Product summary

JODY-W6 series

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Host-based compact automotive modules

Standard

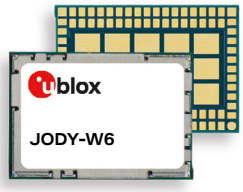
Professional

Automotive

Automotive grade 2 modules featuring tri-band Wi-Fi 6E and dual-mode Bluetooth 5.3

- High-performance In-vehicle infotainment
- Telematics applications with simultaneous use cases
- Concurrent Dual Wi-Fi 6E (2x2 + 1x1)
- Bluetooth LE Audio
- Optimized for parallel operation of Wi-Fi and Bluetooth
- State-of-the-art security and encryption

13.8 × 19.8 × 2.5 mm



Product description

JODY-W6 automotive host-based modules are designed, built, and tested to meet the high reliability and quality requirements of applications in advanced in-vehicle infotainment and telematics use cases requiring high throughput (in-car hotspots), display (e.g. Apple CarPlay) and video streaming for multiple clients.

They deliver up to 1.34 Gbit/s in IEEE 802.11ax technology in three bands with concurrent dual Wi-Fi - 2x2 @ 5/6 GHz + 1x1 @ 2.4GHz. The modules can operate as access point, station, in P2P connections, or combinations of these.

JODY-W6 supports dual-mode Bluetooth 5.3 BR/EDR and LE features, such as high data rates, extended advertising, long range, and the use of isochronous channels for LE Audio, fully simultaneously to Wi-Fi operation.

The modules work with host processors running a Linux or Android operating system connected through various interfaces.

JODY-W6 modules are based on the automotive-qualified NXP AW693 chip. They undergo automotive qualification according to u-blox qualification policy based on AEC-Q104 and are manufactured in line with ISO/TS 16949.

Migration from other JODY products may be done with minimal initial design effort.

Key features

- 2x2 MIMO 802.11ax 5/6 GHz, beamforming
- Wi-Fi concurrent dual band 2.4 and 5/6 GHz - dual MAC
- Wi-Fi data rates (PHY): Up to 1.2 Gbit/s (5/6 GHz)
- Wi-Fi 20, 40, and 80 MHz channels
- Multi-role operation: AP, STA, P2P
- Security: WPA2/3; AES/CCMP, AES/GCMP and WAPI encryption; Secure boot
- Bluetooth LE physical layer (PHY) data rates up to 2 Mbit/s
- Bluetooth long range
- Advertising extension, high duty cycle directed advertising
- All standard pairing, authentication, link key, and encryption operation

	JODY-W682	JODY-W683
Grade		
Automotive	•	•
Professional		
Standard		
Radio		
Chip inside	NXP AW693	
Bluetooth qualification	v5.3	
Bluetooth profiles	HCI	
Bluetooth BR/EDR	•	•
Bluetooth Low Energy	•	•
Wi-Fi IEEE 802.11 standards	Wi-Fi 6E (802.11 a/b/g/n/ac/ax)	
Wi-Fi 2.4 / 5 [GHz]	2.4, 5 and 6	
Wi-Fi output power conducted [dBm]	19	19
Antenna type	2p	3p
OS support		
Android / Linux drivers (from NXP)	•	•
Interfaces		
High-speed UART [B]	1	1
PCM / I2S (Bluetooth audio)	1	1
PCIe [W]	1	1
Features		
Micro Access Point [max connects]	64	64
Wi-Fi direct	•	•
WPA3	•	•
RF parameters in OTP memory	•	•
MAC addresses in OTP memory	•	•
Secure boot	•	•

2p = 2 antenna pins, one each for Bluetooth and Wi-Fi
3p = 3 pins, 2 for Wi-Fi and 1 for Bluetooth antenna

B = For Bluetooth only
W = For Wi-Fi only

JODY-W6 series

S

Features

Wi-Fi standards	Wi-Fi 6/E IEEE 802.11a/b/g/n/ac/ax IEEE 802.11e/h/i/k/mc/r/u/v/w/z
Wi-Fi channels	2.4 GHz: 1-13 5 GHz: 36-177 6 GHz: 1-233
Bluetooth	v5.3 (Bluetooth Low Energy and Bluetooth with EDR) Class 1 and 2 transmission Bluetooth Low Energy long range Power management, LE Audio
Antenna	JODY-W682: Pin 1: 5/6 GHz Wi-Fi and Bluetooth Pin 2: 2.4 GHz and 5/6 GHz Wi-Fi JODY-W683: Pin 1: 2.4 GHz and 5/6 GHz Wi-Fi Pin 2: 2.4 GHz and 5/6 GHz Wi-Fi Pin 3: Bluetooth
Output power (indicative)	Wi-Fi IEEE 802.11b: 19 dBm Wi-Fi IEEE 802.11a/g: 17 dBm Wi-Fi IEEE 802.11n/ac/ax: 14-16 dBm Bluetooth BR/EDR: 10 dBm Bluetooth LE: 7 dBm
RX sensitivity	Wi-Fi 6 2.4 GHz: -91 dBm (indicative) Wi-Fi 6 5 GHz: -92.5 dBm (indicative) Wi-Fi 6 6 GHz: TBD Bluetooth BR/EDR: -96 dBm (indicative) Bluetooth LE: -100 dBm (@ 1Mbit/s, indicative)
Security	Full AES hardware encryption Secure boot (NXP Edgelock ®)

Software features

RF parameters	Available in on-board OTP memory
MAC addresses	Available in on-board OTP memory
Security	WPA2 (CCMP, AES) WPA3 WAPI
Wi-Fi operational	Station, access point, Wi-Fi direct, or any combination of these
Driver support	Linux and Android

Interfaces

Wi-Fi	PCIe
Bluetooth	High-speed UART, 4-wire
Bluetooth audio	PCM and I2S
Coexistence	WCI-2 (2-wire) for external radio coexistence PTA (5-wire) for external radio coexistence
Other interfaces	GPIOs

Package

Dimensions	13.8 × 19.8 × 2.5 mm
Mounting	Solder pins (LGA), 94 pins, additional large ground pins

Environmental data, quality & reliability

Operating temperature –40 °C to +105 °C
Moisture sensitivity level 4
RoHS and REACH compliance
Automotive qualification according to u-blox Qualification Policy based on AEC-Q104

Electrical data

Power supply	3.3 V and 1.8 V
I/O power supply	3.3 V or 1.8 V

Certifications and approvals

Type approvals	Europe (RED); US (FCC); Canada (ISED); Japan (Giteki) Other certifications will be considered upon request
Bluetooth qualification	v5.3 (Bluetooth BR/EDR and Bluetooth Low Energy)

Support products

EVK-JODY-W683	Evaluation kit for JODY-W6 modules
M2-JODY-W683-10C	M.2 card EVK for JODY-W6 modules, including patch antennas

Product variants

JODY-W682-01A	2 antenna pins, 105 °C, dual MAC, automotive grade 2
JODY-W683-01A	3 antenna pins, 105 °C, dual MAC, automotive grade 2

Further information

For contact information, see **www.u-blox.com/contact-u-blox**.

For more product details and ordering information, see the product data sheet.

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