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

SX-SDMAX-2530S

Low Power Wireless LAN Module Powered by NXP's IW611

SX-SDMAX

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.
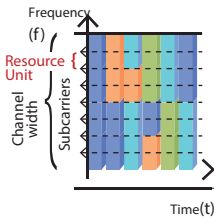
② **Power Saving**   TWT   Multiple BSS

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.

Frequency (f)

Resource Unit

Channel width

Subcarriers

Time(t)

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
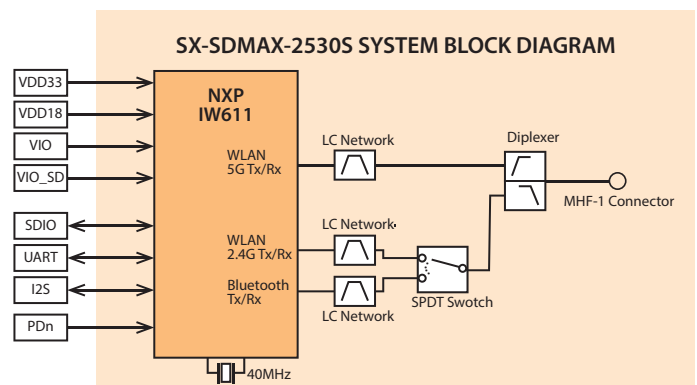● Modular certifications(Planned)： Japan, USA, Canada, Europe, UK

Applications

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

Specifications

Product Name	SX-SDMAX-2530S				
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	Rx
	Wi-Fi:2.4GHz	190mA	130mA	200mA	10mA
	Wi-Fi:5GHz	260mA	150mA	240mA	10mA
	Bluetooth®	150mA	80mA	20mA	10mA
Operating Environment	Temperature ： -40～85℃ Humidity ： 95% RH or less (Without Condensation)				
Storage Environment	Temperature ： -40～85℃ Humidity ： 95% RH or less (Without Condensation)				
Size	17.0×18.0×2.65mm				
Weight	1.7g				
Package Type	44-pins Land Grid Array (Direct Solder）				

Block Diagram

SX-SDMAX-2530S SYSTEM BLOCK DIAGRAM

VDD33
VDD18
VIO
VIO_SD
SDIO
UART
I2S
PDn

NXP IW611

WLAN 5G Tx/Rx

WLAN 2.4G Tx/Rx

Bluetooth Tx/Rx

LC Network

LC Network

LC Network

SPDT Swotch

Diplexer

MHF-1 Connector

40MHz

Dual-band Wi-Fi 6 plus Bluetooth® Combo
SDIO Module
SX-SDMAX-2530S

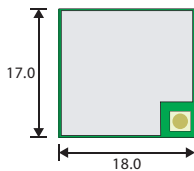## Product Lineup

SX-SDMAX-2530S
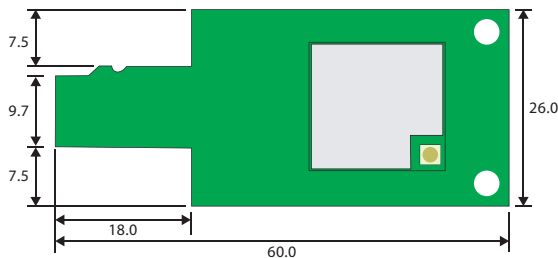(44pins Direct Solder Pads)

SX-SDCAX-2530
(Micro SD Card Type)

Model	Form Factor	MoQ	Packaging
SX-SDMAX-2530S	Surface Mount	500	Reel
SX-SDMAX-2530S-SP	Surface Mount	1	Reel
SX-SDCAX-2530	Micro SD Card	1	Individual Box ※ Antenna Included

Mechanical Drawing

SX-SDMAX-2530S

17.0

18.0

SX-SDCAX-2530

7.5

9.7

7.5

26.0

18.0

60.0

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 inluded 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.

ISO 9001
JQA-2667

ISO 14001
JQA-EM3813

【SX-SDMAX Product Page】
https://www.silextechnology.com/connectivity-solutions/embedded-wireless/sx-sdmax

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