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## Low-Power Long Range LoRa® Technology Transceiver Module

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### General Features

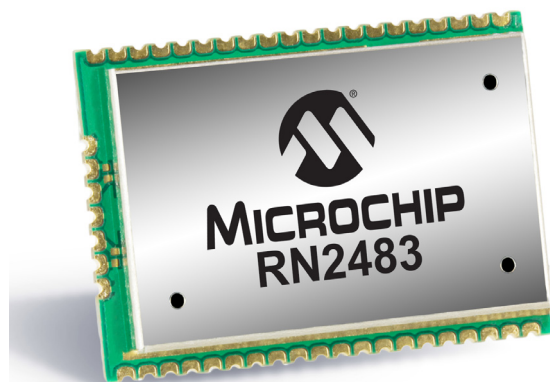
- On-Board LoRaWAN™ Protocol Stack
- ASCII Command Interface over UART
- Compact Form Factor: 17.8 x 26.7 x 3.34 mm
- Castellated SMT Pads for Easy and Reliable PCB Mounting
- Environmentally Friendly, RoHS Compliant
- European R&TTE Directive Assessed Radio Module
- Device Firmware Upgrade (DFU) over UART, see *“RN2483 LoRa® Technology Module Command Reference User’s Guide”* (DS40001784)

### Operational

- Single Operating Voltage: 2.1V to 3.6V (3.3V typical)
- Temperature Range: -40°C to +85°C
- Low-Power Consumption
- Programmable RF Communication Bit Rate up to 300 kbps with FSK Modulation, 10937 bps with LoRa® Technology Modulation
- Integrated MCU, Crystal, EU-64 Node Identity Serial EEPROM, Radio Transceiver with Analog Front End, Matching Circuitry
- 14 GPIOs for Control and Status, Shared with 13 Analog Inputs

### RF/Analog Features

- Low-Power Long Range Transceiver Operating in the 433 MHz and 868 MHz Frequency Bands
- High Receiver Sensitivity: Down to -146 dBm
- TX Power: Adjustable up to +14 dBm high Efficiency PA
- FSK, GFSK, and LoRa Technology Modulation
- IIP3 = -11 dBm
- Up to 15 km Coverage at Suburban and up to 5 km Coverage at Urban Area



### Description

Microchip's RN2483 Low-Power Long Range LoRa Technology Transceiver module provides an easy to use, low-power solution for long range wireless data transmission. The advanced command interface offers rapid time to market.

The RN2483 module complies with the LoRaWAN Class A protocol specifications. It integrates RF, a baseband controller, command Application Programming Interface (API) processor, making it a complete long range solution.

The RN2483 module is suitable for simple long range sensor applications with external host MCU.

### Applications

- Automated Meter Reading
- Home and Building Automation
- Wireless Alarm and Security Systems
- Industrial Monitoring and Control
- Machine to Machine (M2M)
- Internet of Things (IoT)

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## 1.0 DEVICE OVERVIEW

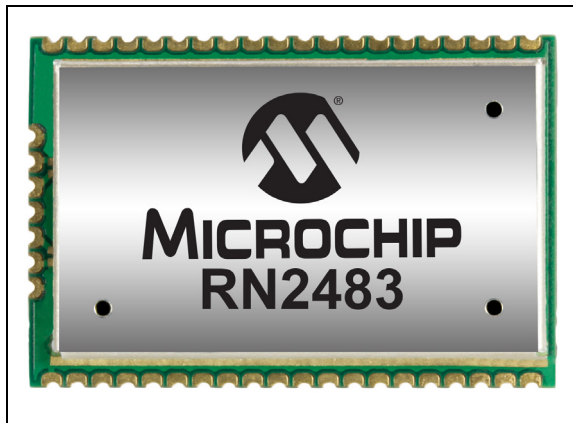
The RN2483 transceiver module features LoRa Technology RF modulation, which provides long range spread spectrum communication with high interference immunity.

Using LoRa Technology modulation technique, RN2483 can achieve a receiver sensitivity of -146 dBm. The high sensitivity combined with the integrated +14 dBm power amplifier yields industry leading link budget, which makes it optimal for applications requiring extended range and robustness.

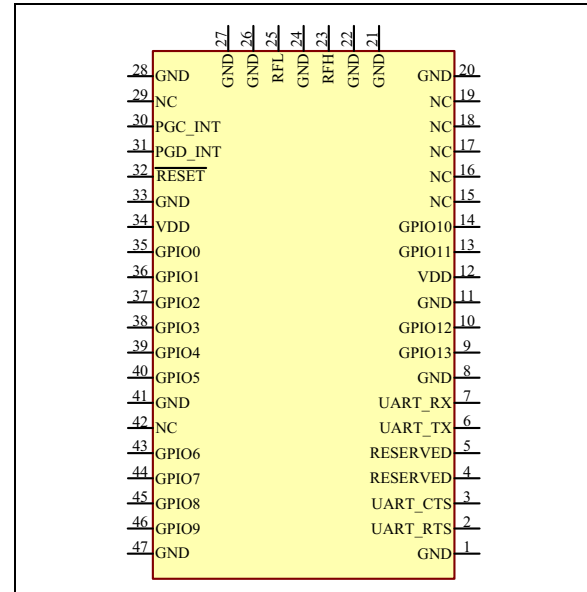
LoRa Technology modulation also provides significant advantages in both blocking and selectivity compared to the conventional modulation techniques, solving the traditional design compromise between extended range, interference immunity, and low-power consumption.

The RN2483 module delivers exceptional phase noise, selectivity, receiver linearity, and IIP3 for significantly lower power consumption. [Figure 1-1](#), [Figure 1-2](#), and [Figure 1-3](#) show the top view, the pinout, and the block diagram of the module.

