GainSpan®

GS2200MIZ
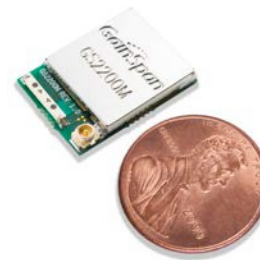## 802.11b/g/n Mini-Module
Ultra-Low Power, Ultra-Compact

The GS2200MIZ is a fully integrated Wi-Fi module with an extremely small footprint that provides an easy, cost-effective way for manufacturers to add Wi-Fi connectivity to their products. Intended for a variety of size-constrained applications, the ~250 sq. mm module has an integrated chip antenna, 4MB FLASH, industry-leading SRAM resources, a high bit-rate 16-bit sigma-delta ADC, 12-bit ADC, and 19 GPIO supporting most interfaces.

This module provides a low-cost, high-speed serial to Wi-Fi connection to an embedded design built on an 8/16/32-bit microcontroller, through an SDIO, SPI or UART interface.

The GS2200MIZ is an ideal solution for organizations with limited Wi-Fi or RF expertise or for those seeking faster time to market, as it reduces RF design time and removes the burden of testing and certification. The module is IEEE 802.11b/g/n compliant, and meets major global regulatory and Wi-Fi Alliance certification requirements.

The module runs the full Wi-Fi and TCP/IP networking stacks, *completely offloading the host microcontroller*. It supports a complete suite of security protocols, also without tasking the host microcontroller, including WPA/WPA2-Enteprise and Personal security modes, and upper layer security protocols such as TLS/SSL and HTTPs. *Alternatively, it can be run self-contained without a host*.

Easy to provision, the module can be set up from a smartphone or laptop through the innovative Limited AP mode or with Wi-Fi Protected Setup (WPS).

The module is single-sided with solder pads on the bottom for the I/O and PWR/GND connections for soldering down on the product's baseboard. It is intended for both line-powered and battery-powered applications.
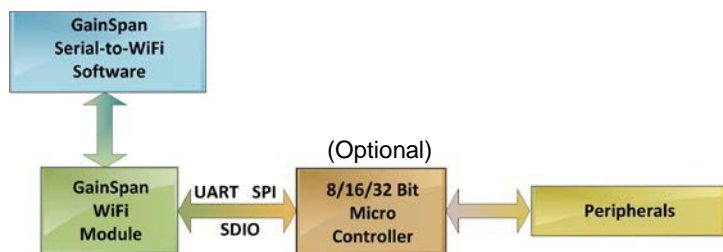
GS2200MIZ System Block Diagram

SKU	Antenna
GS2200MIZ	Ceramic Chip Antenna

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BENEFITS:

- **Extremely compact for size-constrained applications**
- **Adds low power, high speed Wi-Fi and Internet connectivity to any device with a microcontroller and serial host interface or as the standalone application microcontroller**
- **Certified module reduces development time, testing and certification, accelerating time to market**
- **Easy smartphone provisioning with Limited AP or Wi-Fi Protected Set-up (WPS)**
- **Ultra-low power through dynamic power management modes and optional off module DC to DC components**

FEATURES:

- **16-bit Sigma-Delta ADC**
- **12-bit ADC**
- **IEEE 802.11 b/g/n with PHY rates up to 72 Mbps**
- **Limited AP, Station, Wi-Fi Direct, Concurrent mode**
- **UART, SPI, SDIO interface to microcontroller**
- **19 configurable I/O**
- **Interface clock rate: 40 MHz on SDIO, 30 MHz on SPI (master), 10 MHz on SPI (slave), and 921k baud on UART**
- **Extensive networking stack and services**
- **Security: 802.11i, WPA/2–Personal and Enterprise, TLS 1.2, 4K digital certificates**

MODULE HIGHLIGHTS:

- **Power Source**
  - **3.3V main supply**
  - **3.3V or 1.8V I/O**
  - **1.6V to 3.6V Battery**
- **Certification: FCC, IC, ETSI, MIC, Wi-Fi**
- **I/O interfaces : SPI, UART, SDIO, I²C, I²S, GPIO, ADC, JTAG, PWM**
- **Extended Commercial Grade**

GS2200MIZ MODULE SPECIFICATIONS

Radio Protocol	IEEE 802.11b/g/n
Pin Count	66 pins (30 GND)
RF Output Power (Typical)	+15 dBm (802.11b 1Mbps), +14dBm (802.11g 6Mbps), +14dBm (802.11n MCS0)
Rx Sensitivity (Typical)	-91 dBm (802.11b 1Mbps), -88 dBm (802.11g 6Mbps), -88 dBm (802.11n MCS0)
RF Operating Frequency	2.4 - 2.495 GHz
Supported Data Rates	72, 65, 58, 43, 29, 22, 14, 7 Mbps (802.11n), 54, 48, 36, 24, 18, 12, 9, 6 Mbps (802.11g) 11, 5.5, 2, 1 Mbps (802.11b)
Antenna Option	Internal ceramic chip antenna
Operating Temperature	-20° to +70°C
Security Protocols	WPA/WPA2 - Personal, WPA/WPA2 - Enterprise (PEAP, EAP-FAST, EAP-TLS, EAP-TTLS), WEP, TLS/SSL Client and Server, HTTPs
Networking Protocols	TCP, UDP, IPv4, IPv6, TLS Client and Server, SNTP client, DHCP Client and Server v4, DHCP Client and Server v6, DNS Client and Server, mDNS, DNS-SD, HTTP Client and Server, and XML Parser
Certifications and Compliance	FCC, IC, TELEC, CE/ETSI, RoHS, Wi-Fi CERTIFIED
I/O Interfaces	SPI, UART, SDIO, I^2C, I^2S, GPIO (19), 16 & 12 bit ADC, JTAG, PWM (3), RTC
Host Connections	SPI, UART, SDIO
Internal Flash	4 MB
Outline Dimensions	13.5 mm x 17.85 mm x 2.1 mm
I/O Voltage	3.3V or 1.8V
Operating Voltage	2.7-3.6V
V$_{BAT}$	1.6-3.6V

TARGET APPLICATIONS

The GainSpan GS2200MIZ module is easily designed into embedded systems, allowing customers to develop a broad array of devices and appliances that connect to other local devices or to the Internet over Wi-Fi. Applications include smart energy, healthcare and fitness, industrial controls, commercial building automation, and audio/video consumer electronics.
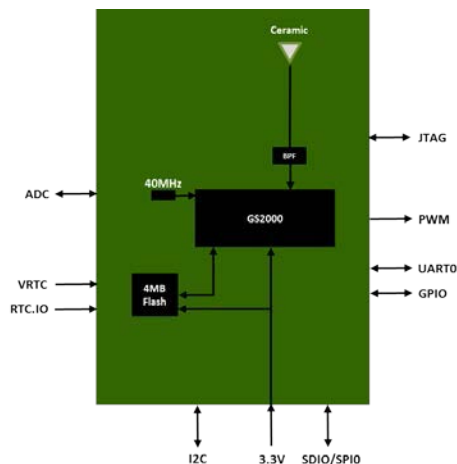
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