

# FALCOM Smart Antenna FSA02

High sensitivity GPS receiver and SARANTEL quadrifilar helix antenna in a single board solution

- SiRFstarIII - GSC3LTf chip
- High sensitivity for indoor fixes
- Extremely fast TTFF at low signal levels
- Integrated TCXO
- On chip 4 Mb FLASH + 4 MB ROM
- ARM7 baseband CPU
- GSW3 software support
- Quadrifilar Helix beamwidth > 120 °
- Right-hand circular polarized
- VSWR < 2.0:1
- Battery backup
- Starter-kit included evaluation and configuration tool



## The FALCOM FSA02

The new product is a combination between a GPS-receiver from FALCOM based on the newest GPS-chip from SiRF and the Quadrifilar Helix antenna from Sarantel with in the dimension of the Sarantel Geohelix-S-antenna. The antenna is tightly integrated with other antennas, e. g. Bluetooth/GPS-receivers or GPS/GSM mobile phones. The orientation of the device is random.

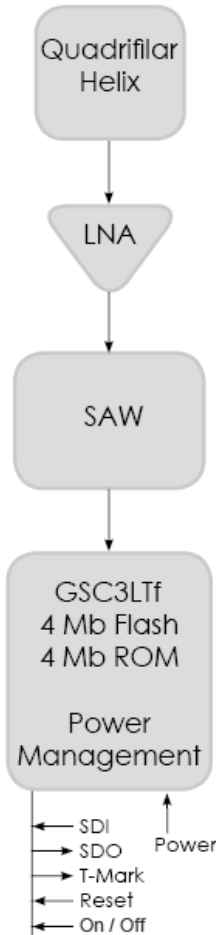
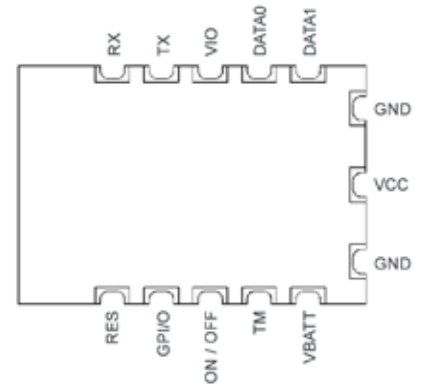
As a dielectrically loaded antenna, the complete device acts its own filter, attenuating signals from common GSM and ISM frequencies by as much as 30 dB without external filtering.

The integrated GPS-receiver is based on the newest GPS Navigation Engine from SiRF, the GSC3LTf. This chip contains the industry leading SiRFstarIII GPS DSP core in 90 nm process

technology operating at 1.2 V. 4 on-board voltage regulators and the integrated Power On Reset reduces solution footprint. The device contains also a LNA with a noise figure of 0,7 dB and a gain of 18 dB.

A SAW filter increase the attenuating against signals from GSM and ISM frequencies. Beside the integrated 4 Mb program flash for customized software, the GSC3LTf has a 4 Mb ROM available for masking stable firmware. The TCXO will a frequency stability of 0,5 ppm allows a sensitivity of -159 dbm. The small size, the high sensitivity and the power consumption from under 20 mA at 3,3 V (under 10 mA in Trickle Power Mode) providing manufactures of cellphones, PDAs and other portable and wireless devices a smaller design with extended battery life.

## Detail view and PIN out



## Technical specification

### GPS receiver

#### Time to first position (TTFF)

|            |  |
|------------|--|
| Hot start  | < 4 sec average (23 dBHz sensitivity)  |
| Warm start | < 35 sec average (28 dBHz sensitivity) |
| Cold start | < 45 sec average (16 dBHz sensitivity) |

#### Sensitivity

|                        |          |
|------------------------|----------|
| Autonomous acquisition | -142 dBm |
| Tracking               | -159 dBm |

#### Receiver

|                  |                   |
|------------------|-------------------|
| Tracking         | L1, CA code       |
| Channel          | 20                |
| Max. update rate | 1 Hz              |
| Protocol support | NMEA, SiRF binary |

#### GPS-Datum

WGS-84

#### Processing core

|                |                         |
|----------------|-------------------------|
| Processor type | ARM7/TDMI, 90 nm, 1.2 V |
| FLASH          | 4 Mb                    |
| ROM            | 4 Mb                    |

#### Electrical characteristics

|                   |   |
|-------------------|---|
| Power supply      | 3,0 V - 5,5 V   |
| Power consumption | 65 mW (3,3 V) Full power<br>30 mW (3,3 V) Trickle power (1 sec) |

#### Quadrifilar Helix

|            |  |
|------------|--|
| Frequency  | 1575.42 MHz                                  |
| Gain       | -3.5 dBic                                    |
| Efficiency | 23 % total spherical<br>45 % upper spherical |
| Beamwidth  | 120 degrees                                  |
| VSWR       | < 2.0 : 1                                    |

#### Dimensions (Antenna & GPS receiver)

|                |         |
|----------------|---------|
| Length         | 50.8 mm |
| Width          | 14.8 mm |
| Helix diameter | 13.2 mm |

#### Required space on customers application board

|        |       |
|--------|-------|
| Length | 23 mm |
| Width  | 16 mm |

## Evaluation