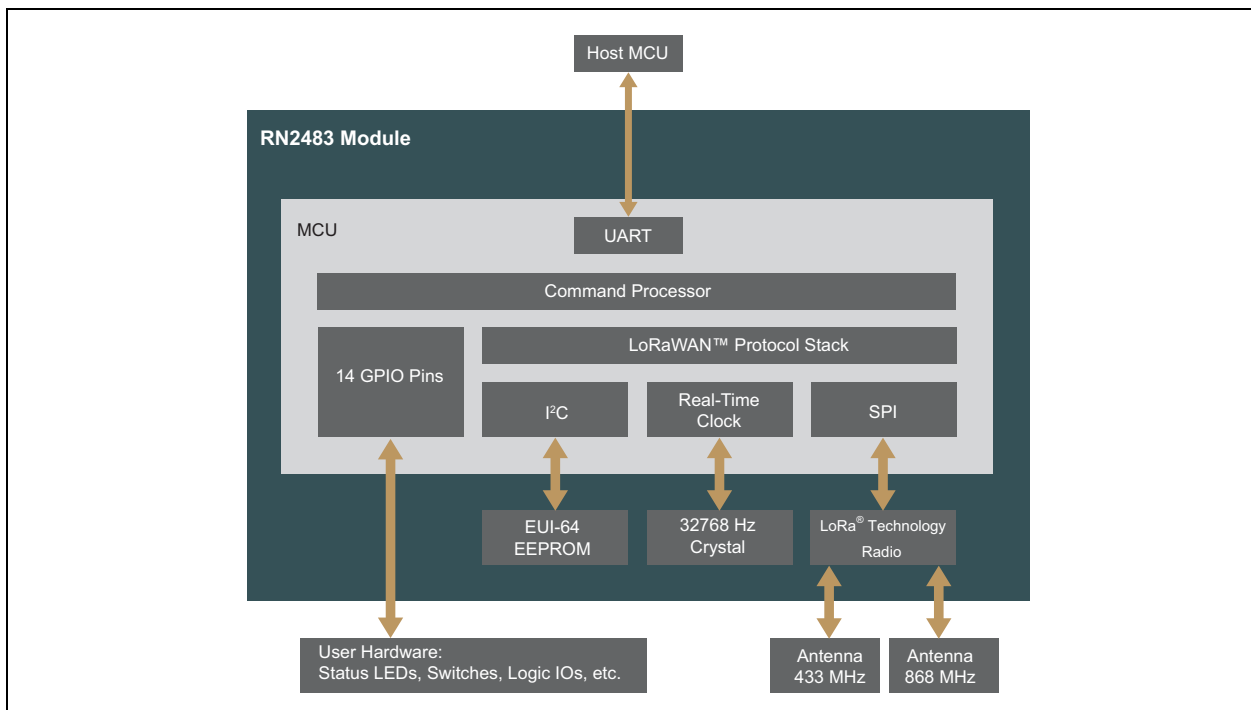
**FIGURE 1-1: RN2483 TOP VIEW**



**FIGURE 1-2: RN2483 PIN DIAGRAM**



**FIGURE 1-3: RN2483 BLOCK DIAGRAM**



# RN2483

Table 1-1 describes the RN2483 pins.

**TABLE 1-1: PIN DESCRIPTION**

| Pin | Name     | Type         | Description                                                               |
|-----|----------|--------------|---------------------------------------------------------------------------|
| 1   | GND      | Power        | Ground supply terminal                                                    |
| 2   | UART_RTS | Output       | Communication UART RTS signal <sup>(1)</sup> , or GPIO                    |
| 3   | UART_CTS | Input        | Communication UART CTS signal <sup>(1)</sup> , or GPIO                    |
| 4   | RESERVED | —            | Do not connect                                                            |
| 5   | RESERVED | —            | Do not connect                                                            |
| 6   | UART_TX  | Output       | Communication UART Transmit (TX)                                          |
| 7   | UART_RX  | Input        | Communication UART Receive (RX)                                           |
| 8   | GND      | Power        | Ground supply terminal                                                    |
| 9   | GPIO13   | Input/Output | General purpose I/O pin or analog input                                   |
| 10  | GPIO12   | Input/Output | General purpose I/O pin or analog input                                   |
| 11  | GND      | Power        | Ground supply terminal                                                    |
| 12  | VDD      | Power        | Positive supply terminal                                                  |
| 13  | GPIO11   | Input/Output | General purpose I/O pin or analog input                                   |
| 14  | GPIO10   | Input/Output | General purpose I/O pin or analog input                                   |
| 15  | NC       | —            | Not connected                                                             |
| 16  | NC       | —            | Not connected                                                             |
| 17  | NC       | —            | Not connected                                                             |
| 18  | NC       | —            | Not connected                                                             |
| 19  | NC       | —            | Not connected                                                             |
| 20  | GND      | Power        | Ground supply terminal                                                    |
| 21  | GND      | Power        | Ground supply terminal                                                    |
| 22  | GND      | Power        | Ground supply terminal                                                    |
| 23  | RFH      | RF analog    | RF signal pin for high band                                               |
| 24  | GND      | Power        | Ground supply terminal                                                    |
| 25  | RFL      | RF analog    | RF signal pin for low band                                                |
| 26  | GND      | Power        | Ground supply terminal                                                    |
| 27  | GND      | Power        | Ground supply terminal                                                    |
| 28  | GND      | Power        | Ground supply terminal                                                    |
| 29  | NC       | —            | Not connected                                                             |
| 30  | PGC_INT  | Input/Output | Internal MCU ICSP program clock or general purpose I/O pin <sup>(2)</sup> |
| 31  | PGD_INT  | Input/Output | Internal MCU ICSP program data or general purpose I/O pin <sup>(2)</sup>  |
| 32  | RESET    | Input        | Active-low device Reset input                                             |
| 33  | GND      | Power        | Ground supply terminal                                                    |
| 34  | VDD      | Power        | Positive supply terminal                                                  |
| 35  | GPIO0    | Input/Output | General purpose I/O pin or analog input                                   |
| 36  | GPIO1    | Input/Output | General purpose I/O pin or analog input                                   |
| 37  | GPIO2    | Input/Output | General purpose I/O pin or analog input                                   |
| 38  | GPIO3    | Input/Output | General purpose I/O pin or analog input                                   |
| 39  | GPIO4    | Input/Output | General purpose I/O pin                                                   |
| 40  | GPIO5    | Input/Output | General purpose I/O pin or analog input                                   |
| 41  | GND      | Power        | Ground supply terminal                                                    |
| 42  | NC       | —            | Not connected                                                             |

