

JODY-W5 series

Host-based multiradio modules with Wi-Fi 6 and Dual-Mode Bluetooth®

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 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

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This document applies to the following products:

Product name	Type number	Chipset	PCN reference	Product status
JODY-W562-A	JODY-W562-00A-00	AW611	N/A	Initial Production
JODY-W562-A	JODY-W562-01A-00	AW611	N/A	Initial Production
JODY-W562-A	JODY-W562-21A-00	AW611	N/A	Initial Production

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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® Classic (BR/EDR), 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 (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. The modules are qualified against Bluetooth Core 5.4.

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.

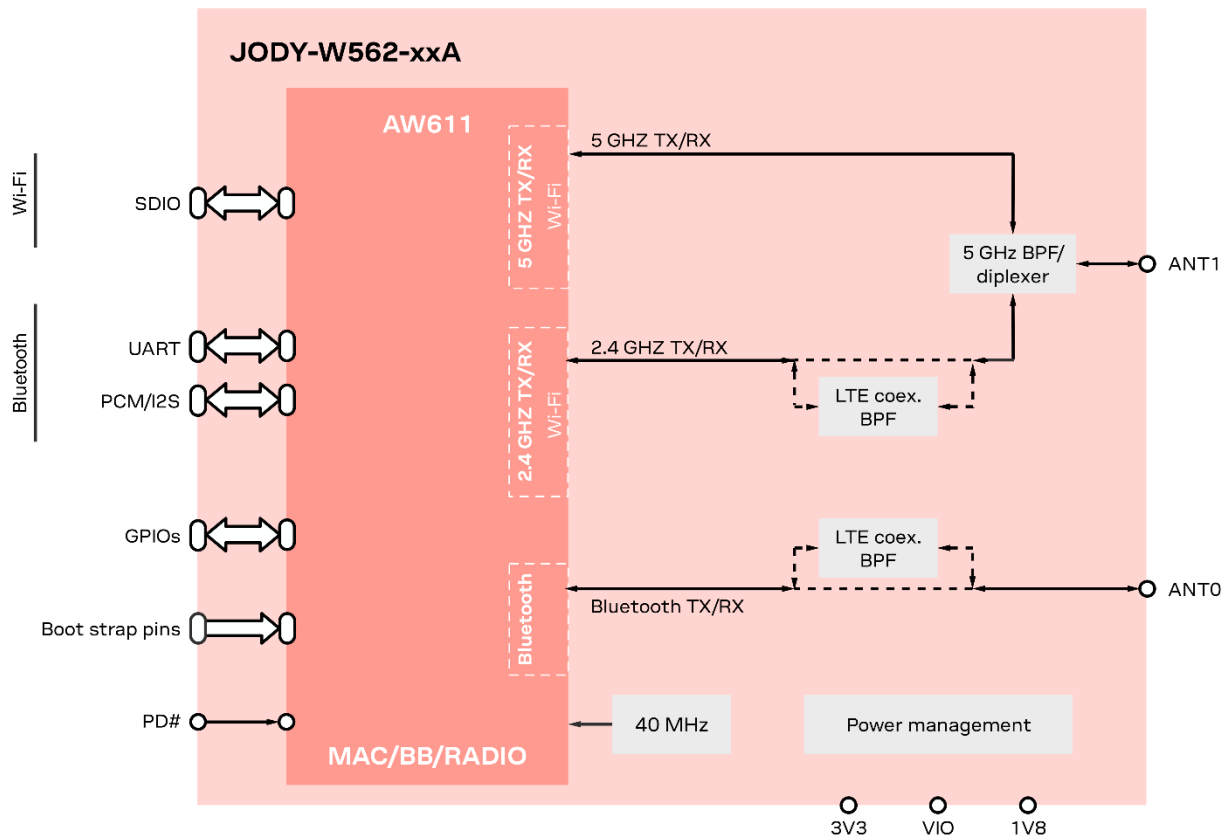


Figure 1: JODY-W562-A block diagram



Module variants equipped with LTE coexistence filters, as shown in Table 1, are recommended when co-located with LTE devices operating in LTE bands 7, 38, 40 or 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	Qualified against Bluetooth Core 5.4	Qualified against Bluetooth Core 5.4	Qualified against Bluetooth Core 5.4
Bluetooth profiles	HCI	HCI	HCI
Supported Bluetooth radio modes	Bluetooth BR/EDR Bluetooth LE	Bluetooth BR/EDR Bluetooth LE	Bluetooth BR/EDR Bluetooth LE
Supported Bluetooth LE data rates	1 Mbps 2 Mbps 500 kbps 125 kbps	1 Mbps 2 Mbps 500 kbps 125 kbps	1 Mbps 2 Mbps 500 kbps 125 kbps
LTE coexistence filters	No	No	Yes
OS support	Linux / Android	Linux / Android	Linux / Android
Interfaces	SDIO 3.0 (Wi-Fi/Bluetooth) UART (Bluetooth) PCM/I2S (Bluetooth digital audio)	SDIO 3.0 (Wi-Fi/Bluetooth) UART (Bluetooth) PCM/I2S (Bluetooth digital audio)	SDIO 3.0 (Wi-Fi/Bluetooth) UART (Bluetooth) 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 600 Mbit/s (MCS11, 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

- Dual-Mode Bluetooth
- Bluetooth power 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	D4:CA:6E:44:00:05
Module1, address 3	(free for use)	0b10	D4:CA:6E:44:00:06
Module1, address 4	(free for use)	0b11	D4:CA:6E:44:00:07
Module2, address 1	Bluetooth	0b00	<i>D4:CA:6E:44:00:08</i>
Module2, address 2	Wi-Fi	0b01	D4:CA:6E:44:00:09
Module2, address 3	(free for use)	0b10	D4:CA:6E:44:00:0A
Module2, address 4	(free for use)	0b11	D4:CA:6E:44:00:0B

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 Classic/ 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)

