SiRF Chips + GPS Software

**APPLICATIONS** ➤Wireless handsets ➤Mobile computing & internet devices ➤Consumer electronics

# SiRFstarIV GSD4t

*Host-based GPS Receiver Featuring SiRFaware Technology*


## PRODUCT OVERVIEW

The SiRFstarIV™ platform with SiRFaware™ GPS technology optimizes mobile phones, mobile computers, and mobile internet devices for location enabled services. Extremely low power consumption and fast location allows a broad range of location enabled services without compromising battery life or dependence on a network – from navigating to playing location-based games to searching for friends at the mall. This compact solution lowers BOM cost and design risk while delivering industry-leading GPS performance.

## GENERAL SPECIFICATIONS

### Performance

- High sensitivity engine acquires at -160 dBm and tracks to -163 dBm
- High performance on-chip LNA with 1.6 dB noise figure
- 6~8 dB of 3GPP pass margin, coarse aided

### Package

42-ball WLCSP with a minimum ball pitch of 0.4 mm

Dimensions: 3.4 mm x 2.7 mm; Height: 0.68 mm

Minimal external BOM: 6-8 passives, single-SAW support

### Integration

- Single 1.8 V power supply
- Fail safe I/O, including RTC input
- 3.3 V compliant integrated TCXO power switch
- Host $I^2C$, SPI, and UART supported
- 20 $mm^2$ total solution footprint
- Fully integrated 1.8 V to 1.2 V switched mode regulator

## SiRFstarIV ARCHITECTURE BENEFITS

### Fast, Responsive Location Experience

- High speed location engine
- 48 track verification channels
- SBAS (WAAS, EGNOS, MSAS, GAGAN)

### Breakthrough Power Consumption

- Adaptive micropower controller
- Requires only 50 – 500 $\mu$A to maintain hot start capability

### Reliable in Difficult Environments

- Active jammer remover
- Tracks up to eight CW jammers
- Removes in-band jammers up to 80 dB-Hz

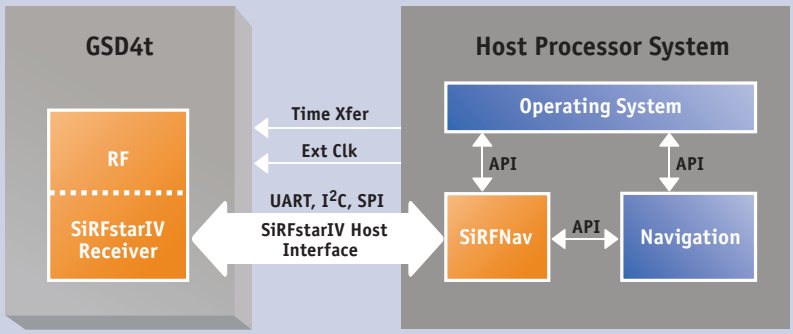
### Enhanced Navigation

- Smart MEMS sensor interface
- Multi-master $I^2C$ bus for smart sensors
- Interrupt input for context change alarms

### SiRFHost Host Software Suite

- Location Manager software suite
- Integrated navigation engine
- Integrated server and client based Extended Ephemeris solution
- Optional A-GPS stack for OMA SUPL1.0 and 3GPP Control Plane
- Pre-ported, pre-tested host software for Android, WinMobile, Linux

## GSD4t 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] | |
| Hot start – Autonomous[4] | <1 s |
| Warm start – Autonomous[5] | <35 s |
| Cold start – Autonomous | <35 s |
| MS Based – GSM coarse time | <4.7 s |
| MS Assisted – GSM coarse time | <4.7 s |
| **Sensitivity** | |
| Autonomous acquisition | -148 dBm |
| GSM / UMTS coarse time aided | -158 dBm |
| CDMA precise time aided | -160 dBm |
| Tracking | -163 dBm |
| **Receiver** | |
| Tracking | L1, CA Code |
| Channels | 48 |
| Max update rate | 1 Hz |
| Max altitude/velocity | <60,000 ft/<1,000 knots |
| Protocol support | MEI |
| **System Integration** | |
| I/O Interface | $I^2C$, UART and SPI |
| External reference clock | 16 to 104 MHz |
| RTC input | 32.768 kHz |
| **Power**[6] | |
| Continuous tracking (1 Hz) | 47 mW |
| TricklePower (1 Hz)[7] | 8 mW |
| Hibernate current[8] | <20 $\mu$A |
| **Host CPU Requirements** | |
| Typical processing load | 5-6 MIPS |
| **Size** | |
| Package dimensions | 3.4 x 2.7 x 0.68 mm |
| Typical design footprint | 20 $mm^2$ |

