SMART Modular Technologies

Data Sheet: LoRa® Module

August 04, 2020

Rev 1.2

Revision History

Revision Code	Date	Description
A	March 25, 2020	Initial release.
B	Apr 24, 2020	Addition of chapter 11 – Module dimensions
C	Aug 04, 2020	Change in supply voltage

Table of Contents

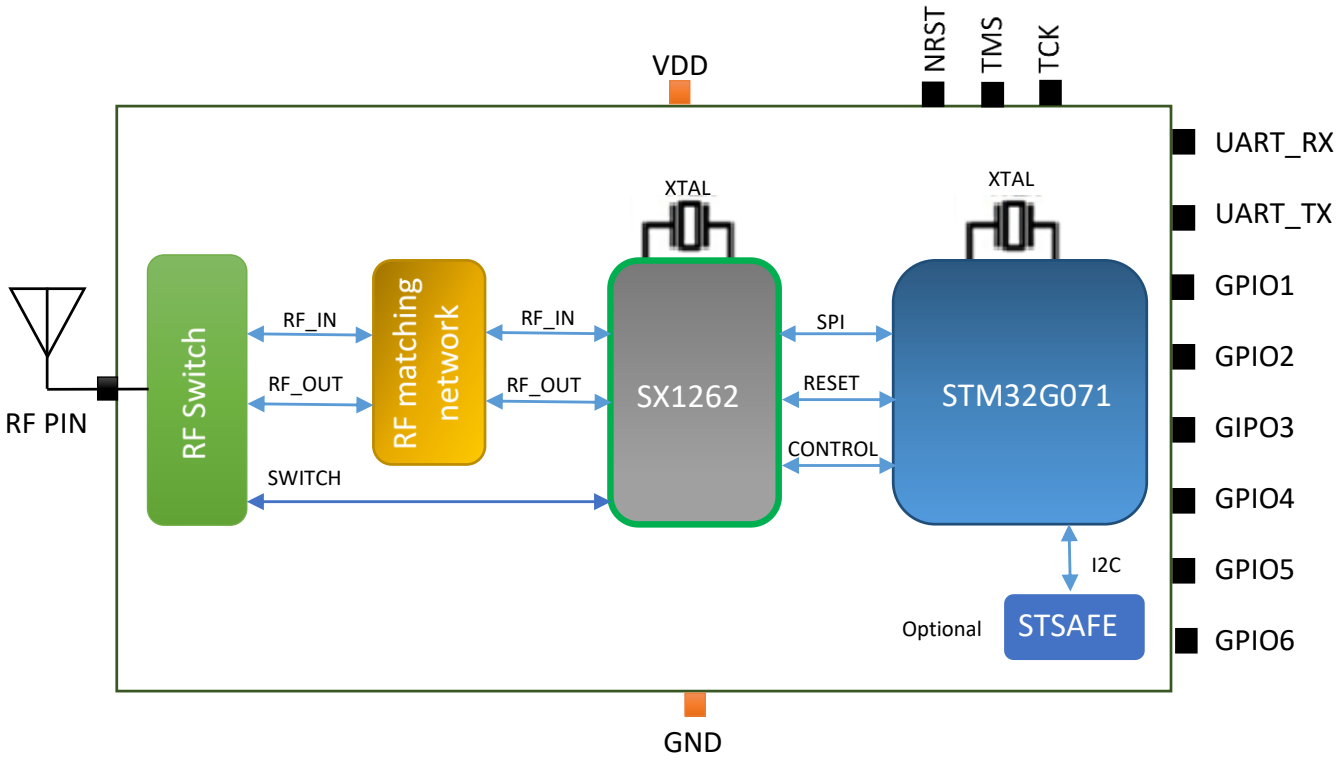
1. Main Features.

