Product Guide

• RS9116 • RS14100

Product Highlights

▶ Industry-lowest Wi-Fi® standby associated current of 40 µA (1s listen), 90µA (300 ms listen)
  • Tolly Group report compares Redpine numbers with three competitors

▶ Highly secure, robust and low-power connectivity in high traffic co-existence environment
  • Independent interoperability report with 100 routers by Novus Lab

▶ Industry-smallest modules – 4.63 mm x 7.63 mm x 0.9 mm with Wi-Fi Dual-Mode BT® 5 and Cortex®-M4F application processor

▶ Industry-leading throughput ~90 Mbps for an embedded solution (40 MHz, TCP bypass)
  • ~25 Mbps with embedded TCP+TLS stack (20 MHz BW)

▶ Highest output-power of 18 dBm for BLE 5 with World’s lowest-power Bluetooth LE in a combo SoC
  • 6x lower power than nearest competitor – achieved with Big-Little Wireless architecture

▶ High Performance integrated 4-Threaded Wireless and Network processor ThreadArch®
  • Enables optimum integration of protocol stacks and network stacks for zero host load

▶ High-Performance (180 MHz M4F) in RS14100 with gear-shifting low-power mode at 19 µA/MHz, CMSIS DSP coprocessor and rich set of analog & digital peripherals

▶ Industrial grade parts (-45C to +85C) with long term availability of parts

RS9116 Connectivity Family

Redpine Signals’ RS9116 family of SoCs and modules provides a comprehensive multi-protocol wireless connectivity solution including 802.11 a/b/g/n (2.4 GHz and 5 GHz) and dual-Mode Bluetooth® 5. There are two product variants in this family – n-Link™ (hosted mode) and WiSeConnect™ (embedded mode). WiSeConnect variant has integrated wireless stacks, profiles and networking stack running on the internal processor, however, in n-Link variant all the stacks and profile run on the host processor.

RS9116 WiSeConnect™ / n-Link™ Features (Embedded Mode/Hosted Mode)

• Co-existence of multiple wireless protocols managed by an internal protocol arbitration manager

• Ultra-low power consumption with multiple power modes to reduce the system energy consumption

• Fully integrated and wireless certified modules with multiple sizes as small as 4.63 mm x 7.90 mm x 0.90 mm

• Application data throughput up to 90 Mbps (Embedded Mode)/100 Mbps (Hosted Mode) with 40 MHz bandwidth and up to 40 Mbps (Embedded Mode)/50 Mbps (Hosted Mode) with 20 MHz bandwidth

• Available host interfaces: UART, SPI, USB HS, SDIO 2.0 and USB HS CDC for embedded solution; SDIO 2.0 and USB HS for Hosted Mode

• Support for Client mode, Access Point mode, Wi-Fi Direct and Enterprise Security

• Supports advanced security features; WPA/WPA2-Personal and Enterprise (EAP-TLS, EAP-FAST, EAP-TTLS, PEAP-MSCHAP-V2)

• Integrated TCP/IP stack (IPV4/IPV6), HTTP/HTTPS, DHCP, ICMP, SSL 3.0/TLS1.2, Web Sockets, IOMP, DNS, DNS-SD, SNMP, FTP Client (Embedded Mode)

• BT profile support1 for SPP, A2DP, AVRCP, HID, PBAP, IAP, GAP, SDP, L2CAP, RFCOMM, GATT, IAP1, IAP2 (Embedded Mode; for hosted mode, stack and profiles are present on the host processor)

• Wireless firmware upgrade and provisioning (Embedded Mode)