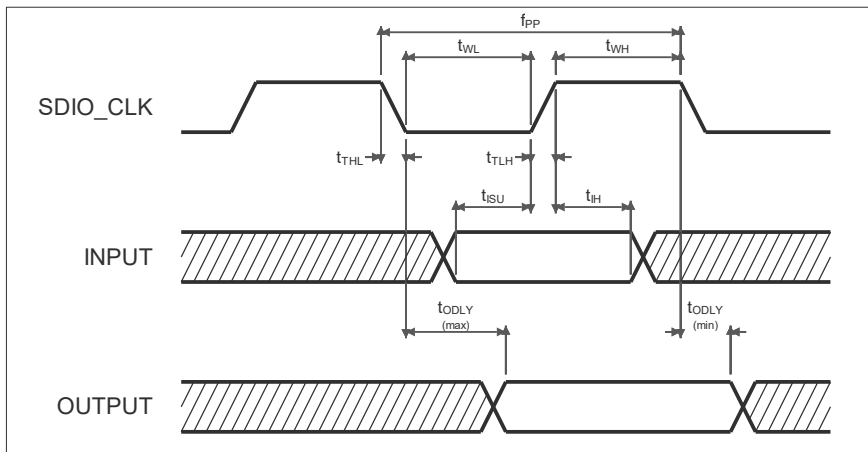


Figure 2: SDIO Protocol timing diagram - default speed mode (1.8 V)

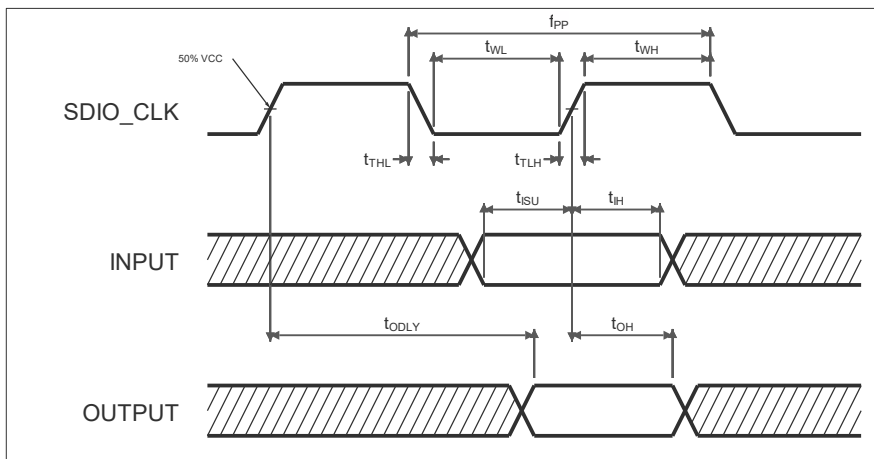


Figure 3: SDIO Protocol timing diagram – high speed mode (1.8 V)

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)

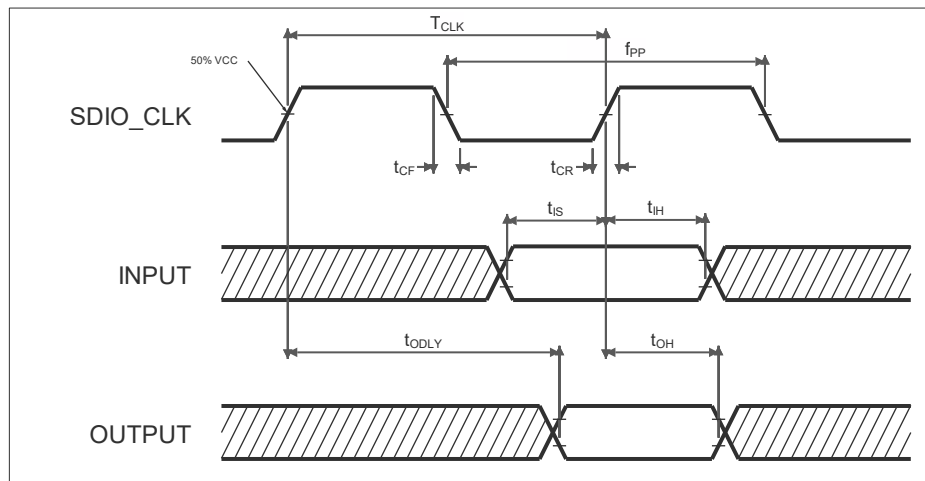


Figure 4: SDIO protocol timing diagram – SDR12, SDR25, SDR50 modes (up to 100 MHz, 1.8 V)

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 $T_{CR}, T_{CF} < 2$ ns (max) at 100 MHz $C_{CARD} = 10$ pF	SDR12/25/50	-	-	$0.2 \cdot T_{CLK}$	ns
t_{ODLY}	Output delay time $C_L \leq 30$ pF	SDR12/25/50	-	-	14/14/7.5	ns
t_{OH}	Output hold time $C_L = 15$ 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)

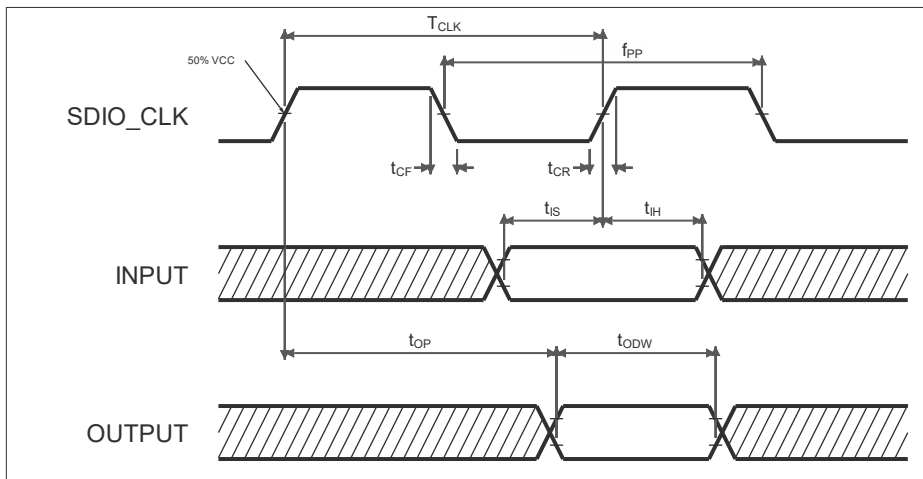


Figure 5: SDIO protocol timing diagram – SDR104 mode (208 MHz, 1.8 V)

