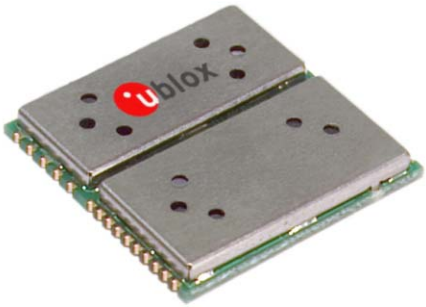
TIM-LF

GPS Receiver Module

ANTARIS® Positioning Engine

The TIM-LF is an ultra-low power OEM GPS receiver module suitable for active antennas. It provides two 3V (5V TTL input compatible) serial ports, SPI and configurable 1.8V I/O ports. The TIM-LF provides system resources for user application software. The combination of high performance, maximum flexibility, and innovative packaging technology makes the TIM-LF suitable for high-volume applications requiring cost-effective and tight system integration.



Overview

The leading ANTARIS® GPS Engine, jointly developed by Atmel and u-blox, provides excellent navigation performance under dynamic conditions in areas with limited sky view like urban canyons, high sensitivity for weak signal operation without compromising accuracy, and support of DGPS and multiple SBAS systems like WAAS and EGNOS. The 16 parallel channels and 8192 search bins provide fast start-up times. The aiding functionality accelerates start-up times even further. The low power consumption and FixNow™ power saving mode make this product suitable for handheld and battery-operated devices.

Small Form Factor

Innovative packaging technologies enable high integration of a GPS receiver in a small module measuring just 25.4 x 25.4 mm and allowing straightforward integration in particularly small end products and opportunities in new application fields. The small form factor and the SMT pads allow a fully automatic assembly process with standard pick-and-place equipment and reflow soldering, enabling cost-efficient high-volume production.

Benefits

- High acquisition and tracking sensitivity
- Ultra-low power consumption
- Excellent GPS performance
  - Excellent navigation accuracy even at low signal levels
  - Active multipath detection and removal
  - Fast Time-to-first-fix (TTFF)
  - Accelerated TTFF with aiding functionality
- Highly integrated GPS module
  - Automatic pick and place assembly
  - Reflow solderable
- Maximum flexibility
  - Extensively configurable
  - Integration of user application software
- Fully EMI shielded
- Active antenna support

Features

- 16 channel GPS receiver
- 8192 simultaneous time-frequency search bins
- 4 Hz position update rate
- ANTARIS Positioning Engine
  - ATR0600 RF front-end IC
  - ATR0620 Baseband IC with ARM7TDMI inside
- FLASH memory
- DGPS and SBAS (WAAS, EGNOS) support
- FixNOW™ power saving mode
- Operating voltage 2.7…3.3 V
- Battery supply pin for internal backup memory and real time clock
- Industrial operating temperature range –40…85°C
- Small size: 25.4 x 25.4 x 3 mm, weight: 3g

Support Products

ANTARIS EvalKit

Use the ANTARIS EvalKit to experience the power of TIM-LF.

ANTARIS SCKit

The ANTARIS Software Customization Kit (SCKit) enables you to implement your own code on TIM-LF.

your position is our focus

Specifications

Receiver Performance Data

Receiver Type	16 channel, L1 frequency, C/A code	
Max. Update Rate	4 Hz	
Accuracy	Position DGPS / SBAS	2.5 m CEP 2.0 m CEP [1]
Start-up Times	Hot start Warm start Cold start Aided start	<3.5 sec 33 sec 34 sec 5 sec
Signal reacquisition	< 1 s	
Sensitivity	Acquisition Tracking	-140 dBm -149 dBm
Timing Accuracy	RMS 99%	50 ns <100 ns
Dynamics	< 4 g	
Operational Limits	COCOM restrictions apply	

[1] Depends on accuracy of correction data of DGPS or SBAS service

Electrical Data

Power Supply	2.7 – 3.3 V
Power Consumption	typ. 153 mW @ 3.0 V typ. 138 mW @ 2.7 V Sleep mode: typ. 100 µA
Backup Power	1.95 V – 3.6 V
Serial Ports	2 USARTs @ 3 V levels 5V TTL compatible inputs
Digital IOs	TIMEPULSE @ 1.8 V
Protocols	NMEA, UBX binary, RTCM Interleaving multiple protocols via same serial interface is supported
Interface	30 pin leadless chip carrier reflow solderable
Antenna Power	External or Internal VCC_RF
Active Antenna Recommendations	Gain ≥ 25 dB Noise figure ≤ 1.5 dB
Antenna Supervision	Integrated short-circuit detection and antenna shutdown Open circuit detection is supported with little external circuitry

Available Resources [2]

Processor	ARM7 @ 23MHz 3.75 – 9 MIPS [3] @ 1Hz Navigation update	
Memory	FLASH SRAM	1 MB 8 kB
Interfaces	SPI @ 1.8 V	
Digital IOs	8 GPIOs @ 1.8 V	

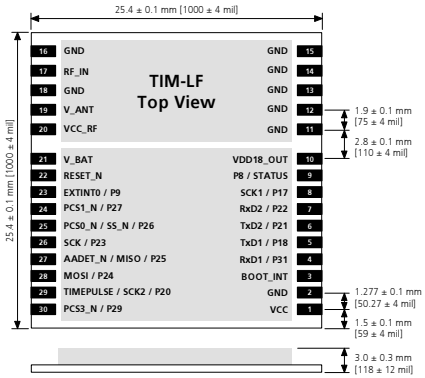
[2] For use with TIM-LF-9 (8 Mbit version). ANTARIS SCKit is required.

[3] "VAX MIPS", calculated using Dhrystone, available for user code

Environmental Data

Operating Temp.	-40°C to 85°C
Storage Temp.	-40°C to 125°C
Vibration	5 Hz to 500 Hz, 5g (IEC 68-2-6)
Shock	Half sine 30g / 11ms (DIN 40046-7)

Mechanical Data



Ordering Information

TIM-LF-0-000-0	TIM-LF - GPS Receiver Module

Delivery Packing
0 = Single samples
1 = Tape on reel (100 pieces)
5 = Tape on reel (500 pieces)

Flash EPROM Configuration
0 = Standard GPS functionality.
Not for ANTARIS SCKit users

For ANTARIS SCKit users only:
8 = 8 Mbit (SST SST39WF800A)
9 = 8 Mbit (AMD AM29SL800DT)

AEK-LS-0-000-0	ANTARIS EvalKit - Evaluation Kit
ASK-LS-0-000-0	ANTARIS SCKit - Software Customization Kit

Parts of this product are patent protected.

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