PAN9310/9320 Series

Embedded WiFi Modules for Easy Deployment

Panasonic introduces a fully embedded WiFi module with an integrated stack and API that minimizes firmware development and includes a full security suite. The PAN9310/9320 Series is a standalone 2.4GHz WiFi module, supporting the IEEE 802.11 b/g/n standards designed for applications where a small form factor and high throughput data rates are required.

The module is a cost-effective, power efficient solution for WLAN applications. The PAN9310/9320 Series combines a high performance CPU, high sensitivity (-98dBm) wireless radio, baseband processor, medium access controller, encryption unit, boot ROM with patching capability, internal SRAM and in-system programmable flash memory. The module’s integrated memory is available to the application to store web content such as html pages or image data.

Coincident support of access point and infrastructure modes enable easy setup up allowing WiFi connections from the PAN9310/9320 Series to smart devices and home network routers, simultaneously. WLAN SoC firmware enables client (STA), micro access point (uAP) and Ad-hoc mode (Wi-Fi direct) applications. Transparent mode permits data to be sent from the PAN9310/9320 Series UART unmodified to the air interface to smart devices, web servers or pc applications.

The PAN9310/9320 Series is qualified to the IEEE 802.11 b/g/n standards. All Panasonic Bluetooth RF modules carry FCC, IC, CE and Bluetooth certifications. Panasonic calibrates and tests every module eliminating a time consuming application production process and cost. Panasonic cost engineering lowers component count and the application BOM. With a fully shielded case, integrated crystal oscillators and chip antenna contained in a footprint of just 29 x 13.5 x 2.66 mm³.

Experimenter Kit

Panasonic’s designer friendly EVAL_PAN9320EMK experimenter kit reduces design efforts and critical time to market. Product design cycles are greatly reduced using Panasonic’s free of charge reference design and design review services. Software available from Marvell® contains applications, demonstrations and utilities that execute on the PAN9320 Series.

WiFigurator Software

Create detailed session log-files with Panasonic’s exclusive Windows based WiFigurator. Read and write important values such as: Firmware Version, WiFi Driver Version, SSID, IP Address and Security Parameters.

Qualified Projects Only

REACH COMPLIANT
RoHS COMPLIANT
## Features

<table>
<thead>
<tr>
<th>Surface Mount Type 29.0 x 13.5 x 2.66 mm³</th>
<th>Wireless Update of Radio Driver and MCU Firmware with Integrated Bootloader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully Embedded WiFi module (with integrated MCU, Radio, WiFi stack, antenna and crystals)</td>
<td>Marvell® 88W8782 WLAN System-on-Chip (SoC) and 88MC200 (MCU) Inside</td>
</tr>
<tr>
<td>Tx Power up to +18 dBm (IEEE 802.11b CCK) and 14dBm (IEEE 802.11g OFDM)</td>
<td>Integrated, Extendable 1.5MB Flash for Web Content and Configuration File</td>
</tr>
<tr>
<td>High Rx Sensitivity -98 dBm (IEEE 802.11b DSSS 1Mbps)</td>
<td>Easy to use Evaluation Board for Quick Development and Reduced time to Market</td>
</tr>
<tr>
<td>Telnet, HTTP, AJAX and JSON Interfaces</td>
<td>Use of Web Technologies (HTML, JavaScript), no need for Wi-Fi Stack implementation</td>
</tr>
<tr>
<td>Simultaneous Access point and Infrastructure modes</td>
<td>Ready to use internet access (integrated Email Server and Cloud Communication Client)</td>
</tr>
<tr>
<td>Supports TLS/SSL, https and WiFi security (WPA2) for Secure Data Connections</td>
<td>Getting started Tutorials, Libraries, and APIs</td>
</tr>
<tr>
<td>Plug-n-Play Name Services (DHCP, DNS) and Custom Name Access (<a href="http://yourdevice">http://yourdevice</a>)</td>
<td>Evaluation and Development software Wifigurator for Windows</td>
</tr>
</tbody>
</table>

## Applications

- Wearables
- Portable Electronics
- Asset Tracking
- Medical
- Industrial Controls
- Building Management
- Gaming Platforms
# PAN9310/9320 Series

## Technical Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Condition / Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>Full Embedded</td>
<td></td>
</tr>
<tr>
<td>Rx Sensitivity</td>
<td>-98 dBm @ 1M-DSSS*</td>
<td></td>
</tr>
<tr>
<td>Tx Power</td>
<td>+18 dBm @ 11b</td>
<td></td>
</tr>
<tr>
<td>Power Supply</td>
<td>3.0 to 3.6 V</td>
<td></td>
</tr>
<tr>
<td>Current Consumption</td>
<td>430 mA, 160 mA</td>
<td>Tx, Rx max @ 11b</td>
</tr>
<tr>
<td>Centre Frequency</td>
<td>2.4 GHz</td>
<td>802.11 b/g/n</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-30 to 70°C</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>29.0 x 13.5 x 2.66 mm</td>
<td></td>
</tr>
</tbody>
</table>

## Part Number Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENW-49A01A3EF</td>
<td>PAN9320 Series, Embedded WiFi module, VIPAR stack., -30-70°C, chip antenna</td>
</tr>
<tr>
<td>ENW-49A01C3EF</td>
<td>PAN9310 Series, Embedded WiFi module, VIPAR stack., -30-70°C, 50 ohm pad</td>
</tr>
<tr>
<td>EVAL_PAN9320EMK</td>
<td>PAN9320 Experimenter Kit, motherboard and daughter board</td>
</tr>
<tr>
<td>EVAL_PAN9320ETU</td>
<td>PAN9320 daughter board</td>
</tr>
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Block Diagram

**PAN9320**

**Microcontroller Unit**
- AHB Bus
- DMA
- Flash Ctrl
- UART
- 12C
- Q-SPI
- GPIO
- 12S
- USB
- SDIO
- Analog Unit
- OSC/PLL
- Memory
- ROM
- SRAM
- FLASH
- Connectivity
- UART
- SWD
- Joint Test Action Group (JTAG)
- UARTO (command)
- UART1 (Data)
- Q-SPI (ext FLASH)
- 12C (Sensor)
- Status LED's
- GPIO's
- USB (CDC Device)
- MCU READY
- WPS
- Factory Reset
- SDIO (testing)

**WLAN-SoC**
- Power Management
- CPU
- Encryption
- ROM
- SRAM
- Peripheral Bus Unit
- Connectivity
- CPU
- JTAG
- UART
- LED Screen
- GPIO
- OTP
- SDIO
- SDIO Controller
- Control Bus
- LDO I/F
- 802.11 MAC Baseband
- WLAN RF Direct Conversion
- SPDT
- TX/RX
- OSC PLL

**Crystal**
- 32 MHz
- 32.760 kHz

**DC/DC Step-down Converter**

**Ceramic Chip Antenna**

**Vcc 3.3V**

**RESET n / PDn**

**Wake UP 0/1**

**JTAG**

**Miscellaneous Signals**
- CPU/IF
- SRAM
- CPU I/F
- PMIP
- RTC
- WDT
- ADC/DAC
- T-Sensor
- ACOMP
- JTAG

**System Unit**
- Timer
- CPU I/F 802.11
- MAC
- Baseband
- Baseband
- USB
- CDC Device
- Status LED's
- Ready
- LED Screen
- SDIO (testing)