

# RB2929S

Ultra High Sensitivity SiRF StarIII 7989  
GPS Module with Patch Antenna

## Documentation History

| <b>Revision</b> | <b>Description</b> | <b>Date</b> | <b>Remark</b> |
|-----------------|--------------------|-------------|---------------|
| V0.1            | RB2929S release    | Mar 2009    |               |
| V1.0            | NMEA Update        | Jul 2009    |               |
| V1.1            | Connector Update   | Sep 2009    |               |
|                 |                    |             |               |

# Content

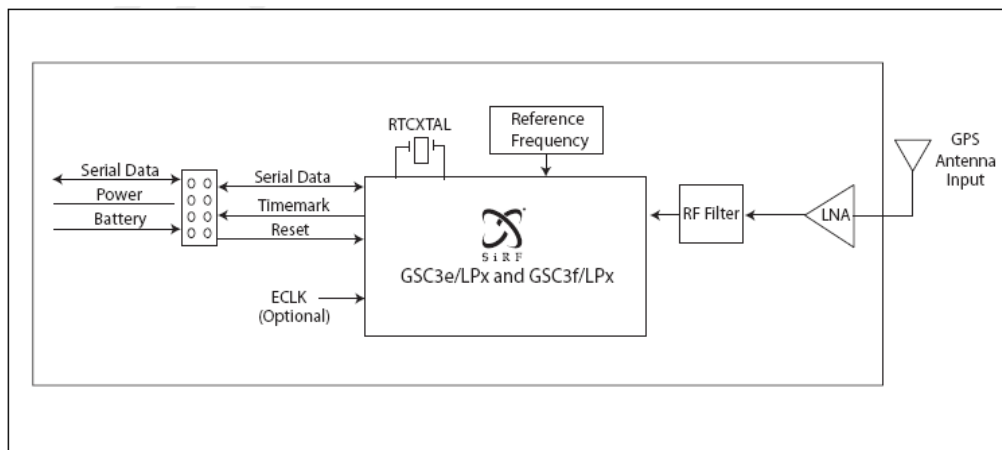
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# RB2929S

## Features

- ✓ 20 channel SiRF StarIII7989 positioning engine
- ✓ Ultra high sensitivity to -159 dBm
- ✓ SBAS (WAAS, MSAS, and EGNOS) support
- ✓ Supports Power saving modes
- ✓ Build in backup battery
- ✓ Support UART and RS232 ports
- ✓ Ultra low power consumption 60mW
- ✓ Ultra miniature 29X 29 mm dimension.
- ✓ Operating temperature range: -30 to 85°C
- ✓ RoHS compliant (lead-free)

## Block diagram



RB2929S GPS module

# Technical Specifications

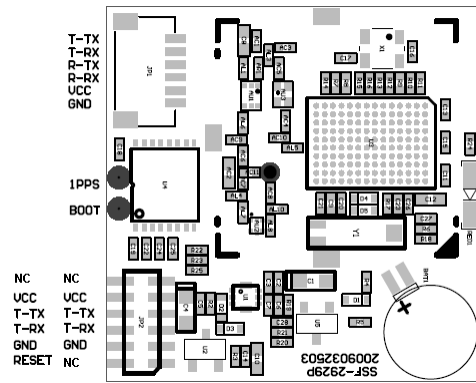
## 1. Electrical Characteristics

|                       |                           |  |
|-----------------------|---------------------------|--|
| 1.1 Chipset           | SiRF StarIII GSC3eLP      |  |
| 1.2 General           | Frequency                 | L1, 1575.42MHz   |
|                       | Channels, C/A code        | 20 1.023 MHz chip rate, 8192 time/frequency search windows |
| 1.3 Accuracy          | Position                  | 5 meters CEP   |
|                       | Time                      | 50 nanosecond rms (1 PPS)                                  |
| 1.4 DGPS Accuracy     | Position                  | 2.0 meters CEP   |
| 1.5 Acquisition Rate  | Reacquisition             | < 1 sec, typical   |
|                       | Cold start                | 35 sec, typical  |
|                       | Warm start                | 35 sec, typical  |
|                       | Hot start                 | 1 sec, typical   |
| 1.6 Sensitivity       | Tracking                  | -159dBm  |
|                       | Acquisition/Reacquisition | -155dBm  |
|                       | Cold start                | -144dBm  |
| 1.7 Dynamic Condition | Altitude                  | 18,000 meters (60,000 Feet) max.                           |
|                       | Velocity                  | 515 meters /sec (1000 Knots) max.                          |
| 1.8 Power             | Main Power                | 3.3 VDC typical  |
|                       | Supply current            | 40 mA  |
|                       | Backup power              | 1.4 ~ 5V   |
| 1.9 Serial Port       | Electrical interface      | UART, RS232  |
|                       | Protocols                 | NMEA0183 v3.0  |