Interfaces:	UART, 6 GPIOs.
Main ICs:	STM32G, SX1262.
Reference clocks:	Integrated 32MHz clock (frequency error=±10 ppm) and 32.768KHz clock (frequency error=±20 ppm)
Supported frequencies:	915 MHz
Module size:	21 mm x 26 mm x 1.76 mm (max.)
Weight:	0.48g (Typ.)
RoHS:	This module is compliant with the RoHS directive
Certifications:	Anatel and Ethingz.

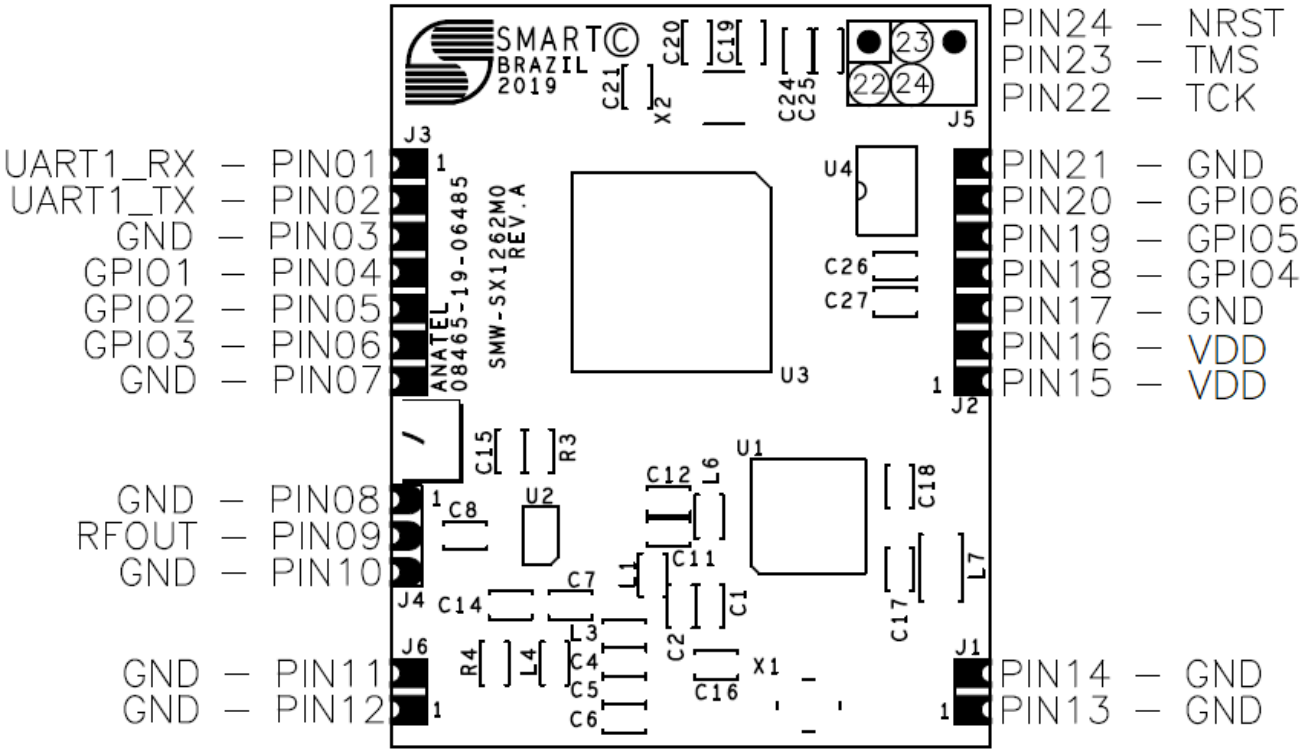
2. Part Number.

