

Ultra-low Power Consumption Dual-band GNSS Chips CC820X Series

CC820X series is a dual-band multi-constellation GNSS positioning chip, featuring ultra-low-power consumption and exceptional performance.

With ICOE's proprietary iDLP® technology, the extremely low power consumption of 10.5 mW in L1/L5 dual-band continuous tracking mode extends battery life for all battery-powered devices; based on the dual-band multipath mitigation technology, CC820X series achieves a significantly high positioning accuracy in urban environments.

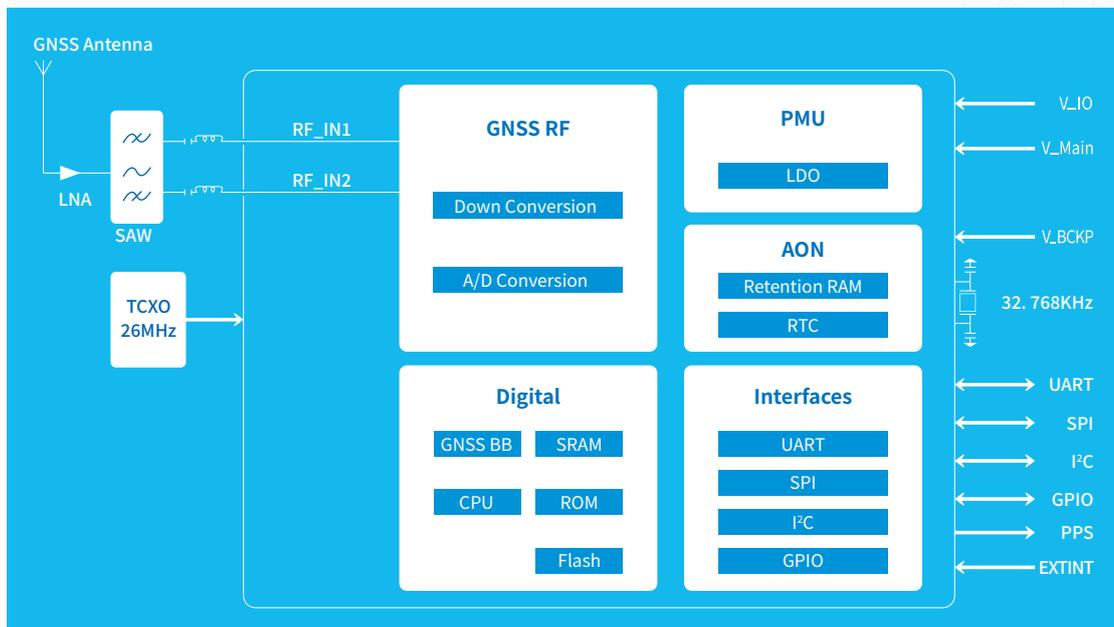
With its ultra-low power consumption, high sensitivity and dual-band multi-constellation joint positioning technology, the CC820X series is ideally suited for applications such as smart watches, fitness bands, trackers, tablets and handheld devices.



Technical advantages

- » GPS/BDS/GLONASS/Galileo/QZSS/NAVIC multi-system supported
- » Ultra-low power consumption
- » Excellent multipath mitigation performance
- » Multi-sports mode supported
- » Adaptive anti-jamming capability
- » Real-time and predicted A-GNSS
- » Package: BGA 3.8x4.2x0.77 (mm)

Product block diagram



Product Specifications

Performance Index	CC8200B	CC8201B	CC8208B
Supported GNSS Constellation	BDS: B1I, B1C, B2a, B2b* GPS: L1C/A, L1C*, L5 GLONASS: L1 Galileo: E1B/C, E5b, E5a QZSS: L1C/A, L5 SBAS: L1 NAVIC: L5	BDS: B1I, B1C GPS: L1C/A, L1C* GLONASS: L1 Galileo: E1B/C QZSS: L1C/A SBAS: L1	BDS: B1, B1C, B2a, B2b* GPS: L1C/A, L5 GLONASS: L1 Galileo: E1B/C, E5a QZSS: L1C/A, L5 SBAS:L1
Position Accuracy (CEP) ^①	Horizontal accuracy: 1.0m (dual-band four-system, open sky) Velocity accuracy: 0.1m/s	Horizontal accuracy: 1.5m (single-band four-system, open sky) Velocity accuracy: 0.1m/s	Single-Point Positioning: 1.0m RTK Positioning: 1cm+1ppm Velocity accuracy: 0.1m/s
Power consumption	Tracking 10mW (low power mode) Acquisition 22mW	Tracking 7mW (low power mode) Acquisition 18mW	Tracking 19mW (low power mode) Acquisition 20mW
1PPS	20ns		
TTFF ^②	Cold start: 24s Hot start: 1s Re-acquisition: 1s		
Sensitivity ^{③④}	Cold start: -149dBm Hot start: -155dBm Tracking: -165dBm Re-acquisition: -156dBm		
Update rate	1Hz ~ 10Hz		
Data format	NMEA-0183, ICOE protocol		

Others

Main power supply	0.8V ~ 1.98V
IO power supply	1.7V ~ 1.98V
Backup power supply	1.7V ~ 1.98V
Communication interface	UARTx2, I ² Cx2, SPIx2
Operating temperature	-40 ~ +85°C
Storage temperature	-40 ~ +125°C
Reliability and certification	Complies with JEDEC standards RoHS and REACH requirements
Package	BGA: 3.8x4.2x0.77 (mm), 3000pcs/reel
Application restrictions	Acceleration ≤ 4g Altitude ≤ 18,000m Velocity ≤ 515m/s

Note:

- ① Simulated linear motion at constant velocity (33 m/s)
- ② Instrument-measured satellite signal strength: -130 dBm
- ③ C/N0 of 41 dB-Hz achieved at -130 dBm signal level
- ④ With external Low-Noise Amplifier (LNA) implementation

*This feature is still under development.

Final performance parameters will be documented in the subsequent product release specification.

Application scenarios

