UBX-G6010-ST-TM

u-blox 6 Precision Timing GPS chip

Highlights

- Precision Timing:
  - o 2 timepulse outputs (up to 10 MHz)
  - o Output timepulse with at least one satellite in view
  - o Stationary mode for GPS timing operation
  - o Time mark of external event inputs
- Raw data
- ROM-based for cost effectiveness
- High level of design flexibility
- Qualified according to AEC-Q100
- Manufactured in ISO/TS 16949 certified production sites

Features

- u-blox 6 position engine:
  - o Navigate down to –162 dBm and –148 dBm coldstart
  - 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
- Operating temperature range: –40°C to 85°C
- Compatible with u-blox GPS Solution for Android

UBX-G6010-ST-TM:
8.0 x 8.0 x 0.85 mm

Product description

The UBX-G6010-ST-TM provides precision GPS timing for demanding positioning applications such as femto cells and WiMAX basestations. This GPS chip features user configurable frequency output and timepulse. An accuracy of up to 15 ns is achievable by using the quantization error information to compensate the granularity of the time pulse. The UBX-G6010-ST-TM features a time mode function whereby the GPS receiver assumes a stationary 3D position, whether programmed manually or determined by an initial self-survey.

During stationary operation GPS timing is possible with only one visible satellite. This means that time can be output even under adverse signal conditions or in environments with poor sky visibility. A built-in time mark and counter unit provide precise time measurement of external event inputs. T-RAIM (Timing Receiver Autonomous Integrity Monitoring) is available to detect faulty GPS measurements. Raw data is also provided.

The UBX-G6010-ST-TM is the ideal GPS chip solution for high-volume Timing applications.

Product selector

Model	Type				Supply		Interfaces				Features						
	Standalone GPS	Capture & Process	Timing & Raw Data	Dead Reckoning	1.75 V – 2.0 V	2.5 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash) FW update	Oscillator	RTC crystal	Antenna supply and supervisor	Configuration pins	Timepulse	External interrupt / Wakeup
UBX-G6010-ST-TM	•		•		•	•	•	•	•	•		T*	o	o	10	2	2

T* = requires TCXO

o = requires external components

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]	Cold starts: Aided starts[2]: Hot starts:	26 s 1 s 1 s
Sensitivity[3]	Tracking: Cold starts: Hot starts:	–162 dBm –148 dBm –157 dBm
Operational limits	Velocity: Altitude:	500 m/s 50,000 m

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

Timing performance data

Timing accuracy	RMS 99% Granularity Compensated	30 ns < 60 ns 21 ns 15 ns[4]

[4] Quantization error information can be used to compensate the granularity related error of the timepulse signal

Electrical data

Supply voltages	1.75 V – 2.0 V 2.5 V – 3.6 V
Digital I/O voltage level	1.65 V – 3.6 V
Power consumption	67 mW @ 1.8 V (continuous)
Backup supply	Voltage range: 1.4 to 3.6 V
RTC input	32.768 kHz (optional)
Oscillator	TCXO required
Antenna supervision	Short and open circuit detection supported with external circuit
Antenna type	Active and passive

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I^2C compliant) 1 SPI
Digital I/O	2 configurable timepulse 2 EXTINT interrupt inputs 10 configuration pins

Specification applies to FW 7

Package

UBX-G6010-ST-TM: 56 Pin MLF: 8.0 x 8.0 x 0.85 mm

Environmental data, quality & reliability

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

RoHS compliant (lead-free) and green (no halogens)

Qualification according to ISO 16750

Manufactured in ISO/TS 16949 certified production sites

Support products

u-blox 6 Evaluation Kit: easy-to-use kit to get familiar with u-blox 6.

EVK-6T: u-blox 6 Evaluation Kit with Precision Timing.

u-blox 6 Chipset Development Kit

CDK-6X: For information contact u-blox.

Ordering information

UBX-G6010-ST-TM	u-blox 6 GPS Precision Timing chip, 56 Pin MLF

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