TRPGR30ATGC 12-mm Low-Frequency Glass-Encapsulated Transponder, Read Only

1 Device Overview

1.1 Features

- Best-in-Class Performance Through Patented HDX Technology
- Patented Transponder Tuning Provides Stable and High Read Performance
- 80-Bit UID (64-Bit ID, 16-Bit CRC)
- Insensitive to Almost All Nonmetallic Materials

1.2 Applications

- Industrial Automation
- Asset Tracking

1.3 Description

Texas Instruments' 12-mm low-frequency (LF) glass transponders provide superior performance and operate at a resonance frequency of 134.2 kHz. The products are compliant to ISO/IEC 11784 and ISO/IEC 11785 global open standards. Texas Instruments LF glass transponders are manufactured with TI's patented tuning process to provide consistent read performance. Before delivery, the transponders undergo complete functional and parametric testing to provide the high quality customers have come to expect from TI.

Device Information(1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)(2)
TRPGR30ATGC	TGC (0)	2.12 mm x 12.0 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 transponder.

Figure 1-1. TRPGR30ATGC Transponder

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2 Revision History

DATE	REVISION	NOTES
August 2014	*	Initial Release

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	85	°C

3.3 Electrical Characteristics

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

PARAMETER	TRPGR30ATGC
Functionality	Read only
Memory (bits)	80 (64-bit UID + 16-bit CRC)
Memory (pages)	1
Resonance frequency	134.6 kHz
Modulation	FSK (frequency shift keying) 134.2 kHz and 124.2 kHz
Transmission principle	HDX (half duplex)
Power source	Powered from the reader signal (battery-less)
Typical reading range	≤60 cm(1)
Typical reading time	70 ms
Case material	Glass
Protection glass	Hermetically sealed
EMC	Programmed code is not affected by natural electromagnetic interference or x-rays
Signal penetration	Transponder can be read through almost all nonmetallic material
Mechanical shock	IEC 60068-2-32 free-fall drop test, 20 times from 1.5-m height
Dimensions	Ø 2.12 ± 0.05 mm x 12.0 ± 0.5 mm
Weight	0.10 g

(1) Depends on RF regulation in country of use, the reader antenna configuration used, and the environmental conditions.

4 Device and Documentation Support

4.1 Documentation Support

The following documents describe the TRPGR30ATGC 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.

SPAT184 ***12mm Glass Encapsulated HDX Transponders.*** Product bulletin that provides an overview of the features of the glass encapsulated transponders from TI.

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 finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TRPGR30ATGC	ACTIVE	RFIDT	TGC	0	2000	RoHS & Green	Call TI	N / A for Pkg Type	-25 to 85		Samples

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".
RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.
Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

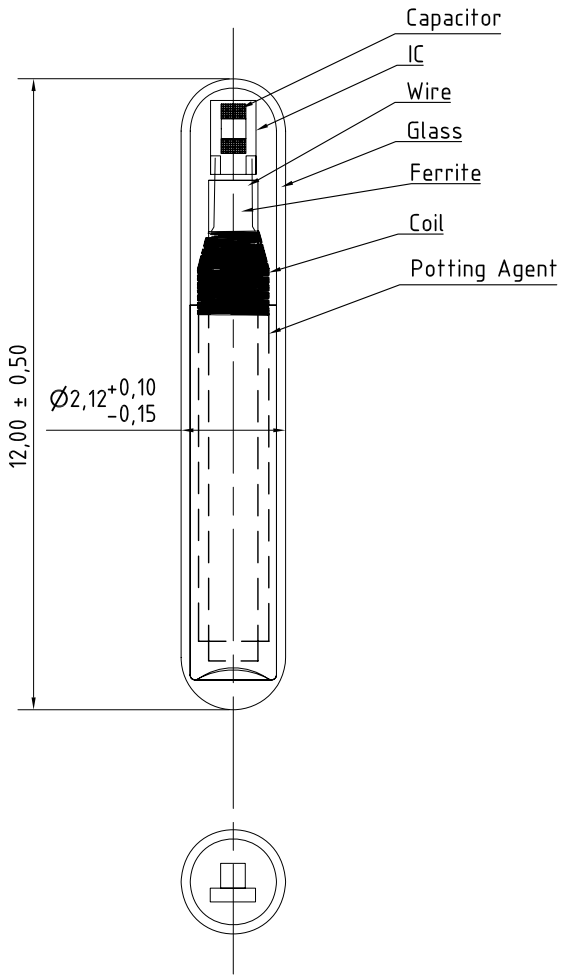
(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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

TGC (R–RFID–NO) RFIDT



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NOTES:
A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5–1994.
B. This drawing is subject to change without notice.
C. HDX+ 12mm glass TRP MCU–RF with capacitor on Die

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