

# GPS Module Ct-G223



## Specifications Sheet

*Part No. : 1-1S01-102RS000*

*Features:*

- SiRF StarIII/LPx single power chipset
- Compact module size for easy
- integration : 36 x 24 x 10.5 mm
- MMCX Antenna connector type
- RoHS compliance (lead-free)

## 1. Introduction

Ct-G223 is a high performance, low power consumption, small size, easily integrated GPS module board designed for a broad spectrum of OEM system applications.

This product is based on SiRFstarIII/LPx single chipset solution.

**Ct-G223 module board is very fit to the customers who devote themselves to AVL system integration and location-based service.**

The Ct-G223 design utilizes the latest surface mount technology and high level circuit integration to achieve superior performance while minimizing space and power requirements. This hardware capability combined with software intelligence makes the board easy to be integrated and used in all kinds of navigation applications or products. The application system may communicate with the module board set via two RS232 compatible bi-directional communication channels with CMOS/TTL voltage level.

## 2. Features

### 2.1. Hardware and Software

- Based on the high performance features of the SiRFstarIII/LPx single chipset
- Compact module size for easy integration: 36x24x10.5mm (1.417"x0.945"x0.413")
- 20 channels "All-in-View" tracking
- Hardware compatible with SiRF GSW software
- RoHS compliance

### 2.2 Physical Characteristics

- Length                      36 mm (1.417 in)
- Width                        24 mm (0.945 in)
- Height                       10.50 mm (0.413 in)
- Weight                      7g
- Antenna connector    MMCX type
- Interface connector   20-pin straight header, 0.8mm pitch board-to-board

## 2.3 Performance

- Cold/Warm/Hot Start Time: 35/35/1 sec. at open sky and stationary environments.
- Reacquisition Time: 0.1 second
- RF Metal Shield for best performance in noisy environments
- Multi-path Mitigation Hardware

## 2.4 Interface

- TTL level serial port for GPS communications interface
- Protocol: NMEA-0183/SiRF Binary (default NMEA)
- Baud Rate: 4800, 9600, 19200, 38400 or 57600 bps (default 4800)

## 2.5 Applications

- Car Navigation
- Marine Navigation
- Fleet Management
- AVL and Location-Based Services
- Hand-Held Device for Personal Positioning and Navigation
- Ideal for PDA, Pocket PC and Other Computing Devices at GPS Application

## 3. Specifications

### 3.1 Technical Specifications

Feature	Item	Description
<b>Chipset</b>	GSC3f	SiRFstarIII Low power single chipset
<b>General</b>	Frequency C/A code Channels	L1, 1575.42 MHz 1.023 MHz chip rate 20
<b>Accuracy</b>	Position  Velocity Time	10 meters, 2D RMS 5 meters 2D RMS, WAAS corrected <5meters (50%) 0.1 meters/second 1 microsecond synchronized to GPS time
<b>Datum</b>	Default Other	WGS-84 selectable for other Datum
<b>Time to First Fix (TTFF) (Open Sky &amp; Stationary Requirements)</b>	Reacquisition  <b>Snap start</b> Hot start Warm start Cold start	0.1 sec., average  1 sec., average 1 sec., average typical TTFF 35 sec., average typical TTFF 35 sec., average typical TTFF
<b>Dynamic Conditions</b>	Altitude Velocity Acceleration Jerk	18,000 meters (60,000 feet) max. 515 meters/second (1000 knots) max. 4g, max. <b>20 meters/second<sup>3</sup>, max.</b>
<b>Power</b>	Main power input Power consumption Supply Current Backup Power	3.3 ~ 5.0 VDC 86mW 26mA 1.5 ~ 5.0 VDC input.
<b>Serial Port</b>	Electronics interface Protocol messages	Two full duplex serial TTL interface  NMEA-0183@4800 bps (Default)
<b>Time-1PPS</b>	Level	TTL

Feature	Item	Description
Pules	Pulse duration	The 1PPS pulse width is 1 $\mu$ s, this 1PPS is NOT suited to steer various oscillators (timing receivers, telecommunications system, etc).
	Time reference	At the pulse positive edge.
	Measurement	Aligned to GPS second, $\pm 1$ microsecond

### 3.2 Environmental Characteristics

Items	Description
Operating temperature range	-40 deg. C to +85 deg. C
Storage temperature range	-55 deg. C to +100 deg. C

### 3.3 Physical Characteristics

Items	Description
Length	36 mm $\pm$ 0.3mm (1.417in)
Width	24 mm $\pm$ 0.3mm (0.945 in)
Height	10.5 mm $\pm$ 0.3mm (0.413 in)
Weight	7g

### 3.4 Interface Specifications

Items	Description
I/O	20 pin SMD micro package

### 3.5 Recommended GPS Antenna specifications

Parameter	Specification
Antenna Type	Right-hand circular polarized active patch antenna
Frequency Range	1575.42 ± 1.023 MHz
Impedance	50 Ohm
LNA Gain	18dB~28dB
Noise Figure	1.5dB Max.
Antenna connector type	MMCX
Antenna Voltage	DC 3V
Antenna Current	20mA Max.

### 3.6 Software

The Ct-G223 module includes SiRF high sensitivity software solution.