**TABLE 1-1: PIN DESCRIPTION (CONTINUED)**

| Pin | Name  | Type         | Description                             |
|-----|-------|--------------|-----------------------------------------|
| 43  | GPIO6 | Input/Output | General purpose I/O pin or analog input |
| 44  | GPIO7 | Input/Output | General purpose I/O pin or analog input |
| 45  | GPIO8 | Input/Output | General purpose I/O pin or analog input |
| 46  | GPIO9 | Input/Output | General purpose I/O pin or analog input |
| 47  | GND   | Power        | Ground supply terminal                  |

**Note 1:** Optional handshake lines are supported in future firmware releases.

**2:** The “RN2483 LoRa® Technology Module Command Reference User’s Guide” (DS40001784F) uses the pin name TEST0 for PGC\_INT and TEST1 for PGD\_INT.

## 2.0 GENERAL SPECIFICATIONS

Table 2-1 provides the general specifications for the module. Table 2-2, Table 2-3, and Table 2-4 provide the electrical characteristics, current consumption, and

dimensions of the module, respectively. Table 2-5 shows the RF output power calibration data. Table 2-6 shows the RF output power at different supply voltages and temperatures.

**TABLE 2-1: GENERAL SPECIFICATIONS**

| Specification                  | Description                                                                                                                |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Frequency Band                 | 863.000 MHz to 870.000 MHz; 433.050 MHz to 434.790 MHz                                                                     |
| Modulation Method              | FSK, GFSK, and LoRa® Technology modulation                                                                                 |
| Maximum Over-the-Air Data Rate | 300 kbps with FSK modulation; 10937 bps with LoRa Technology modulation                                                    |
| RF Connection                  | Board edge connection                                                                                                      |
| Interface                      | UART                                                                                                                       |
| Operation Range                | Up to 15 km coverage at suburban; up to 5 km coverage at urban area                                                        |
| Sensitivity at 1% PER          | -146 dBm <sup>(1)</sup>                                                                                                    |
| RF TX Power                    | Adjustable up to max. 10 dBm on 433 MHz band (limited to meet regulations); max. 14 dBm on the 868 MHz band <sup>(2)</sup> |
| Temperature (operating)        | -40°C to +85°C                                                                                                             |
| Temperature (storage)          | -40°C to +115°C                                                                                                            |
| Humidity                       | 10% ~ 90% non-condensing                                                                                                   |

**Note 1:** Dependent on modulation settings, Receiver Bandwidth (RBW), and Spreading Factor (SF).

**2:** TX power is adjustable. For more information, refer to the “RN2483 LoRa® Technology Module Command Reference User’s Guide” (DS40001784).

**TABLE 2-2: ELECTRICAL CHARACTERISTICS**

| Parameter                                                                            | Min.      | Typ. | Max.       | Units |
|--------------------------------------------------------------------------------------|-----------|------|------------|-------|
| Supply Voltage                                                                       | 2.1       | —    | 3.6        | V     |
| Voltage on any pin with respect to VSS (except VDD) and RESET                        | -0.3      | —    | VDD + 0.3  | V     |
| Voltage on VDD with respect to VSS                                                   | -0.3      | —    | 3.9        | V     |
| Voltage on RESET with respect to VSS                                                 | 0         | —    | +11        | V     |
| Input Clamp Current (I <sub>IK</sub> ) (V <sub>I</sub> < 0 or V <sub>I</sub> > VDD)  | —         | —    | +/-20      | mA    |
| Output Clamp Current (I <sub>OK</sub> ) (V <sub>O</sub> < 0 or V <sub>O</sub> > VDD) | —         | —    | +/-20      | mA    |
| GPIO sink/source current each                                                        | —         | —    | 25/25      | mA    |
| Total GPIO sink/source current                                                       | —         | —    | 200/185    | mA    |
| RAM Data Retention Voltage (in Sleep mode or Reset state)                            | 1.5       | —    | —          | V     |
| VDD Start Voltage to ensure internal Power-on Reset signal                           | —         | —    | 0.7        | V     |
| VDD Rise Rate to ensure internal Power-on Reset signal                               | 0.05      | —    | —          | V/ms  |
| Brown-out Reset Voltage                                                              | 1.75      | 1.9  | 2.05       | V     |
| Logic Input Low Voltage                                                              | —         | —    | 0.15 x VDD | V     |
| Logic Input High Voltage                                                             | 0.8 x VDD | —    | —          | V     |
| Input Leakage at <25°C<br>(VSS < V <sub>PIN</sub> < VDD, Pin at high-impedance)      | —         | 0.1  | 50         | nA    |
| Input Leakage at +60°C<br>(VSS < V <sub>PIN</sub> < VDD, Pin at high-impedance)      | —         | 0.7  | 100        | nA    |
| Input Leakage at +85°C<br>(VSS < V <sub>PIN</sub> < VDD, Pin at high-impedance)      | —         | 4    | 200        | nA    |
| RF Input Level                                                                       | —         | —    | +10        | dBm   |

