

# BD-SDMAC: IEEE 802.11ac SDIO Wireless LAN + Bluetooth Module

## Revision History

Date	Revision	Description
09-20-2016	1.0	First Draft
05-31-2017	1.1	Updated Power Specifications
07-21-2017	1.2	Updated Mechanical

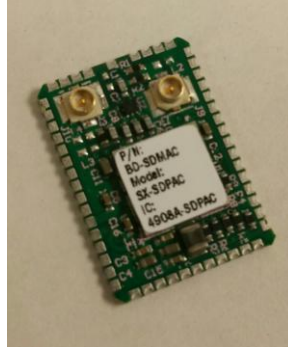
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## 2 Overview

This document describes the BD-SDMAC.

BD-SDMAC is a dual-band 1x1 802.11a/b/g/n/ac plus Bluetooth 4.1+HS “Smart Ready” SDIO module based on the Silex SX-SDPAC/Qualcomm Atheros QCA9377 System-on-Chip (SoC). The BD-SDMAC is a pre-certified module with a compact 13mm x 18mm footprint.



BD-SDMAC provides an SDIO3.0 interface for WLAN and a hi-speed UART interface for BT. The module can be evaluated with any Boundary Devices single board computer and driver support is integrated in all Boundary Devices kernels.

### Features

- IEEE802.11a/b/g/n/ac compatible (2.4 GHz, 5 GHz)
- 5 GHz : Support 20/40/80 MHz bandwidth mode (Link rate 433 Mbps)
- 2.4 GHz : Support 20/40 MHz bandwidth mode (Link rate 200 Mbps)
- Bluetooth 4.1 BR/EDR/LE Smart Ready compatible. Backward-compatible to Bluetooth 1.x, 2.x, 3.0, 4.0
- SDIO3.0 as the Wireless LAN host interface
- UART as the Bluetooth host interface
- u.FL connector for external antenna
- Single antenna or optional dual antenna diversity controlled by software and signal pins
- Worldwide acceptance: FCC (USA), IC (Canada), ETSI (Europe)
- Modular certification allows reuse of FCC ID and ETSI certification without repeating the expensive testing on end product
- +3.3V main power supply and 1.8V IO power supply
- ROHS Compliant

## 3 Specifications

**Please see Silex SX-SDPAC datasheet for full performance details:**

<http://www.silexamerica.com/products/connectivity-solutions/embedded-wireless/sdio-radios/sx-sdpac-system-in-package-sip/>

### Environmental specifications

Items	Specifications	Units	Remarks
Operating Temperature	-20 to +70C	°C	Ambient temperature
Operating humidity	85	%RH	Non condensing
Storage temperature	-40 ~ 85	°C	
Moisture Sensitivity Level	3	—	IPC/JEDEC J-STD-020

### Electrical specifications

#### Absolute Maximum Ratings

Items	Specifications			Units	Remarks
	Min.	Typ.	Max.		
VBAT	-0.3	—	4.0	V	Voltage Supply
VIO	-0.3	-	2.1	V	
RFin			+10	dBm	Maximum RF Input (reference to 50 Ohm input)

#### Recommended Operating Conditions

Items	Specifications			Units	Remarks
	Min.	Typ.	Max.		
VBAT	3.135	3.3	3.465	V	Voltage Supply
VIO	1.71	1.8	1.89	V	

#### Current Consumption – 2.4 GHz

Items	Specifications			Units	Remarks
	Mode s	Standards	Typ		
Current Consumption 2.4 GHz	Tx	11b	340	mA	
	Tx	11g	320	mA	
	Tx	11ng 20MHz	330	mA	
	Tx	11ng 40MHz	305	mA	
	Rx	All mode	85	mA	

**Current Consumption – 5GHz**

Items	Specifications			Units	Remarks
	Modes	Standards	Typ		
Current Consumption 5 GHz	Tx	11a	490	mA	
	Tx	11na HT20	490	mA	
	Tx	11na HT40	470	mA	
	Tx	11ac VHT80	410	mA	
	Rx	All mode	115	mA	

