NEO-6 module series

u-blox 6 ROM-based GPS receivers

Highlights

- Miniature 16.0 x 12.2 x 2.4 mm package
- UART, USB, DDC (I²C compliant) and SPI interfaces
- Supports crystal for cost effectiveness or TCXO for exceptional Kickstart performance
- Onboard RTC Crystal for faster warm and hot starts
- 1.8 V and 3 V variants

NEO-6

Features

- u-blox 6 position engine:
  - Navigate down to -160 dBm and -147 dBm coldstart
  - Configurable power management
  - Hybrid GPS/SBAS engine (WAAS, EGNOS, MSAS, GAGAN)
  - Up to 5 Hz navigation rate
  - Anti-jamming technology
- 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 AEC-Q100 qualified GPS chips
- Manufactured in ISO/TS 16949 certified sites
- LCC package for reliable and cost effective manufacturing
- Operating temperature range: -40 to 85°C
- Microsoft® certified USB driver

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. All NEO-6 modules are based on AEC-Q100 qualified GPS chips 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 - 2.0 V	2.7 - 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	•				•		•	•	•	•		•	•		3	1	•
NEO-6Q	•					•	•	•	•	•		•	•		3	1	•
NEO-6M	•					•	•	•	•	•			•		3	1	•

Receiver performance data

Receiver type	50-channel u-blox 6 engine GPS L1 C/A code SBAS: WAAS, EGNOS, MSAS, GAGAN		
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:	29 s < 1 s < 1 s	32 s < 3 s < 1 s
Sensitivity[3]		NEO-6G/Q	NEO-6M
	Tracking: Reacquisition: Cold starts: Hot starts:	–160 dBm –160 dBm –147 dBm –156 dBm	–160 dBm –160 dBm –146 dBm –155 dBm
Operational limits	Velocity: 500 m/s Altitude: 50,000 m		

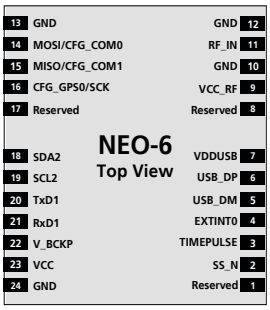
[1] All SV @ –130 dBm
[2] Dependent on aiding data connection speed and latency
[3] Demonstrated with a good active antenna

Electrical data

Power supply	2.7-3.6 V (NEO-6Q/6M) 1.75-2.0 V (NEO-6G)
Power consumption	115 mW @ 3.0 V (Max. Performance) 51 mW @ 3.0 V (Power Save Mode @1 Hz) 72 mW @ 1.8 V (Max. Performance) 32 mW @ 1.8 V (Power Save Mode @1 Hz)
Backup power	1.4-3.6 V, 25 µA
Supported Antennas	Active and passive

Package

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



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	0.1 Hz to 1 kHz

Environmental data

Operating temp.	–40° C to 85° C
Storage temp.	–40° C to 85° C
Humidity	JEDEC MSL 4

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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