

## SERIES 2000 MINI RADIO FREQUENCY MODULE

### FEATURES

- **Best-in-Class Performance Through Patented HDX Technology**
- **Reduced Power Output for Handheld And Medium Read/Write Range Applications**
- **Proven in Harsh Industrial Environments**
- **Best Value**
- **Easy to Install and Use**

### APPLICATIONS

- **Access Control**
- **Vehicle Identification**
- **Container Tracking**
- **Asset Management**
- **Waste Management**



### DESCRIPTION

The Texas Instruments low-frequency (LF) reader module provides all the functionality required to communicate with Texas Instruments 134.2 kHz LF transponders, which are available in a variety of form factors. The RI-RFM-003B radio frequency power (RFM) module is capable driving a variety of antennas with inductance ranges from 115 = H to 117 = H including TI standard RI-ANT-P02A stick antenna.

The RI-RFM-003B module in combination with a control module is well suited for usage in a broad range of applications including, but not limited to, access control, vehicle identification, container tracking, asset management, and waste management applications.

The Series 2000 Mini Radio Frequency Module is the interface between a 134.2 kHz HDX/FSK transponder and the data processing unit.

It sends an energizing signal to the transponder, modulates the RF signal to send data to the transponder, receives the identification signal, and processes it for digital decoding. The small size and low supply voltage make the Mini RF Module well suited for portable read/write units.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

### ABSOLUTE MAXIMUM RATINGS<sup>(1)</sup>

over operating free-air temperature range (unless otherwise noted)

	RI-RFM-003B	UNIT
Operating Temperature	0 to +50	°C
Storage Temperature	-25 to +85	°C

(1) Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

### RECOMMENDED OPERATING CONDITIONS

over operating free-air temperature range (unless otherwise noted)

	RI-RFM-003B
Power Supply	Logic Part: 4.75 to 5.25 VDC, regulated; maximum 80 mA TX Power Stage: 4.50 to 6.00 VDC, regulated; maximum 1.2 A (depending on the repetition rate and antenna used)

### OPERATING CHARACTERISTICS

over operating free-air temperature range (unless otherwise noted)

PARAMETER	PART NUMBER	UNIT
	RI-RFM-003B	
Relative Humidity	<97% non-condensing, IEC 68-2-30 Test Db, 21 cycles	
RF Transmit Frequency	134.2	kHz
Antenna Specification	Inductivity: 115 to 117 $\mu$ H Q: min. 200	
Antenna Recommended	Ferrite Stick Antenna RI-ANT-P02A or Air Coil Antenna Inductivity: 115 to 117 $\mu$ H; Q: minimum 200 Inductivity: 116.5 to 119 $\mu$ H; Q: minimum 100	
Antenna Resonance Voltage	Maximum 240 V peak	
Transponder Types	134.2 kHz HDX/FSK	
Dimensions	(60.2 $\times$ 55.1 $\times$ 11.5) $\pm$ 1.0	mm
Weight	Approximately 40	g
Drop Test	1 m on concrete, 3 axes, mounted in molded aluminum case	
Vibration Test	2 g, 5-500 Hz, displacement 15 mm, 1 oct/min, 3 axes, 3 hrs/axis	
Reference Documentation	11-06-29-030 (SCBU021) Reference Guide 11-08-22-003 (SCBS845) Data Sheet S2000 Mini RF Module RI-RFM-003B S2000 Antennas RI-ANT-P02A	
Approvals	CE; FCC	

**PACKAGING INFORMATION**

Orderable Device	Status <sup>(1)</sup>	Package Type	Package Drawing	Pins	Package Qty	Eco Plan <sup>(2)</sup>	Lead/Ball Finish	MSL Peak Temp <sup>(3)</sup>
RI-RFM-003B-00	OBSOLETE			0		TBD	Call TI	Call TI

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
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Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
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Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
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