li> <li>• I2S data input</li> </ul>  | Tristate         | VIO          |

| No. | Name        | Pin type <sup>1</sup> | Chipset pin                   | Description   | Power-down state | Power domain |
|-----|-------------|-----------------------|-------------------------------|---|------------------|--------------|
| 19  | GND         | GND                   |                               | Ground  | -                |              |
| 20  | GND         | GND                   |                               | Ground  | -                |              |
| 21  | DNC         | DNC                   |                               | Reserved RF pin. Do not connect.  | -                |              |
| 22  | GND         | GND                   |                               | Ground  | -                |              |
| 23  | GND         | GND                   |                               | Ground  | -                |              |
| 24  | ANT0        | I/O, RF               |                               | RF pin: <ul style="list-style-type: none"> <li>JODY-W562-A: Bluetooth</li> </ul>  | -                |              |
| 25  | GND         | GND                   |                               | Ground  | -                |              |
| 26  | DNC         | DNC                   |                               | Do not connect  | -                |              |
| 27  | GND         | GND                   |                               | Ground  | -                |              |
| 28  | GND         | GND                   |                               | Ground  | -                |              |
| 29  | ANT1        | I/O, RF               |                               | RF pin: <ul style="list-style-type: none"> <li>JODY-W562-A: Wi-Fi 2.4 and 5 GHz</li> </ul>  | -                |              |
| 30  | GND         | GND                   |                               | Ground  | -                |              |
| 31  | GND         | GND                   |                               | Ground  | -                |              |
| 32  | GPIO_28     | I/O                   | GPIO[28] / JTAG_TCK           | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[28]</li> <li>JTAG test data clock (input)</li> </ul>  | Tristate         | VIO          |
| 33  | GPIO_29     | I/O                   | GPIO[29] / JTAG_TMS           | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[29]</li> <li>JTAG controller select (input)</li> </ul>  | Tristate         | VIO          |
| 34  | GPIO_0      | I/O                   | GPIO[0] / XOSC_EN             | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[0]</li> <li>Oscillator enable (output)</li> </ul>   | Drive low        | VIO          |
| 35  | GPIO_3      | I/O                   | GPIO[3] / PCM_MCLK / I2S_CCLK | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[3]</li> <li>PCM main clock output (optional)</li> <li>I2S main clock output (optional)</li> </ul> | Tristate         | VIO          |
| 36  | BT_UART_TX  | I/O                   | GPIO[11] / UART_TX            | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[11]</li> <li>UART serial data output signal</li> </ul>  | Drive low        | VIO          |
| 37  | BT_UART_RX  | I/O                   | GPIO[10] / UART_RX            | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[10]</li> <li>UART serial data input signal</li> </ul>   | Tristate         | VIO          |
| 38  | BT_UART_RTS | I/O                   | GPIO[9] / UART_RTS            | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[9]</li> <li>UART request-to-send input signal (active low)</li> </ul>                             | Drive high       | VIO          |
| 39  | BT_UART_CTS | I/O                   | GPIO[8] / UART_CTS            | Multi-functional pin: <ul style="list-style-type: none"> <li>GPIO[8]</li> <li>UART clear-to-send input signal (active low)</li> </ul>                               | Tristate         | VIO          |
| 40  | DNC         | DNC                   |                               | Do Not Connect.   | -                |              |

| No.   | Name    | Pin type <sup>1</sup> | Chipset pin               | Description  | Power-down state | Power domain |
|-------|---------|-----------------------|---------------------------|--|------------------|--------------|
| 41    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 42    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 43    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 44    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 45    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 46    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 47    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 48    | DNC     | DNC                   |                           | Do Not Connect.  | -                |              |
| 49    | GND     | GND                   |                           | Ground   | -                |              |
| 50    | SD_D2   | I/O                   | SD_DAT[2]                 | SDIO data line bit [2]   | Tristate         | 1V8          |
| 51    | SD_D3   | I/O                   | SD_DAT[3]                 | SDIO data line bit [3]   | Tristate         | 1V8          |
| 52    | SD_CMD  | I/O                   | SD_CMD                    | SDIO command line  | Tristate         | 1V8          |
| 53    | SD_CLK  | I                     | SD_CLK                    | SDIO clock input   | Tristate         | 1V8          |
| 54    | SD_D0   | I/O                   | SD_DAT[0]                 | SDIO data line bit [0]   | Tristate         | 1V8          |
| 55    | SD_D1   | I/O                   | SD_DAT[1]                 | SDIO data line bit [1]   | Tristate         | 1V8          |
| 56    | DNC     | DNC                   |                           | Do not connect   | -                |              |
| 57    | DNC     | DNC                   |                           | Do not connect   | -                |              |
| 58    | PD#     | I                     | PDn                       | Power-down interface of the chipset:<br><ul style="list-style-type: none"> <li>• 0 = power-down mode</li> <li>• 1 = normal mode</li> </ul> Can accept an input of 1.8 V to 4.5 V. Internal 51 kΩ pull-up to 1V8 on this pin. | -                | 1V8          |
| 59-64 | DNC     | DNC                   |                           | Do not connect   | -                |              |
| 65    | GPIO_21 | I/O                   | GPIO[21] / SD_INT         | Multi-functional pin:<br><ul style="list-style-type: none"> <li>• GPIO[21]</li> <li>• SDIO interrupt signal (output)</li> </ul>  | Drive low        | VIO          |
| 66    | GPIO_24 | I/O                   | GPIO[24]                  | GPIO[24]   | Tristate         | VIO          |
| 67    | GPIO_1  | I/O                   | GPIO[1] / IND_RST_WL      | Multi-functional pin:<br><ul style="list-style-type: none"> <li>• GPIO[1]</li> <li>• Independent software reset for Wi-Fi (input)</li> </ul>   | Tristate         | VIO          |
| 68    | GPIO_2  | I/O                   | GPIO[2] / IND_RST_BT      | Multi-functional pin:<br><ul style="list-style-type: none"> <li>• GPIO[2]</li> <li>• Independent software reset for Bluetooth (input)</li> </ul>   | Tristate         | VIO          |
| 69    | GPIO_27 | I/O                   | GPIO[27] / BLE_HOST_TRIG2 | Multi-functional pin:<br><ul style="list-style-type: none"> <li>• GPIO[27]</li> <li>• BLE ISOC host trigger pin 2</li> </ul>   | Tristate         | VIO          |
| 70    | GPIO_22 | I/O                   | GPIO[22]                  | GPIO[22]   | Tristate         | VIO          |
| 71    | GPIO_23 | I/O                   | GPIO[23] / BLE_HOST_TRIG1 | Multi-functional pin:<br><ul style="list-style-type: none"> <li>• GPIO[23]</li> <li>• BLE ISOC host trigger pin 1</li> </ul>   | Tristate         | VIO          |
| 72    | DNC     | DNC                   |                           | Do not connect   | -                |              |
| 73    | DNC     | DNC                   |                           | Do not connect   | -                |              |