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 $T_{CR}, T_{CF} < 0.96$ ns (max) at 208 MHz $C_{CARD} = 10$ 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)

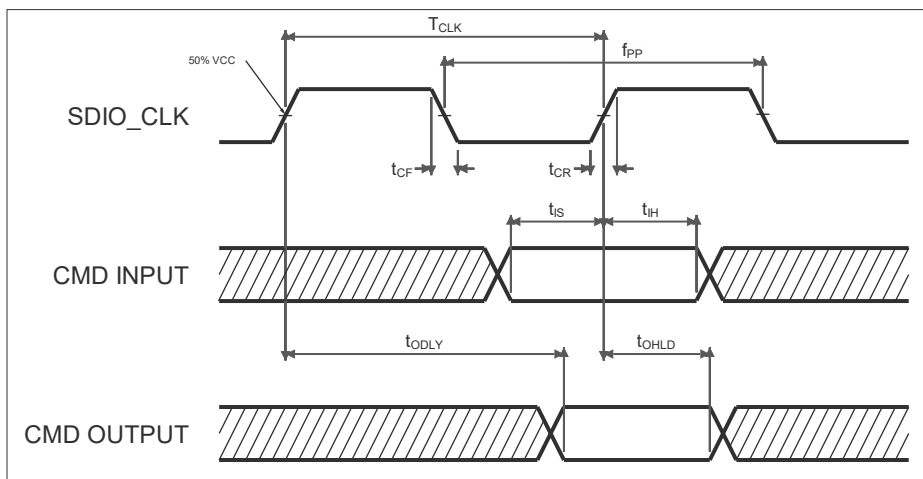


Figure 6: SDIO CMD timing diagram – DDR50 mode (50 MHz, 1.8 V)

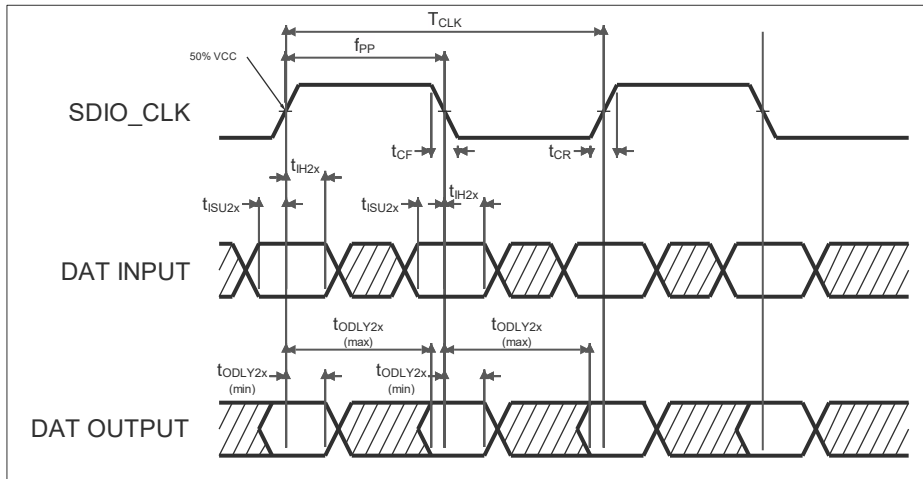


Figure 7: SDIO DAT [3:0] timing diagram – DDR50 mode (50 MHz, 1.8 V)

Symbol	Parameter	Condition	Min.	Typ	Max.	Units
Clock						
T_{CLK}	Clock time 50 MHz (max) between rising edges	DDR50	20	-	-	ns
t_{CR}, t_{CF}	Rise time, fall time TCR, TCF < 4.00 ns (max) at 50 MHz CCARD = 10 pF	DDR50	-	-	$0.2 \cdot T_{CLK}$	ns
Clock Duty		DDR50	45	-	55	%
CMD Input (referenced to clock rising edge)						
t_{IS}	Input setup time CCARD ≤ 10 pF (1 card)	DDR50	6	-	-	ns
t_{IH}	Input hold time CCARD ≤ 10 pF (1 card)	DDR50	0.8	-	-	ns
CMD Output (referenced to clock rising edge)						
t_{ODLY}	Output delay time during data transfer mode CL ≤ 30 pF (1 card)	DDR50	-	-	13.7	ns
t_{OHLd}	Output hold time 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 CCARD ≤ 10 pF (1 card)	DDR50	3	-	-	ns
t_{IH2x}	Input hold time 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 mode CL ≤ 25 pF (1 card)	DDR50	-	-	7.0	ns
$t_{ODLY2x} (min)$	Output hold time 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 Classic/Bluetooth LE 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.

