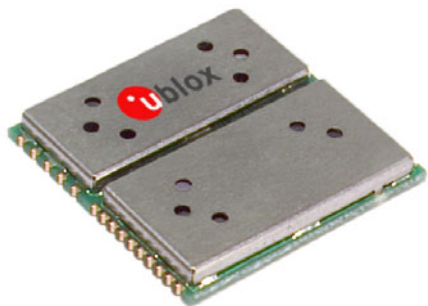# TIM-LC

GPS Receiver Macro Component
ANTARIS™ Positioning Engine

The TIM-LC is an ultra-low power GPS receiver macro component for standard PVT (position / velocity / time) functionality for use with active antennas. Based on the ANTARIS™ GPS positioning engine jointly developed by Atmel and u-blox, it offers excellent GPS performance. The TIM-LC provides one 3V (5V TTL input compatible) serial port. With its innovative packaging technology the TIM-LC GPS receiver is the ideal solution for cost-critical high-volume applications.

Overview

The TIM-LC GPS receiver macro component is another milestone in the miniaturization of GPS receiver modules. Innovative packaging technology has opened the door for a thin and compact GPS receiver unique to the market. The TIM-LC macro component is SMT solderable and can be handled by standard pick-and-place equipment. This allows a fully automatic assembly process. The height of 3mm (~120mil) and the size of 25.4 x 25.4 mm (1" x 1") make it the ideal GPS solution for applications with stringent space requirements.

Benefits

- Fully self-contained GPS receiver (PVT output)
- Ultra-low power consumption
- Excellent GPS performance
  - Excellent navigation accuracy
  - Fast Time-to-first-fix
- Macro component
  - Very compact design
  - Automatic pick and place assembly
  - Reflow solderable
- High Flexibility:
  - Extensively configurable
- Fully EMI shielded
- Active antenna support

Features

- 16 channel GPS receiver
- 8192 simultaneous time-frequency search bins
- 4 Hz position update rate
- Based on the ANTARIS™ GPS Technology
  - ATR0600 RF front-end IC
  - ATR0620 Baseband IC with integrated ARM7TDMI and ROM code
- Boot-time configuration pins
- FixNOW™ power saving mode ideally suited for mobile and battery-driven tracking applications
- 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
  - Size   25.4mm x 25.4mm
  - Height   3mm
  - Weight   3g

Support Products

ANTARIS™ EvalKit

Use the ANTARIS™ EvalKit to experience the power of TIM-LC.

your position is our focus
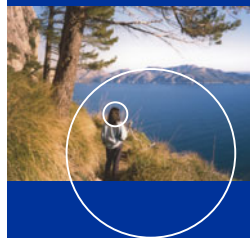
Specifications

Receiver Performance Data

Receiver Type	16 channel, L1 frequency, C/A code	
Max. Update Rate	4 Hz	
Accuracy	Position	3 m CEP
	DGPS	2 m CEP [1]
Start-up Times	Hot start	3.5 sec
	Warm start	33 sec
	Cold start	41.5 sec
Signal reacquisition	< 1 s	
Timing Accuracy	max. 100 ns typ. 50 ns (RMS)	
Dynamics	< 4 g	
Operational Limits	COCOM restrictions apply	

[1] Depending on accuracy of correction data

For more detailed information on the GPS performance check the *TIM-LC Data Sheet*.

Electrical Data

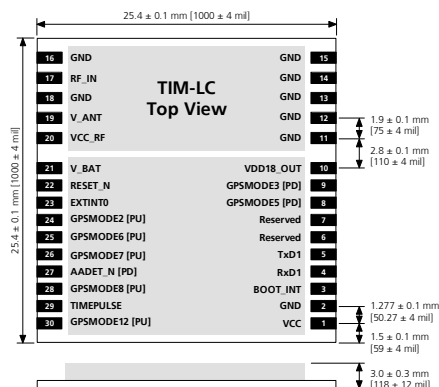|	
Power Supply	2.7 – 3.3 V
Power Consumption	typ. 159 mW @ 3.0 V typ. 143 mW @ 2.7 V
	Sleep mode: typ. 130 µA
Backup Power	1.95 V – 3.6 V
Serial Ports	1 UART @ 3 V levels 5V TTL compatible input
Digital IOs	TIMEPULSE @ 1.8 V
Configuration	Pin settings Serial protocol messages
I/O Protocols	NMEA input/output UBX binary input/output RTCM in
	Interleaving multiple protocols via same serial interface is supported
Interface	30 pin leadless chip carrier, reflow solderable
Antenna Power	External
Antenna Supervision	Integrated short-circuit detection and antenna shutdown
	Open circuit detection is supported with little external circuitry

Environmental Data

Operating Temperature	-40°C to 85°C
Storage Temperature	-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

25.4 ± 0.1 mm [1000 ± 4 mil]
25.4 ± 0.1 mm [1000 ± 4 mil]

TIM-LC Top View

16	GND	GND	15	
17	RF_IN	GND	14	
18	GND	GND	13	
19	V_ANT	GND	12	1.9 ± 0.1 mm [75 ± 4 mil]
20	VCC_RF	GND	11	2.8 ± 0.1 mm [110 ± 4 mil]
21	V_BAT	VDD18_OUT	10	
22	RESET_N	GPSMODE3 [PD]	9	
23	EXTINT0	GPSMODE5 [PD]	8	
24	GPSMODE2 [PU]	Reserved	7	
25	GPSMODE6 [PU]	Reserved	6	
26	GPSMODE7 [PU]	TxD1	5	
27	AADET_N [PD]	RxD1	4	
28	GPSMODE8 [PU]	BOOT_INT	3	
29	TIMEPULSE	GND	2	1.277 ± 0.1 mm [50.27 ± 4 mil]
30	GPSMODE12 [PU]	VCC	1	1.5 ± 0.1 mm [59 ± 4 mil]

3.0 ± 0.3 mm [118 ± 12 mil]

Ordering Information

TIM-LC-0-000-0	TIM-LC - GPS Receiver Macro Component Single Samples
TIM-LC-0-000-1	TIM-LC - GPS Receiver Macro Component Tape on reel 100pcs
TIM-LC-0-000-5	TIM-LC - GPS Receiver Macro Component Tape on reel 500pcs
AEK-LS-0-000-0	ANTARIS™ EvalKit - Evaluation Kit

Parts of this product are patent protected.

GPS.G3-MS3-03002-B