**TABLE 2-3: CURRENT CONSUMPTION**

| Mode     | Temperature (°C) | Typical Current (mA) |            |            |
|----------|------------------|----------------------|------------|------------|
|          |                  | VDD = 2.1V           | VDD = 3.3V | VDD = 3.6V |
| Idle     | -40 to +85       | 1.7                  | 2.8        | 3.1        |
| Transmit | 25               | 28.6                 | 38.9       | 44.5       |
| Sleep    | -40              | 0.0011               | 0.0013     | 0.0014     |
|          | 25               | 0.0015               | 0.0016     | 0.0016     |
|          | 85               | 0.002                | 0.0026     | 0.0026     |

**TABLE 2-4: MODULE DIMENSIONS**

| Parameter  | Value                 |
|------------|-----------------------|
| Dimensions | 17.8 x 26.7 x 3.34 mm |
| Weight     | 2.05g                 |

**TABLE 2-5: OUTPUT POWER OF TX POWER SETTING**

| Band    | TX Power Setting | Output Power (dBm) | Typical Supply Current at 3.3V (mA) |
|---------|------------------|--------------------|-------------------------------------|
| 868 MHz | -3               | -4.0               | 17.3                                |
|         | -2               | -2.9               | 18.0                                |
|         | -1               | -1.9               | 18.7                                |
|         | 0                | -1.7               | 20.2                                |
|         | 1                | -0.6               | 21.2                                |
|         | 2                | 0.4                | 22.3                                |
|         | 3                | 1.4                | 23.5                                |
|         | 4                | 2.5                | 24.7                                |
|         | 5                | 3.6                | 26.1                                |
|         | 6                | 4.7                | 27.5                                |
|         | 7                | 5.8                | 28.8                                |
|         | 8                | 6.9                | 30.0                                |
|         | 9                | 8.1                | 31.2                                |
|         | 10               | 9.3                | 32.4                                |
|         | 11               | 10.4               | 33.7                                |
|         | 12               | 11.6               | 35.1                                |
|         | 13               | 12.5               | 36.5                                |
|         | 14               | 13.5               | 38.0                                |
|         | 15               | 14.1               | 38.9                                |

**TABLE 2-5: OUTPUT POWER OF TX POWER SETTING (CONTINUED)**

| Band    | TX Power Setting | Output Power (dBm) | Typical Supply Current at 3.3V (mA) |
|---------|------------------|--------------------|-------------------------------------|
| 433 MHz | -3               | -3.5               | 14.7                                |
|         | -2               | -2.3               | 15.1                                |
|         | -1               | -1.3               | 15.6                                |
|         | 0                | -2.3               | 15.8                                |
|         | 1                | -1.2               | 16.4                                |
|         | 2                | -0.1               | 17.0                                |
|         | 3                | 1.0                | 17.7                                |
|         | 4                | 2.1                | 18.5                                |
|         | 5                | 3.2                | 19.4                                |
|         | 6                | 4.3                | 20.3                                |
|         | 7                | 5.4                | 21.4                                |
|         | 8                | 6.5                | 22.3                                |
|         | 9                | 7.6                | 23.3                                |
|         | 10               | 8.8                | 24.5                                |
|         | 11               | 9.9                | 25.8                                |
|         | 12               | 10.9               | 27.3                                |
|         | 13               | 11.9               | 28.8                                |
|         | 14               | 12.9               | 30.7                                |
|         | 15               | 13.6               | 32.9                                |

**TABLE 2-6: OUTPUT POWER OF SUPPLY VOLTAGE AND TEMPERATURE**

| Temperature (°C) | Typical Output Power at 868 MHz (dBm) |            |            |
|------------------|---------------------------------------|------------|------------|
|                  | VDD = 2.1V                            | VDD = 3.3V | VDD = 3.6V |
| -40              | 10.5                                  | 13.8       | 13.7       |
| 25               | 10.0                                  | 14.1       | 14.6       |
| 85               | 9.1                                   | 13.4       | 13.7       |

