

SRF: Surface Mount Wireless Serial Data Module



The SRF is designed for wireless transmission and reception of serial data in an easy to use surface mounted module. It has an on-board balun and chip antenna, which can be detached for applications where an external antenna is required.

The SRF makes use of Texas Instruments CC1110 or CC1111, a low-power System-on-Chip, which sports a micro-controller unit (MCU), memory, a sub-1GHz transceiver, an encryption engine and a USB controller (for the CC1111 based module). This chip has been pre-loaded with Cisco firmware such that multiple SRF modules provide a wireless RF serial connection without any need for programmer or end-user configuration.

The SRF serial is a surface mount equivalent to the [XRE](#), the SRF USB is a surface mount equivalent to the [LRF](#). The [LRF stick](#) makes use of the SRF USB.

Technical specification

Operating Conditions

Parameter	Min	Max	Unit	Condition
Operating ambient temperature, TA	0	85	°C	USB (CC1111)
Operating ambient temperature TA	-40	85	°C	Serial (CC1110)
Operating supply voltage (VVD)	2.0	3.6	V	All supply

Electrical Specification

Parameter	Value	Unit	Condition
TX current consumption	36.2	mA	10 dBm (max power)
TX current consumption	21.0	mA	@ 0 dBm
TX current consumption	20	mA	@ -6 dBm
RX current consumption	23.8	mA	Max @ 868.3 MHz
Sleep mode current	123.2	µA	ATSM1 sleep pin low @ 2.6V
Deep sleep current	0.2	µA	ATSM2 sleep pin high @ 2.6V

Absolute Maximum Ratings

Under no circumstances must the absolute maximum ratings given in the table below be violated. Exceeding one or more of the limiting values may cause permanent damage to the device.

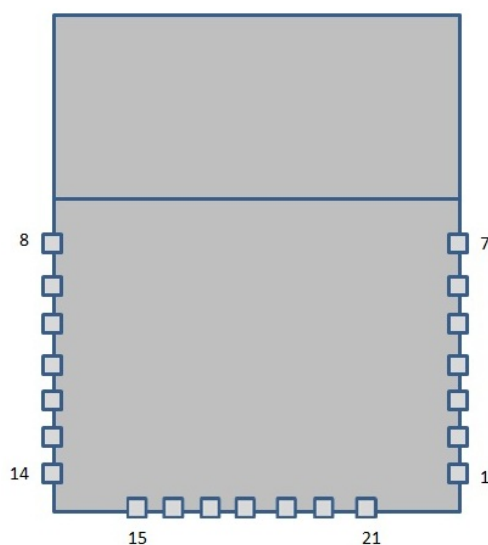
Parameter	Min	Max	Unit
Supply voltage (VVD)	-0.3	3.9	V
Voltage on any digital pin	-0.3	VDD + 0.3, max 3.9	V
Voltage ramp-up rate		120	KV/?s
Input RF level		10	Dbm
Storage temperature range	-50	150	°C
Solder reflow temperature		260	°C
ESD		750	V
ESD		750	V