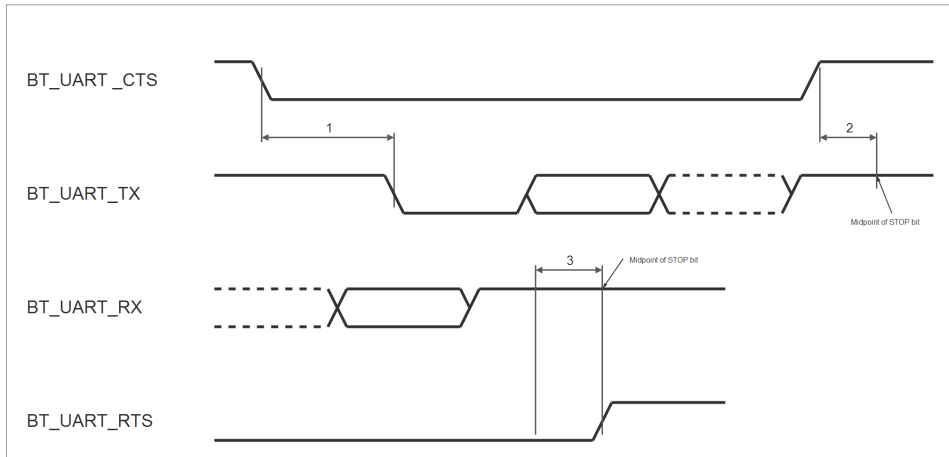


Figure 8: UART timing characteristics

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

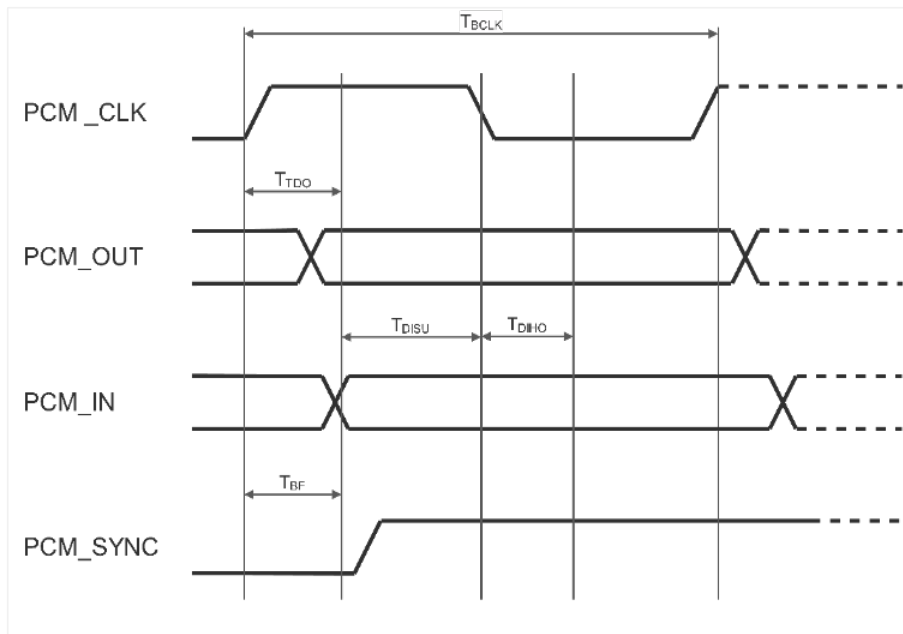


Figure 9: PCM timing specification – Central mode

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

Table 12: PCM timing specification – Central mode

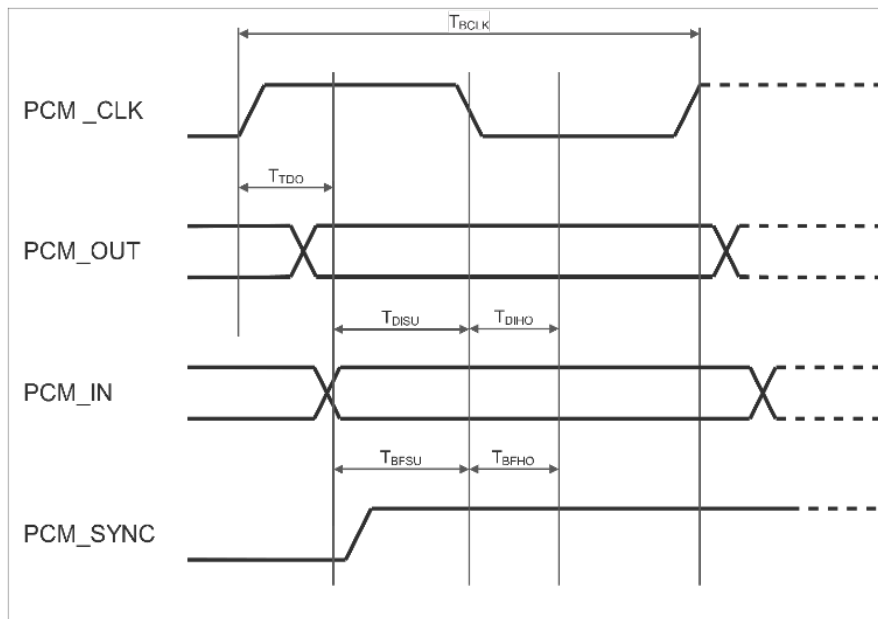


Figure 10: PCM timing specification – Peripheral mode

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

Table 13: PCM timing specification – Peripheral mode

3 Pin definition

3.1 Pin description

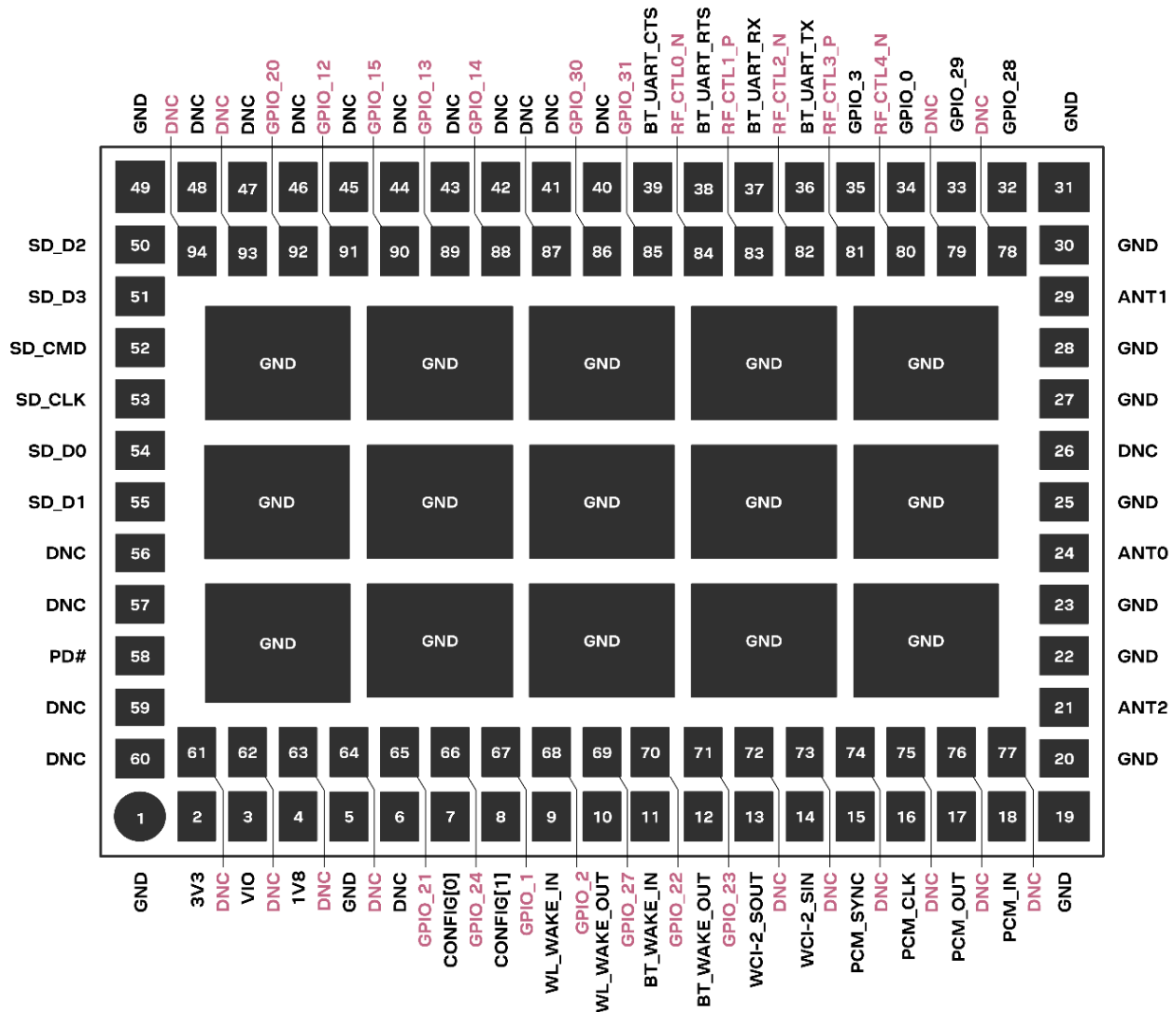


Figure 11: JODY-W5 pin assignment (top view)

No.	Name	Pin type ¹	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 Digital I/O SDIO and RF power supply	-	1V8
5	GND	GND		Ground	-	

¹ 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 ¹	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. See also Configuration pins .	Tristate	1V8
8	CONFIG[1]	I	CONFIG_HOST_BOOT[1]	Firmware boot options. See also Configuration pins .	Tristate	1V8
9	WL_WAKE_IN	I/O	WL_WAKE_IN / GPIO[16]	Multi-functional pin: • Wi-Fi radio wake-up input signal • GPIO [16]	Tristate	VIO
10	WL_WAKE_OUT	I/O	WL_WAKE_OUT / GPIO[17]	Multi-functional pin: • Wi-Fi radio wake-up output signal • GPIO [17]	Drive low	VIO
11	BT_WAKE_IN	I/O	BT_WAKE_IN / GPIO[18]	Multi-functional pin: • Bluetooth radio wake-up input signal • GPIO [18]	Tristate	VIO
12	BT_WAKE_OUT	I/O	BT_WAKE_OUT / GPIO[19]	Multi-functional pin: • Bluetooth radio wake-up output signal • GPIO [19]	Drive low	VIO
13	WCI-2_SOUT	I/O	WCI-2_SOUT / GPIO[26]	Multi-functional pin: • WCI-2 Transmit signal to external radio (output) • GPIO[26]	Drive low	VIO
14	WCI-2_SIN	I/O	WCI-2_SIN / GPIO[25]	Multi-functional pin: • WCI-2 Transmit signal to external radio (input) • GPIO[25]	Tristate	VIO