| No. | Name       | Pin type <sup>1</sup> | Chipset pin                     | Description  | Power-down state | Power domain |
|-----|------------|-----------------------|---------------------------------|--|------------------|--------------|
| 74  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 75  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 76  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 77  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 78  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 79  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 80  | RF_CNTL4_N | I/O                   | RF_CNTL4_N                      | RF control line 4<br><a href="#">Configuration pin</a>   | Drive low        | 1V8          |
| 81  | RF_CNTL3_P | I/O                   | RF_CNTL3_P /<br>CONFIG_XOSC_SEL | RF control line 3<br><a href="#">Configuration pin</a>   | Drive high       | 1V8          |
| 82  | RF_CNTL2_N | O                     | RF_CNTL2_N                      | RF control line 2  | Drive low        | 1V8          |
| 83  | RF_CNTL1_P | O                     | RF_CNTL1_P                      | RF control line 1  | Drive high       | 1V8          |
| 84  | RF_CNTL0_N | O                     | RF_CNTL0_N                      | RF control line 0  | Drive low        | 1V8          |
| 85  | GPIO_31    | I/O                   | GPIO[31] /<br>JTAG_TDO          | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[31]</li> <li>JTAG test data signal (output)</li> </ul>              | Tristate         | VIO          |
| 86  | GPIO_30    | I/O                   | GPIO[30] /<br>JTAG_TDI          | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[30]</li> <li>JTAG test data signal (input)</li> </ul>               | Tristate         | VIO          |
| 87  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 88  | GPIO_14    | I/O                   | GPIO[14] /<br>EXT_GNT           | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[14]</li> <li>PTA external radio grant signal (output)</li> </ul>    | Tristate         | VIO          |
| 89  | GPIO_13    | I/O                   | GPIO[13] /<br>EXT_REQ           | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[13]</li> <li>PTA request from the external radio (input)</li> </ul> | Drive high       | VIO          |
| 90  | GPIO_15    | I/O                   | GPIO[15] /<br>EXT_PRI           | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[15]</li> <li>PTA external radio priority signal (input)</li> </ul>  | Drive low        | VIO          |
| 91  | GPIO_12    | I/O                   | GPIO[12] /<br>EXT_STATE         | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[12]</li> <li>PTA External radio state signal (input)</li> </ul>     | Tristate         | VIO          |
| 92  | GPIO_20    | I/O                   | GPIO[20] /<br>EXT_FREQ          | Multi-functional pin:<br><ul style="list-style-type: none"> <li>GPIO[20]</li> <li>PTA external radio frequency signal (input)</li> </ul> | Drive low        | VIO          |
| 93  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| 94  | DNC        | DNC                   |                                 | Do not connect   | -                |              |
| EP  | GND        | GND                   | Exposed die pad                 | 15 exposed ground/thermal pins. Connect to ground.   | -                | GND          |

**Table 14: JODY-W5 series pin description**

## 4 Electrical specifications

Stressing the device above one or more of the [Absolute maximum ratings](#) can cause permanent damage. These are stress ratings only. Operating the module at these or at any conditions other than those specified in the [Operating conditions](#) should be avoided. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

All given application information is only advisory and does not form part of the specification.

### 4.1 Absolute maximum ratings

| Symbol               | Description                       | Min. | Max. | Units |
|----------------------|-----------------------------------|------|------|-------|
| 3V3                  | Power supply voltage              | -    | 3.96 | V     |
| VIO                  | I/O supply voltage 1.8 V          | -    | 2.16 | V     |
|                      | I/O supply voltage 3.3 V          |      | 3.96 | V     |
| 1V8                  | Analog power supply voltage 1.8 V | -    | 2.16 | V     |
| T <sub>STORAGE</sub> | Storage temperature JODY-W562-xxA | -55  | +125 | °C    |

**Table 15: Absolute maximum ratings**

The product is not protected against overvoltage or reversed voltages. Voltage spikes exceeding the power supply voltage specification described in [Table 15](#) must be limited to values within the specified boundaries by using appropriate protection devices.

### 4.2 Maximum ESD ratings

| Applicability  | Min.  | Max.  | Units |
|--|-------|-------|-------|
| Human Body Model (HBM), according to AEC-Q100-002              | -2000 | +2000 | V     |
| Charged Device Model (CDM), all pins according to AEC-Q100-011 | -500  | +500  | V     |

**Table 16: Maximum ESD ratings**

### 4.3 Operating conditions

| Symbol         | Parameter                                       | Min.           | Typ. | Max. | Units |    |
|----------------|---|----------------|------|------|-------|----|
| 3V3            | Power supply voltage                            | 3.14           | 3.3  | 3.46 | V     |    |
| VIO            | I/O supply voltage 1.8 V                        | 1.71           | 1.8  | 1.89 | V     |    |
|                | I/O supply voltage 3.3 V                        | 3.14           | 3.3  | 3.46 | V     |    |
| 1V8            | Analog power supply voltage 1.8 V               | 1.72           | 1.8  | 1.89 | V     |    |
| T <sub>A</sub> | Ambient operating temperature                   | JODY-W562-00A  | -40  | -    | +85   | °C |
|                |   | JODY-W562-01A, | -40  | -    | +105  | °C |
|                |   | JODY-W562-21A  |      |      |       |    |
| Ripple Noise   | Peak-to-peak voltage ripple on all supply lines | -              | -    | 10   | mV    |    |

**Table 17: Operating conditions**

## 4.4 Wi-Fi power consumption

| Peak current condition   | Temperature | VBAT (3.3 V) [mA] | 1V8 [mA] |
|--|-------------|-------------------|----------|
| 5 GHz 802.11ax 80 MHz, MCS11 receive + Bluetooth LE transmit at 21 dBm   | 85 °C       | 0.1               | 644      |
|  | 105 °C      | 0.1               | 748      |
| 5 GHz 802.11ax, 20 MHz, MCS11 transmit + Bluetooth LE transmit at 21 dBm | 85 °C       | 303               | 752      |
|  | 105 °C      | 331               | 967      |
| Firmware Initialization  | 85 °C       | 368               | 497      |
|  | 105 °C      | 345               | 582      |

