SiRF
A CSR plc Company

SiRF Chips + GPS Software

APPLICATIONS ➤Wireless handsets ➤Personal navigation devices ➤Host platform devices

SiRFstarIII GSD3tw

Flagship Performance, Satellite Signal Processor, Host Coupled Single Die

PRODUCT OVERVIEW

This single die, small footprint implementation of SIRFstarIII™ architecture provides a cost-effective solution for high-volume embedded applications where host processor resources are available to execute SiRFNav®—SiRF's high performance navigation software suite, providing Autonomous navigation, Aided-GPS navigation (both user plane and control plane), and SiRFInstantFix™ technology. This 90 nm single-die IC has fully integrated 1.2 V LDOs, reducing the external Bill of Materials.

GENERAL SPECIFICATIONS

Supported Software

Standard

- SiRFTrackIII™ GPS tracker software
- SiRFNavIII™ standalone GPS navigation software

Premium

- SiRFLoc® Client (SLC) A-GPS software
  - SiRFNavIII A-GPS navigation software
  - SiRFLocStack™ location protocol library for user plane (SUPL) and control plane (RRLP, RRC) A-GPS
- SiRFInstantFix™ extended ephemeris technology

Smallest Footprint Package

- Type: 49-pin WLCSP with a ball pitch of 0.4 mm
- Dimensions: 3.12 mm x 3.17 mm; Height: 0.68 mm
- Typical total solution footprint: 30 mm^2

Low Cost Production Package

- Type: 49-pin TFBGA with a ball pitch of 0.5 mm
- Dimensions: 4 mm x 4.5 mm; Height: 0.68 mm
- Typical total solution footprint: 40 mm^2

KEY FEATURES

- Single die SiRFstarIII proprietary Satellite Signal Processor technology
- High sensitivity signal acquisition capability (Aided-GPS)
- Integrated ROM and controller to minimize host platform loading
- 90 nm RFCMOS for cost effective baseband + RF integration
- On-chip LNA reduces total solution cost and footprint
- Extremely low power
- Reduced pin count and small package size simplifies PCB layout
- TCXO power supply control through integrated FET switch

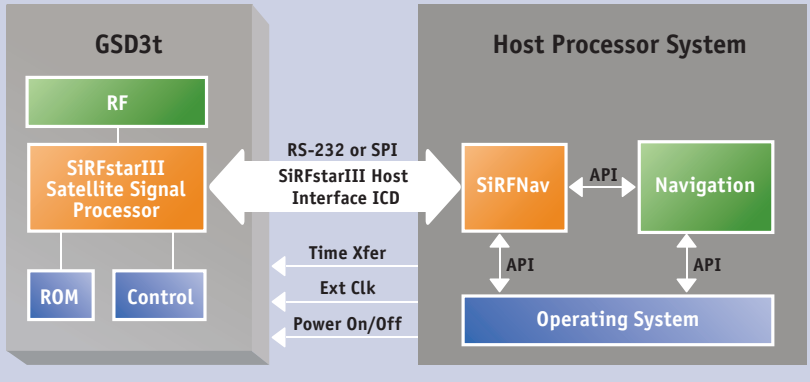
GPS Architecture Highlights

- Premium SiRFstarIII architecture with 200,000+ effective correlators for fast TTFF and high sensitivity acquisition

GPS Features

- SiRFNav host software with: real-time navigation for location based services
- Advanced Power Management and Adaptive TricklePower™ plus low energy-per-fix in point position applications
- Multimode A-GPS support: Autonomous, MS Based, MS Assisted
- Location protocol libraries supporting RRC, RRLP, 3GPP2, SUPL, E-911

GSD3tw BLOCK DIAGRAM



TECHNICAL SPECIFICATIONS

Horizontal Position Accuracy[1]	
Autonomous	<2.5 m
Velocity Accuracy[2]	
Speed	<0.01 m/s
Heading	<0.01°
Time To First Fix[3, 4]	
Hot start - Autonomous	<1 s
Warm start - Autonomous	<36 s
Cold start - Autonomous	<36 s
MS Based - GSM coarse time	<0.6 s
MS Assisted - GSM coarse time	<5.3 s
Sensitivity[5]	
Autonomous acquisition	-147 dBm
GSM / UMTS coarse time aided	-155 dBm
CDMA precise time aided	-155 dBm
Tracking (external LNA)	-158 dBm
Receiver	
Tracking	L1, CA Code
Channels	up to 20
Max update rate	1 Hz
Max altitude/velocity	<60,000 ft/<1,000 knots
Protocol support	SSIII sat. signal processing
System Integration	
I/O Interface	UART and SPI
External reference clock	16.369, 16.8, 26, 40 MHz
RTC input	32.768 kHz
Power[6]	
Continuous tracking (1 Hz)	40 mW
TricklePower (1 Hz)	20 mW
Energy per fix	40 mW-s
Hibernate current	13 μA
Host CPU Requirements	
Typical processing load	5-6 MIPS
Size	
Package dimensions	3.12 x 3.17 x 0.4 mm
Typical design footprint	30 mm^2

1. 50% 24 hr static, -130 dBm 2. 50% @ 30 m/s 3. 50% -130 dBm Fu 0.5 ppm Tu ±2 s Pu 30 Km 4. Dependent on host processor speed 5. -142 dBm ≈ 28 dB-Hz with 4 dB noise figure 6. Average, TricklePower 200:1

ORDERING INFORMATION

Part Number	Temp. Range	Description
GSD3tw-8100	-40° to +85° C	SSIII Satellite Signal Processing FBGA
GSD3tw-8800	-40° to +85° C	SSIII Satellite Signal Processing WLCSP

For more information about this and related products, contact your SiRF representative, or call our sales force at (1) (408) 467-0410, or visit www.sirf.com.

For the location of your nearest authorized SiRF distributor, visit www.sirf.com.

HIGHLIGHTED ADVANTAGES

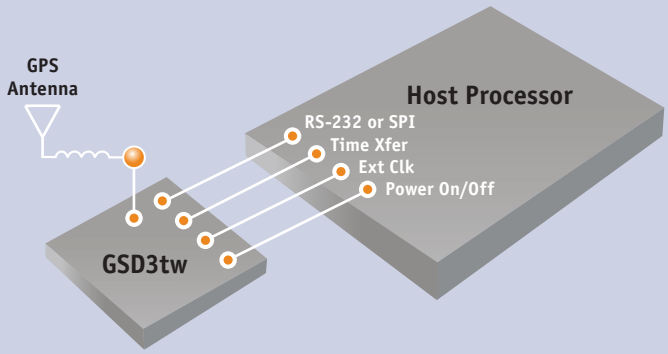
For cellular handset applications where space is at a premium, the GSD3tw offers two excellent package options; one for low cost production and one for small footprint mainstream design.

The GSD3tw supports SiRFLoc Client, the patented Multimode A-GPS software powering mobile phones optimized for location-enabled services. SiRFLoc improves GPS location capability in wireless system environments by utilizing various modes of wireless infrastructure assistance to improve weak signal reception.

For personal navigation devices with high-end host processors, the GSD3tw with SiRFNav software provides SiRF Autonomous mode GPS navigation, setting a new performance benchmark for high-sensitivity navigation.

SiRF's standard autonomous software also supports SiRFInstantFix technology, which eliminates the initial task of obtaining broadcast GPS data from the satellites themselves, resulting in a faster TTFFs, even in weak signal environments.

GSD3tw SYSTEM CONFIGURATION



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