• Host mode drivers for Linux, Android™, and Windows® 10 IoT

• All SoC and module packages support industrial grade temperature (-45C to +85C)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RS9116W-SB00-ppg</td>
<td>2.4</td>
<td>SPI, USB, UART and SDIO 2.0</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>QMS, WMS</td>
</tr>
<tr>
<td>RS9116W-DB00-ppg</td>
<td>2.4, 5</td>
<td>SPI, USB, UART and SDIO 2.0</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>None</td>
<td>CC0, CC1</td>
</tr>
<tr>
<td>RS9116N-SB00-ppg</td>
<td>2.4</td>
<td>SDIO 2.0 and USB</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>QMS, WMS</td>
</tr>
<tr>
<td>RS9116N-DB00-ppg</td>
<td>2.4, 5</td>
<td>SDIO 2.0 and USB</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>None</td>
<td>CC0, CC1, MB0, HB0</td>
</tr>
</tbody>
</table>

www.redpinesignals.com
RS14100 WiSeMCU™ Family

Redpine Signals' RS14100 WiSeMCU™ family of SoCs and modules device is the industry's first Wireless MCU family with a comprehensive multi-protocol wireless sub-system. It has an integrated ultra-low-power microcontroller, a built-in wireless subsystem, advanced security, high performance mixed-signal peripherals and integrated power-management.

RS14100 Features:
- Ultra-low power consumption with multiple power modes to reduce the system energy consumption
- Multiple levels of security including PUF (Physically Unclonable Function), Crypto HW accelerators and Secure Bootloader to create a highly secure system
- Fully integrated and wireless certified modules with multiple sizes as small as 4.63 mm x 7.90 mm x 0.90 mm
- Rich set of digital and analog peripherals including USB, Ethernet, CAN, SDMem, I2S, ADC, DAC, Opamp, Voice Activation Detection, Touch, Timers, GPIOs
- BT profile support1 for SPP, A2DP, AVRCP, HFP, PBAP, IAP, GAP, SDP, L2CAP, RFCOMM, GATT, IAP1, IAP2
- All SoC and module packages support industrial grade temperature (-40°C to +85°C)

Part Number Bands (GHz) RAM (KB) Flash (MB) Cortex M4 Max Speed (MHz) Wi-Fi Dual Mode Bluetooth & No. of Peripherals Analog Chip Packages (ppg) Module Packages (ppg)

RS14100-SB00-140F-ppg 2.4 208 4 100 ✓ ✓ >10 >25 None CA0, CA1
RS14100-SB00-240F-ppg 2.4 208 4 180 ✓ ✓ >10 >25 None CA0, CA1
RS14100-SB00-110F-ppg 2.4 208 1 100 ✓ ✓ >10 >25 QMS B00
RS14100-SB00-210F-ppg 2.4 208 1 180 ✓ ✓ >10 >25 QMS, WMS B00
RS14100-SB00-1N0F-ppg 2.4 208 0 100 ✓ ✓ >10 >25 None CC0, CC1
RS14100-SB00-2N0F-ppg 2.4 208 0 180 ✓ ✓ >10 >25 None CC0, CC1
RS14100-DB00-140F-ppg 2.4, 5 208 4 100 ✓ ✓ >10 >25 None CC0, CC1
RS14100-DB00-240F-ppg 2.4, 5 208 4 180 ✓ ✓ >10 >25 None CC0, CC1

Evaluations Kits

9.8 mm LGA Module (CA0/CC0) 15.0 mm LGA module (AA0) 15.0 mm LGA module (CA1/CC1) 27.0 mm LGA module (AA1) 30.0 mm LGA module (B00) 16.0 mm WLCSP (WMS) 7.90 mm LGA Module (B00) 7.0 mm QFN (QMS) 3.60 mm WLCSP (WMS) 7.0 mm QFN (QMS)

n-Link, WiSeConnect EVK P/N:
• RS9116X-SB-EVK1
• RS9116X-DB-EVK1
WiSeMCU EVK P/N:
• RS14100-SB-EVK1
• RS14100-DB-EVK1

*: Application RAM varies with the features used
1: Contact Redpine for availability
Note: Replace ‘ppg’ with desired SoC / Module Packages code

Performance and features vary for different part numbers. Please contact your Redpine sales representative for further details.