LEA-6T

u-blox 6 GPS receiver with Precision Timing

Objective Specification

Product description

The LEA-6T supports precision GPS timing for demanding positioning applications such as femto cells and WiMAX basestations. 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 (I²C 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 inview
- 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 (I²C compliant)	Reset input	Configuration pin
LEA-6T	2.7 - 3.6	F	•		•		•	•	•	•	1	1		1	•	

F = Oboard FLASH for configuration storage



Mechanical data

15 GND GND 14 16 RF_IN 17 GND GND 13 Reserved 12 LEA-6T 18 VCC_RF V_BCKP 11 **Top View** 19 V_ANT RESET_N 10 20 AADET N TIMEPULSE2 9 VCC_OUT 8
GND 7 21 NC 22 NC 23 NC VCC 6 NC 5 RxD1 4 24 VDDUSB 25 USB DM TxD1 3 26 USB_DP 27 EXTINTO SCL2 2 28 TIMEPULSE SDA2 1

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

Integrated short-circuit detection Antenna supervision

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 (I²C 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

RMS Timing accuracy 30 ns 99% < 60 ns

Granularity 21 ns Compensated 15 ns¹

Configurable 1/60 Hz to 10 MHz Time pulse

of Inputs Time mark / Counter

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Receiver performance data

50-channel u-blox 6 engine Receiver type

GPS L1 C/A code

SBAS: WAAS, EGNOS, MSAS, GAGAN

Max. update rate 2 Hz

Accuracy² Position 2.5 m CEP SBAS 2 0 m CFP

Acquisition²

Cold starts: 28 s Warm starts: 28 s Aided starts³: < 2 s Hot starts: 1 s

Sensitivity⁴

-160 dBm Tracking: Reacquisition: -160 dBm -147 dBm Cold starts:

A-GPS Supports AssistNow Online and

AssistNow Offline, OMA SUPL compliant

Velocity: 500 m/s (972 knots) Operational limits

Altitude: 50,000 m

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

² All SV @ −130 dBm

Dependent on aiding data connection speed and latency
 Demonstrated with a good active antenna

Support products

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

Ordering information

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

Available as samples and tape on reel (250 pieces)

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