



OriginGPS

RF Modules Technologies

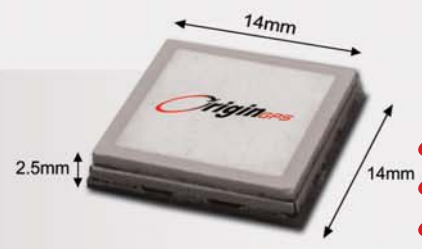


ORG-2000 Fully integrated GPS Module including antenna

OriginGPS has developed a proprietary miniaturized RF technology to produce extremely small fully-integrated GPS modules. This technology enables the development of a GPS system that incorporates the OriginGPS antenna into the single extremely small module, thereby optimizing integration in mobile devices such as hand-held computers, radios and cellular phones.

Overview:

The ORG-2000 is another miniature device from OriginGPS which made a breakthrough with the first fully integrated GPS module – The ORG-1100 which holds the title “The smallest GPS receiver module” until now. OriginGPS had downscaled the outline to as small as 14mm x 14mm x 2.5mm keeping high sensitivity and improved performance with low power consumption. The ORG-2000 GPS Receiver Module continues the ORG-1100 GPS Module success that derived from incorporating an onboard filtering antenna that allows only the GPS frequency of 1.575 GHz to enter the system. All RF signals are processed through OriginGPS's Noise-Free Zones (NFZ) technology that presents filtered signals with a very high signal-to-noise ratio. All this occurs within the single integrated module, thereby achieving a best-in-class sensitivity and noise-immunity with outstanding navigation performance, even under weak signal conditions. OriginGPS system-in-package (SiP) miniaturization technology achieves the industry's smallest form-factor of 14mm x 14mm x 2.5mm, including the antenna. The LGA SMT pads allow reflow soldering and automatic assembly process using standard equipment, enabling cost-efficient high-volume production.



Features

- Multi channel GPS receiver
- Microstrip patch antenna
- Acquisition sensitivity: -158dBm
- Tracking sensitivity: -160dBm
- Fast TTFF: <40s (typical) under cold start conditions
- Sophisticated baseband algorithms for complicated signal environments
- Control plane and user plane A-GPS advanced aiding capability
- Automatic and user defined power saving scenarios
- Low power consumption: 145mW
- UART and SPI communication
- Single operating voltage: 2.8V to 5.5V
- Small size: 14mm x 14mm x 2.5mm
- Industrial operating temperature range: -40°C to +85°C
- Pb-Free RoHS compliant

Benefits

- Fully integrated solution
- Built-in antenna
- Accurate positioning
- Fast start-up time
- Advanced miniature packaging
- No external ground plane needed
- High sensitivity
- Noise immunity
- ESD protected
- Assisted-GPS support
- Low power consumption



Actual Size
Patent Pending



Specifications

Performance

| | |
|-------------------------|-----------------------|
| Receiver Chipset | NXP GNS7560 |
| Channels | 14 parallel tracking |
| Frequency | L1-1575 MHz, C/A Code |

Sensitivity

| | |
|--------------------------|----------|
| Tracking | -160 dBm |
| Acquisition ¹ | -158 dBm |

Position Accuracy (Horizontal)² 5m 2dRMS

Time To First Fix

| | |
|--------------------------|------|
| Hot Start ³ | <1s |
| Warm Start ⁴ | <15s |
| Cold Start ⁵ | <38s |
| Aided Start ⁶ | <2s |

Signal Reacquisition⁷ <1s

Timing Accuracy <1µs

Dynamics⁸

| | |
|--------------|---------|
| Velocity | <515m/s |
| Acceleration | <2g |
| Altitude | <18,000 |

Communication

| | |
|---------------------------------------|----------------------------|
| UART | Full Duplex, 8-N-1, 115200 |
| SPI | Slave up to 3 Mbps |
| Navigation Output Format ⁹ | NMEA-0183 / NXP API |

Electrical Data

Input Voltage 2.8 to 5.5V DC

Power Consumption¹⁰

| | |
|--------------------------|-------|
| Operating | 145mW |
| Sleep ¹¹ | 50mW |
| Deep Sleep ¹² | 12mW |

Interface¹³

Serial Port

| | |
|------|-------------------------|
| UART | 1.8V/ 2.5V/ 3.3V LVCMOS |
| SPI | 1.8V/ 2.5V/ 3.3V LVCMOS |

Digital

| | |
|-------------|-------------------------|
| 1PPS Output | 1.8V/ 2.5V/ 3.3V LVCMOS |
|-------------|-------------------------|

Mechanical Data

Dimensions

14mm x 14mm x 2.5mm
0.55" x 0.55" x 0.1"

Weight

2g < 0.1oz

Environment

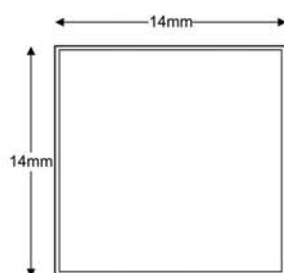
Temperature

Operating/Storage -40°C to +85°C

1. With GSM or WCDMA/3G aiding
2. With signals at -130dBm and HDOP < 1.5.
3. The receiver has estimates of time/date/position and valid Almanac and Ephemeris.
4. The receiver has estimates of time/date/position and Almanac.
5. The receiver has no estimate of time/date/position and no recent Almanac.
6. GSM (coarse) and WCDMA/3G Aiding - time known to <2 sec, location known to <3Km, oscillator known to 0.05ppm, known Ephemeris for available satellites.
7. The receiver's calibrated clock is not stopped.
8. Regulatory limitation.
9. Program host output.
10. V_{CC}=3.3V, V_{IO}=2.5V
11. Most baseband clocks are disabled.
12. All baseband clocks are disabled.
13. Host defined.



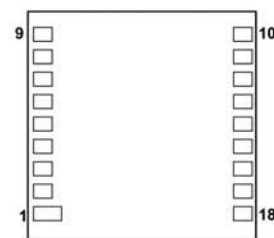
TOP VIEW



SIDE VIEW



BOTTOM VIEW



Origin GPS Ltd.

High-Tech Village, Givat Ram Campus, The Hebrew University
P.O.Box 39158, Jerusalem 91391, ISRAEL

Tel: +972- 2 -6535191 Fax: +972- 2 - 6540487 e-mail: info@origingps.com

Lat: 31°46'06.49"N; Long: 35°11'48.33"E

www.origingps.com