15	PCM_SYNC	I/O	GPIO[7] / PCM_SYNC/ I2S_LRCLK	Multi-functional pin: • GPIO[7] • PCM sync can be output (central) or input (peripheral mode) • I2S word select / left-right clock can be output (central) or input (peripheral mode).	Tristate	VIO
16	PCM_CLK	I/O	GPIO[4] / PCM_CLK / I2S_BCLK	Multi-functional pin: • GPIO[4] • PCM clock can be output (central) or input (peripheral mode) • I2S bit clock can be output (central) or input (peripheral mode)	Tristate	VIO
17	PCM_OUT	I/O	GPIO[5] / PCM_DOUT / I2S_DOUT	Multi-functional pin: • GPIO[5] • PCM data output • I2S data output	Tristate	VIO
18	PCM_IN	I/O	GPIO[6] / PCM_DIN / I2S_DIN	Multi-functional pin: • GPIO[6] • PCM data input • I2S data input	Tristate	VIO

No.	Name	Pin type ¹	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: JODY-W562-A: Bluetooth	-	
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: JODY-W562-A: Wi-Fi 2.4 and 5 GHz	-	
30	GND	GND		Ground	-	
31	GND	GND		Ground	-	
32	GPIO_28	I/O	GPIO[28] / JTAG_TCK	Multi-functional pin: - GPIO[28] - JTAG test data clock (input)	Tristate	VIO
33	GPIO_29	I/O	GPIO[29] / JTAG_TMS	Multi-functional pin: - GPIO[29] - JTAG controller select (input)	Tristate	VIO
34	GPIO_0	I/O	GPIO[0] / XOSC_EN	Multi-functional pin: - GPIO[0] - Oscillator enable (output)	Drive low	VIO
35	GPIO_3	I/O	GPIO[3] / PCM_MCLK / I2S_CCLK	Multi-functional pin: - GPIO[3] - PCM main clock output (optional) - I2S main clock output (optional)	Tristate	VIO
36	BT_UART_TX	I/O	GPIO[11] / UART_TX	Multi-functional pin: - GPIO[11] - UART serial data output signal	Drive low	VIO
37	BT_UART_RX	I/O	GPIO[10] / UART_RX	Multi-functional pin: - GPIO[10] - UART serial data input signal	Tristate	VIO
38	BT_UART_RTS	I/O	GPIO[9] / UART_RTS	Multi-functional pin: - GPIO[9] - UART request-to-send input signal (active low)	Drive high	VIO
39	BT_UART_CTS	I/O	GPIO[8] / UART_CTS	Multi-functional pin: - GPIO[8] - UART clear-to-send input signal (active low)	Tristate	VIO