Dimensions

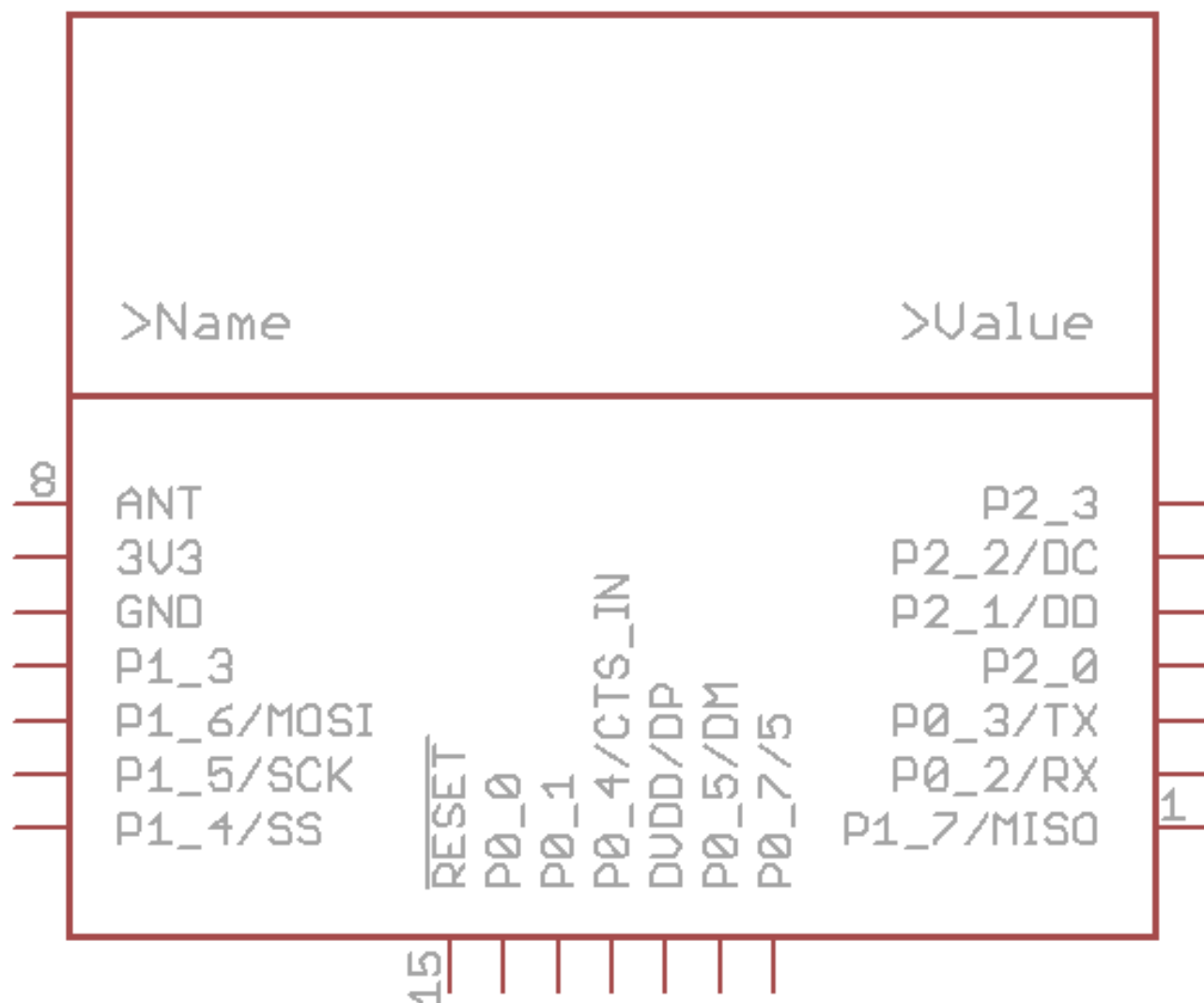
The SRF measures

- 26.4 X 15.9 X 2.0 mm

Pin and I/O Configuration



Pin	SRF Serial	SRF USB
1	Heartbeat	Heartbeat
2	DIN	DIN
3	DOUT	DOUT
4	DTR in	USB Enable
5	Remote Reset	
6	LNA_EN	
7		
8	Antenna	Antenna
9	VVD	VVD
10	GND	GND
11	<small>ON/-SLEEP Led</small>	Remote Reset
12	Power on reset	USB Rx LED
13	Power on reset	USB Tx LED
14	SLEEP	
15	RESET	RESET
16	RTS	
17		USB/Serial
18	CTS in	CTS in
19		USB Data+
20		USB Data-
21	Tx LED/PAN_EN	



Dimensional Drawings

<http://openmicros.org/images/datasheets/SRF%201.0a%20Outline.pdf>

<http://openmicros.org/images/datasheets/SRF%201.0a%20Landing.pdf>

Designing PCB's for the SRF

Eagle CAD Footprints for the SRF can be found in our Eagle Parts library

<https://github.com/CisecoPlc/Ciseco-Eagle-Library>

We recommend including a 8 pin debuting/programming header in all design with the following layout

The numbers in green are the SRF pins to wire back to.

Pins 1 & 2 allow for external power to the SRF and GND matching for the signals

Pins 3, 4 & 5 allow for factor debugging and firmware restoration.

Pin 6 Mode pin, on SPI device this is needed to disable SPI and enable Serial Comms.

Pin 7 & 8 allows for Serial comms useful for user firmware upgrade's and setting changes.

If space is tight and you already have TX and RX available on other pins you can use the 6 pin verion of this lay out and omit 7 & 8

You can see the 8 Pin version of this header on the [Explorer Plus](#) and the 6 pin version on the [XinoRF](#) and [Slice or Radio](#)

If space is really tight we still recomend breaking out the pins to test pads, you can see an example of this on the underside of the [RFμ-328](#)