**Table 18: Peak current consumption**

| Wi-Fi operation modes                        | VBAT (3.3 V) [mA] | 1V8 [mA] | VIO [mA]            |
|--|-------------------|----------|---------------------|
| <b>Power – save modes</b>                    |                   |          |                     |
| Power down                                   | 0.03              | 0.86     | 0.07 <sup>(1)</sup> |
| Bluetooth only sleep mode                    | 0.03              | 1.04     | 0.2 <sup>(1)</sup>  |
| Wi-Fi only sleep mode                        | 0.03              | 1.96     | 0.12 <sup>(1)</sup> |
| Wi-Fi and Bluetooth in deep-sleep            | 0.03              | 0.62     | 0.27 <sup>(1)</sup> |
| IEEE Power Save 2.4 GHz, DTIM 10             | 0.03              | 1.91     | 0.22 <sup>(1)</sup> |
| IEEE Power Save 2.4 GHz, DTIM 5              | 0.03              | 1.91     | 0.22 <sup>(1)</sup> |
| IEEE Power Save 2.4 GHz, DTIM 3              | 0.03              | 1.92     | 0.22 <sup>(1)</sup> |
| IEEE Power Save 2.4 GHz, DTIM 1              | 0.03              | 1.92     | 0.23 <sup>(1)</sup> |
| IEEE Power Save 5 GHz, DTIM 10               | 0.03              | 1.9      | 0.22 <sup>(1)</sup> |
| IEEE Power Save 5 GHz, DTIM 5                | 0.03              | 1.91     | 0.22 <sup>(1)</sup> |
| IEEE Power Save 5 GHz, DTIM 3                | 0.03              | 1.92     | 0.23 <sup>(1)</sup> |
| IEEE Power Save 5 GHz, DTIM 1                | 0.03              | 1.9      | 0.22 <sup>(1)</sup> |
| <b>Active transmit modes (Bluetooth off)</b> |                   |          |                     |
| 2.4 GHz, 11b, 11 Mbps, Ch6, 20 dBm           | 246               | 149      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11g, 54 Mbps, Ch6, 19dBm            | 202               | 155      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11n, 20 MHz, MCS7, Ch6, 18 dBm      | 187               | 155      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11n, 40 MHz, MCS7, Ch6, 18 dBm      | 181               | 159      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 20 MHz, MCS0, Ch6, 20 dBm     | 244               | 178      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 20 MHz, MCS11, Ch6, 15 dBm    | 154               | 153      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 40 MHz, MCS0, Ch6, 20 dBm     | 249               | 186      | 0.07 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 40 MHz, MCS11, Ch6, 15 dBm    | 149               | 158      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11n, 20 MHz, MCS0, Ch100, 19 dBm      | 287               | 238      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11n, 20 MHz, MCS7, Ch100, 18 dBm      | 243               | 208      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 20 MHz, MCS0, Ch100, 19 dBm     | 294               | 241      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 20 MHz, MCS11, Ch100, 15 dBm    | 188               | 206      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 40 MHz, MCS0, Ch102, 19 dBm     | 281               | 261      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 40 MHz, MCS11, Ch102, 14 dBm    | 169               | 212      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 80 MHz, MCS0, Ch106, 19 dBm     | 288               | 264      | 0.07 <sup>(2)</sup> |
| 5 GHz, 11ax, 80 MHz, MCS11, Ch106, 14dBm     | 168               | 218      | 0.07 <sup>(2)</sup> |



| Wi-Fi operation modes                | VBAT (3.3 V) [mA] | 1V8 [mA] | VIO [mA]            |
|--------------------------------------|-------------------|----------|---------------------|
| <b>Receive modes (Bluetooth off)</b> |                   |          |                     |
| 2.4 GHz, 11b, 11 Mbps                | 0.12              | 100      | 0.08 <sup>(2)</sup> |
| 2.4 GHz, 11g, 54 Mbps                | 0.12              | 118      | 0.08 <sup>(2)</sup> |
| 2.4 GHz, 11n, 20 MHz, MCS7           | 0.12              | 123      | 0.08 <sup>(2)</sup> |
| 2.4 GHz, 11n, 40 MHz, MCS7           | 0.12              | 138      | 0.08 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 20 MHz, MCS11         | 0.12              | 125      | 0.08 <sup>(2)</sup> |
| 2.4 GHz, 11ax, 40 MHz, MCS11         | 0.12              | 140      | 0.08 <sup>(2)</sup> |
| 5 GHz, 11a, 54 Mbps                  | 0.12              | 132      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11n, 20 MHz, MCS7         | 0.12              | 136      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11n, 40 MHz, MCS7         | 0.12              | 150      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ac, 20 MHz, MCS8        | 0.12              | 137      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ac, 40 MHz, MCS9        | 0.12              | 151      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ac, 80 MHz, MCS9        | 0.12              | 180      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ax, 20 MHz, MCS11       | 0.12              | 141      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ax, 40 MHz, MCS11       | 0.12              | 153      | 0.08 <sup>(2)</sup> |
| 5 GHz, 802.11ax, 80 MHz, MCS11       | 0.12              | 181      | 0.08 <sup>(2)</sup> |
| (1) VIO voltage is 3.3V              |                   |          |                     |
| (2) VIO voltage is 1.8V              |                   |          |                     |