Ordering Part Number	MCU	Secure element	Device firmware	Description
SMW-SX1262M0	STM32G071	NA	1.2	MP P/N

3. Block diagram.



4. Pin information.



5. Absolute maximum ratings.

Table 1 Maximum ratings

Parameters	Min.	Typ.	Max.	Units
Storage temperature	-40	25	+125	°C
RF input level	-	-	10	dBm
Supply voltage	-0.3	-	3.9	V

6. Operation Condition.

Table 2 Operation specification

Parameters	Min.	Typ.	Max.	Units
Operating Temperature	-40	25	+85	°C
Supply voltage (*)	2.0	-	3.6	V

Note:
(*) When module is on +22dBm operation, the supply of the voltage should be set to 3.6V.

7. Electrical characteristics.

7.1 LoRa® Transceiver Specification.

Conditions:
The table below gives the electrical specifications for the transceiver operating with LoRa®TM modulation. Following conditions apply unless otherwise specified:

Supply voltage	3.6 V.
Temperature	25 ° C.
FXOSC	32 MHz.
Error correction code (EC)	4/5.
Packet error rate (PER)	1%.
CRC in Payload	Enabled.
Payload Length	10 bytes.
With the corresponding impedances.	

Table 3 LoRa® receiver specification

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
RX_T (*)	Supply current in receiver LoRa® mode.	Band 1, BW = 125 kHz		6.5		mA
		Band 1, BW = 250 kHz		6.9		mA
		Band 1, BW = 500 kHz		7.1		mA
RX_125	RF sensitivity, using split Rx/Tx path, 125 kHz bandwidth	SF = 6		-117.5		dBm
		SF = 7		-122.5		dBm
		SF = 8		-125.5		dBm
		SF = 9		-128.5		dBm
		SF = 10		-131.0		dBm
		SF = 11		-133.5		dBm
		SF = 12		-135.5		dBm
RX_250	RF sensitivity, using split Rx/Tx path, 250 kHz bandwidth.	SF = 6		-114.0		dBm
		SF = 7		-119.0		dBm
		SF = 8		-122.0		dBm
		SF = 9		-125.0		dBm
		SF = 10		-127.5		dBm
		SF = 11		-130.0		dBm
		SF = 12		-133.0		dBm

Table 4 LoRa® transmitter specification

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
TX_T	Supply current in transmitter mode	PA setting = 22 dBm		129		mA

Note:
(*) RX_T, RX_125, RX_250, TX_T are total current consumption including MCU in active.

7.2 Low power mode current.

Conditions:

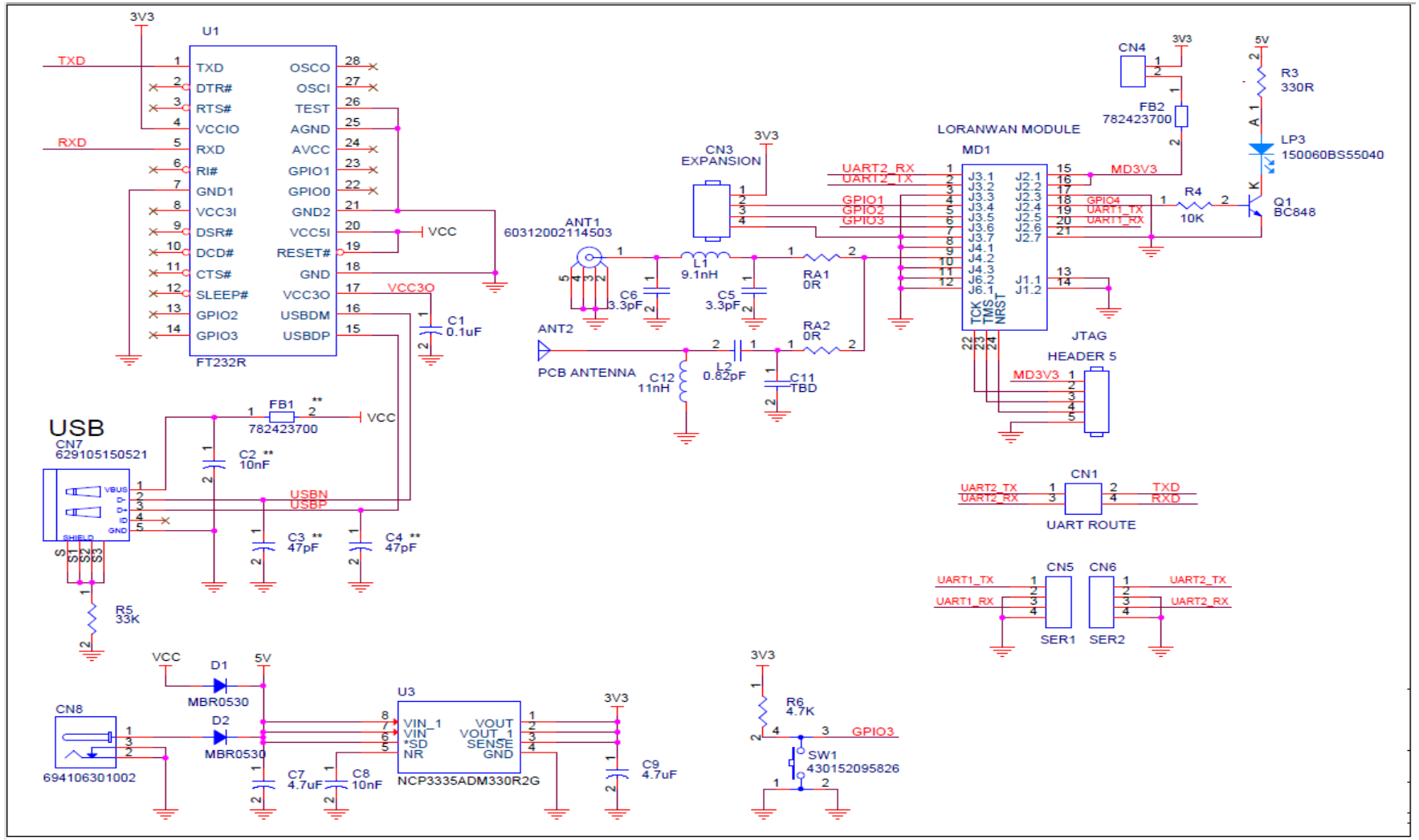
Power supply 3.3 V.
Temperature Room

Table 5 Low Power Consumption Modes

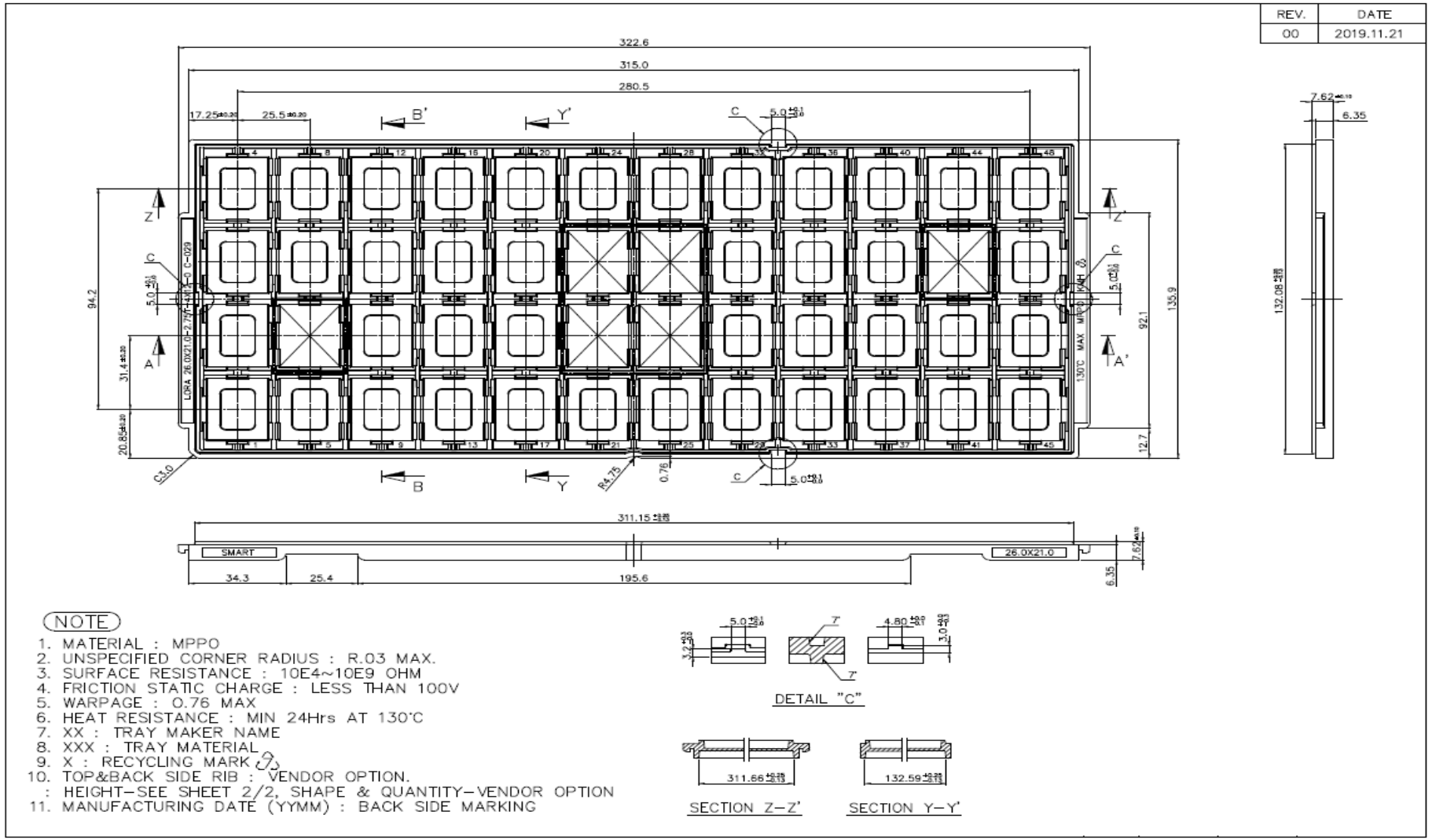
Mode	Description	Min.	Typ.	Max.	Units
Standby	Normal condition when waiting for commands received from UART	4.00	4.50	4.95	uA
Power down(*)	Enters in this mode, when receives AT+SHTDWN command in UART. Wakes-Up with a dummy byte sent to UART.		650		nA

Note:
(*) AT+SHTDWN command will shut down module and all configuration will be lost. Any byte sent to the UART interface will wake–up module with a self-reset, with similar a result sent to the serial terminal as ATZ command does.