No.	Name	Pin type ¹	Chipset pin	Description	Power-down state	Power domain
40	DNC	DNC		Do Not Connect.	-	
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: 0 = power-down mode 1 = normal mode 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: - GPIO[21] - SDIO interrupt signal (output)	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: - GPIO[1] - Independent software reset for Wi-Fi (input)	Tristate	VIO
68	GPIO_2	I/O	GPIO[2] / IND_RST_BT	Multi-functional pin: - GPIO[2] - Independent software reset for Bluetooth (input)	Tristate	VIO
69	GPIO_27	I/O	GPIO[27] / BLE_HOST_TRIG2	Multi-functional pin: - GPIO[27] - BLE ISOC host trigger pin 2	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: - GPIO[23] - BLE ISOC host trigger pin 1	Tristate	VIO

No.	Name	Pin type ¹	Chipset pin	Description	Power-down state	Power domain
72	DNC	DNC		Do not connect	-	
73	DNC	DNC		Do not connect	-	
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 Configuration pin	Drive low	1V8
81	RF_CNTL3_P	I/O	RF_CNTL3_P / CONFIG_XOSC_SEL	RF control line 3 Configuration pin	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] / JTAG_TDO	Multi-functional pin: • GPIO[31] • JTAG test data signal (output)	Tristate	VIO
86	GPIO_30	I/O	GPIO[30] / JTAG_TDI	Multi-functional pin: • GPIO[30] • JTAG test data signal (input)	Tristate	VIO
87	DNC	DNC		Do not connect	-	
88	GPIO_14	I/O	GPIO[14] / EXT_GNT	Multi-functional pin: • GPIO[14] • PTA external radio grant signal (output)	Tristate	VIO
89	GPIO_13	I/O	GPIO[13] / EXT_REQ	Multi-functional pin: • GPIO[13] • PTA request from the external radio (input)	Drive high	VIO
90	GPIO_15	I/O	GPIO[15] / EXT_PRI	Multi-functional pin: • GPIO[15] • PTA external radio priority signal (input)	Drive low	VIO
91	GPIO_12	I/O	GPIO[12] / EXT_STATE	Multi-functional pin: • GPIO[12] • PTA External radio state signal (input)	Tristate	VIO
92	GPIO_20	I/O	GPIO[20] / EXT_FREQ	Multi-functional pin: • GPIO[20] • PTA external radio frequency signal (input)	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 _{STORAGE}	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 _A	Ambient operating temperature				
	JODY-W562-00A	-40	-	+85	°C
	JODY-W562-01A, JODY-W562-21A	-40	-	+105	°C
Ripple Noise	Peak-to-peak voltage ripple on all supply lines	-	-	10	mV

Table 17: Operating conditions

4.4 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 18: DC characteristics VIO

4.5 Power-down specifications

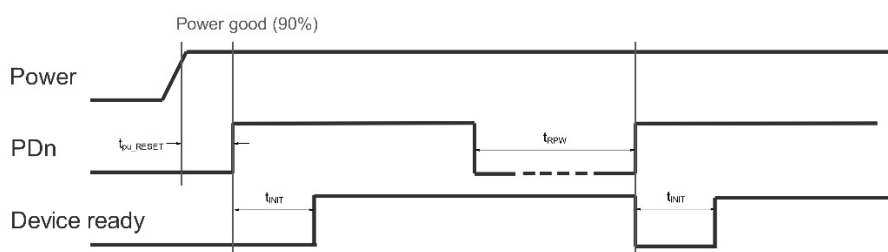


Figure 12: JODY-W5 PDn (power-down) timing

Symbol	Parameter	Min.	Max.	Units
t_{PU_RESET}	Valid power to PDn deasserted	0	-	ms
t_{RPW}	PDn pulse width	1	-	μ 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 19: PDn pin specification

4.6 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 20: Peak current consumption

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

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

Table 21: Wi-Fi radio typical current consumption with different modes of operation

4.7 Bluetooth power consumption

Bluetooth operation modes	VBAT (3.3 V) [mA]	1V8 [mA]	VIO [mA]
Operating modes			
Bluetooth alone (SDIO not connected)	0.04	1.76 ⁽³⁾	0.15 ⁽¹⁾
Bluetooth classic inquiry scan	0.04	1.76 ⁽³⁾	0.15 ⁽¹⁾
Bluetooth classic page scan	0.04	1.76 ⁽³⁾	0.15 ⁽¹⁾
Bluetooth LE advertisement	0.04	1.76 ⁽³⁾	0.15 ⁽¹⁾
Bluetooth LE scanning	0.04	1.76 ⁽³⁾	0.15 ⁽¹⁾
Active transmit mode			
Bluetooth classic DH3, 4 dBm	0.22	172	0.06 ⁽²⁾
Bluetooth classic DH3, 20 dBm	0.22	344	0.06 ⁽²⁾
EDR, 4dBm, 3Mbps	0.22	148	0.06 ⁽²⁾
EDR, 10dBm, 3Mbps	0.22	148	0.06 ⁽²⁾
BLE, 4dBm, 1Mbps	0.22	165	0.06 ⁽²⁾
BLE, 19dBm, 1Mbps	0.22	289	0.06 ⁽²⁾
Active receive mode			
BR peak receive, DH5, 1 Mbps	0.22	39	0.06 ⁽²⁾
(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 22: Bluetooth radio typical current consumption with different operating modes