**Table 19: Wi-Fi radio typical current consumption with different modes of operation**

## 4.5 Bluetooth power consumption

| Bluetooth operation modes  | VBAT (3.3 V) [mA] | 1V8 [mA]            | VIO [mA]            |
|--|-------------------|---------------------|---------------------|
| <b>Operating modes</b>   |                   |                     |                     |
| Bluetooth alone (SDIO not connected)   | 0.04              | 1.76 <sup>(3)</sup> | 0.15 <sup>(1)</sup> |
| Bluetooth classic inquiry scan   | 0.04              | 1.76 <sup>(3)</sup> | 0.15 <sup>(1)</sup> |
| Bluetooth classic page scan  | 0.04              | 1.76 <sup>(3)</sup> | 0.15 <sup>(1)</sup> |
| Bluetooth LE advertisement   | 0.04              | 1.76 <sup>(3)</sup> | 0.15 <sup>(1)</sup> |
| Bluetooth LE scanning  | 0.04              | 1.76 <sup>(3)</sup> | 0.15 <sup>(1)</sup> |
| <b>Active transmit mode</b>  |                   |                     |                     |
| Bluetooth classic DH3, 4 dBm   | 0.22              | 172                 | 0.06 <sup>(2)</sup> |
| Bluetooth classic DH3, 20 dBm  | 0.22              | 344                 | 0.06 <sup>(2)</sup> |
| EDR, 4dBm, 3Mbps   | 0.22              | 148                 | 0.06 <sup>(2)</sup> |
| EDR, 10dBm, 3Mbps  | 0.22              | 148                 | 0.06 <sup>(2)</sup> |
| BLE, 4dBm, 1Mbps   | 0.22              | 165                 | 0.06 <sup>(2)</sup> |
| BLE, 19dBm, 1Mbps  | 0.22              | 289                 | 0.06 <sup>(2)</sup> |
| <b>Active receive mode</b>   |                   |                     |                     |
| BR peak receive, DH5, 1 Mbps   | 0.22              | 39                  | 0.06 <sup>(2)</sup> |
| (1) VIO voltage is 3.3V  |                   |                     |                     |
| (2) VIO voltage is 1.8V  |                   |                     |                     |
| (3) Average value. Deep sleep ON, with default scanning rate (scheduled every 1.28 seconds for 30ms), Max. current around 40 mA (Peak) |                   |                     |                     |

**Table 20: Bluetooth radio typical current consumption with different operating modes**

## 4.6 Digital pad ratings

| Symbol    | Parameter           | VIO           | Min.               | Max.               | Units |
|-----------|---------------------|---------------|--------------------|--------------------|-------|
| $V_{IH}$  | Input high voltage  | 1.8 V - 3.3 V | $0.7 \cdot V_{IO}$ | $V_{IO} + 0.4$     | V     |
| $V_{IL}$  | Input low voltage   | 1.8 V - 3.3 V | -0.4               | $0.3 \cdot V_{IO}$ | V     |
| $V_{HYS}$ | Input hysteresis    | 1.8 V - 3.3 V | 100                | -                  | mV    |
| $V_{OH}$  | Output high voltage | 1.8 V - 3.3 V | $V_{IO} - 0.4$     | -                  | V     |
| $V_{OL}$  | Output low voltage  | 1.8 V - 3.3 V | -                  | 0.4                | V     |

Table 21: DC characteristics VIO

## 4.7 Power-down specifications

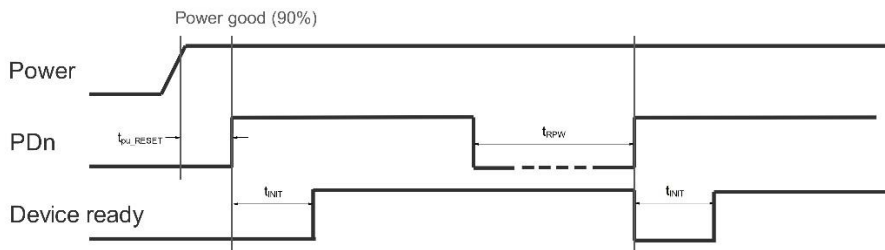


Figure 12: JODY-W5 PDn (power-down) timing

| Symbol          | Parameter  | Min. | Max. | Units   |
|-----------------|--|------|------|---------|
| $t_{PU\_RESET}$ | Valid power to PDn deasserted                                | 0    | -    | ms      |
| $t_{RPW}$       | PDn pulse width  | 1    | -    | $\mu$ s |
| $t_{INIT}$      | From PDn de-assertion to device ready (SDIO bus enumeration) | 20   | -    | ms      |
| $V_{IH}$        | Input high voltage   | 1.4  | 4.5  | V       |
| $V_{IL}$        | Input low voltage  | -0.4 | 0.5  | V       |

Table 22: PDn pin specification

## 4.8 Radio specifications

### 4.8.1 Bluetooth

| Parameter                                     | Specification   |
|---|---|
| RF Frequency Range                            | 2.4 – 2.5 GHz   |
| Supported Modes                               | Bluetooth 5.4   |
| Number of channels                            | 79 (BR/EDR)<br>40 (BLE)   |
| Modulation                                    | 1 Mbps: GFSK (BR)<br>2 Mbps: $\pi/4$ DQPSK (EDR)<br>3 Mbps: 8DQPSK (EDR)                                    |
| Transmit Power<br>(JODY-W562-00A/-01A )       | Class 1 BR: 18 dBm<br>Class 1 EDR: 8 dBm<br>Class 1 BLE: 16 dBm   |
| Receiver sensitivity<br>(JODY-W562-00A/-01A ) | BR -94.6 dBm $\pm$ 1.5 dB (1DH1)<br>EDR -93.5 dBm $\pm$ 1.5 dB (2DH1)<br>BLE -105.9 dBm $\pm$ 1.5 dB (125k) |

**Table 23: Bluetooth radio parameters**



Note: The Bluetooth TX output power and RX sensitivity for JODY-W562-21A are reduced by 2 dB.

### 4.8.2 Wi-Fi



| Parameter                     | Operation mode    | Specification                  |
|-------------------------------|-------------------|--------------------------------|
| RF Frequency range            | 802.11b/g/n       | 2.400 – 2.500 GHz              |
|                               | 802.11a/n/ac/ax   | 4.900 – 5.895 GHz              |
| Modulation                    | 802.11b           | CCK and DSSS                   |
|                               | 802.11a/g/n/ac/ax | OFDM                           |
|                               | 802.11ax          | OFDMA                          |
| Supported data rates          | 802.11b           | 1/2/5.5/11 Mbps                |
|                               | 802.11a/g         | 6/9/12/18/24/36/48/54 Mbps     |
|                               | 802.11n SISO      | MCS0 - MCS7 (150 Mbps)         |
|                               | 802.11ac SISO     | MCS0 – MCS9 (433 Mbps)         |
| Supported channel bandwidth   | 802.11ax SISO     | MCS0 – MCS11 (600 Mbps)        |
|                               | 802.11n           | 20/40 MHz                      |
|                               | 802.11ac          | 20/40/80 MHz                   |
|                               | 802.11ax          | 20/40/80 MHz                   |
| Supported guard interval (GI) | 802.11n           | 400/800 ns                     |
|                               | 802.11ac          | Short guard interval supported |
|                               | 802.11ax          | 800/1600/3200 ns               |