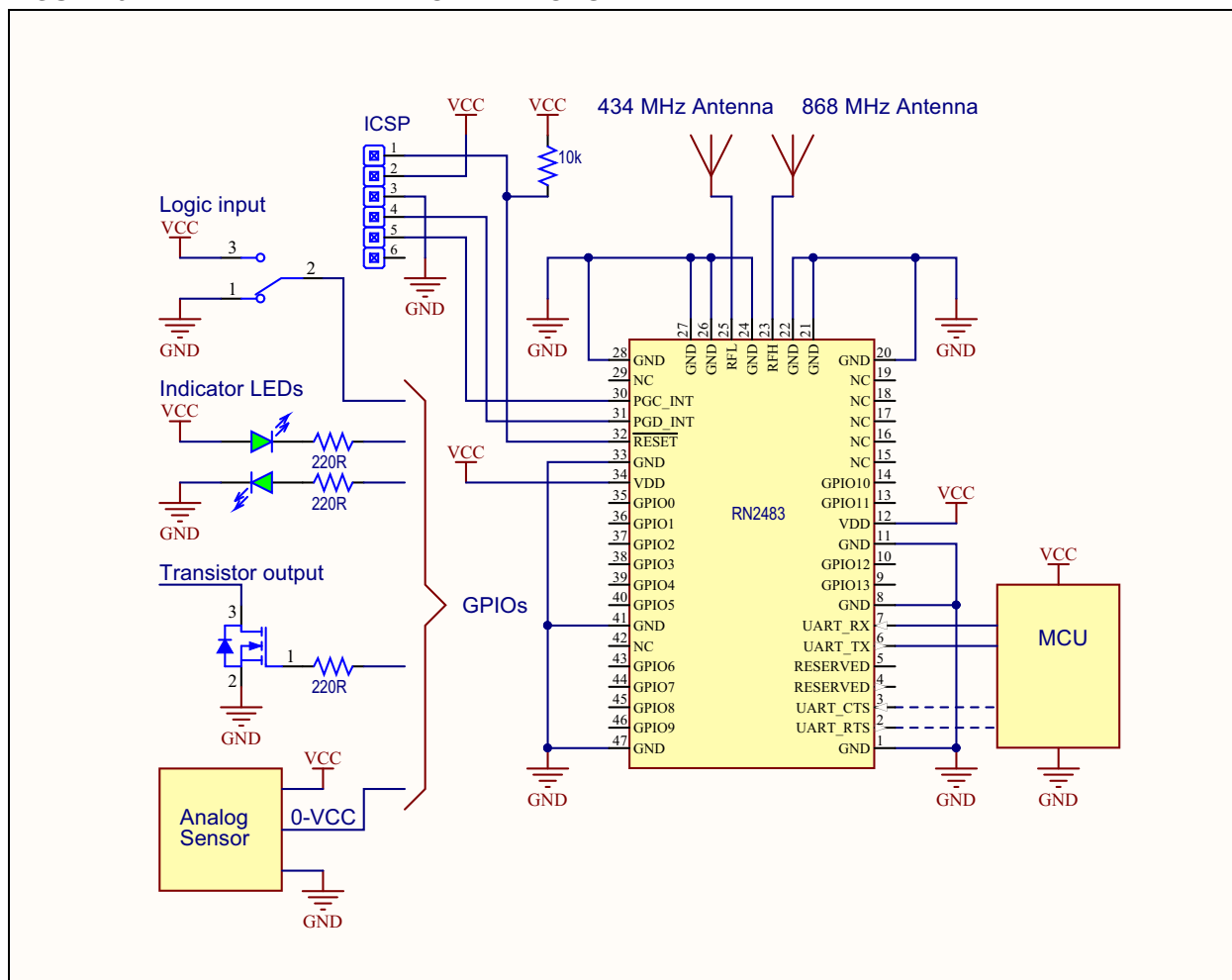
**TABLE 2-7: OUTPUT POWER OF SUPPLY VOLTAGE AND TEMPERATURE**

| Temperature (°C) | Typical Output Power at 434 MHz (dBm) |            |            |
|------------------|---------------------------------------|------------|------------|
|                  | VDD = 2.1V                            | VDD = 3.3V | VDD = 3.6V |
| -40              | 10.1                                  | 13.2       | 13.2       |
| 25               | 9.7                                   | 13.6       | 14.2       |
| 85               | 9.3                                   | 13.0       | 13.4       |

## 3.0 TYPICAL HARDWARE CONNECTIONS

Figure 3-1 shows the typical hardware connections.

**FIGURE 3-1: HARDWARE CONNECTIONS**



### 3.1 Interface to Host MCU

The RN2483 module has a dedicated UART interface to communicate with a host controller. Optional handshake lines are supported in future firmware releases. The “RN2483 LoRa® Technology Module Command Reference User’s Guide” (DS40001784) provides a detailed UART command description. Table 3-1 shows the default settings for the UART communication.

**TABLE 3-1: DEFAULT UART SETTINGS**

| Specification         | Description |
|-----------------------|-------------|
| Baud Rate             | 57600 bps   |
| Packet Length         | 8 bit       |
| Parity Bit            | No          |
| Stop Bits             | 1 bit       |
| Hardware Flow Control | No          |

### 3.2 GPIO Pins (GPIO0-GPIO13)

The module has 14 GPIO pins. These lines can be connected to switches, LEDs, and relay outputs. The pins can be either logic inputs or outputs, and some pins (see Table 1-1) have analog input capability that can be accessed via the module firmware. These pins have limited sink and source capabilities. Electrical characteristics are described in Table 2-2. For more information, see “RN2483 LoRa® Technology Module Command Reference User’s Guide” (DS40001784).

### 3.3 RF Connections (RFL, RFH)

RFL is the RF analog port for the lower frequency band (433 MHz) while RFH is for the higher frequency band (868 MHz). When routing RF paths, use proper strip lines with an impedance of 50 Ohm.

## 3.4 **RESET Pin**

The **RESET** pin of the module is an active-low logic input. An internal weak pull-up resistor is enabled when the pin is configured as the MCLR input.

## 3.5 **Power Pins**

It is recommended to connect power pins (Pin 12 and 34) to a stable supply voltage with sufficient source current. [Table 2-3](#) shows the current consumption.

Additional filtering capacitors are not required but used to ensure stable supply voltage in a noisy environment.

## 3.6 **Internal Program Pins**

PGC\_INT (Pin 30) and PGD\_INT (Pin 31) are internal program pins used during manufacturing. For normal operation, these pins can be left unconnected.

The normal firmware upgrade method is through the internal bootloader of the module via the UART. The method is documented in the *“RN2483 LoRa® Technology Module Command Reference User's Guide”* (DS40001784).

However, for backup firmware update purposes the user can place a 6-pin ICSP header on their host PCB with PGC\_INT (Pin 30), PGD\_INT (Pin 31), **RESET** (Pin 32), power and ground.

