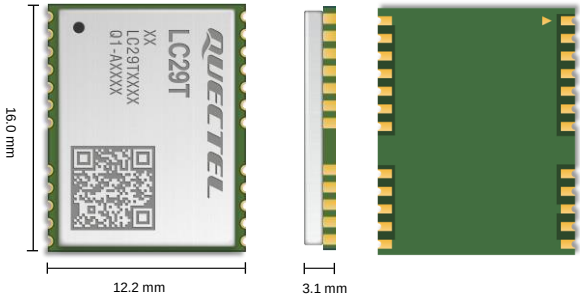
Quectel LC29T (AA)

High-precision Timing GNSS Module



LC29T (AA) is a multi-constellation GNSS module that delivers high integrity, precision timing in demanding applications worldwide. It simultaneously receives and tracks L1 frequency band of multiple GNSS constellations (GPS, BDS, GLONASS, Galileo and QZSS). Its timing functionality can be maintained even if only one satellite is tracked.

The integrated AGNSS feature can improve signal acquisition, shorten the time needed to achieve the first position fix and output an accurate and stable PPS pulse. The module also features a high dynamic range receiver with both analog and digital interference mitigation, enabling applications in wireless communications equipment.

The LC29T (AA) internal chip is compliant with the AEC-Q100 Qualification. Manufacturing and testing are strictly controlled to guarantee high quality modules.

Key Features

- Ultra compact size: 12.2 mm × 16.0 mm × 3.1 mm
- Multi-GNSS engine for GPS, GLONASS, BDS, Galileo, and QZSS
- Integrated AGNSS Function
- Single-satellite timing*
- 10MHz time Pulse
- Auto Position hold

AGNSS Technology

Multi-constellation System

Ultra Compact Size

Tracking Sensitivity: -161 dBm

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

Anti-jamming

RoHS Compliant

Version: 1.0 | Status: Released

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GNSS Module	LC29T (AA)
Region	Global
Dimensions	12.2 mm × 16.0 mm × 3.1 mm
Weight	Approx. 1.1 g
Temperature Range	
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +90 °C
GNSS Features	
Supported Bands	GPS L1 C/A, QZSS L1 C/A, Galileo E1: 1575.42 MHz GLONASS L1: 1598.0625–1605.375 MHz BDS B1I: 1561.098 MHz
Default Constellations	GPS + BDS + Galileo + QZSS + GLONASS
Number of Channels	80 Tracking Channels 4 Fast Acquisition Channels
Number of Concurrent GNSS	4 + QZSS
SBAS	WAAS, EGNOS, MSAS, and GAGAN
Horizontal Position Accuracy①	Autonomous: 1.1 m
Timing Accuracy②	< 6 ns @ 1σ
Time Pulse Signal③	Frequency: 10 MHz ± 0.05ppm Jitter: 6 ns
TTFF (with AGNSS)③	Warm Start: 1.6 s
TTFF (without AGNSS)②	Cold Start: 35 s Warm Start: 24 s Hot Start: 2 s
Sensitivity (@ Default Constellations) ④	Acquisition: -145 dBm Tracking: -161 dBm Reacquisition: -154 dBm
Certifications	
Regulatory	**Europe:** CE*
Others	RoHS
Interface	
UART	Adjustable: 115200–921600 bps Default: 115200 bps Update Rate: 1 Hz (default), up to 10 Hz
Protocol	
Protocol	NMEA 0183 V4.11
External Antenna Interface	
Antenna Type	Active
Antenna Power Supply	External or Internal (through VDD_RF)
Electrical Characteristics	
Supply Voltage Range	3.0–3.6 V, Typ. 3.3 V
I/O Voltage	Typ. VCC
Current Consumption (@ Default Constellations, 3.3 V)②	**Normal Operation:** 222 mA @ Acquisition; 232 mA @ Tracking **Power Saving Mode:** 55 µA @ Backup mode

NOTE:
1. ①: CEP, 50%, 24 hours static, -130 dBm, more than 6 SVs.
2. ② : Default constellations, room temperature, all satellites at -130 dBm.
3. ③ : Open-sky, active high-precision GNSS antenna.
4. ④: Test with an external LNA with 16.5 dB gain and 0.85 dB noise figure.
5. *: Under development/ in progress.

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