Anaren Integrated Radio
2530 System on Chip Series

A2530R24AZ1

The A2530R24AZ1 is a high-performance, FCC & IC certified and ETSI-compliant radio module that incorporates the Texas Instruments CC2530 SOC and integral antenna, all in the industry's smallest package: 11 x 19 x 2.5 mm. The module comes pre-loaded with Anaren's AIR-ZNP firmware for the ZigBee®* Standard.

Features

General:
- 2.4-GHz IEEE 802.15.4 compliant RF transceiver
- Excellent receiver sensitivity and robustness to interference (-90dBm average)
- Wide input voltage range (2.2V – 3.6V)
- 100% RF tested in production
- Module weight approximately 0.7 grams

Current Consumption: *(TC = 25°C, VDD = 3.0V)*
- Active mode RX (CPU Idle): 25 mA
- Active mode TX (CPU Idle): 29 mA @0dBm, 34mA @4dBm *(module MAX output power, complies with FCC, IC and ETSI limits)*
- 3 Low power/sleep modes from 1uA to 200 uA

Microcontroller:
- High-performance and low-power 8051 Microcontroller core with code prefetch
- 256KB in-system programmable flash and 8KB RAM with retention in all power modes

Firmware:
- Preloaded with Anaren's AIR-ZNP firmware, based on the TI Z-Stack™ for the ZigBee® Standard
- Supports SPI and UART communication
- Driver library included for MSP430™ and Stellaris® MCUs, which abstracts functionality
- Over 30 code examples for a paired MCU included to demonstrate functionality, including:
  - Button Blink: Blinks LED when button pressed
  - Hello World: Outputs 'Hello World' to the PC via USB
  - Get Module Version: Displays module version
  - Get MAC Address: Displays internal MAC address
  - Write NV Items: Writes to user-accessible non-volatile memory
  - Read NV Items: Reads user-accessible non-volatile memory
  - Read Radio GPIO: Displays value of module GPIO 1-4
  - Write Radio GPIO: Writes values to module GPIO 1-4
  - Coordinator Function: AF/ZDO, Simple API, or Secure
  - Router Function: AF/ZDO, Simple API, or Secure
  - End Point Function: AF/ZDO
  - RF Tester: RF test utility
  - Range Test: Test utility to show link quality (LQI)
  - Packet Error Test: Test utility to show packet error rate (PER)
  - **AND MANY MORE!**

Benefits

- Minimal RF engineering experience necessary
- Minimal ZigBee® experience necessary
- Easy to program and implement, short design cycle
- No additional "Intentional Radiator" certification required (FCC CFR 47 Part 15, IC RSS-210)
- Minimal real estate required
- Easily implemented on a two layer PCB
- No additional harmonic filtering required
- 100% RF-tested in production
- Common footprint for similar products in family
- No additional DC decoupling required
- Includes IEEE 802.15.4 MAC Timer
- CSMA/CA hardware support
- Accurate Digital RSSI/LQI support
- Battery monitor and temperature sensor
- AES Security co processor
- Operating temperature –40 to +85˚C

Applications

ZigBee® Light Link control systems, ZigBee® systems, Home/building automation, lighting systems, low power wireless sensor networks, consumer electronics, industrial control and monitoring.

PLEASE NOTE: Additional information on the Texas Instruments CC2530 device can be found in the company's latest datasheet release at http://www.ti.com

This product is not to be used in any implantable medical device or external medical device intended to regulate or monitor biological functions, including but not limited to devices such as pacemakers, defibrillators, cardiac resynchronization devices, pressure sensors, biochemical stimulators and neurostimulators. ANAREN MAKES NO WARRANTY OF FITNESS OR MERCHANTABILITY OF THIS PRODUCT FOR ANY USE OF THIS TYPE. Anaren shall not be responsible for any consequential damages arising from the sale or use of this product for any use of this type. The ultimate user of the product assumes all risk of personal injury or death arising from a prohibited use.

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Anaren, Inc. / 6635 Kirkville Road / East Syracuse, NY 13057
800.411.6596 / http://www.anaren.com / AIR@anaren.com

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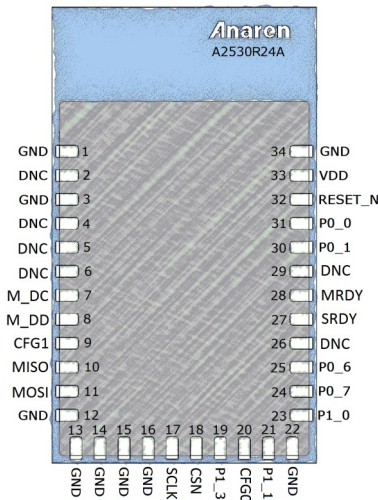
Product overview

