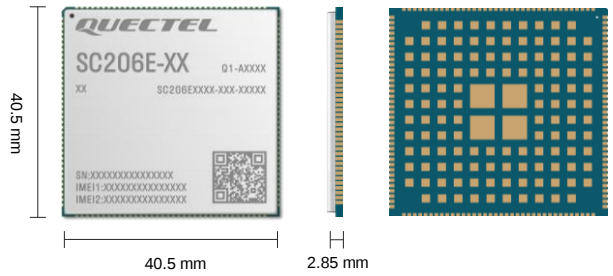


Quectel SC206E Series

Multi-mode Smart LTE Module with Integrated Wi-Fi & Bluetooth



The SC206E series is Quectel's next-generation multi-mode Smart LTE Cat 4 module. Powered by a Qualcomm 64-bit quad-core Cortex-A53 processor with an integrated Adreno™ 702 GPU, it is ideal for both industrial and consumer applications that require high data rates, multimedia capabilities, and long-term support. The SC206E series is available in four variants: SC206E-EM, SC206E-NA, SC206E-GL, and the Wi-Fi & Bluetooth-only version, SC206E-WF.

The SC206E series supports multiple-input multiple-output (MIMO) technology. Utilizing multiple antennas at the receiver on the same frequency band significantly reduces errors and enhances data speeds. In addition to high-speed wireless connectivity, the module features an embedded, multi-constellation, high-sensitivity GNSS receiver that supports GPS, BDS, GLONASS, Galileo, QZSS, SBAS, and NavIC for positioning.

A comprehensive set of interfaces—including LCM, camera, touch panel, microphone, line out, UART, USB, I2C, and SPI—significantly expands the module's applicability to a wide range of M2M applications. Typical use cases include edge devices, edge computing, smart POS systems, smart cash registers, smart home gateways, robotics, wearables, safety solutions, PDAs and tablets, vending machines, delivery lockers, and video streaming and entertainment systems.



Key Features

- ✓ Exceptional application and system performance powered by a 64-bit quad-core Cortex-A53 processor
- ✓ Advanced mobile rendering APIs for image and video applications through the integrated Adreno™ 702 GPU
- ✓ Global coverage for LTE, UMTS/ HSPA+, and GSM/ GPRS/ EDGE networks
- ✓ Dual ISPs and cameras up to 25 MP at 30 fps
- ✓ Recording and playback of 1080p videos at 30 fps
- ✓ Multi-constellation GNSS receiver, delivering fast and accurate positioning for applications in any environment

 Quad-core 64-bit Arm® Cortex-A53 Processor	 Qualcomm® Adreno™ 702 GPU	 Linux
 LTE Cat 4 Max. 150 Mbps (DL) Max. 50 Mbps (UL)	 IEEE 802.11 a/ b/ g/ n/ ac	 Bluetooth 5.0 (BR/ EDR + BLE)
 GPS/ BDS/ GLONASS/ Galileo/ QZSS/ SBAS/ NavIC	 Robust Multimedia Performance	 LCC + LGA Package