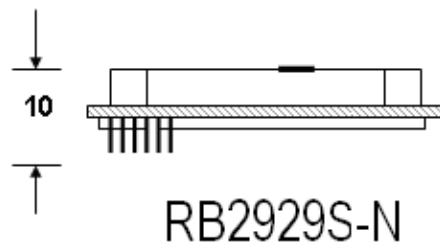
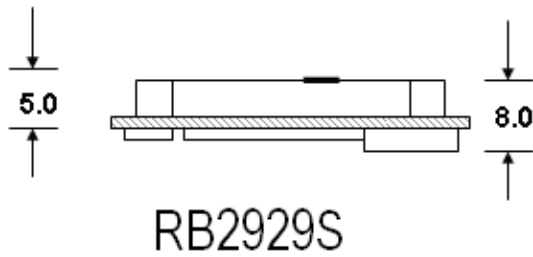
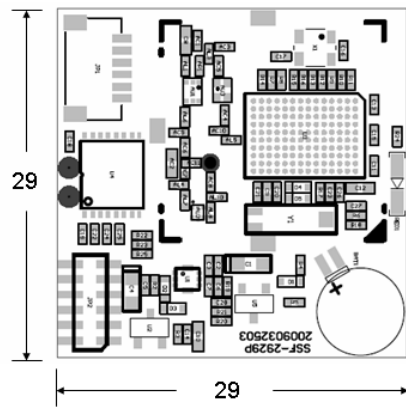
## 2. Environmental Characteristics

|                 |                 |  |
|-----------------|-----------------|--|
| 2.1 Temperature | Operating range | - 30 °C to + 85 °C   |
| 2.3 Interface   | I/O connector   | 6 pin pitch 1.0mm connector (RB2929S)<br>12 pin pitch 1.27mm (RB2929S-N) |

## PIN assignment



## Dimension



Side View

Unit: mm

## Pin Definition

### RB2929S JP1 (CSI-1182-061R from CSTCONN - www.cstconn.com)

| Pin# | Name | Type   | Description             |
|------|------|--------|-------------------------|
| 1    | T-TX | Output | UART TXD output         |
| 2    | T-RX | Input  | UART RX input           |
| 3    | R-TX | Output | RS232 TX                |
| 4    | R-RX | Input  | RS232 RX                |
| 5    | Vcc  | PWR    | DC power input 3.3 – 5V |
| 6    | GND  | PWR    | Ground                  |

1\*6 Pitch 1.0mm

### RB2929S-N JP2 (CPA-2001-1230 from CSTCONN - www.cstconn.com)

| Pin# | Name  | Type   | Description             |
|------|-------|--------|-------------------------|
| 1,12 | NC    |        |                         |
| 2,11 | Vcc   | PWR    | DC power input 3.3 – 5V |
| 3,10 | T-TX  | Output | UART TX output          |
| 4,9  | T-RX  | Input  | UART RXD input          |
| 5,8  | GND   | PWR    | Ground                  |
| 6    | Reset | Input  |                         |
| 7    | NC    |        |                         |

**Boot:** High Boot from Flash, Low Boot from serial port

**1pps:** Time plus

2\*6 Pitch 1.27mm

## Output NMEA Messages

### NMEA-0183 Output Messages

| NMEA Sentence | Description                              |
|---------------|--|
| GGA (default) | Global Positioning System Fixed Data     |
| GLL           | Geographic Position - Latitude/Longitude |
| GSA (default) | GNSS DOP and Active Satellites           |
| GSV (default) | GNSS Satellites in View                  |
| RMC (default) | Recommended Minimum Specific GNSS data   |
| VTG           | Course Over Ground and Ground Speed      |
| ZDA           | Time and Date                            |

The detail information please refers to RBXXXX series GPS module NMEA protocol reference manual.