

Dual-band Wi-Fi 6 plus Bluetooth® Combo SDIO Modules SX-SDMAX

Low Power Wireless LAN Module Powered by NXP's IW611



Overview

The SX-SDMAX is a Wi-Fi 6 (IEEE 802.11a/b/g/n/ac/ax) plus Bluetooth® v5.3 that supports SDIO as its host interface. Powered by NXP's highly integrated IW611 chipset, the Wi-Fi 6 module delivers higher throughput, better network efficiency, lower latency, and improved range over previous-generation Wi-Fi standards. The module supports SDIO as its host interface, which is a popular choice for many battery-operated device applications, as it provides the perfect balance between performance and power consumption. In addition, by supporting a wide temperature range, it is a wireless LAN module that is ideal for wireless compatibility with a wide range of products, from industrial equipment to small devices.

Efficient, Faster, & Lower Latency with Wi-Fi 6

The latest Wi-Fi 6 technology introduces features such as OFDMA, 1024QAM, and Target Wake Time (TWT) bringing higher throughput, better network efficiency, lower latency, and improved range over previous-generation Wi-Fi standards.

The SX-SDMAX with its SDIO host interface combines all the benefits of Wi-Fi 6 while optimizing power consumption to deliver unmatched Wi-Fi performance with improved battery life, making it an ideal solution for many battery-operated embedded devices.

Wi-Fi 6 Features

1 Efficiency

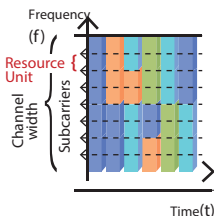
MU-MIMO OFDMA

Improved efficiency and stability in dense networks. Wi-Fi 6 delivers data reliably with low latency even in congested radio wave environments.

2 Power Saving

TWT Multiple BSS

Wi-Fi 6 has introduced new features like Target Wake Time which allows devices to negotiate when and how frequently they will wake up to send or receive data. This Wi-Fi 6/6E feature increases device sleep time and greatly improves battery life. It also incorporates a mechanism for avoiding collisions between packets and for efficiently avoiding radio wave interference for efficient communication.



Specifications

Product Name	SX-SDMAX-2530S SX-SDMAX-2530C SX-SDMAX-M2			
Chipset	NXP IW611			
Host Interface	WLAN : SDIO3.0 Bluetooth® : UART			
Wi-Fi Standard	IEEE 802.11a/b/g/n/ac/ax (1x1)			
Bluetooth®	Bluetooth® v5.3 (BR/EDR/LE Compliant)			
Antenna Connector	MHF Connector :1			
Operating Voltage	Main Power Supply : 3.3V + 1.8V IO Power Supply : 1.8V or 3.3V			
Current Consumption (Peak Value)	Voltage	VDD18		VDD33
		Tx	Rx	Tx
	Wi-Fi:2.4GHz	190mA	130mA	200mA
	Wi-Fi:5GHz	260mA	150mA	240mA
	Bluetooth®	150mA	80mA	20mA
Operating Environment	Temperature : -40 ~ 85°C Humidity : 95% RH or less (Without Condensation)			
Size	SX-SDMAX-2530S: 17.0 × 18.0 × 2.65mm SX-SDMAX-2530C: 24.0 × 24.0 × 4.45mm SX-SDMAX-M2 : 17.0 × 18.0 × 2.65mm			
Package Type	SMT: 44-pins Land Grid Array (Direct Solder) B2B: 40 pins board to board connector M.2 Card: M.2 Card type 2230-S3-E			

Product Lineup



SX-SDMAX-2530S
Surface Mount Type



SX-SDMAX-2530C
Board to Board
Connector Type



SX-SDMAX-M2
M.2 2230-S3-E
Card Type

Long Term Supply Guarantee

To meet the needs of the medical and industrial fields, where product lifespans of 10 years or more are required, the following initiatives have been implemented for this product.

- Uses chipset covered by the NXP Long-Term Supply Program (15 years)
- In-House manufacturing and storage to provide flexibility to build and deliver parts when you need them.

