

PL-6313

Single-Chip GPS Baseband Processor

OVERVIEW

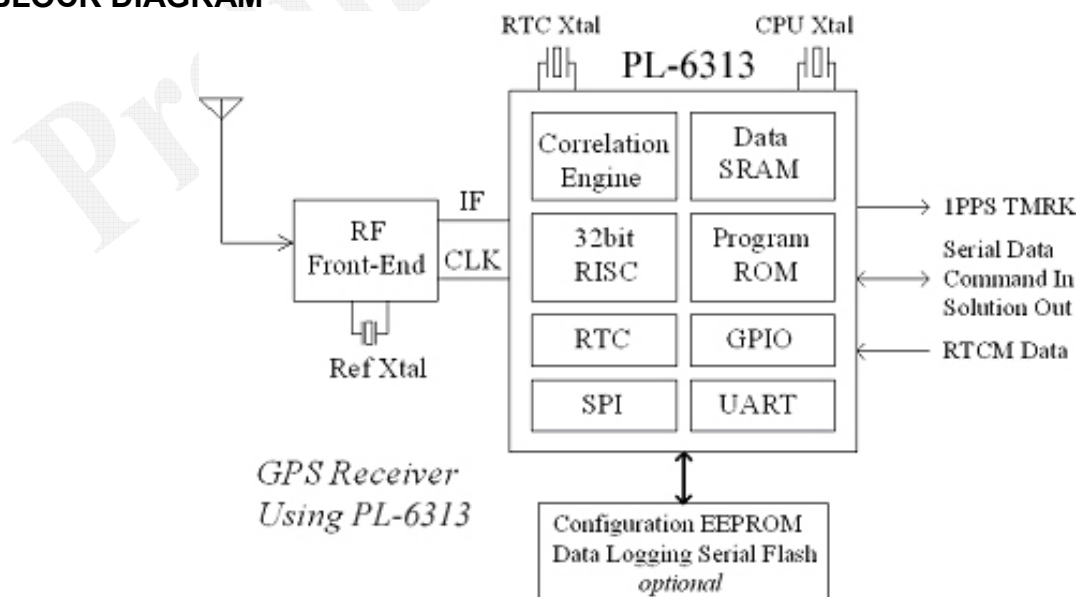
The PL-6313 is a low-power single-chip baseband LSI for GPS application. It supports 12 parallel correlation channels, having 4000 time/frequency search bins, achieves fast signal lock-on to all visible satellite signals at power-up and reacquisition. The sensitivity-enhanced architecture allows positioning in severe environments such as under foliage and urban canyons. The PL-6313 incorporates power management features to lower power consumption. Unused portion of the circuitry is turned-off dynamically. Software commands allow controlling of PL-6313's low-power features according to application requirements.

The PL-6313 works with available RF front-ends such as SiGe SE4100L and NEC uPB1007K. A complete GPS receiver system can be formed using just two chips and a few discrete passive components. The PL-6313 enables realization of low-power GPS receiver solution within a very small footprint. Having a small package dimension and low power consumption, the PL-6313 is ideal for use in all applications requiring GPS-enabled location awareness.

FEATURES

- Low power consumption < 50mW
- 5-stage pipeline 32bit RISC CPU
- On-chip program and data memory
- 12 parallel GPS signal processing channels
- Fast acquisition with 4000 time/frequency search bins
- WAAS / EGNOS SBAS correction
- Wireless A-GPS support
- Hot-start time-to-first-fix < 5sec
- Cold-start time-to-first-fix < 45sec
- Acquisition sensitivity better than -140dBm
- Tracking sensitivity better than -150dBm
- Compatible with available GPS RF front-ends
- UART / SPI / GPIO interface
- On-chip real-time clock
- Core voltage 1.8V, I/O voltage 3.3V
- 0.18um CMOS technology
- 0.8mm pitch 10mm x 10mm TFBGA128 package
- Operating temperature from -40°C to +85°C

BLOCK DIAGRAM



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TECHNICAL SPECIFICATIONS

Receiver Type	12 Channel, L1 Frequency, C/A Code	
Accuracy	Position	10m autonomous
		5m WAAS
		3m DGPS
	Velocity	0.1m/sec stand-alone 0.05m/sec DGPS
	Time	+/-500nsec
Startup Time	Hot Start < 5sec	
	Warm Start < 35sec	
	Cold Start < 45sec	
Sensitivity	Acquisition better than -140dBm	
	Tracking better than -150dBm	
Reacquisition	< 1sec	
Dynamics	< 4G	
Operating Limit	Altitude	-1,000m to 18,000m
	Velocity	500m/sec
Protocol	NMEA-0183 v3.01	
	Prolific Private	
Interface	GPIO, SPI, UART	
Power	Less than 50mW	
Voltage	Core 1.8V, I/O 3.3V	
Package	0.8mm pitch	10mm x 10mm TFBGA128
		9mm x 9mm LQFP-64

APPLICATIONS

- Global Positioning System Receivers
- Car / Marine Navigation System
- Fleet Management System
- Vehicle Locating Systems
- Personal Locator Device
- Timing Reference
- Asset Tracking
- Smart Phone
- PDA

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