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LTE Cat 4	SC206E-EM	SC206E-NA	SC206E-WF	SC206E-GL	SC206E-JP
Region/ Operator	EMEA/ Korea/ South Asia/ Latin America/ India/ Australia/ New Zealand/ South Africa	North America	Global	Global	Japan
CPU	QCM2290, 4 × A53 @ 2.0 GHz	QCM2290, 4 × A53 @ 2.0 GHz	QCM2290, 4 × A53 @ 2.0 GHz	QCM2290, 4 × A53 @ 2.0 GHz	QCM2290, 4 × A53 @ 2.0 GHz
Memory	Integrated	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 16 GB eMMC (Optional)	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 16 GB eMMC (Optional)	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 16 GB eMMC (Optional)	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 16 GB eMMC (Optional)
	Discrete	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 32 GB eMMC (Optional)	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 32 GB eMMC (Optional)	-	• 1 GB LPDDR4X + 8 GB eMMC (Default) • 2 GB LPDDR4X + 32 GB eMMC (Optional)
OS	Yocto Linux (Kernel 5.4)	Yocto Linux (Kernel 5.4)	Yocto Linux (Kernel 5.4)	Yocto Linux (Kernel 5.4)	Yocto Linux (Kernel 5.4)
Dimensions (mm)	40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85	40.5 × 40.5 × 2.85
Package	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA	LCC + LGA
Weight (g)	Approx. 10.3	Approx. 10.3	Approx. 10.1	Approx. 10.6	Approx. 10.3
Temperature Range					
Operating Temperature	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C	-35 °C to +75 °C
Frequency Bands					
LTE-FDD	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 20/ 28	B2/ 4/ 5/ 7/ 12/ 13/ 14/ 17/ 25/ 26/ 66/ 71	-	B1/ 2/ 3/ 4/ 5/ 7/ 8/ 12/ 13/ 14/ 17/ 18/ 19/ 20/ 25/ 26/ 28/ 66/ 71	B1/ 3/ 5/ 8/ 11/ 18/ 19/ 21/ 26/ 28
LTE-TDD	B38/ 40/ 41	B41	-	B34/ 38/ 39/ 40/ 41	B41
WCDMA	B1/ 2/ 4/ 5/ 8	-	-	B1/ 2/ 4/ 5/ 6/ 8/ 19	B1/ 6/ 8/ 19
GSM/ EDGE (MHz)	850/ 900/ 1800/ 1900	-	-	850/ 900/ 1800/ 1900	-
Wi-Fi	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac	2.4 & 5 GHz, 802.11a/ b/ g/ n/ ac
Bluetooth [®]	2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.0 LE	2.1 EDR/ 3.0 HS/ 4.2 LE/ 5.0 LE
GNSS	GPS/ BDS/ GLONASS/ Galileo/ QZSS/ SBAS, L1	GPS/ BDS/ GLONASS/ Galileo/ QZSS/ SBAS/ NavIC, L1	-	GPS/ BDS/ GLONASS/ Galileo/ QZSS/ SBAS/ NavIC, L1	GPS/ BDS/ GLONASS/ Galileo/ QZSS/ SBAS/ NavIC, L1
Certifications					
Carrier	-	America: Verizon/ AT&T/ T-Mobile	-	America: Verizon/ AT&T	Japan: NTT DOCOMO
Regulatory/ conformance	Global: GCF Europe: CE UK: UKCA South Korea: KC Australia/New Zealand: RCM Brazil: Anatel	Global: GCF North America: PTCRB America: FCC Canada: IC	Europe: CE UK: UKCA South Korea: KC Taiwan, China: NCC Australia/New Zealand: RCM Japan: JATE/ TELEC America: FCC Canada: IC Brazil: Anatel	Global: GCF America: FCC Canada: IC Europe: CE Australia/ New Zealand: RCM North America: PTCRB Japan: JATE/ TELEC South Korea: KC	Japan: JATE/ TELEC
Others	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH	RoHS/ REACH
Data Rate					
LTE-FDD (Mbps)	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)	-	150 (DL)/ 50 (UL)	150 (DL)/ 50 (UL)
LTE-TDD (Mbps)	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)	-	130 (DL)/ 30 (UL)	130 (DL)/ 30 (UL)
DC-HSDPA/ HSUPA (Mbps)	42 (DL)/ 5.76 (UL)	-	-	42 (DL)/ 5.76 (UL)	42 (DL)/ 5.76 (UL)
WCDMA (kbps)	384 (DL)/ 384 (UL)	-	-	384 (DL)/ 384 (UL)	384 (DL)/ 384 (UL)
EDGE (kbps)	296 (DL)/ 236.8 (UL)	-	-	296 (DL)/ 236.8 (UL)	-
GPRS (kbps)	107 (DL)/ 85.6 (UL)	-	-	107 (DL)/ 85.6 (UL)	-
Enhanced Features					
3GPP E-UTRA	Release 10	Release 10	-	Release 10	Release 10
Bandwidth (MHz)	1.4/ 3/ 5/ 10/ 15/ 20	1.4/ 3/ 5/ 10/ 15/ 20	-	1.4/ 3/ 5/ 10/ 15/ 20	1.4/ 3/ 5/ 10/ 15/ 20
Rx-diversity	●	●	-	●	●
DL MIMO 2 × 2	●	●	-	●	●
(U)SIM Detection	●	●	-	●	●
Dual SIM Dual Standby	●	●	-	●	●
Firmware Upgrade via USB	●	●	●	●	●
Firmware Upgrade via OTA	●	●	●	●	●

Notes:
● : supported.
①: The module complies with all mandatory Bluetooth 5.0 features but does not support optional features such as 2 Mbps BLE, Advanced Advertising Extension, and similar functions.



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LTE Cat 4 General Module Features	
Interfaces	
LCM	One 4-lane MIPI DSI, HD+ (1680 × 720) @ 60 fps
Camera	- Two 4-lane MIPI CSIs, up to 2.5 Gbps/ lane - Two or three cameras, up to 25 MP or 13 MP + 13 MP with dual ISPs
Touch Panel	Capacitive touch panel
Audio	- Analog inputs × 3: MIC1, MIC2, and MIC3 (including one noise-canceling MIC) - Analog outputs × 3: Line out, earpiece, and headphone
Video	- Encoding: 1080P 8-bit H.264/ H.265 @ 30 fps - Decoding: 1080P 8-bit H.264/ H.265 VP9 @ 30 fps
USB	× 1, compliant with USB 2.0 and USB 3.1, supporting USB OTG, charging, etc.
(U)SIM	× 2, compatible with 1.8 V and 2.95 V (U)SIM cards, supporting (U)SIM card detection and dual SIM dual standby (DSDS)
UART	× 3, supporting data rates up to 4 Mbps and hardware flow control
SD Card	× 1, SD 3.0 interface, supporting 4-bit SDIO operation
ADC	× 1, general-purpose ADC interface
I2C	× 4
SPI	× 1 (multiplexed)
PWRKEY	Internally pulled up to 1.1 V
GPIO	× 33
Antenna	× 4, Main/ Rx-diversity/ GNSS/ Wi-Fi & Bluetooth respectively (SC206E-WF: × 1, Wi-Fi & Bluetooth)
Electrical Features	
Supply Voltage Range	3.55–4.4 V (typ. 3.8 V)
Power Consumption	80 μA @ power off; typ. 4.5 mA @ sleep mode