**Table 24: Wi-Fi radio features and specifications**

JODY-W5 series modules support dual-band Wi-Fi with 802.11b/g/n/a/ac/ax operation in the 2.4 GHz and 5 GHz radio bands, as shown in [Table 25](#).

| Parameter               | Frequency | Operation mode          | 802.11 EVM limit | Output power<br>(output power tolerance $\pm 2$ dB typ.) |
|-------------------------|-----------|-------------------------|------------------|--|
| Maximum transmit power  | 2.4 GHz   | DSSS/CCK, 20 MHz        | -9 dB            | 19 dBm   |
|                         |           | MCS7, 64-QAM, 20 MHz    | -27 dB           | 18 dBm   |
|                         |           | MCS8, 256-QAM, 20 MHz   | -30 dB           | 17 dBm   |
|                         |           | MCS11, 1024-QAM, 20 MHz | -35 dB           | 16 dBm   |
|                         |           | MCS7, 64-QAM, 40 MHz    | -27 dB           | 17 dBm   |
|                         |           | MCS9, 256-QAM, 40 MHz   | -32 dB           | 17 dBm   |
|                         |           | MCS11, 1024-QAM, 40 MHz | -35 dB           | 16 dBm   |
|                         | 5 GHz     | MCS7, 64-QAM, 20 MHz    | -27 dB           | 17 dBm   |
|                         |           | MCS8, 256-QAM, 20 MHz   | -30 dB           | 16 dBm   |
|                         |           | MCS11, 1024-QAM, 20 MHz | -35 dB           | 14 dBm   |
|                         |           | MCS7, 64-QAM, 40 MHz    | -27 dB           | 16 dBm   |
|                         |           | MCS9, 256-QAM, 40 MHz   | -30 dB           | 14 dBm   |
|                         |           | MCS11, 1024-QAM, 40 MHz | -35 dB           | 12 dBm   |
|                         |           | MCS7, 64-QAM, 80 MHz    | -27 dB           | 14 dBm   |
| MCS9, 256-QAM, 80 MHz   | -30 dB    | 13 dBm                  |                  |  |
| MCS11, 1024-QAM, 80 MHz | -35 dB    | 11 dBm                  |                  |  |

**Table 25: Wi-Fi Radio maximum transmit power parameter**

-  Note 1: The output power tolerance  $\pm 2$  dB (typ.) is given for temperature range -40 to 85 °C. The output power tolerance in temperature range -40 to +105 °C is  $\pm 3$  dB (typ.)
-  Note 2: The output power in 2.4 GHz range for JODY-W562-21A is 2 dB less compared to that of JODY-W562-00A/01A.

| Band     | Operating mode | Data rate | Bandwidth | Sensitivity [dBm] |
|----------|----------------|-----------|-----------|-------------------|
| 2.4 GHz  | 802.11b        | 1 Mbps    | 20 MHz    | -97.8             |
|          |                | 11 Mbps   |           | -89.9             |
|          | 802.11g        | 6 Mbps    |           | -93.2             |
|          |                | 54 Mbps   |           | -76.5             |
|          | 802.11n        | MCS0      |           | -92.5             |
|          |                | MCS7      |           | -73.7             |
|          | 802.11ax       | MCS0      |           | -93.1             |
|          |                | MCS9      |           | -70.3             |
|          |                | MCS11     |           | -64.2             |
|          | 802.11n        | MCS0      | 40 MHz    | -89.4             |
|          |                | MCS7      |           | -71.3             |
|          | 802.11ax       | MCS0      |           | -90.2             |
|          |                | MCS9      |           | -68               |
|          |                | MCS11     |           | -61.5             |
|          | 5 GHz          | 802.11a   | 6 Mbps    | 20 MHz            |
| 54 Mbps  |                |           | -74.6     |                   |
| 802.11ac |                | MCS0      | 20 MHz    | -90.6             |
|          |                | MCS8      |           | -69.4             |
|          |                | MCS0      | 40 MHz    | -87.6             |
|          |                | MCS8      |           | -65.9             |
|          |                | MCS9      |           | -64.4             |
|          |                | MCS0      | 80 MHz    | -83.7             |
|          |                | MCS8      |           | -62.7             |
| MCS9     |                | -61       |           |                   |
| 802.11ax |                | MCS0      | 20 MHz    | -91.4             |
|          |                | MCS9      |           | -68.3             |
|          |                | MCS11     | 40 MHz    | -62.2             |
|          |                | MCS0      |           | -88.2             |
|          |                | MCS9      |           | -67.3             |
|          |                | MCS11     | 80 MHz    | -62.8             |
|          |                | MCS0      |           | -84.8             |
| MCS9     |                | -63.3     |           |                   |
| MCS11    | -57.9          |           |           |                   |

**Table 26: Wi-Fi radio sensitivity**


Note: The RX sensitivity in 2.4 GHz range for JODY-W562-21A is 2 dB less compared to that for JODY-W562-00A/01A

## 5 Software

JODY-W5 series modules are based on the NXP AW611 chipset and the drivers and firmware required to operate JODY-W5 series modules are developed by NXP. A firmware binary is downloaded by the host operating system driver at start-up.

The modules support the following software options:

- Open-source Linux/Android driver (`mxm_mwiflex`) for mainstream use is available free of charge and already integrated into the Linux BSP for NXP i.MX application processors
- Proprietary Linux/Android drivers providing different feature packs
- MCUXpresso Wi-Fi/Bluetooth support for supported NXP MCUs

The software packages typically include:

- Dedicated kernel driver that binds the Wi-Fi device to the kernel. Driver sources are provided.
- Dedicated Wi-Fi firmware image that is uploaded during initialization of the Wi-Fi device.
- Dedicated Bluetooth firmware image that is uploaded during initialization of the Bluetooth device.
- Laboratory and manufacturing tools.

