

# UBX-G6010-ST

## u-blox 6 GPS standard grade single chip

### Highlights

- High performance GPS with over 2 million correlators
- Cost and size effective
- High level of design flexibility
- AEC-Q100 qualified



UBX-G6010-ST

### 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
- Supports ultra-low power logging and geo-tagging applications with Capture & Process technology<sup>1</sup>
- Backward compatible (hardware and firmware); easy migration from u-blox 5
- Manufactured in ISO/TS 16949 certified sites
- Operating temperature range: -40 to 85°C
- 3GPP compliant
- Microsoft® certified USB drivers

<sup>1</sup> Requires u-blox' YUMA, available separately.

### Product description

The UBX-G6010-ST is the newest generation standard grade single chip GPS receiver from u-blox that demonstrates our continuing commitment to advancing GPS technology. Featuring the high performance u-blox-6 position engine, the UBX-G6010-ST provides even better sensitivity and acquisition times while requiring no external host. Sophisticated RF-architecture and interference suppression ensure maximum performance even in GPS-hostile environments.

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. The minimal BOM requires as few as 19 passive components, an LDO and LNA are integrated and costly external memory is not needed. Lower price GPS crystals as well as TCXOs are supported, and 2-layer PCB integration capability and small footprint ensure further cost savings.

The UBX-G6010-ST is the ideal GPS chip solution for cost and space sensitive applications.

### Product selector

Model	Type	Supply	Interfaces	Features
	Standalone GPS Capture & Process Timing & Raw Data Dead Reckoning	1.75 - 2.0 V 2.5 - 3.6 V Dual: 1.4 - 3.6 V with 1.8 V or 3.0 V	UART USB SPI DDC (I <sup>2</sup> C compliant)	Programmable (Flash) FW update TCXO (KickStart) RTC Crystal Antenna supply and supervisor Configuration pins Timepulse External interrupt / Wakeup
UBX-G6010-ST	• Y	• • •	1 • • •	• • • 10 2 2

Y = requires u-blox' YUMA (available separately), • = requires external components

## 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 ROM		
Accuracy <sup>1</sup>	Position	2.5 m CEP	
	SBAS	2.0 m CEP	
Acquisition <sup>1</sup>		TCXO	Crystal
	Cold starts:	29 s	32 s
	Warm starts:	29 s	32 s
	Aided starts <sup>2</sup> :	< 1 s	< 3 s
	Hot starts:	< 1 s	< 1 s
Sensitivity <sup>3</sup>		TCXO	Crystal
	Tracking:	-160 dBm	-160 dBm
	Reacquisition:	-160 dBm	-160 dBm
	Cold starts:	-147 dBm	-146 dBm
	Hot starts:	-156 dBm	-155 dBm
Operational limits	Velocity:	500 m/s	
	Altitude:	50,000 m	

<sup>1</sup> All SV @ -130 dBm

<sup>2</sup> Dependent on aiding data connection speed and latency

<sup>3</sup> Demonstrated with a good active antenna

## RF data

LNA	Built-In (no external LNA required)
Overall noise figure	2.5 dB (LNA + RF + digital part combined)
RTC input	32.768 kHz (optional)

## Electrical data

Supply voltages	Single voltage supply: 1.75-2.0 V or 2.5-3.6 V Dual voltage supply: 1.4-3.6 / 1.75-2.0 V or 1.4-3.6 / 2.5-3.6 V
Digital I/O voltage level	1.65 – 3.6 V
Power Consumption	59 mW (Continuous) 30 mW @ 1.8 V Power Save mode (1 Hz)
Backup Supply	Voltage range: 1.4 to 3.6 V
Antenna Supervision	Short and open circuit detection supported with external circuit
Antenna Type	Active and passive

## Packages

UBX-G6010-ST:	56 Pin MLF: 8 x 8 x 0.85 mm
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## Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I <sup>2</sup> C compliant) 1 SPI
Digital I/O	Configurable time pulse 2 EXTINT interrupt inputs 10 configuration pins

## Environmental data

Operating temp.	-40°C to 85°C
Storage temp.	-40°C to 85°C
Humidity	JEDEC MSL 3
RoHS compliant (lead-free) and green (no halogens)	

## Support products

u-blox 6 Evaluation Kit:	easy-to-use kit to get familiar with u-blox 6.
EVK-6H:	u-blox 6 Evaluation Kit with TCXO.
EVK-6P:	u-blox 6 Evaluation Kit with Crystal.
u-blox 6 Chipset Development Kit	
CDK-6X:	For information contact u-blox.

## Ordering information

UBX-G6010-ST	u-blox 6 GPS single chip, 56 Pin MLF
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