## 4 Signal Descriptions

Pin	Pin Name	VDD	Description
1	VBAT		
2	No Connect	1.8V	
3	No Connect		No Connect
4	SDIO_INT_L	1.8V	WLAN Interrupt Request
5	BT_EN	1.8V	Bluetooth Enable
6	No Connect		
7	Debug_UART_RX	1.8V	WLAN Test UART RX
8	Debug_UART_TX	1.8V	WLAN Test UART TX
9	No Connect		
10	WL_EN	1.8V	WLAN Enable
11	1P8V		Power Supply for Digital IO
12	GND		GND
13	SDIO_DAT3	1.8V	SDIO Interface, HOST Pull up
14	SDIO_DAT2	1.8V	SDIO Interface, HOST Pull up
15	SDIO_DAT1	1.8V	SDIO Interface, HOST Pull up
16	SDIO_DAT0	1.8V	SDIO Interface, HOST Pull up
17	SD_CMD	1.8V	HOST Pull up
18	SDIO_CLK	1.8V	HOST Pull up
19	LF_CLK_IN	1.8V	32.768KHz Clock
20	No Connect		
21	No Connect		No Connect
22	No Connect		No Connect
23	No Connect		
24	No Connect		
25	No Connect		
26	No Connect		Connect to GND
27	No Connect		Connect to GND
28	No Connect		
29	No Connect		Connect to GND
30	GND		
31	No Connect		
32	No Connect		
33	PCM_SYNC	1.8V	PCM I/F
34	BT_UART_RXD	1.8V	BT RX
35	BT_UART_RTS	1.8V	BT RTS
36	BT_UART_TXD	1.8V	BT TX
37	PCM_CLK	1.8V	PCM I/F
38	PCM_OUT	1.8V	PCM I/F
39	BT_UART_CTS	1.8V	BT CTS
40	PCM_IN	1.8V	PCM I/F

41	CLK_REQ_OUT		
42	BT_HOST_WAKE	1.8V	
43	No Connect		
44	GND		
45	GND		
46	GND		
47	GND		
48	ANT1		WLAN + BT Antenna
49	GND		
50	GND		
51	GND		
52	GND		

Standards Compliance

Part Number: BD-SDMAC

Model: SX-SDPAC

FCC ID: N6C-SDPAC

IC: 4908A-SDPAC

Modular certification for US, Canada, Europe, Aus, NZ

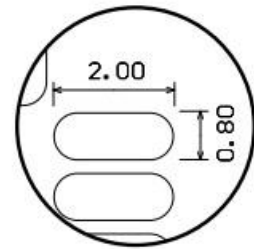
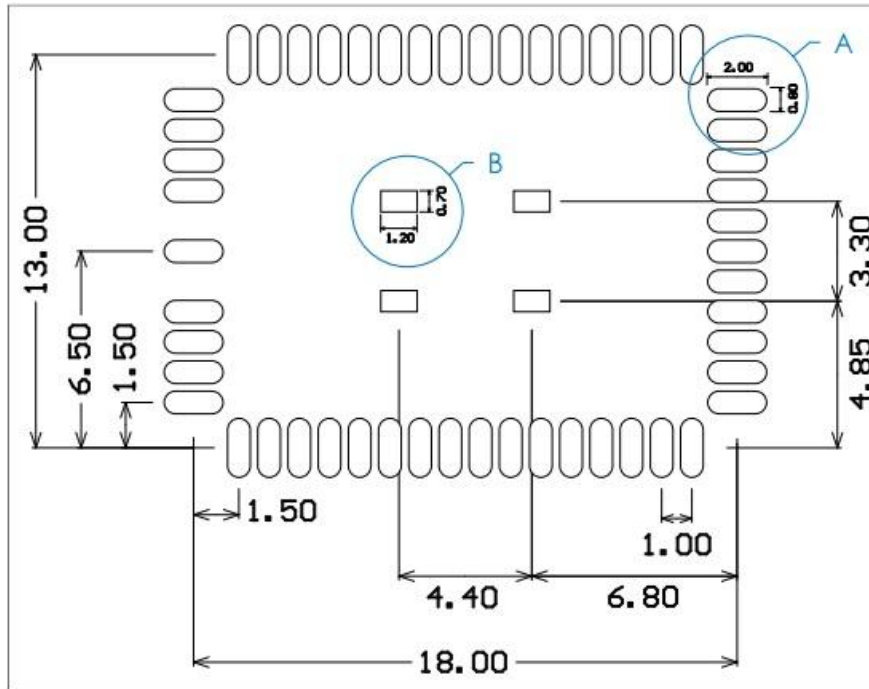
List of All Suitable Antennas:

