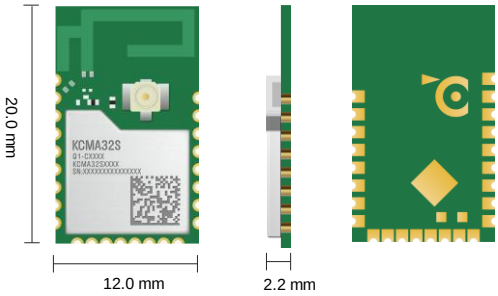
Quectel KCMA32S

Zigbee 3.0 + BLE 5.4 Module
Compact LCC + LGA Package



KCMA32S is a high-performance MCU Zigbee and BLE module launched by Quectel. It boasts a ARM Cortex-M33 processor with a frequency of up to 80 MHz, and supports Zigbee 3.0, BLE 5.4 and BLE mesh. The module features built-in 96 KB SRAM and 1024 KB flash, ensuring efficient performance.

KCMA32S is in an LCC + LGA form factor with an ultra-compact size of 20.0 mm × 12.0 mm × 2.2 mm, which optimizes the size and cost for end-products and is compatible with diverse designs.

KCMA32S supports up to 20 GPIOs which can be multiplexed for various interfaces including I2C, UART, SPI, I2S in Open solution and features an superior sensitivity of -104 dBm and transmit power of up to +20 dBm, which provide flexibility and versatility for a range of applications.

KCMA32S supports Zigbee/BLE mesh networking, increasing network scalability and node counts with mesh topology, which is suitable for devices that enables many-to-many communications, smart lighting, smart buildings and home smart wireless networks. And the module offers an enhanced security option, Secure Vault, featuring a higher level of IoT security.

Key Features

- Zigbee 3.0, BLE 5.4, multi-protocol coexistence
- 96 KB SRAM and 1024 KB flash (optional)
- Zigbee/BLE mesh networking
- 20 GPIOs which can be multiplexed for various interfaces including I2C, UART, SPI, I2S functions in Open solution
- Operating temperature range: -40 °C to +85 °C
- PCB antenna/ 1st generation RF coaxial connector/ pin antenna interface① (optional)

Zigbee 3.0

BLE 5.4

LCC + LGA Form Factor

Multiple Interfaces

Operating Temperature Range: -40 °C to +85 °C

Compact Size

EMAIL US: info@quectel.com

VISIT US: www.quectel.com

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Zigbee 3.0 + BLE 5.4	KCMA32S
Zigbee Protocol	Zigbee 3.0 (IEEE 802.15.4)
Bluetooth Protocol	BLE 5.4
Encryption Mode	AES128/256, SHA-1, SHA-2 (up to 256 bits), ECC (up to 256 bits), ECDSA (up to 256 bits), ECDH, J-Pake, TRNG, secure boot
Operating Mode	Zigbee, BLE 5.4, BLE mesh, multi-protocol coexistence
Antenna (Optional)	× 1 (PCB antenna/ 1st generation RF coaxial connector/ pin antenna interface①)
Kernel	ARM Cortex-M33 (up to 80 MHz)
SRAM (Optional)	96 KB
Flash (Optional)	1024 KB
Dimensions	20.0 mm × 12.0 mm × 2.2 mm
Temperature Range	
Operating Temperature Range	-40 °C to +85 °C
Storage Temperature Range	-45 °C to +95 °C
Certifications	
Regulatory	**Europe:** CE **America:** FCC* **Canada:** IC* **China:** SRRC **Australia/New Zealand:** RCM*
Interfaces	
Interfaces②	I2C/ UART/ SPI/ I2S, etc.
Electrical Features	
Power Supply Voltage	1.71–3.8 V, Typ. 3.3 V
RF Performance	

		Receiver Sensitivity	Transmit Power
Zigbee 3.0	**250 kbps**	-103.5 dBm ±2 dB	≤ 20 dBm
BLE	**1 Mbps**	-97.1 dBm ±2 dB	≤ 20 dBm
	2 Mbps	-94.0 dBm ±2 dB	≤ 20 dBm
	BLE (125 kbps)	-105.0 dBm ±2 dB	≤ 20 dBm
	BLE (500 kbps)	-100.5 dBm ±2 dB	≤ 20 dBm

Ordering Code	Flash	SRAM	Transmit Power	Operating Temperature Range	Antenna	Development Board (Only for Debugging)
KCMA32SAAMD-0P	768 KB	64 KB	≤ 20 dBm	-40 °C to +85 °C	PCB antenna	KCMA32SAATB-0P
KCMA32SAAMD-1X	768 KB	64 KB	≤ 20 dBm	-40 °C to +85 °C	1st generation RF coaxial connector	KCMA32SAATB-1X
KCMA32SABMD-0P	1024 KB	96 KB	≤ 20 dBm	-40 °C to +85 °C	PCB antenna	KCMA32SABTB-0P
KCMA32SABMD-1X	1024 KB	96 KB	≤ 20 dBm	-40 °C to +85 °C	1st generation RF coaxial connector	KCMA32SABTB-1X

NOTE:

1.①: Under planning.
2.②: See hardware design manual for details of the module interfaces.
3.*: Ongoing.

HQ address: Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China
Tel: +86 21 51086236 Email: info@quectel.com