



# FALCOM

WIRELESS COMMUNICATIONS GMBH

- **SMART ANTENNA**

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- **FSA01**

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- ***Application Notes***



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**VERSION HISTORY:**

This table provides a summary of the document revisions.

Version	Author	Changes	Release Date
1.0.0	F. Beqiri	- Initial version	11/05/2007
1.0.1	F. Beqiri	- GPIO8 changed to ON/OFF and its input voltage level changed from <b>1.8 V</b> to <b>1.2 V</b> . - Changed input voltage range of <b>VCC</b> from <b>3.4 .. 5.5</b> to <b>3.3 .. 5.5 V</b> . - Added <b>VRTC</b> . - The voltage on <b>RX</b> and <b>TX</b> depends on the supply voltage (VCC). - Added new chapter – see chapter 2 “ <a href="#">Security</a> ” ( <i>please read carefully this chapter before starting to use the FSA01</i> ) - Replaced both schematics by new ones.	12/09/2007
1.0.2	F. Beqiri	- Added schematic pad design.	30/01/2008
1.0.3	F. Beqiri	- Because the FSA01 is based on the JP18 receiver, for more technical specification about it, refer to the manual “ <a href="#">JP18_hardware_manual.pdf</a> ”.	09/05/2008
1.0.4	F. Beqiri	- The firmware version ROM is very early (engineering proof) and was never intended for production use.	23/05/2008
1.0.5	F. Beqiri	-VRTC must be always connected to the VCC pin.	06/06/2008
1.0.6	F. Beqiri	- Added mechanical dimensions for the side view	19/08/2008

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# 1 INTRODUCTION

This application note comprises a brief description of the operation of the FALCOM Smart Antenna, the Pad-Design and an application circuit.

## 1.1 General

The Smart Antenna can operate either from internal ROM or internal FLASH.

**Important:** *The firmware version ROM is very early (engineering proof) and was never intended for production use.*

## 1.2 Technical data (briefly)

### ❖ ROM:

- ✓ Output NMEA messages.
  - ✓ Baud rate: 4800 bps,
  - ✓ RMC, GGA, GSA - (1 x 1 sec.)
  - ✓ GSV - (1 x 5 sec.)

### ❖ FLASH:

- ✓ Output NMEA messages.
  - ✓ Baudrate: 38400 bps,
  - ✓ RMC, GGA, GSA, GSV - (1 x 1 sec.)

### ❖ BOOTMODE:

- ✓ To load a new firmware into the internal FLASH use SiRFlash tool version 3.2 or higher .

*Because the FSA01 is based on the JP18 receiver, for more technical specification about it, refer to the manual "[JP18\\_hardware\\_manual.pdf](#)".*

## 1.3 ROM and Flash Memory Operating Modes

	DATA 0	DATA 1
ROM	Open	Open
FLASH	Open	Connect to GND
BOOTMODE	Connect to VIO	Open

Table 1: ROM and Flash Memory Operating Modes

## 1.4 Signal levels

Pin name	Level	Function
RES	1.2 V CMOS	Input
GPIO 0	1.8 V CMOS	Input/Output
ON/OFF*	1.2 V CMOS	Input
TM	1.8 V CMOS	Output
VRTC	3.3 V – 5.5 VDC	Input. <i>It must be always connected to the VCC pin.</i>
GND	0 V	-
VCC	3.3 V – 5.5 VDC	Input
GND	0 V	-
DATA 0	1.8 V CMOS	Input at startup
DATA 1	1.8 V CMOS	Input at startup
VIO	1.8 V CMOS	Output
TX	3.3 V CMOS** (if VCC = 3.3 V)	Output
RX	3.3 V CMOS** (if VCC = 3.3 V)	Input

\* For more technical details regarding the ON/OFF pin, please refer to the “[JP18\\_hardware\\_manual.pdf](#)” manual , chapter 6.2.

\*\* The voltage on both pins depends on the supply voltage (VCC)

**Table 2:** Signal levels and their function

## 2 SECURITY

This chapter contains important information for the safe and reliable use of the GPS receiver. Please read this chapter carefully before starting to use the GPS receiver.

### 2.1 Electrostatic Discharge (ESD)

The FSA01 Smart Antenna contains class 1 devices. The FSA01 Smart Antenna contains components that can be damaged or destroyed by electrostatic discharge. When handling the module, observe the necessary safety precautions against electrostatic discharge (ESD), in accordance with EN 61340-5-1 and the following. The following Electrostatic Discharge (ESD) precautions are recommended:

- *Protective outer garments.*
- *Handle device in ESD safeguarded work area.*
- *Transport device in ESD shielded containers.*
- *Monitor and test all ESD protection equipment.*
- *Treat the FSA01 Smart Antenna as extremely sensitive to ESD.*

