Product summary

JODY-W1 series

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Host-based multiradio modules with Wi-Fi and Bluetooth

Standard

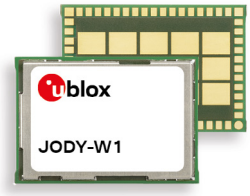
Professional

Automotive

Smallest, most flexible automotive modules supporting Wi-Fi Real Simultaneous Dual Band (RSDB)

- Dual band Wi-Fi with 2x2 MIMO 802.11a/b/g/n/ac
- Real Simultaneous Dual Band (RSDB) Wi-Fi 2.4 GHz and 5 GHz
- Dual-mode Bluetooth® (Bluetooth/Bluetooth Low Energy) v5/v5.1
- Simultaneous operation modes: access point (AP), station (STA), Wi-Fi Direct (P2P)
- Optimized for parallel operation of Wi-Fi and Bluetooth

13.8 × 19.8 × 2.5 mm



Product description

JODY-W1 compact modules are based on Infineon CYW88359, CYW89359, CYW88459, and CYW89459 AEC-Q100 compliant chipsets. They provide Wi-Fi and Bluetooth EDR/low energy communication, and are thus ideal for in-vehicle infotainment and telematics applications that require high data rates. Use cases include in-car hotspots, Wi-Fi display applications like Apple CarPlay, or video streaming across multiple clients. JODY-W1 can be operated in the following modes:

- Wi-Fi 2x2 MIMO 802.11ac in 2.4 GHz or 5 GHz
- Wi-Fi 1x1 802.11ac in 2.4 / 5 GHz real simultaneous dual band
- Dual-mode Bluetooth v5/v5.1, including audio, can be operated fully simultaneous with both the Wi-Fi modes

JODY-W1 modules undergo extended automotive qualification according to ISO 16750-4 and are manufactured in line with ISO/TS 16949. They connect to a host processor through PCIe, SDIO, or High-Speed UART interfaces. JODY-W1 series modules comply with the regulatory demands of Federal Communications Commission (FCC), Industry Canada (IC) and the CE mark.

Key features

- Real simultaneous dual band - parallel operation of 2.4 GHz (802.11n) and 5 GHz (802.11ac) Wi-Fi
- 2x2 MIMO IEEE 802.11ac data rates up to 867 Mbit/s (PHY), beamforming
- TurboQAM high speed 802.11n for faster 2.4 GHz access point application
- Chipset is compliant with AEC-Q100
- Wi-Fi 20, 40, and 80 MHz channel bandwidth
- Bluetooth and Bluetooth Low Energy v5/v5.1
- PCIe or SDIO high speed interface for Wi-Fi
- PCM and I2S interfaces for Bluetooth audio
- Access point mode for up to 10 stations (12 for JODY-W174)
- Hardware encryption engines: AES and TKIP
- Security: WPA, WAPI, WPA2, and WPS; WPA3 (JODY-W174)
- Extended temperature range –40 °C to +85 °C
- Smallest possible form factor
- DFS Master + Real Simultaneous Dual Band (JODY-W174)*

* Approval pending

	JODY-W163	JODY-W164	JODY-W167	JODY-W174
Grade				
Automotive	•	•	•	•
Professional				
Standard				
Radio				
Bluetooth qualification	v5	v5	v5	v5.1
Bluetooth profiles	HCI			
Bluetooth BR/EDR	•	•	•	•
Bluetooth low energy	•	•	•	•
Wi-Fi IEEE 802.11 standards	a/b/g/n/ac			
Wi-Fi 2.4 / 5 [GHz]	2.4 and 5			
LTE filter	o	o	o	o
Bluetooth output power conducted [dBm]	10	10	10	10
Wi-Fi output power conducted [dBm]	18	18	18	18
Antenna type	2p	2p	3p	2p
OS support				
Android / Linux drivers (from Infineon)	•	•	•	•
QNX (via third party)	•	•	•	•
Interfaces				
High-speed UART [B]	1	1	1	1
PCIe [W]		1	1	1
SDIO [W] [version]	v3			
PCM (Bluetooth audio)	1	1	1	1
Features				
Micro Access Point [max connects]	10	10	10	12
AES hardware support	•	•	•	•
Wi-Fi direct	•	•	•	•
Factory-assigned MAC address	•	•	•	•
Factory calibrated RF	•	•	•	•
Simultaneous STA/AP on different channels	•	•	•	•
WPA, WAPI, WPA2, and WPS	•	•	•	•
WPA3				•
DFS Master + RSDB				•