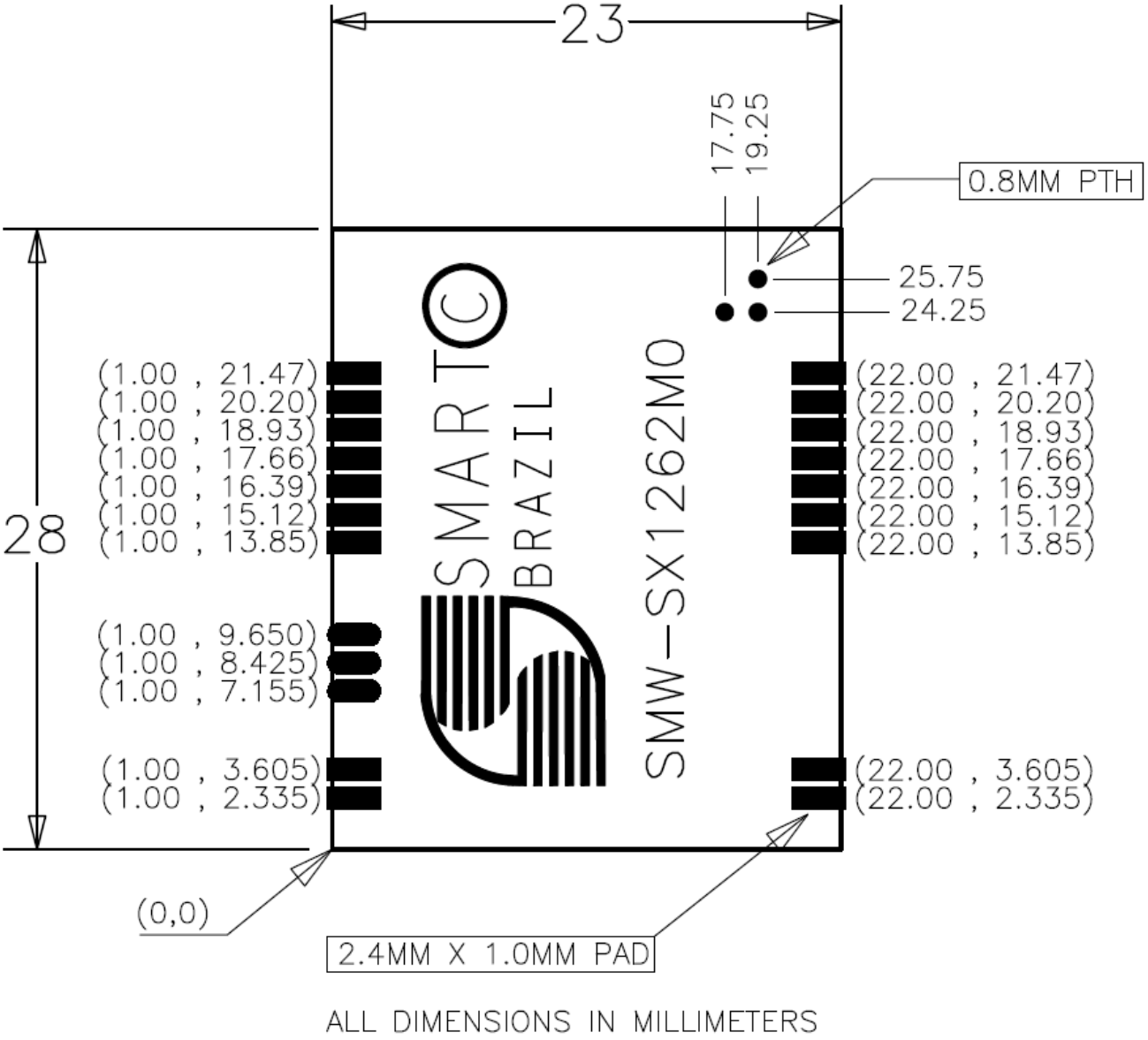
8. Reference circuit - Evaluation Board SMW-SX1262M0EB.



