NEO-6 series

Versatile u-blox 6 GPS modules

Highlights

- Miniature package
- UART, USB, DDC (I²C compliant) and SPI interfaces
- Available in Crystal and TCXO versions
- Onboard RTC crystal for faster warm and hot starts
- 1.8 V and 3.0 V variants

NEO-6:
12.2 x 16.0 x 2.4 mm

Features

- u-blox 6 position engine:
  - o Navigate down to –162 dBm and –148 dBm coldstart
  - o Faster acquisition with AssistNow Autonomous
  - o Configurable power management
  - o Hybrid GPS/SBAS engine (WAAS, EGNOS, MSAS)
  - o Anti-jamming technology
- Simple integration with u-blox wireless modules
- A-GPS: AssistNow Online and AssistNow Offline services, OMA SUPL compliant
- Backward compatible (hardware and firmware); easy migration from NEO-5 family or NEO-4S
- Based on GPS chips qualified according to AEC-Q100
- Manufactured in ISO/TS 16949 certified sites
- LCC package for reliable and cost effective manufacturing
- Operating temperature range: –40°C to 85°C

Product description

The NEO-6 module series brings the high performance of the u-blox 6 position engine to the miniature NEO form factor. u-blox 6 has been designed with low power consumption and low costs in mind. Intelligent power management is a breakthrough for low-power applications. These receivers combine a high level of integration capability with flexible connectivity options in a small package. This makes them perfectly suited for mass-market end products with strict size and cost requirements. The DDC interface provides connectivity and enables synergies with u-blox LEON and LISA wireless modules.

All NEO-6 modules are based on GPS chips qualified according to AEC-Q100 and are manufactured in ISO/TS 16949 certified sites. Qualification tests on NEO-6 modules are performed as stipulated in the ISO16750 standard: "Road vehicles – Environmental conditions and testing for electrical and electronic equipment".

Product selector

Model	Type				Supply		Interfaces				Features						
	Standalone GPS	Capture & Process	Timing & Raw Data	Dead Reckoning	1.75 V – 2.0 V	2.7 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash) FW update	TCXO (KickStart)	RTC crystal	Antenna supply and supervisor	Configuration pins	Timepulse	External interrupt / Wakeup
NEO-6G	•				•		•	•	•	•		•	•	o	3	1	•
NEO-6Q	•					•	•	•	•	•		•	•	o	3	1	•
NEO-6M	•					•	•	•	•	•			•	o	3	1	•

o = requires external components and integration on application processor

Receiver performance data

Receiver type	50-channel u-blox 6 engine GPS L1 C/A code SBAS: WAAS, EGNOS, MSAS		
Navigation update rate	up to 5 Hz		
Accuracy[1]	Position SBAS	2.5 m CEP 2.0 m CEP	
Acquisition[1]		NEO-6G/Q	NEO-6M
	Cold starts: Aided starts[2]: Hot starts:	26 s 1 s 1 s	27 s < 3 s 1 s
Sensitivity[3]		NEO-6G/Q	NEO-6M
	Tracking: Cold starts: Hot starts:	–162 dBm –148 dBm –157 dBm	–162 dBm –147 dBm –156 dBm

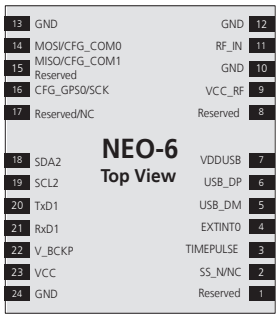
[1] All SV @ –130 dBm
[2] Dependent on aiding data connection speed and latency
[3] Demonstrated with a good active antenna

Electrical data

Power supply	2.7 V – 3.6 V (NEO-6Q/6M) 1.75 V – 2.0 V (NEO-6G)
Power consumption	117 mW @ 3.0 V (continuous) 33 mW @ 3.0 V Power Save Mode (1 Hz) 72 mW @ 1.8 V (continuous) 22 mW @ 1.8 V Power Save Mode (1 Hz)
Backup power	1.4 V – 3.6 V, 22 µA
Supported antennas	Active and passive

Package

Dimensions	LCC (Leadless Chip Carrier), surface mount package: 12.2 x 16.0 x 2.4 mm
Weight	1.6 g
Pinout	



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Specification applies to FW 7.01

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I²C compliant) 1 SPI	
Digital I/O	Configurable timepulse 1 EXTINT input for Wakeup	
Serial and I/O	Voltages	2.7 – 3.6 V (NEO-6Q/6M) 1.75 – 2.0 V (NEO-6G)
Timepulse	Configurable	0.25 Hz to 1 kHz
Protocols	NMEA, UBX binary, RTCM	

Environmental data

Operating temp.	–40° C to 85° C
Storage temp.	–40° C to 85° C

RoHS compliant (lead-free)

Support products

u-blox 6 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox 6 positioning technology, evaluate functionality, and visualize GPS performance.

EVK-6H:	u-blox 6 Evaluation Kit with TCXO, suitable for NEO-6G, NEO-6Q
EVK-6P:	u-blox 6 Evaluation Kit with crystal, suitable for NEO-6M

Ordering information

NEO-6G-0	ROM-based u-blox 6 GPS Module 1.8 V with TCXO
NEO-6M-0	ROM-based u-blox 6 GPS Module with Crystal
NEO-6Q-0	ROM-based u-blox 6 GPS Module with TCXO

Available as samples and tape on reel (250 pieces)

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