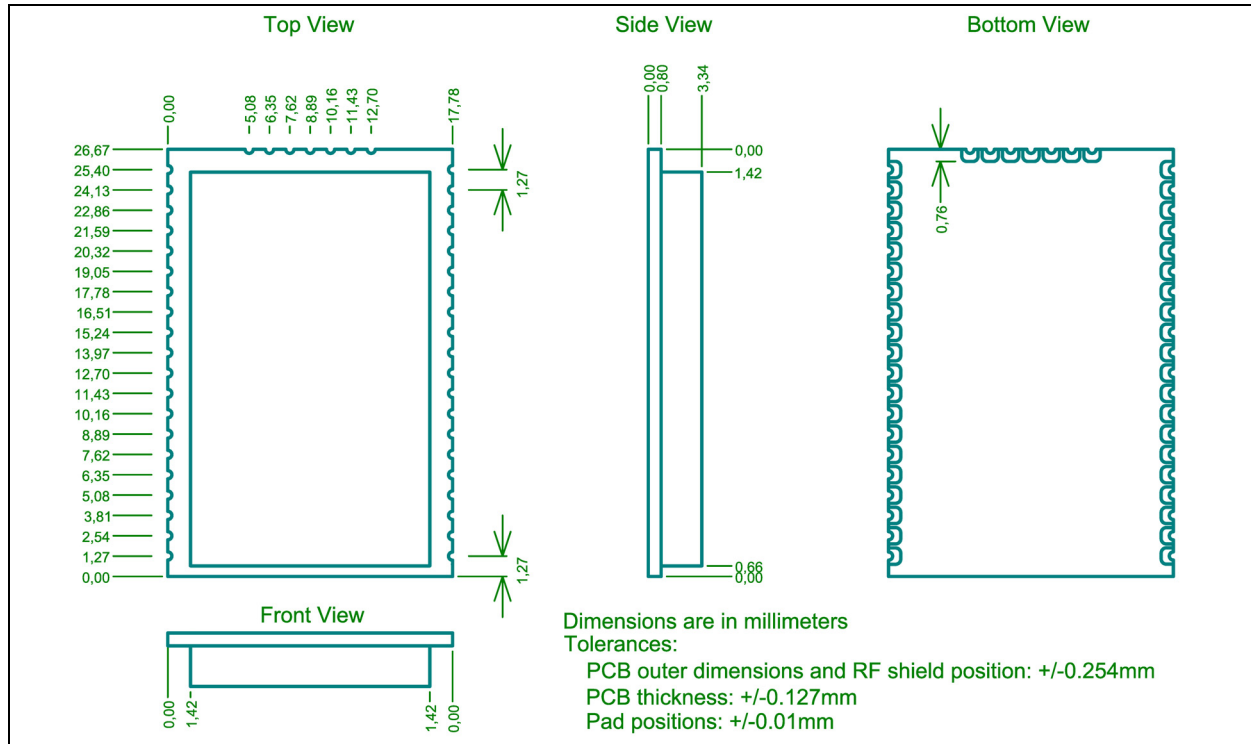
During High Voltage In-Circuit Serial Programming mode, the **RESET** pin is driven with high-voltage (9V), therefore protection may be necessary for sensitive devices.

|                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Note:</b> Only official Microchip Technology firmware released for the RN2483 module shall be used to maintain FCC and IC certification.</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------|

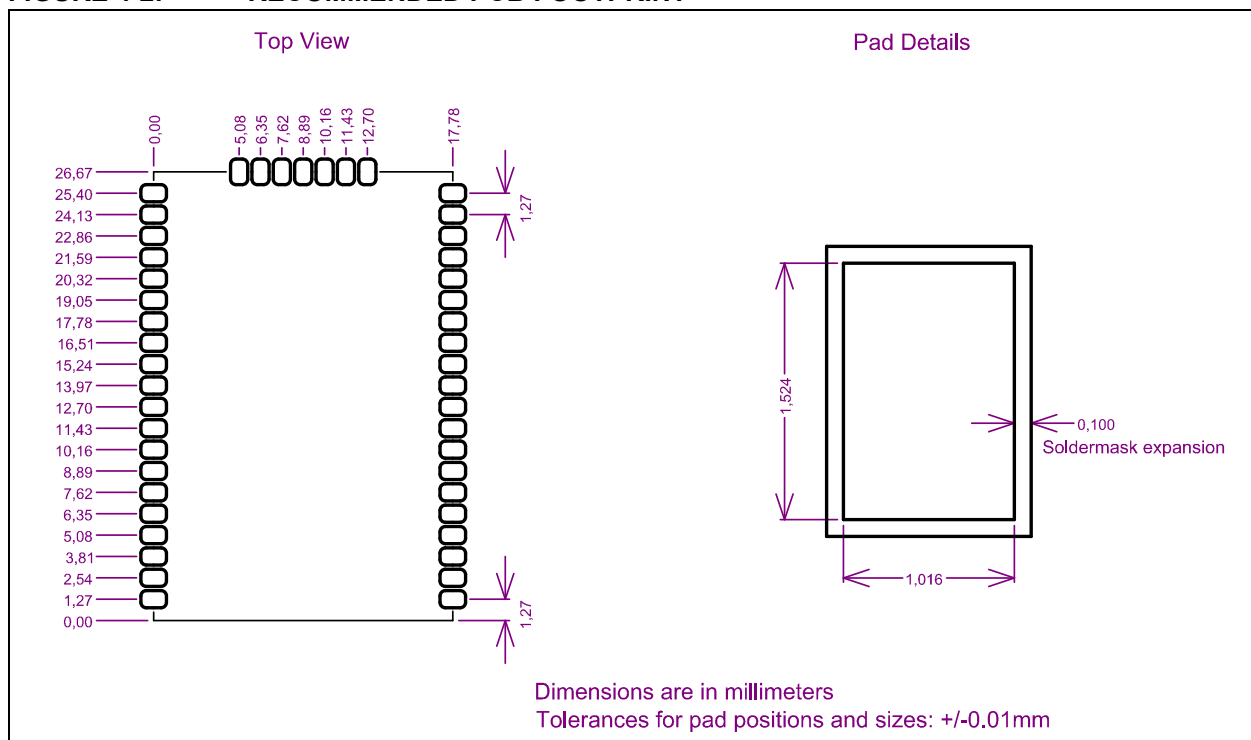
## 4.0 PHYSICAL DIMENSIONS

Figure 4-1 and Figure 4-2 illustrate the physical dimensions and the recommended PCB layout for the RN2483 module.