The A2530R24AZ1 is a high-performance, FCC & IC certified and ETSI-compliant ZigBee®/IEEE 802.15.4 RF SOC module that incorporates the Texas Instruments CC2530 transceiver chip in the industry's smallest package (11 x 19 x 2.5 mm). The module incorporates a crystal, the required RF matching and filtering for regulatory compliance, plus filtering on select digital lines for better noise reduction and sensitivity. The modules operate in the global non-licensed 2.4GHz ISM/SRD frequency band. These radio modules are ideal for achieving low power wireless connectivity without having to deal with extensive Protocol, RF design and regulatory compliance, allowing quick time to market. The modules are 100% RF-tested to provide consistent performance.

The A2530R24AZ1 has an RoHS-compliant ENIG finish and is packaged on tape & reel or in matrix trays for high-volume automated manufacturing.
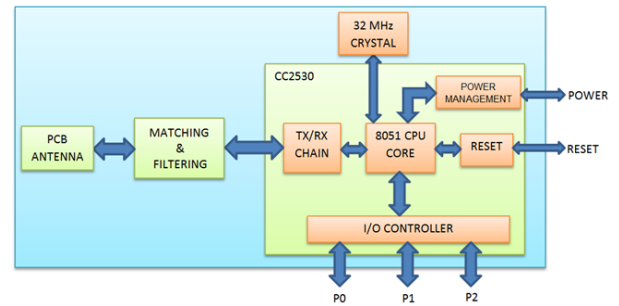
Pin diagram

Pin-out shown is for operation using the AIR-ZNP firmware for the ZigBee® Standard. See User's Manual for detailed pin descriptions.

Pin	Name	Pin	Name
1	GND	34	GND
2	DNC	33	VDD
3	GND	32	RESET_N
4	DNC	31	P0_0
5	DNC	30	P0_1
6	DNC	29	DNC
7	M_DC	28	MRDY
8	M_DD	27	SRDY
9	CFG1	26	DNC
10	MISO	25	P0_6
11	MOSI	24	P0_7
12	GND	23	P1_0

Bottom pins: 13 GND, 14 GND, 15 GND, 16 GND, 17 SCLK, 18 CSN, 19 P1_3, 20 CFG0, 21 P1_1, 22 GND

DNC = "Do Not Connect". Pin reserved for internal use, ensure mating footprint pads are **isolated**.

GND = "Ground". Connect the maximum number possible (minimum **one** for proper operation).

MSL 3

Caution! ESD sensitive device. Precautions should be used when handling the device in order to prevent permanent damage.

Module Block Diagram

Layout Information

See product User's Manual for detailed information.

Ground detail (corner)

Ground detail (edge)

Footprint (PWB)
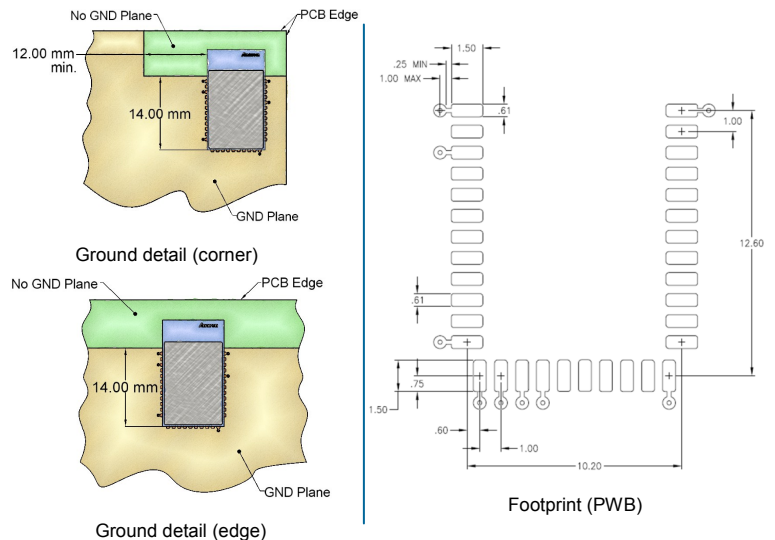
Nomenclature

A2530R24AZ1GR

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A		(Anaren)
1	Chip series	(CC1101, CC2500, CC2530, CC8520)
2	Function	(R = radio only, E = Range Extender)
3	Frequency band	(x 100MHz)
4	Form factor	(A = Internal Antenna, C = Connector)
5	Design ID	(Z1 = Loaded with Anaren AIR-ZNP for the ZigBee® Standard)
6	Application	(G = General)
7	Packaging	(R = Reel, M = Matrix Tray)