Molex 146153

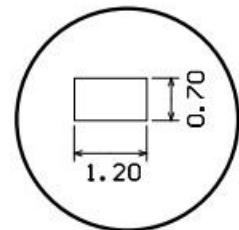
Unictron H2B1PC1A1C (AA258)

Unictron H2B1PD1A1C (AA222)

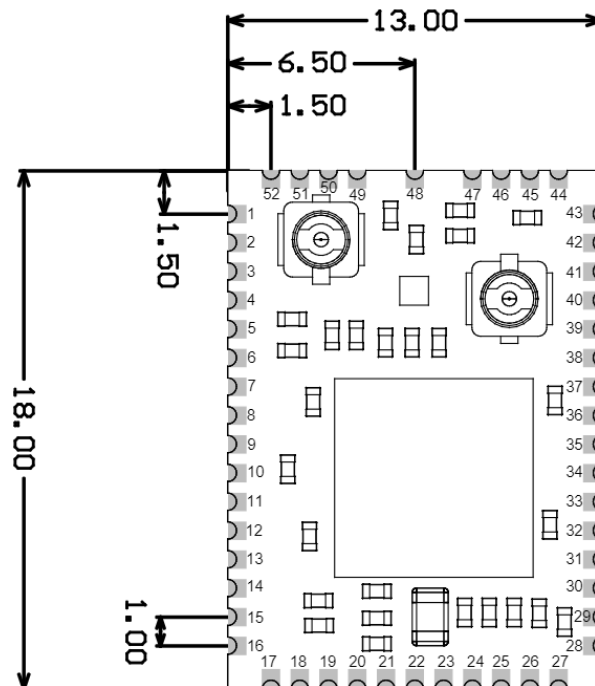
## 5 Mechanical Specifications



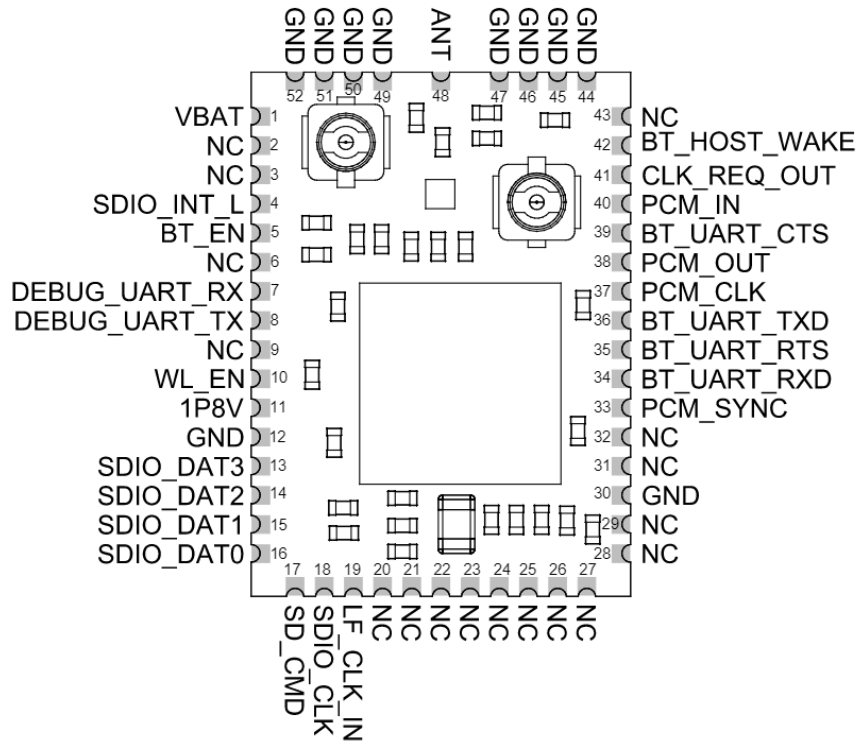
DETAIL A (Scale 8:1)



DETAIL B (Scale 8:1)







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