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) 40 (BLE)
Modulation	1 Mbps: GFSK (BR) 2 Mbps: $\pi/4$ DQPSK (EDR) 3 Mbps: 8DQPSK (EDR)
Transmit Power (JODY-W562-00A/-01A)	Class 1 BR: 18 dBm Class 1 EDR: 8 dBm Class 1 BLE: 16 dBm
Receiver sensitivity (JODY-W562-00A/-01A)	BR (1DH5): -94 dBm $\pm$ 1.5 dB EDR (2DH5): -92 dBm $\pm$ 1.5 dB EDR (3DH5): -87 dBm $\pm$ 1.5 dB LE (125k): -105 dBm $\pm$ 1.5 dB LE (1M): -100.5 dBm $\pm$ 1.5 dB LE (2M): -97.1 dBm $\pm$ 1.5 dB

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 802.11a/n/ac/ax	2.400 – 2.500 GHz 4.900 – 5.895 GHz
Modulation	802.11b 802.11a/g/n/ac/ax 802.11ax	CCK and DSSS OFDM OFDMA
Supported data rates	802.11b 802.11a/g 802.11n SISO 802.11ac SISO 802.11ax SISO	1/2/5.5/11 Mbps 6/9/12/18/24/36/48/54 Mbps MCS0 – MCS7 (150 Mbps) MCS0 – MCS9 (433 Mbps) MCS0 – MCS11 (600 Mbps)
Supported channel bandwidth	802.11n 802.11ac 802.11ax	20/40 MHz 20/40/80 MHz 20/40/80 MHz
Supported guard interval (GI)	802.11n 802.11ac 802.11ax	400/800 ns Short guard interval supported 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 (output power tolerance ± 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 ± 2 dB (typ.) is given for temperature range -40 to 85 °C. The output power tolerance in temperature range -40 to +105 °C is ± 3 dB (typ.).



Note 2: The output power in 2.4 GHz range for JODY-W562-21A is 2 dB less compared to 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	-91.3
		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		-62.2
		MCS0	40 MHz	-88.2
		MCS9		-67.3
		MCS11		-62.8
		MCS0	80 MHz	-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 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

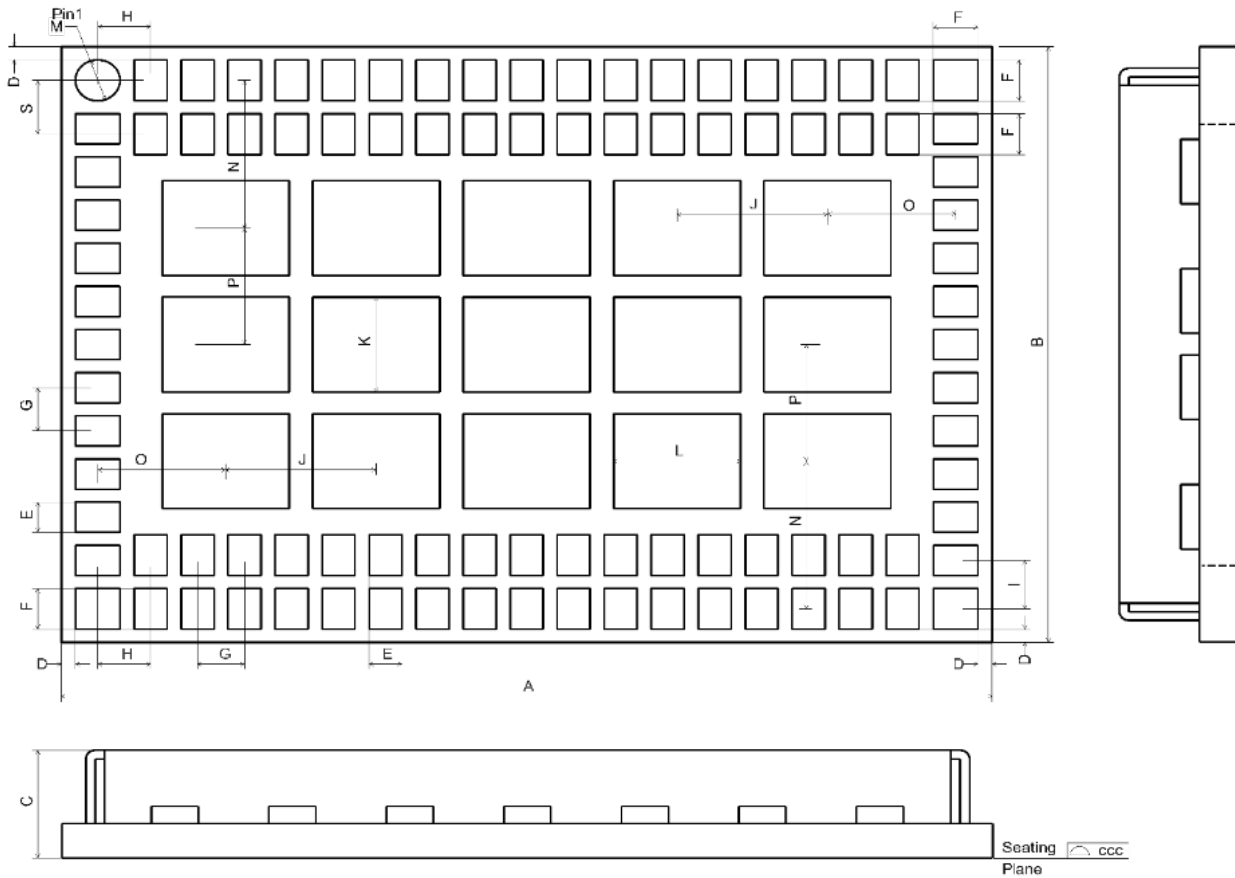


Figure 13: JODY-W5 series dimensions (bottom view)

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)

Parameter	Description	Typical		Tolerance	
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	Approved	Approved
Europe	Approved	Approved	Approved
Great Britain	Approved	Approved	Approved
USA	Approved	Approved	Approved

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, JODY-W562-00A, JODY-W562-21A	Core-Controller Configuration	223670	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.