**FIGURE 4-1: RN2483 PHYSICAL DIMENSIONS**



**FIGURE 4-2: RECOMMENDED PCB FOOTPRINT**



# RN2483

## 5.0 APPLICATION INFORMATION

### 5.1 RF Trace Layout Design

The RN2483 modular transmitter is certified with a PCB edge SMA connector and micro-strip trace layout as shown in Figure 5-1 and Figure 5-2. The two RF paths

are axisymmetric with the same linear dimensions. The host PCB can follow these trace design to maintain compliance under the modular grant (FCC) and certificate (IC). Gerber files are available on the RN2483 product web page at [www.microchip.com/RN2483](http://www.microchip.com/RN2483).

FIGURE 5-1: RF TRACE ROUTING (TOP LAYER)

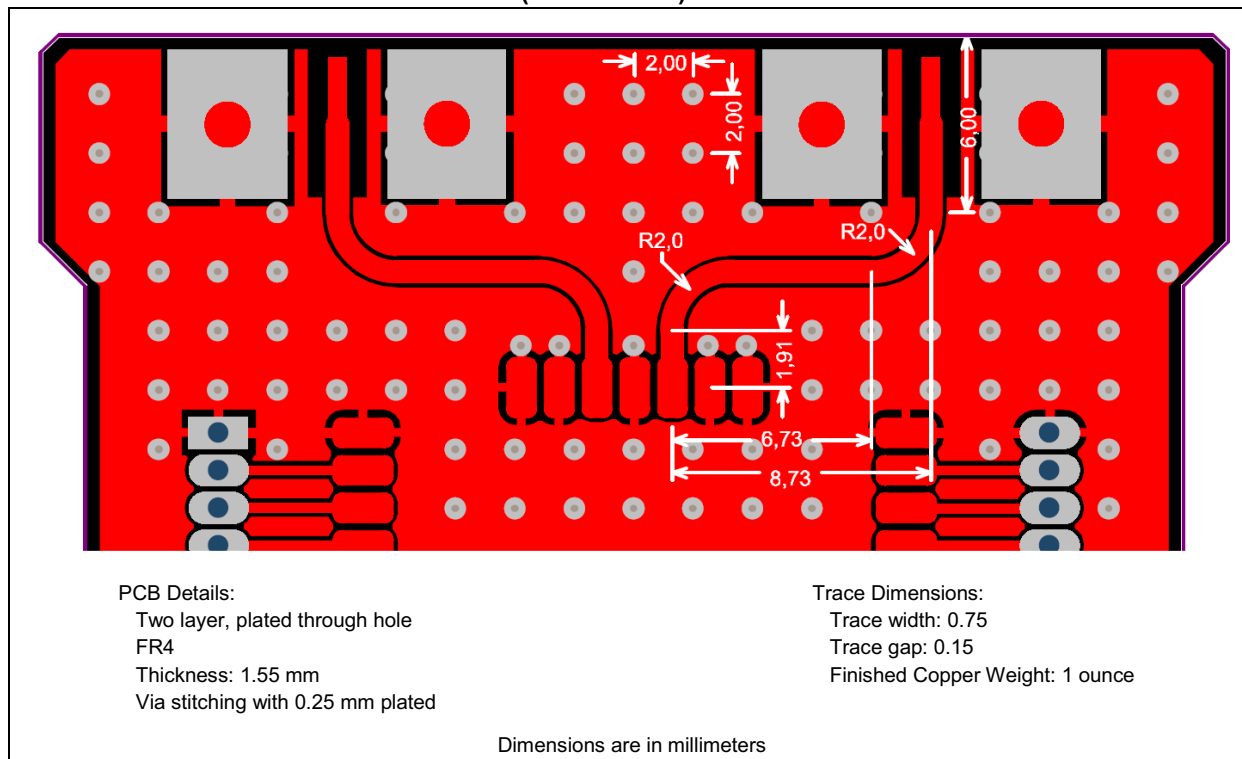
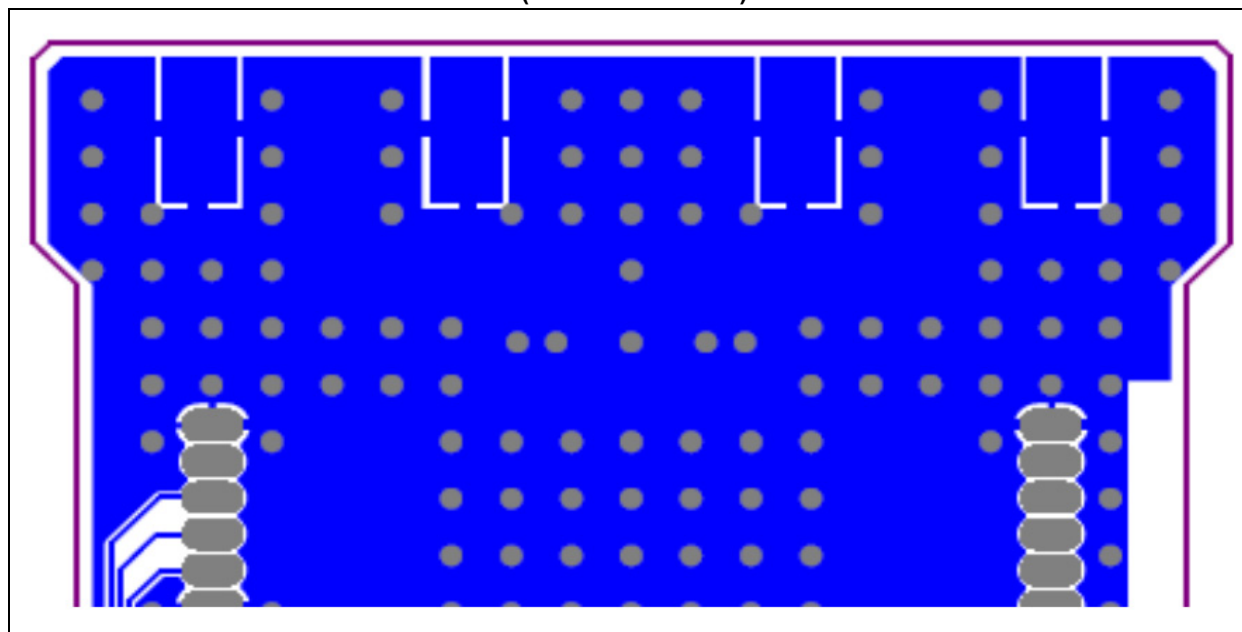


FIGURE 5-2: RF TRACE ROUTING (BOTTOM LAYER)



## 6.0 REGULATORY APPROVAL

This section outlines the regulatory information for the RN2483 module for Europe.