## 6 Mechanical specifications

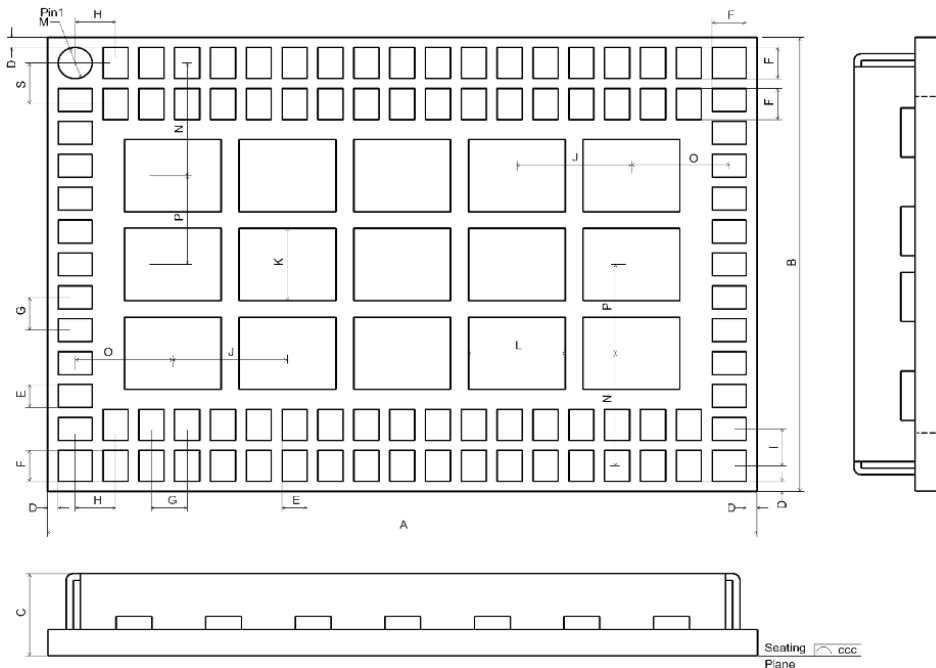


Figure 13: JODY-W5 series dimensions (bottom view)

| Parameter | Description                              | Typical |             | Tolerance   |                  |
|-----------|--|---------|-------------|-------------|------------------|
| A         | Module length [mm]                       | 19.8    | (779.5 mil) | +0.35/-0.1  | (+13.8/-3.9 mil) |
| B         | Module width [mm]                        | 13.8    | (543.3 mil) | +0.2/-0.2   | (+7.9/-7.9 mil)  |
| C         | Module thickness [mm]                    | 2.5     | (98.4 mil)  | +0.2/-0.2   | (+7.9/-7.9 mil)  |
| ccc       | Seating plane coplanarity [mm]           | <0.1    | (3.94 mil)  |             |                  |
| D         | PCB edge-to-pin Edge [mm]                | 0.3     | (11.8 mil)  | +0.20/-0.20 | (+7.9/-7.9 mil)  |
| E         | Pin width [mm]                           | 0.7     | (27.6 mil)  | +0.05/-0.05 | (+2.0/-2.0 mil)  |
| F         | Pin length [mm]                          | 0.95    | (37.4 mil)  | +0.05/-0.05 | (+2.0/-2.0 mil)  |
| G         | Pin to pin pitch [mm]                    | 1.0     | (39.4 mil)  | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| H         | Horizontal corner pin-to-pin pitch [mm]  | 1.125   | (44.3 mil)  | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| I         | Lateral corner pin-to-pin pitch [mm]     | 1.125   | (44.3 mil)  | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| J         | Horizontal thermal pads pitch [mm]       | 3.2     | (126.0 mil) | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| K         | Thermal pad height [mm]                  | 2.2     | (86.6 mil)  | +0.1/-0.1   | (+3.9/-3.9 mil)  |
| L         | Thermal pad length [mm]                  | 2.7     | (106.3 mil) | +0.1/-0.1   | (+3.9/-3.9 mil)  |
| M         | Pin 1 diameter [mm]                      | 0.95    | (37.4 mil)  | +0.05/-0.05 | (+2.0/-2.0 mil)  |
| N         | Horizontal pin-to-thermal pad pitch [mm] | 3.425   | (134.8 mil) | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| O         | Lateral pin-to-thermal pad distance [mm] | 2.725   | (107.3 mil) | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| P         | Lateral thermal pads pitch [mm]          | 2.7     | (106.3 mil) | +0.02/-0.02 | (+0.8/-0.8 mil)  |
| R         | Reserved area for future module variants | 1.55    | (61.0 mil)  | +0.05/-0.05 | (+2.0/-2.0 mil)  |
| S         | Horizontal pins row pitch [mm]           | 1.25    | (49.2 mil)  | +0.02/-0.02 | (+0.8/-0.8 mil)  |

Table 27: Description of mechanical parameters

## 6.1 Module weight

| Module      | Typ | Unit |
|-------------|-----|------|
| JODY-W562-A | 1.4 | g    |

**Table 28: Module weight**



# 7 Qualifications and approvals

## 7.1 Country approvals

Table 29 describes the status of JODY-W5 module certification in each country/region.

| Country/region | JODY-W562-00A | JODY-W562-01A | JODY-W562-21A |
|----------------|---------------|---------------|---------------|
| Canada         | Approved      | Pending       | Pending       |
| Europe         | Approved      | Pending       | Pending       |
| Great Britain  | Approved      | Pending       | Pending       |
| USA            | Approved      | Pending       | Pending       |

**Table 29: Country approval status**

Additional country certifications can be progressed upon request. Contact your local support team for further information.

For detailed information about the regulatory requirements that must be met when using JODY-W5 modules in an end product, see the system integration manual [2].

## 7.2 Approved antennas

JODY-W5 is to be tested and approved for use with single- and dual-band antennas. For the list of antennas that are pre-approved for use with JODY-W5, see the system integration manual [2].

## 7.3 Bluetooth qualification



End products must be qualified and listed with the [Bluetooth Special Interest Group \(SIG\)](#).

Product declarations are submitted through the SIG [Bluetooth SIG Qualification Workspace](#).

JODY-W5 series modules are qualified as Core-Controller Configuration in accordance with the Bluetooth 5.4 specification.

To list your product that integrates JODY-W5 with no additional testing required, combine the QDID for the Bluetooth stack implemented in the Core-Host Configuration with the QDID of the Core-Controller Configuration shown in [Table 30](#).

| Product name                                      | Product type                     | QDID                   | Product qualification date |
|---|----------------------------------|------------------------|----------------------------|
| JODY-W562-01A,<br>JODY-W562-00A,<br>JODY-W562-21A | Core-Controller<br>Configuration | <a href="#">223670</a> | 2024-11-25                 |

**Table 30: JODY-W5 series Bluetooth qualified design IDs**

## 8 Product handling

### 8.1 Packaging

For efficient production, production lot set-up, and tear-down, JODY-W5 series modules are delivered as hermetically sealed devices on tape and reel. For more information about the packaging, shipment, storage, and handling of the modules, see the Product packaging reference guide [1].