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. Commanded hot start 5. Commanded warm start 6. Average, TricklePower 200:1 7. Single 1.8 V supply 8. Including SRAM operating code retention

## ORDERING INFORMATION

| Part Number | Temp. Range | Description |
|---|---|---|
| GSD4t-9800 | -40° to +85° C | SSIV Satellite Signal Processor, 65 nm 42 ball WLCSP |

For more information, contact your SiRF/CSR representative, or call our sales force at (1) (408) 467-0410, or visit www.sirf.com or www.csr.com.

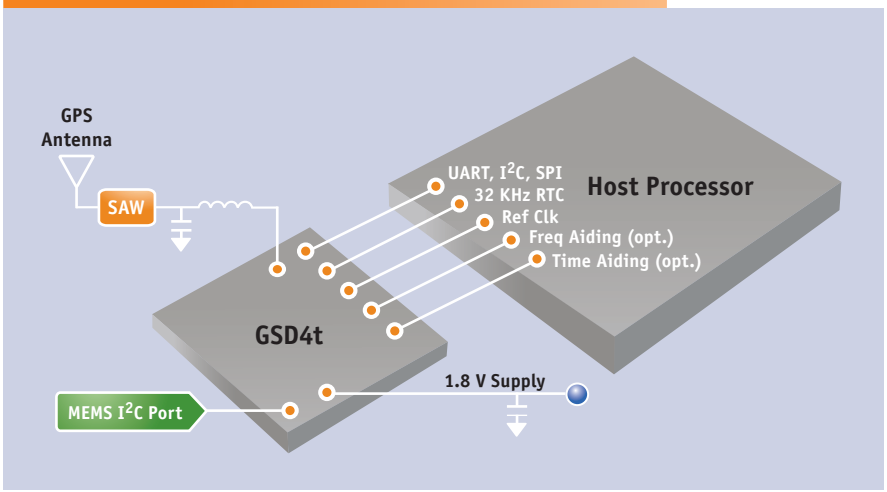
For the location of your nearest authorized SiRF/CSR distributor, visit www.sirf.com or www.csr.com.

## HIGHLIGHTED ADVANTAGES

SiRFstarIV architecture is optimized for how people really use their portable devices. For smartphones, feature phones, networks, MIDs, and other consumer products, the GSD4t offers near-continuous availability of a fast location fix at signal levels as low as -160 dBm independent of the wireless network used or without any network at all. With 20x less power consumption required to retain hot start conditions than competitive GPS receivers, the GSD4t eliminates the need to completely turn off the GPS receiver to conserve power, unlocking new use cases for location awareness, such as geo-tagging, location-enabled games, and LBS (Location Based Services) applications.

The GSD4t is simple to integrate and can be dropped into multiple platforms, lowering engineering investment. The small size, minimal footprint, and reduced power demand make the cost of adding location awareness to a device lower than ever before. The ability to detect and remove sources of jamming coupled with high 3GPP and E911 pass margins reduces risk and enables faster time to market. There is nothing like the GSD4t on the market today.

## GSD4t SYSTEM CONFIGURATION




## WORLDWIDE SALES OFFICES


**North America**

**United States**
(1) (408) 467-0410
Sales@sirf.com

**Europe**

**United Kingdom**
(44) (1344) 668390
SalesUK@sirf.com

**Germany**
(49) (81) 529932-90
SalesGermany@sirf.com

**Asia Pacific**

**China**
(86) (21) 5854-7127
SalesChina@sirf.com

**Taiwan**
(886) (2) 2650-2011
SalesTaiwan@sirf.com

**Japan**
(81) (3) 5276-2979
SalesJapan@sirf.com

**India**
(91) (120) 4696000
SalesIndia@sirf.com

**South Korea**
(82) (26) 444-2010
SalesKorea@sirf.com





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