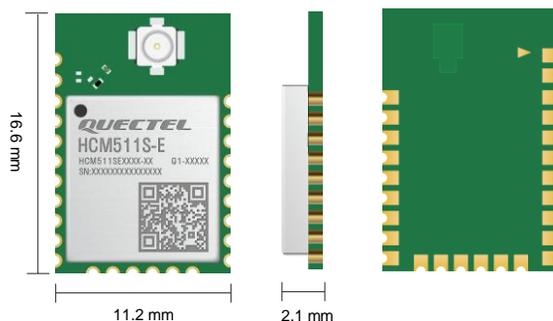


Quectel HCM511S-E

BLE 5.4 Module

Compact LCC Package



HCM511S-E is a high-performance MCU Bluetooth module launched by Quectel. It boasts an ARM Cortex-M33 processor with a frequency of up to 76.8 MHz and supports BLE 5.4. The module features built-in 32 KB RAM and 352 KB/512 KB flash (optional), ensuring efficient performance.

HCM511S-E is in an LCC form factor with an ultra-compact size of 16.6 mm × 11.2 mm × 2.1 mm, which optimizes the size and cost for end-products. HCM511S-E provides two optional antenna (interface) designs: the first generation RF coaxial connector and pin antenna interface, which are compatible with diverse designs.

HCM511S-E supports standard Bluetooth mesh network low-power nodes (optional), increasing network scalability and node counts with mesh topology, which is suitable for digital keys, asset tags and beacons, portable medical devices, low-power nodes for smart homes, battery-operated motion sensors, etc.



Key Features

- ✓ BLE 5.4
- ✓ 32 KB RAM, 352 KB/ 512 KB flash (optional)
- ✓ Bluetooth mesh network low-power nodes (optional)
- ✓ 18 GPIOs which can be multiplexed for various interfaces including ADC, USART, I2C, PDM, SPI and PWM
- ✓ Operating temperature range: -40 °C to +85 °C
- ✓ Max. transmit power: 8 dBm
- ✓ 1st generation RF coaxial connector, pin antenna interface (optional)



BLE 5.4



LCC Package



Compact Size



Multiple Interfaces



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

Quectel HCM511S-E

BLE 5.4		HCM511S-E	
Bluetooth Protocol	BLE 5.4		
Encryption Mode	AES128/256, SHA-1, SHA-2, ECC, ECDSA, ECDH, TRNG, secure boot		
Operating Mode	BLE (Bluetooth Low Energy)		
Bluetooth Antenna	1 st generation RF coaxial connector/ pin antenna interface (optional)		
Kernel	ARM Cortex-M33 (up to 76.8 MHz)		
RAM	32 KB		
Flash	352 KB/ 512 KB (optional)		
Dimensions	16.6 mm × 11.2 mm × 2.1 mm		
Weight	Approx. 0.62 g		
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		
Others	Bluetooth		
Interfaces			
Interfaces [Ⓞ]	18 GPIOs (multiplexed for various interfaces including ADC, USART, I2C, I2S, PDM, SPI and PWM)		
Electrical Features			
Power Supply Voltage	VBAT: 1.71–3.8 V, Typ. 3.3 V		
RF Performance			
		Receiver Sensitivity	Transmit Power
BLE	1 Mbps	-98 dBm ±2 dB	≤ 8 dBm
	2 Mbps	-95 dBm ±2 dB	≤ 8 dBm
	BLE (S = 2) [Ⓞ]	-102 dBm ±2 dB	≤ 8 dBm
	BLE (S = 8) [Ⓞ]	-106 dBm ±2 dB	≤ 8 dBm

Ordering Code	Flash	Transmit Power	Operating Temperature Range	Antenna	Development Board (Only for Debugging)
HCM511SEAAMD-1X	352 KB	≤ 8 dBm	-40 °C to +85 °C	1 st generation coaxial connector	RF HCM511SEAATB-1X
HCM511SEABMD-1X	512 KB	≤ 8 dBm	-40 °C to +85 °C	1 st generation coaxial connector	RF HCM511SEABTB-1X
HCM511SEABMD-0L	512 KB	≤ 8 dBm	-40 °C to +85 °C	Pin antenna interface	HCM511SEABTB-0L

NOTE:

- ①: See hardware design manual for details of the module interfaces.
- ②: Only applicable to the module model with built-in 512 KB flash.