



Connecting innovation for Intelligent wireless

SPTA7S3 Micro.sp[®]
434MHz transmitter
data sheet



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About Micro.sp[®] technology

Micro.sp[®] technology, patented by STE, is based on short RF pulses transmitted with Pulse Position Modulation (PPM) technique, which guarantees high RF peak power, as required for radio link reliability, but with a very low average power (Power Density) and consequently low current absorption during the transmission period.

This allows the system to be powered by a small battery for a very long lifetime (typically over 10 years) and also by autonomous energy sources (Energy Scavengers).

Low power consumption is the greatest advantage of Micro.sp transmitter over traditional RF systems which use standard ASK or FSK modulation and either require the use of large batteries or have a very limited battery lifetime.

Benefits of Micro.SP[®] technology are:

- high reliability
- excellent RF performance
- lower power consumption
- low cost

sp.net - the network evolution

sp.net is the new multi-technology sensors network produced by STE.

Thanks to sp.net you will be able to create your own wireless infrastructure with just few easy steps while saving your money.

With sp.net you will be able to control any kind of sensor within any environment.

A wide range of applications which go from small home sensors to bigger urban systems as well as more sophisticated use such as checking wheel pressure through a sensor placed into the tyre which sends data directly to your smartphone.



Product Description

SPTA7S3 transmitter is the first model of a new product line of radio devices made by STE, based on patented Micro.sp technology. The new product line is characterized by compact size, increased performance and ease of use.

With SPTA7S3 transmitter, the user can send data to RF transmitter via serial port (SPI, UART or I2C) without needing to configure any parameter. Micro.sp, besides RF transmission and HW interfaces, also manages data transfer protocols.

Another key feature of Micro.sp is its extremely low power consumption, thanks to its innovative technology.

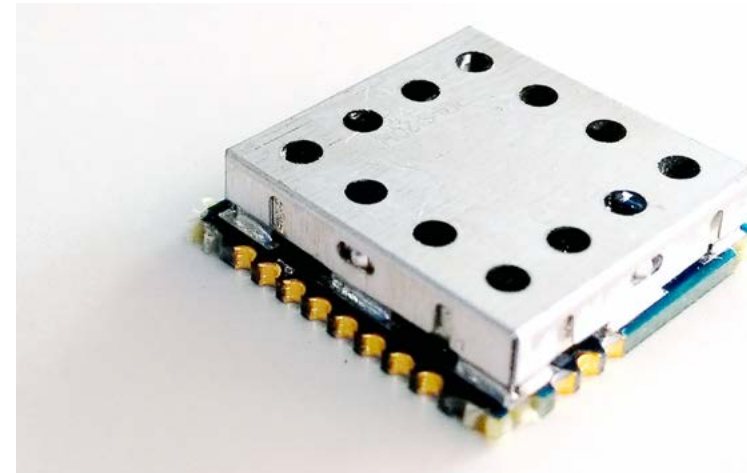


fig. 1 - SPTA7S3 transmitter module

Applications

- Smart City
- Social Alarms
- Home Automation
- Monitoring
- Local-based Services

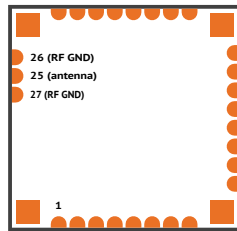
System Description

Data transmission is based on a SAW stabilized RF circuit (patented), capable of generating fast and accurate RF PPM pulses modulated by the microcontroller.

The microcontroller is a Texas Instruments MSP430G2453 Ultra Low Power.

Refer to the section “Pinout” for SPTA7S3 to MSP430 pinout conversion.

Mechanical Specifications



Length	15 mm
Width	15 mm
Height	4 mm

fig. 2 - typical connections and dimensions

Technical Specifications

Operating Value

Supply Voltage	2,4V ÷ 3,6V DC
Current Consumption (sleep mode)	0,1 µA
Current Consumption Average (TX Mode)	0,8 mA
Current Consumption Peak (TX Mode)	15 mA
Transmitter Frequency	434,35 MHz
Frequency Tolerance	±50 kHz
Modulation	PPM
Bandwidth	400 kHz
Output Power (at 3V)	+10 dBm
RF Output impedance	50 Ω
Operating Temperature	-40°C / +85°C

Pinout

Pin n.	Function	Description	MSP430 pin
1	UART-RXD / SPI-OUT	UART RXD: receive data input MISO SPI mode: slave data out/master in	P1.1
2	UART TXD / SPI-IN	UART TXD: transmit data output MOSI SPI mode: slave data in/master out	P1.2
3	ENABLE	Chip enable	P1.3
4	SPI-CLK	SPI CLK - clock input/output	P1.4
5	SPI SSEL	SPI SSEL - Slave transmit enable	P1.5
6		Reserved	P3.1
7		Reserved	P3.0
8	VDD	Supply voltage	AVCC/DVCC
9	INTERRUPT	Output pin that returns the status of the radio	P2.0
10	SERIAL MODE 1	Select the UART serial mode (HIGH). When selected, PIN11 status is neglectable	P2.1
11	SERIAL MODE 2	Select I2C (HIGH) or SPI (low) serial mode	P2.2



Pin n.	Function	Description	MSP430 pin
12	I2C ADDRESS 1	If HIGH, I2C ADDRESS IS 0xXX. NOTE: only one address is selectable. If both pins are selected, address 1 will be the default value	P3.2
13	I2C ADDRESS 2	If HIGH, I2C ADDRESS IS 0xXX. NOTE: only one address is selectable. If both pins are selected, address 1 will be the default value.	P3.3
14		Reserved	P3.4
15		Reserved	P2.3
16		Reserved	P2.4
17		Reserved	P2.5
18		Reserved	P3.5
19		Reserved	P3.6
20		Reserved	P3.7
21	I2C SCL	I2C SCL - SCL I2C clock	P1.6
22	I2C SDA	I2C SDA - SDA I2C data	P1.7
23	RESET	RESET	RST
24		Reserved	
25	RF OUT	Output for 434.4 MHz antenna with 50 Ω impedance	

Pin n.	Function	Description	MSP430 pin
26	RF GND	RF Ground	
27	RF GND	RF Ground	