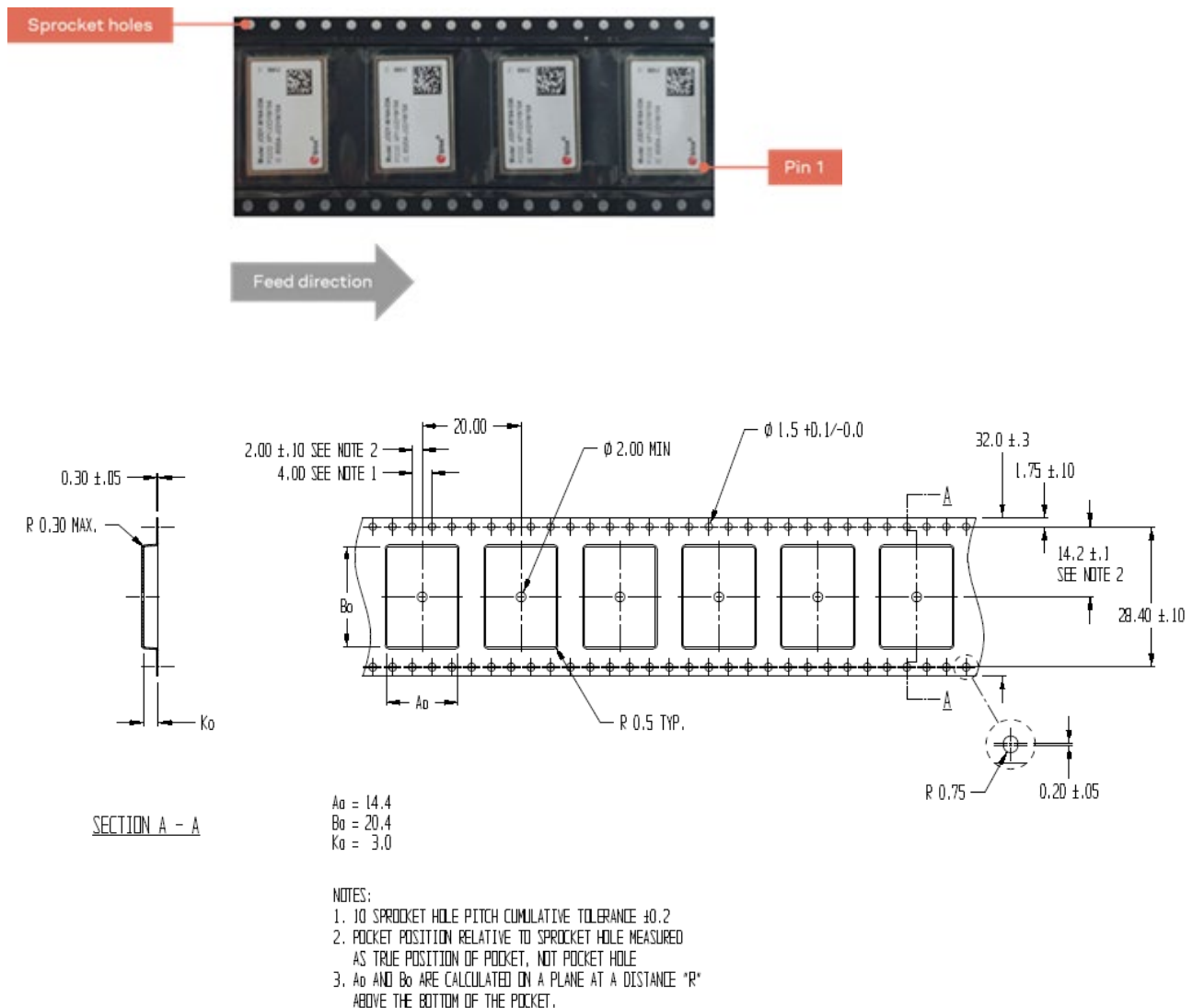


Figure 14: JODY-W5 tape dimensions

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 and upside down reflow.

-  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: - 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. - The following 12 symbols represent the unique hexadecimal Bluetooth address of the module AABCCDDEEFF. - The last 4 symbols represent the hardware and firmware version encoded HHFF.
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 T – Dominant technology, For example, W: Wi-Fi, B: Bluetooth G - Generation	W5
VV	Variant based on the same platform; range [00...99]	62
TT	Major product version	00
Q	Quality grade A: Automotive B: Professional 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
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
RH	Relative humidity

Abbreviation	Definition
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](#)

 For product change notifications and regular updates of u-blox documentation, register on our website, www.u-blox.com.

Revision history

Revision	Date	Name	Comments
R01	28-Jun-2023	vbak	Initial release
R02	16-Feb-2024	vbak	Added JODY-W562-21A variant in Block diagram and Ordering codes . Current consumption updated in Wi-Fi power consumption and Bluetooth power consumption . Updated Radio specifications and Operating conditions . Added S dimension in Mechanical specifications .
R03	12-Apr-2024	dawa	Revised disclosure restriction status only.
R04	24-Jul-2024	vbak, frca, mzes	Added Module weight . Corrected description of WL_WAKE_OUT and BT_WAKE_OUT in Table 14 . Updated Wi-Fi and Bluetooth current consumption data in Table 21 and Table 22 .
R05	29-Jan-2025	vbak, frca, lber	Updated product status in Document information , current consumption values, and certification values in Country approvals . Power Down State information added in Table 14 (JODY-W5 pin description). Updated Table 19 (Peak current consumption) Table 21 (DC characteristics VIO), and Table 27 (Wi-Fi radio sensitivity). Updated Host interface configuration and High Speed UART interface .
R06	16-Oct-2025	frca	Updated product status in Document information , updated certification status in Table 29 . Added picture of the reel and feed direction in Tapes . Updated Bluetooth receiver sensitivity in Table 23 .

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