### 6.1 Europe

The RN2483 module is an R&TTE Directive assessed radio module that is CE marked and has been manufactured and tested with the intention of being integrated into a final product.

The RN2483 module has been tested to R&TTE Directive 1999/5/EC Essential Requirements for Health and Safety (Article 3.1a), Electromagnetic Compatibility (EMC) (Article 3.1b), and Radio (Article 3.2) and are summarized in [Table 6-1: European Compliance Testing](#). A Notified Body Opinion has also been issued. All test reports are available on the product web page at <http://www.microchip.com>.

The R&TTE Compliance Association provides guidance on modular devices in document **Technical Guidance Note 01** available at [http://www.rteca.com/html/download\\_area.htm](http://www.rteca.com/html/download_area.htm).

**Note:** To maintain conformance to the testing listed in [Table 6-1: European Compliance Testing](#), the module shall be installed in accordance with the installation instructions in this data sheet and shall not be modified.

When integrating a radio module into a completed product the integrator becomes the manufacturer of the final product and is therefore responsible for demonstrating compliance of the final product with the essential requirements of the R&TTE Directive.

#### 6.1.1 LABELING AND USER INFORMATION REQUIREMENTS

The label on the final product which contains the RN2483 module must follow CE marking requirements. The “*R&TTE Compliance Association Technical Guidance Note 01*” provides guidance on final product CE marking.

**TABLE 6-1: EUROPEAN COMPLIANCE TESTING**

| Certification | Standards                          | Article | Laboratory       | Report Number                                               | Date      |
|---------------|------------------------------------|---------|------------------|-------------------------------------------------------------|-----------|
| Safety        | IEC 60950-1:2005 (2nd Ed: A1:2009) | (3.1a)  | TRaC Global Ltd. | TRA-025134-43-00A                                           | 2/12/2015 |
| Health        | EN 62479                           | —       | TRaC Global Ltd. | TRA-025134-01-47-03A                                        | 2/12/2015 |
| EMC           | EN 301 489-3 v1.6.1                | (3.1b)  | TRaC Global Ltd. | TRA-025134-43-00A                                           | 2/12/2015 |
| Radio         | EN 300 220-2 v2.4.1                | (3.2)   | TRaC Global Ltd. | TRA-025134-01-47-00A (433 MHz) TRA-025134-01-47-01A(868MHz) | 2/12/2015 |

#### 6.1.2 EXTERNAL ANTENNA REQUIREMENTS

From R&TTE Compliance Association document **Technical Guidance Note 01**:

Provided the integrator installing an assessed radio module with an integral or specific antenna and installed in conformance with the radio module manufacturer's installation instructions requires no further evaluation under Article 3.2 of the R&TTE Directive and does not require further involvement of an R&TTE Directive Notified Body for the final product (Section 2.2.4).

#### 6.1.3 HELPFUL WEB SITES

A document that can be used as a starting point in understanding the use of Short Range Devices (SRD) in Europe is the European Radio Communications Committee (ERC) Recommendation 70-03 E, which can be downloaded from the European Radio Communications Office (ERO) at: <http://www.ero.dk/>.

Additional helpful web sites are:

- Radio and Telecommunications Terminal Equipment (R&TTE): [http://ec.europa.eu/enterprise/sectors/rtte/regulatory-framework/index\\_en.htm](http://ec.europa.eu/enterprise/sectors/rtte/regulatory-framework/index_en.htm)
- European Conference of Postal and Telecommunications Administrations (CEPT): <http://www.cept.org>
- European Telecommunications Standards Institute (ETSI): <http://www.etsi.org>
- European Radio Communications Office (ERO): <http://www.ero.dk/>
- The Radio and Telecommunications Terminal Equipment Compliance Association (R&TTE CA): <http://www.rteca.com/>

# RN2483

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NOTES:

## APPENDIX A: REVISION HISTORY

### Revision A (March 2015)

This is the initial release of this document.

### Revision B (December 2015)

This revision includes the following updates:

- Updated Deep Sleep value in [Table 2-3](#)
- Updated Dimensions value in [Table 2-4](#)
- Updated [Figure 4-1](#)
- Updated [Figure 4-2](#)
- Added [Figure 5-2](#)
- Updated information for [Section 5.1 “RF Trace Layout Design”](#).

### Revision C (April 2017)

This revision includes the following updates:

- Updated [Figure 1-2](#) and [Figure 3-1](#)
- Updated [Table 1-1](#), [Table 2-2](#), and [Table 2-3](#)
- Added [Table 2-6](#) and [Table 2-7](#)
- Updated [Section 3.4 “RESET Pin”](#)
- Added [Section 3.6 “Internal Program Pins”](#)
- Deleted Section “5.2 Application Schematic”.

NOTES:

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| <u>PART NO.</u>                                                                 |                   |         |                          |
|---------------------------------------------------------------------------------|-------------------|---------|--------------------------|
| Device                                                                          | Temperature Range | Package | Firmware Revision Number |
| <b>Device:</b> RN2483: Low-Power Long Range LoRa® Technology Transceiver module |                   |         |                          |
| <b>Temperature Range:</b> I = -40°C to +85°C (Industrial)                       |                   |         |                          |
| <b>Package:</b> RM = Radio Module                                               |                   |         |                          |

### Examples:

RN2483A-I/RM: Industrial temperature

NOTES:

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