



Venus638LPx-T Low Cost Precision Timing GPS Module

FEATURES

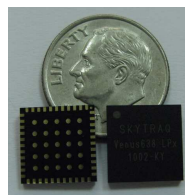
- -148dBm cold start sensitivity
- -165dBm tracking sensitivity
- 29 second cold start TTFF
- 3.5 second TTFF with AGPS
- 1 second hot start
- 2.5m accuracy
- 30nsec (1-sigma) timing accuracy
- Position hold mode for GPS timing operation
- 1PPS generation with 1 satellite in view
- Multipath detection and suppression
- Jamming detection and mitigation
- SBAS (WAAS / EGNOS) support
- 7-day extended ephemeris AGPS
- Works directly with active or passive antenna
- Complete module in 10mm x 10mm x 1.3mm size
- Contains LNA, SAW Filter, TCXO, RTC Xtal, LDO
- Requires only antenna and power to function
- Pb-free RoHS compliant

The Venus638LPx-T is a high performance GPS module in a single-chip design targeting precision timing GPS applications. It offers low power consumption, high sensitivity, and best in class signal acquisition and time to first fix performance.

The Venus638LPx-T contains all the necessary components of a complete GPS receiver module, includes GPS RF front-end, GPS baseband signal processor, 0.5ppm TCXO, 32.768kHz RTC crystal, RTC LDO regulator, and passive components. It requires very low external component count and takes up only 100mm² PCB footprint.

Dedicated massive-correlator signal parameter search engine within the baseband enables rapid search of all the available satellites and acquisition of very weak signal. An advanced track engine allows weak signal tracking and continuous reliable precision timing generation in harsh environments such as urban canyons and under deep foliage.

Venus638LPx-T is very easy to use, minimizes RF layout design issues and offers very fast time to market.



actual size

TECHNICAL SPECIFICATIONS

Receiver Type L1 frequency
GPS C/A code, SBAS capable
65-channel architecture
8-million time-freq search / sec

Accuracy Position 2.5m CEP
Velocity 0.1m/sec
Timing 30nsec (1-sigma)
< 60nsec (99%)

Open Sky TTFF 29 second cold start
3.5 second with AGPS
1 second hot start

Reacquisition < 1s

Sensitivity -165dBm tracking
-158dBm reacquisition
-148dBm cold start

AGPS 7-day extended ephemeris

Update Rate 1 / 2 / 4 / 5 / 8 / 10 / 20 Hz
Default 1Hz

Dynamics 4G

Operational Limits Altitude < 18,000m^{*1} or
Velocity < 515m/s^{*1}

Serial Interface LVTTTL level

Protocol NMEA-0183 V3.01
SkyTraQ Binary

Power Consumption 70mW full power tracking
100mW low power acquisition
120mW max perf. acquisition

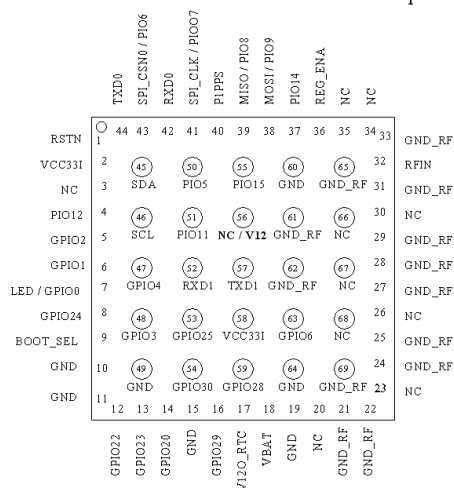
Package LGA69 10 x 10 x 1.3 mm

Compliance RoHS

Weight 0.3g

*1: COCOM limit

Venus638LPx-T-L / Venus638LPx-T-D Top View



ORDERING INFORMATION

Part Number	Description
Venus638LPx-T-D	timing mode GPS receiver module 3.3V + 1.2V input
Venus638LPx-T-L	timing mode GPS receiver module 3.3V input (internal 1.2V LDO)

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