RI-TRP-DR2B 32-mm Glass Transponder

1 Device Overview

1.1 Features

- Best-in-Class Performance Through Patented Half-Duplex (HDX) Technology
- Patented Transponder Tuning Provides Stable and High Read and Write Performance
- MPT 1360-Bit Type
- ISO 11784/11785 Compliant
- Insensitive to Almost All Nonmetallic Materials

1.2 Applications

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

1.3 Description

Texas Instruments' 32-mm glass transponders provide superior performance and operate at a resonance frequency of 134.2 kHz. Specific products are compliant to ISO/IEC 11784/11785 global open standards. Texas Instruments LF transponders are manufactured with TI's patented tuning process to provide consistent read and write performance. Before delivery, the transponders undergo complete functional and parametric testing to provide the high quality customers have come to expect from TI. The transponder is well suited for use in a broad range of applications including, but not limited to, access control, vehicle identification, container tracking, asset management, and waste management applications.

Table 1-1. Device Information(1)

PART NUMBER	PACKAGE (PIN)	BODY SIZE(2)
RI-TRP-DR2B	TGB (0)	3.85 mm x 32.2 mm

(1) For the most current device, package, and ordering information, see the *Package Option Addendum* in Section 5, or see the TI web site at www.ti.com.
(2) The sizes shown here are approximations. For the package dimensions with tolerances, see the *Mechanical Data* in Section 5.

Figure 1-1 shows the RI-TRP-DR2B transponder.

Figure 1-1. RI-TRP-DR2B Transponder

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2 Revision History

DATE	REVISION	NOTES
July 2014	B	Document organization and format changes throughout, including addition of section numbering. Removed all devices except RI-TRP-DR2B. Added Section 4 and Section 5.

3 Specifications

3.1 Absolute Maximum Ratings

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

		MIN	MAX	UNIT
T_A	Operating temperature range	-25	85	°C

3.2 Handling Ratings

		MIN	MAX	UNIT
T_{STG}	Storage temperature range	-40	100 (1)	°C

(1) +125°C for total 1000 hours

3.3 Operating Characteristics

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

PARAMETER	RI-TRP-DR2B	UNIT
Functionality	MPT	
Memory	1360	bits
	16R/W, 1 R/O (UID)	pages
Operating Frequency	134.2	kHz
Modulation	FSK (frequency shift keying) 134.2 kHz and 123.2 kHz	
Transmission Principle	HDX (half duplex)	
Power Source	Powered from the reader signal (batteryless)	
Typical Read Range	≤100	cm
Typical Programming Range	30% of specified reading range	
Typical Read Time	86	ms
Typical Programming Time	293	ms
Typical Programming Cycles	100000	
Case Material	Glass	
Protection Class	Hermetically sealed	
EMC	Programmed code is not affected by normal electromagnetic interference or x-rays	
Signal Penetration	Transponder can be read through almost all nonmetallic material	
Mechanical Shock	IEC 68-2-27, Test Ea; 300 g, half sine, 3 ms, 2 axes	
Vibration	IEC 68-2-6, Test Fc; 3 g, 5 to 50 Hz, 2 axes, 24 hours per axis 20 g, 10 to 2000 Hz, 2 axes, 2.5 hours per axis	
Dimensions	⌀ 3.85 ± 0.05 x 32.2 ± 0.6	mm
Weight	0.85	g

4 Device and Documentation Support

4.1 Documentation Support

The following documents describe the RI-TRP-DR2B device. Copies of these documents are available on the Internet at www.ti.com.

SPAT178 ***RFID Systems Product Specifications.*** Texas Instruments Radio Frequency Identification Systems is an industry leader in RFID technology, and the world's largest integrated manufacturer of TI-RFid™ tags, TI-RFid smart labels, and TI-RFid reader systems. With more than 1 billion RFID tags manufactured, TI-RFid technology is used in a broad range of RFID applications worldwide. TI is an active member of many standards bodies, including ISO, ISO/IEC, ECMA International, ETSI, and several national standardization bodies working to drive the adoption of global standards for RFID technology.

SCBU053 ***32-mm Glass-Encapsulated Multipage Transponders Reference Guide.*** Describes the use of the 32-mm glass transponders.

4.2 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's Terms of Use.

TI E2E™ Online Community ***TI's Engineer-to-Engineer (E2E) Community.*** Created to foster collaboration among engineers. At e2e.ti.com, you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

4.3 Trademarks

TI-RFid, E2E are trademarks of Texas Instruments.
All other trademarks are the property of their respective owners.

4.4 Electrostatic Discharge Caution

This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

4.5 Export Control Notice

Recipient agrees to not knowingly export or re-export, directly or indirectly, any product or technical data (as defined by the U.S., EU, and other Export Administration Regulations) including software, or any controlled product restricted by other applicable national regulations, received from Disclosing party under this Agreement, or any direct product of such technology, to any destination to which such export or re-export is restricted or prohibited by U.S. or other applicable laws, without obtaining prior authorization from U.S. Department of Commerce and other competent Government authorities to the extent required by those laws.

4.6 Glossary

SLYZ022 — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

5 Mechanical Packaging and Orderable Information

5.1 Packaging Information

The following pages include mechanical packaging and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
RI-TRP-DR2B	OBSOLETE	RFIDT	TGB	0		TBD	Call TI	Call TI	-25 to 85		
RI-TRP-DR2B-30	NRND	RFIDT	TGB	0	2000	Pb-Free (RoHS)	Call TI	N / A for Pkg Type			

(1) 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.

(2) 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)

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

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TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265