SX-SDMAX Features

- PHY data rate up to 600Mbps (at 5GHz/80MHz/MSC11)
- Single stream, 1x1
- Powered by NXP's IW611 chipset
- Host interface: Wireless LAN SDIO3.0 compatible, Bluetooth® UART
- 80MHz band mode (5GHz)
- High density modulation mode (1024 QAM)
- Bluetooth® v5.3 Class1 compatible
- RoHS compliant
- Modular certifications(Planned) : Japan, USA, Canada, Europe, UK

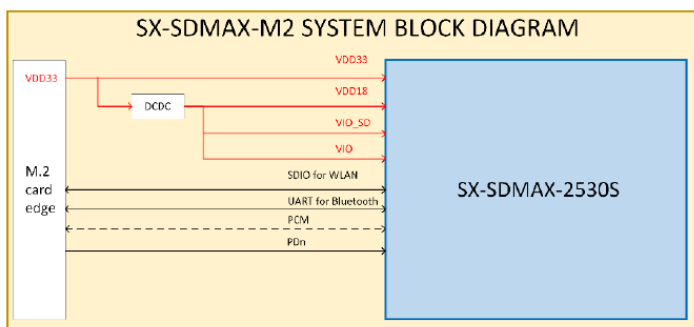
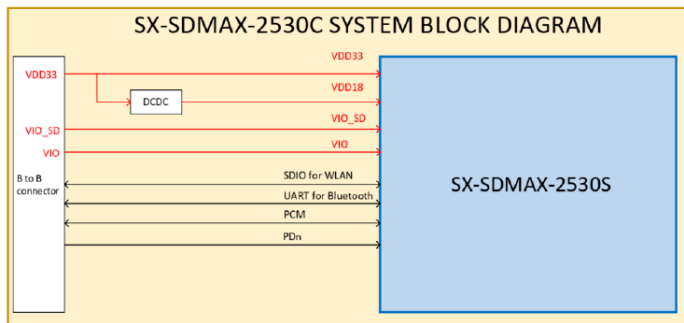
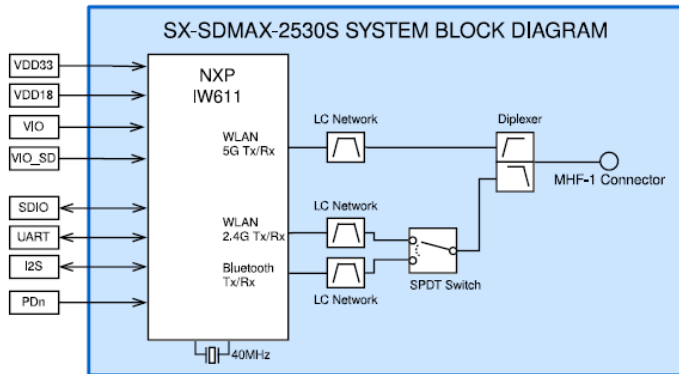
Applications

Ideal for many battery operated medical devices, mobile printers, Hand held POS and terminals, barcode scanners, IoT Applications etc.

Dual-band Wi-Fi 6 plus Bluetooth® Combo SDIO Module

SX-SDMAX

Block Diagram



Wireless Driver ※1

[WLAN]

- Linux
 - Station, Access Point Mode
 - WPA™/WPA2™/WPA3™ Authentication
 - IEEE 802.1X(TLS, TTLS, PEAP, LEAP, FAST)
 - WPS2.0 Support※2
 - Wi-Fi Direct® Support※2

[Bluetooth®]

- In order to support the Bluetooth® v5.3 standard, it is necessary to combine a stack and profile that support the Bluetooth® v5.3 standard.

Please contact our sales representative for compatible Bluetooth® stacks and profiles.

※1 : Please contact our sales representative for details of compatible drivers.
※2 : When using, it is necessary to obtain Wi-Fi Alliance certification separately.

Evaluation

Although the NXP i.MX BSP will already include Wi-Fi drivers for SX-SDMAX to enable plug-n-play evaluation, Silex also provides a separate evaluation Linux OS image which not only includes Silex's optimized driver but also board data files, and other Linux test tools ideal for evaluation.

What you will need?

- SX-SDCAX-2530
- NXP i.MX8M Evaluation Kit (MCIMX8M-EVKB)



Other useful tools included in Silex image :

- Wireless LAN management command - iw
- Throughput test - iperf
- Station/AP function - hostapd, wpa_supplicant
- DHCP - udhcpd, udhcpc

To get started:

- 1 Purchase SX-SDCAX-2530-SP**
Includes antenna
- 2 Execute Evaluation License Agreement on website.**
- 3 Download evaluation image via link provided in an email.**
- 4 Procure other equipment necessary for evaluation. It includes NXP i.MX8M Evaluation Kit**
- 5 Begin evaluation.**
Steps included in Startup Guide.

[SX-SDMAX Product Page]

<https://www.silextechnology.com/connectivity-solutions/embedded-wireless/sx-sdmax>

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- Bluetooth is a trademark or registered trademark of Bluetooth SIG, Inc., USA.
- Specifications are subject to change without notice for improvement. The listed specifications are as of March 2023.



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