#### 8.1.1 Reels

JODY-W5 series modules are deliverable in quantities of 500 pieces on a reel. The modules are shipped on reel Type A4 reels, as described in the Product packaging reference guide [1].

#### 8.1.2 Tapes

Figure 14 shows the position, dimensions, and orientation of the JODY-W5 modules as they are delivered on tape.

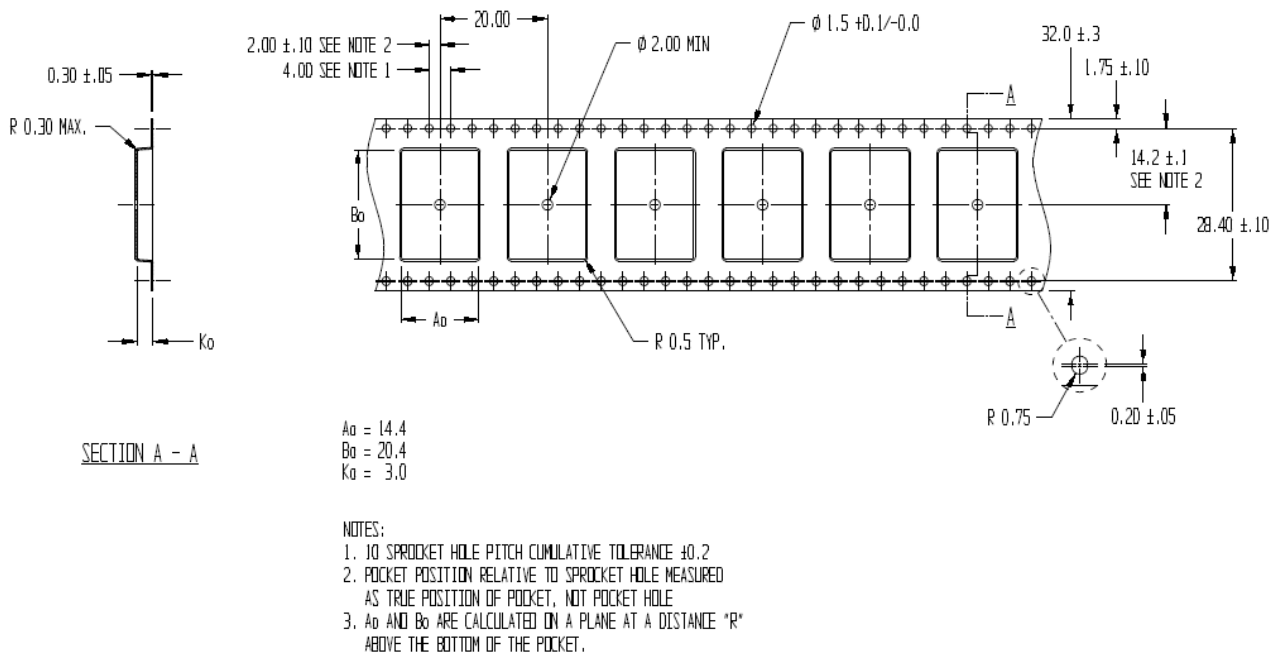



Figure 14: JODY-W5 tape dimensions

## 8.2 Shipment, storage, and handling

### 8.2.1 Moisture sensitivity levels


-  JODY-W5 series automotive-grade modules are rated at moisture sensitivity level 3. See moisture sensitive warning label on each shipping bag for detailed information.

After opening the dry pack, modules must be mounted within 168 hours in factory conditions of maximum 30 °C/60%RH. Otherwise, the module must be stored at less than 10%RH. Modules require baking if the humidity indicator card shows more than 10% when read at 23±5 °C or if the conditions mentioned above are not met. For information about the bake procedure, see also the J-STD-033B standard.


For more information regarding MSL (Moisture Sensitivity Level), labeling, and storage, see also the Product packaging reference guide [\[1\]](#).

### 8.2.2 Mounting process and soldering recommendations

JODY-W5 series modules are approved for two reflow cycles.

-  Reflow soldering profiles must be selected in accordance with u-blox soldering recommendations described in the system integration manual [\[2\]](#). Failure to observe these recommendations can result in severe damage to the product.

### 8.2.3 ESD handling precautions

-  JODY-W5 series modules are Electrostatic Sensitive Devices that demand the observance of special handling precautions against electrostatic damage. Failure to observe these precautions can result in severe damage to the product.

Proper ESD handling and packaging procedures must be applied throughout the processing, handling, and operation of any application that incorporates JODY-W5 series modules. ESD precautions should be implemented on the application board where the module is mounted.

For further information about the handling of JODY-W5 series modules, see also the JODY-W5 system integration manual [\[2\]](#).

## 9 Labeling and ordering information

### 9.1 Product labeling

The labels applied to JODY-W5 series modules include important product information, including the data matrix code that incorporates the module serial number.

Figure 15 shows the label applied to JODY-W5 series modules. Each of the given label references are described in Table 31.



Figure 15: JODY-W5 series sample label

Detailed descriptions of the label components are shown in Table 31.

| Reference | Description  |
|-----------|--|
| 1         | Product (model) name: Type number with the product version   |
| 2         | Minor product version  |
| 3         | Date of production encoded YY/WW (year/week)   |
| 4         | FCC/ISED ID with which the module has been listed (+ other certification IDs when available)   |
| 5         | Data Matrix with unique serial number comprising 19 alphanumeric symbols: <ul style="list-style-type: none"> <li>- The first 3 symbols are used for production tracking and are an abbreviated representation of the Type number that is unique to each module variant.</li> <li>The following 12 symbols represent the unique hexadecimal Bluetooth address of the module AABCCDDEEFF.</li> <li>- The last 4 symbols represent the hardware and firmware version encoded HHFF.</li> </ul> |
| 6         | u-blox logo. The red dot above the logo represents the physical location of pin 1.   |

Table 31: JODY-W5 series label references

## 9.2 Product identifiers

Table 32 describes the three product identifiers, namely the Type number, Model name and Ordering code.

| Format        | Description  | Nomenclature      |
|---------------|--|-------------------|
| Model name    | Describes the form factor, platform technology and platform variant. Used mostly in product documentation like this data sheet, the model name represents the most common identity for all u-blox products | PPPP-TGVV         |
| Ordering code | Comprises the model name – with additional identifiers to describe the major product version and quality grade   | PPPP-TGVV-TTQ     |
| Type number   | Comprises the model name and ordering code – with additional identifiers to describe minor product versions.   | PPPP -TGVV-TTQ-XX |