B = For Bluetooth only
W = For Wi-Fi only
o = On request

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

JODY-W1 series

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Features

Wi-Fi standards	IEEE 802.11a/b/g/n/ac 2x2 MIMO for 11ac IEEE 802.11d/e/h/i/w
Wi-Fi channels	2.4 GHz: 1-13 5 GHz: 36-165
Bluetooth	v5/v5.1 (Bluetooth low energy and Bluetooth with EDR) Class 1 and 2 transmission
Antenna	JODY-W163, JODY-W164, and JODY-W174: – Pin 1: 2.4 GHz and 5 GHz Wi-Fi - RSDB mode – Pin 2: Bluetooth and 5 GHz Wi-Fi depending on module variant JODY-W167: – Pin 1: 2.4 GHz and 5 GHz Wi-Fi - 2x2 MIMO – Pin 2: 2.4 GHz and 5 GHz Wi-Fi - 2x2 MIMO – Pin 3: 2.4 GHz Bluetooth
Output power	Wi-Fi IEEE 802.11b: 18 dBm Wi-Fi IEEE 802.11a/g/n/ac: 16.5 dBm Bluetooth BR: 10 dBm Bluetooth EDR: 8 dBm
Security	Hardware encryption engine: AES-CCMP, TKIP WPA/WPA2, WAPI, WEP

Software features

RF parameters	Available in on-board OTP memory
MAC addresses	Available in on-board OTP memory
Security	WEP WPA2 (CCMP, AES), WAPI 128-bit AES hardware support WPA3 (JODY-W174)
Wi-Fi modes	Station (STA): Infrastructure & direct mode AP: Supports up to 10 stations (12 for JODY-W174) Wi-Fi direct
Driver support	Free of charge drivers for Linux and Android Third party drivers for QNX

Interfaces

Wi-Fi	PCIe v3.0 SDIO v3.0 (4-bit, 208 MHz)
Bluetooth	High-speed UART, 4-wire, up to 4 Mbit/s PCM audio, 8, 16 KHz sampling I2S for Bluetooth audio
Other interfaces	GPIOs

Package

Dimensions	13.8 × 19.8 × 2.5 mm
Mounting	Solder pins (LGA), 60 pins, additional large ground pins

Environmental data, quality & reliability

Operating temperature –40 °C to +85 °C
Automotive qualification according to ISO 16750-4

Electrical data

RF power supply	3.2 V – 4.8 VDC
I/O power supply	3.3 VDC or 1.8 VDC

Certifications and approvals

Type approvals	Europe (ETSI RED); US (FCC CFR part 15); Canada (ISED)
Bluetooth qualification	v5/v5.1 (Bluetooth BR/EDR and Bluetooth low energy)

Support products

EVK-JODY-W163	Evaluation kit for JODY-W163
EVK-JODY-W164	Evaluation kit for JODY-W164

Product variants

JODY-W163	Automotive grade with 2 antenna pins, RSDB mode with a single antenna pin, SDIO interface
JODY-W164	Automotive grade with 2 antenna pins, RSDB mode with a single antenna pin, PCIe interface
JODY-W167	Automotive grade with 3 antenna pins, 2x2 MIMO mode, PCIe interface
JODY-W174	Automotive grade with 2 antenna pins, RSDB mode with a single antenna pin, PCIe interface, WPA3, Bluetooth v5.1

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.