LEA-6T

u-blox 6 GPS receiver with Precision Timing

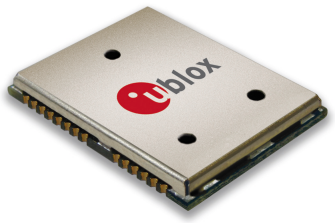
Objective Specification

GPS

locate, communicate, accelerate

Product description

The LEA-6T supports precision GPS timing for demanding positioning applications such as femto cells and WiMAX base-stations. It features a time mode function whereby the GPS receiver assumes a stationary 3D position, whether programmed manually or determined by an initial self-survey. Stationary operation enables GPS timing with only one visible satellite and eliminates timing errors which otherwise result in positioning errors. An accuracy of up to 15 ns is achievable by using the quantization error information to compensate the granularity of the time pulse. A built-in time mark and counter unit provide precise time measurement of external event inputs.



Highlights

- u-blox 6 position engine with over 2 million effective correlators featuring acquisition down to 1 s, –147 dBm coldstart sensitivity and 5 Hz update rate
- UART, USB and DDC (I^2C compliant) interfaces
- Supports u-blox' AssistNow Online and AssistNow Offline A-GPS services and is OMA SUPL compliant
- 1 timepulse (e.g. PPS) and 1 reference frequency output (up to 10 MHz)
- Pin compatible with LEA-5T
- Hybrid GPS and SBAS (WAAS, EGNOS, MSAS, GAGAN) engine
- Stationary mode for GPS timing operation
- Output timepulse with at least one satellite in view
- RoHS compliant

Features

Series	Power	Memory	Function						Antenna		Input / Output					
	Voltage range [V]	Programmable (Flash) FW update	Power Save mode	Capture & Process	TCXO	Dead Reckoning	Raw data	Precision Timing	Antenna supply	Antenna supervisor	UART	USB	SPI	DDC (I^2C compliant)	Reset input	Configuration pin
LEA-6T	2.7 - 3.6	F	•		•		•	•	•	•	1	1		1	•	

F = Oboard FLASH for configuration storage

Mechanical data

Dimensions
22.4 x 17 x 2.4 mm

Weight
2.1 g

Electrical data

Power supply	2.7 to 3.6 V
Power consumption	119 mW @ 3.0 V (Max. Performance)
Backup power	1.4 V to 3.6 V, 25µA
Antenna power	External or internal VCC_RF
Antenna supervision	Integrated short-circuit detection and antenna shutdown, open circuit detection is supported with AADET_N input and little external circuitry

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I^2C compliant)
Digital I/O	2 configurable time pulse 1 EXTINT input 1 reset
Serial and I/O voltages	2.7 to 3.6 V
Protocols	NMEA, UBX binary

Timer performance data

Timing accuracy	RMS	30 ns
	99%	< 60 ns
	Granularity	21 ns
	Compensated	15 ns[1]
Time pulse	Configurable	1/60 Hz to 10 MHz
Time mark / Counter	# of Inputs	1

[1] Quantization error information can be used to compensate the granularity related error of the time pulse signal

Receiver performance data

Receiver type	50-channel u-blox 6 engine GPS L1 C/A code SBAS: WAAS, EGNOS, MSAS, GAGAN	
Max. update rate	2 Hz	
Accuracy[2]	Position	2.5 m CEP
	SBAS	2.0 m CEP
Acquisition[2]		
Cold starts:	28 s	
Warm starts:	28 s	
Aided starts[3]:	< 2 s	
Hot starts:	1 s	
Sensitivity[4]		
Tracking:	–160 dBm	
Reacquisition:	–160 dBm	
Cold starts:	–147 dBm	
A-GPS	Supports AssistNow Online and AssistNow Offline, OMA SUPL compliant	
Operational limits	Velocity: 500 m/s (972 knots) Altitude: 50,000 m	
Operating temp.	–40°C to 85°C	
Storage temp.	–40°C to 85°C	

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

Support products

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

Ordering information

LEA-6T-0	u-blox 6 Precision Timing GPS Module

Available as samples and tape on reel (250 pieces)

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