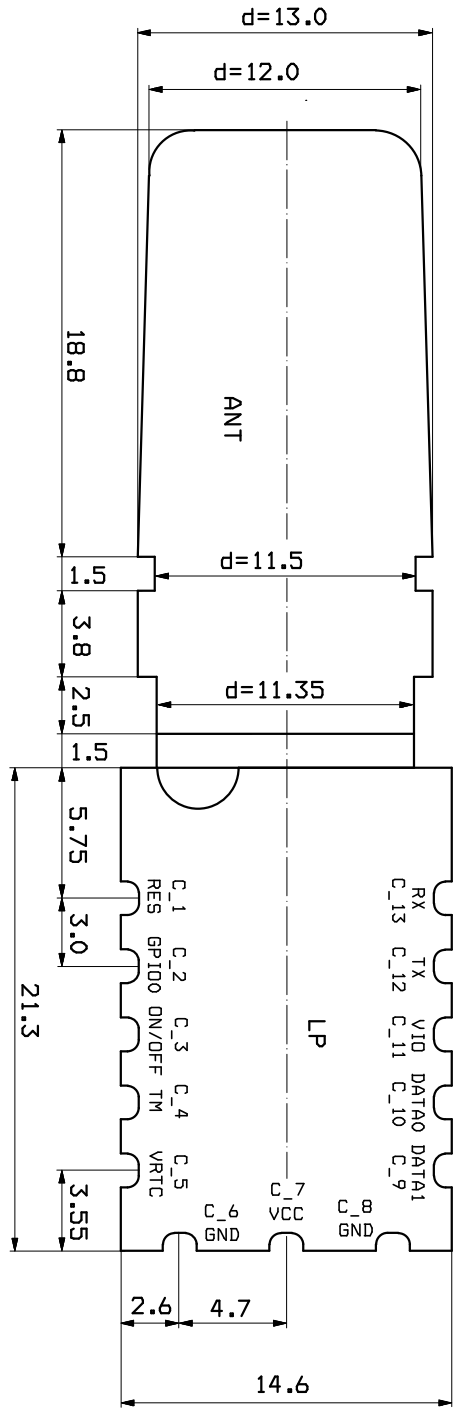
### 2.2 Moisture Sensitive Level (MSL)

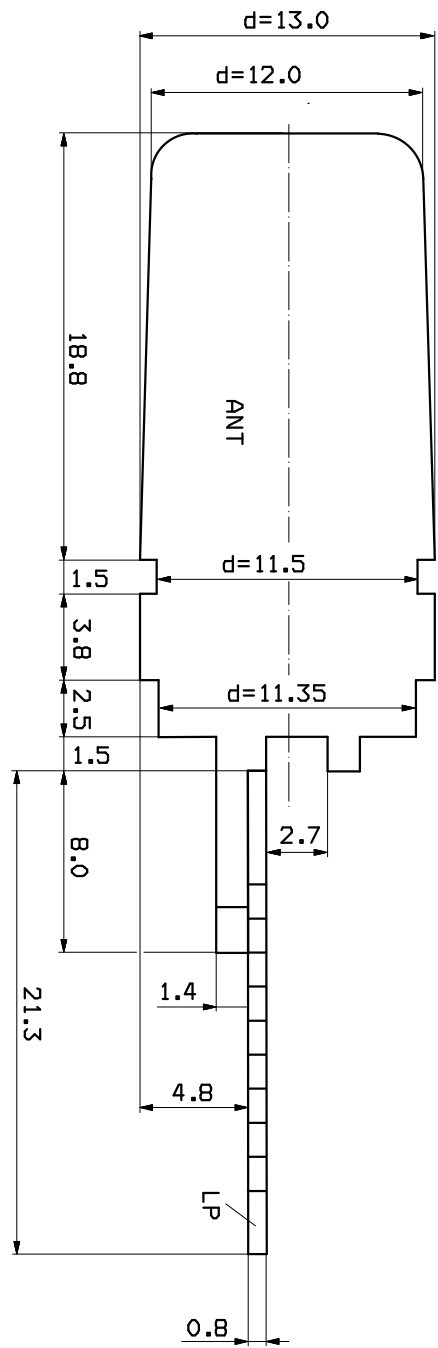
The FSA01 Smart Antenna is classified as a MSL3 device. FSA01 is moisture sensitive and need to be handled within proper MSL 3 guidelines to avoid damage from moisture absorption and exposure to solder reflow temperatures that can result in yield and reliability degradation. That means, after the FSA01 Smart Antenna is removed from the vacuum packaging, it must go through reflow for main board assembly within 168 hours (1 week). If this conditions is not met, the module should be baked for 24 hours at 125°C before board mounting.

#### References

Customers may refer to following IPC standards for more details:

- *J-STD-033B Standard for Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices.*
- *J-STD-020D Moisture/Reflow Sensitivity Classification for Non-hermetic Solid State Surface Mount Devices.*





Tolerances:  $\pm 0.1\text{mm}$

# Pad-design FSA01

Note: no ground under the component