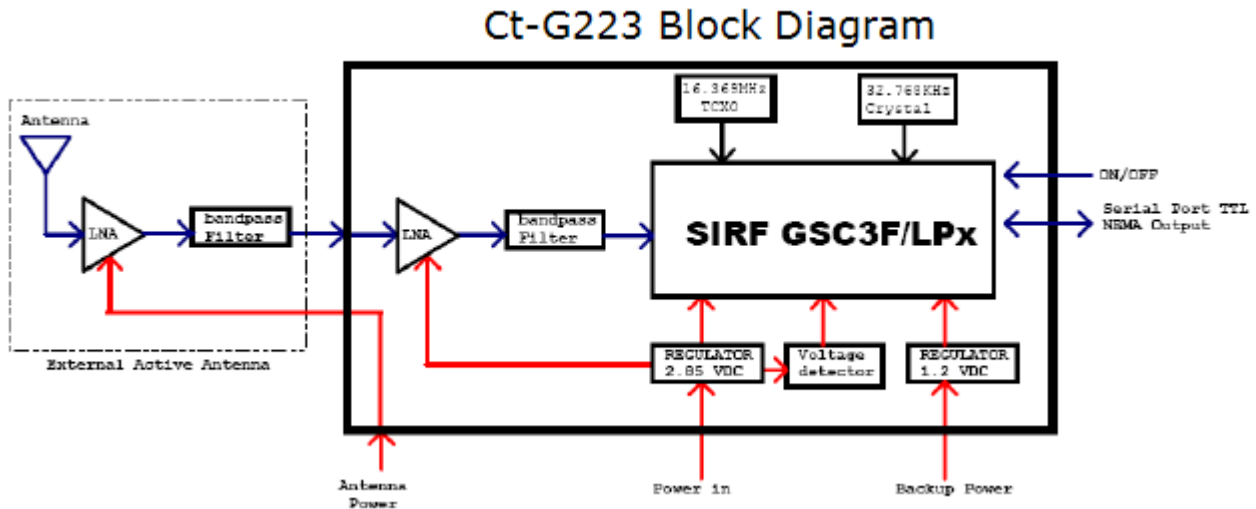
Features include:

- High tracking sensitivity
- High configurability
- 1 Hz position update rate
- Real-time Operating System (RTOS) friendly
- Capable of outputting both NMEA and SiRF-proprietary binary protocols
- Designed to accept custom user tasks executed on the integrated ARM7TDM1 processor
- Runs in full power operation or optional power saving modes

Item	Description
Core of firmware	SiRF GSW Software
Baud rate	4800, 9600, 19200, 38400 or 57600 bps (default 4800)
Code type	NMEA-0183 ASCII
Datum	WGS-84
Protocol message	GGA(1sec), GSA(5sec), GSV(5sec),RMC(1sec),VTG(1sec)
Output frequency	1 Hz

## 4. Electrical Specifications

### 4.1 Block Diagram



### 4.2 Absolute Maximum Ratings

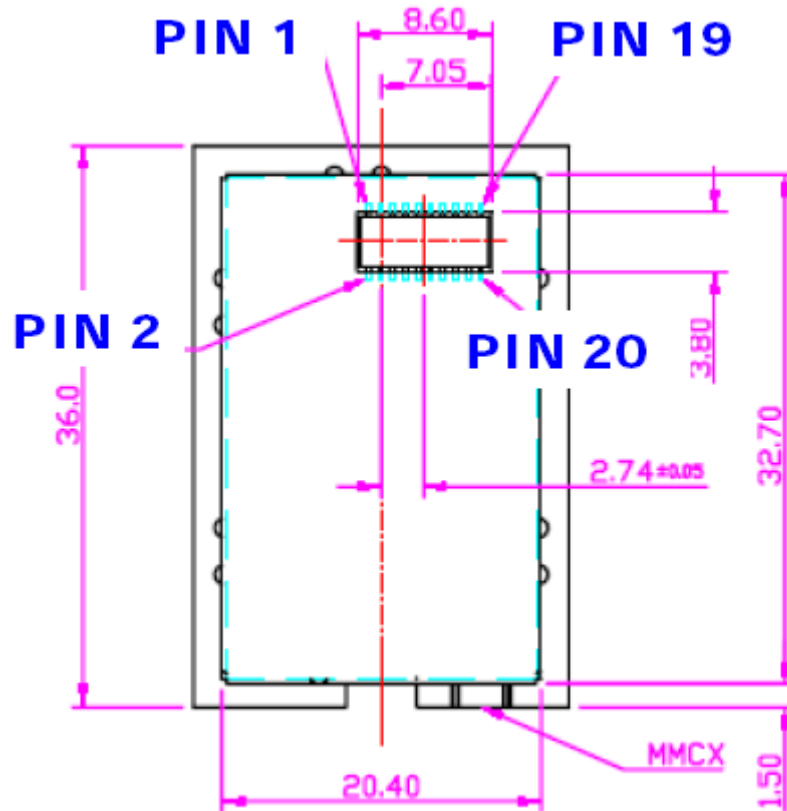
Parameter	Symbol	Min	Max	Units
Power supply voltage	VCC	-0.3	6	V
Backup battery voltage	BAT	-0.3	6	V

### 4.3 Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units
<b>Power Supply</b>					
Power supply voltage	VCC	3.2	3.3	5	V
Backup battery voltage	BAT	1.5	3.3	5	V
<b>UART and I/O</b>					
Input Low Voltage		-0.3		0.7	V
Input High Voltage		2		3.1	V
Output Low Voltage		-0.3		0.7	V
Output High Voltage		2		2.85	V

## 5. Interface Specification

### 5.1 Pin Positions



## 6. Mechanical Dimensions

### 6.1 Outline Drawing

Tolerance:	
Length	36.0 ± 0.3 mm
Width	24.0 ± 0.3 mm
Height	10.50 ± 0.3 mm