**Table 32: Product code formats**

Table 33 describes the identification codes associated with each module variant.

| Code | Description  | Example |
|------|--|---------|
| PPPP | Form factor  | JODY    |
| TG   | Platform<br>T – Dominant technology, For example, W: Wi-Fi, B: Bluetooth<br>G - Generation | W5      |
| VV   | Variant based on the same platform; range [00...99]  | 62      |
| TT   | Major product version  | 00      |
| Q    | Quality grade<br>A: Automotive<br>B: Professional<br>C: Standard                           | A       |
| XX   | Minor product version (not relevant for certification)                                     | 00      |

**Table 33: Part identification codes**

## 9.3 Ordering codes

| Ordering code | Product name | Product   |
|---------------|--------------|---|
| JODY-W562-00A | JODY-W562-A  | Automotive grade module based on NXP AW611 transceiver (automotive grade 3). Equipped with a single Wi-Fi and single Bluetooth antenna pin. The module has an operational temperature of -40 °C to +85 °C.  |
| JODY-W562-01A | JODY-W562-A  | Automotive grade module based on NXP AW611 transceiver (automotive grade 2). Equipped with a single Wi-Fi and single Bluetooth antenna pin. The module has an operational temperature of -40 °C to +105 °C.   |
| JODY-W562-21A | JODY-W562-A  | Automotive grade module based on NXP AW611 transceiver (automotive grade 2). Equipped with a single Wi-Fi and single Bluetooth antenna pin, and LTE filter for Wi-Fi 2.4 GHz and Bluetooth. The module has an operational temperature of -40 °C to +105 °C. |

**Table 34: Product ordering codes**

# Appendix

## A Glossary


| Abbreviation | Definition  |
|--------------|---|
| AC           | Alternating Current                                 |
| ACL          | Asynchronous Connection-oriented Logical transport  |
| BLE          | Bluetooth Low Energy                                |
| CMD          | Command   |
| DC           | Direct Current                                      |
| DDR          | Double Data Rate                                    |
| ESD          | Electrostatic Sensitive Devices                     |
| FCC          | Federal Communications Commission                   |
| FIFO         | First In, First Out                                 |
| GI           | Guard interval                                      |
| GND          | Ground  |
| GPIO         | General-purpose input/output                        |
| HD           | High Definition                                     |
| HCI          | Host Controller Interface                           |
| ISED         | Innovation, Science and Economic Development Canada |
| ISM          | Industrial, scientific, and medical                 |
| LE           | Bluetooth Low Energy                                |
| LTE          | Long Term Evolution                                 |
| LULA         | Limited Use License Agreement                       |
| MAC          | Medium Access Control                               |
| MIMO         | Multiple Input Multiple Output                      |
| MWS          | Mobile Wireless Standards                           |
| MSL          | Moisture sensitivity level                          |
| NFC          | Near-Field Communication                            |
| OEM          | Original equipment manufacturer                     |
| P2P          | Peer-to-peer  |
| P2P (GC)     | P2P Client  |
| P2P (GO)     | P2P Group Owner                                     |
| PCB          | Printed Circuit Board                               |
| PCI          | Peripheral Component Interconnect                   |
| PCIe         | PCI Express   |
| PCN          | Product Change Notification                         |
| PCM          | Pulse-code modulation                               |
| POR          | Power-on reset                                      |
| RED          | Radio Equipment Directive                           |
| RF           | Radio Frequency                                     |
| RSDB         | Real Simultaneous Dual Band                         |
| RSS          | Radio Standards Specification                       |

| Abbreviation | Definition                                     |
|--------------|--|
| RH           | Relative humidity                              |
| RoHS         | Restriction of Hazardous Substances            |
| SAR          | Specific Absorption Rate                       |
| SCO          | Synchronous Connection-Oriented                |
| SDIO         | Secure Digital Input Output                    |
| SDR          | Single Data Rate                               |
| SISO         | Single-input single-output                     |
| SMD          | Surface-mount Device                           |
| STA          | Station  |
| TBD          | To be defined                                  |
| USB          | Universal Serial Bus                           |
| UART         | Universal Asynchronous Receiver/Transmitter    |
| VSDB         | Virtual Simultaneous Dual Band                 |
| WAPI         | WLAN Authentication and Privacy Infrastructure |
| WLAN         | Wireless Local Area Network                    |
| WPA          | Wi-Fi Protected Access                         |

**Table 35: Explanation of the abbreviations and terms used**

## Related documents

- [1] Product packaging reference guide, [UBX-14001652](#)
- [2] JODY-W5 series, system integration manual, [UBX-23001477](#)
- [3] JODY-W5 product summary, [UBX-23007124](#)

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## Revision history

| Revision | Date        | Name             | Comments  |
|----------|-------------|------------------|---|
| R01      | 28-Jun-2023 | vbak             | Initial release   |
| R02      | 16-Feb-2024 | vbak             | Added JODY-W562-21A variant in <a href="#">Block diagram</a> and <a href="#">Ordering codes</a> . Current consumption updated in <a href="#">Wi-Fi power consumption</a> and <a href="#">Bluetooth power consumption</a> . Updated <a href="#">Radio specifications</a> and <a href="#">Operating conditions</a> . Added S dimension in <a href="#">Mechanical specifications</a> .   |
| R03      | 12-Apr-2024 | dawa             | Revised disclosure restriction status only.   |
| R04      | 24-Jul-2024 | vbak, frca, mzes | Added <a href="#">Module weight</a> . Corrected description of WL_WAKE_OUT and BT_WAKE_OUT in <a href="#">Table 14</a> . Updated Wi-Fi and Bluetooth current consumption data in <a href="#">Table 19</a> and <a href="#">Table 20</a> .  |
| R05      | 29-Jan-2025 | vbak, frca, lber | Updated product status in <a href="#">Document information</a> , <a href="#">current consumption</a> values, and certification values in <a href="#">Country approvals</a> .<br>Power Down State information added in <a href="#">Table 14</a> (JODY-W5 pin description). Updated <a href="#">Table 19</a> (Peak current consumption) <a href="#">Table 21</a> (DC characteristics VIO), and <a href="#">Table 27</a> (Wi-Fi radio sensitivity). Updated <a href="#">Host interface configuration</a> and <a href="#">High Speed UART interface</a> . |

## Contact

### u-blox AG

Address: Zürcherstrasse 68  
8800 Thalwil  
Switzerland

For further support and contact information, visit us at [www.u-blox.com/support](http://www.u-blox.com/support).