9. Package information - Dimension of Tray (Plastic tape).

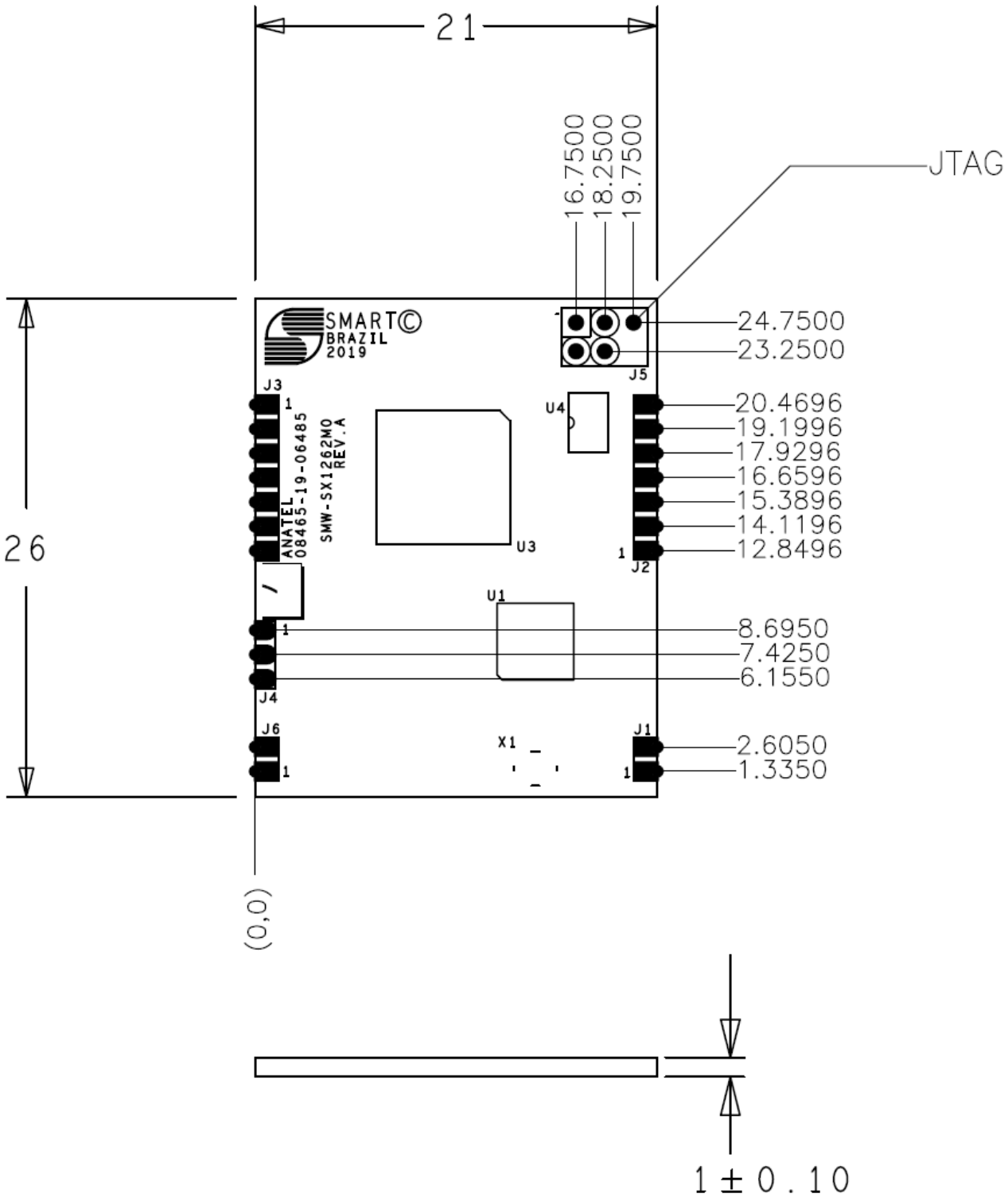


10. Landing pattern



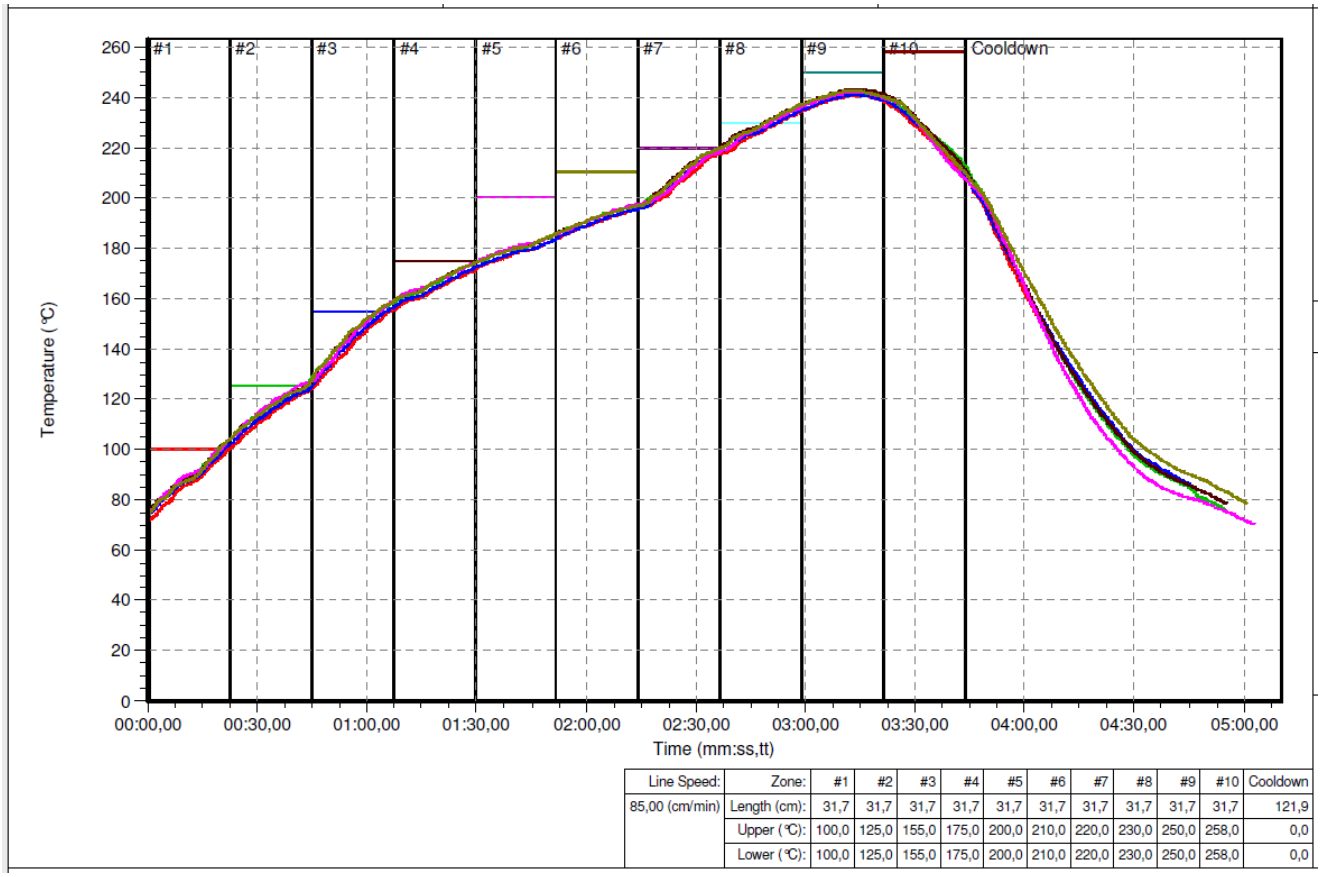
11. Module dimensions

Note: 1.5 mm tolerance unless otherwise specified.



12. Soldering conditions.

The recommendation conditions of soldering are as in the following figure. Soldering must be carried out by the above mentioned conditions to prevent products from damage. Set up the highest temperature of reflow within 250 °C.



Line Speed:	Zone:	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Cooldown
85,00 (cm/min)	Length (cm):	31,7	31,7	31,7	31,7	31,7	31,7	31,7	31,7	31,7	31,7	121,9
	Upper (°C):	100,0	125,0	155,0	175,0	200,0	210,0	220,0	230,0	250,0	258,0	0,0
	Lower (°C):	100,0	125,0	155,0	175,0	200,0	210,0	220,0	230,0	250,0	258,0	0,0

13. Certifications.

13.1 Anatel.

13.2 Ethingz.