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85mm DISK TRANSPONDER

FEATURES

- **Best in Class Performance Through Patented HDX Technology**
- **Patented Transponder Tuning Provides Stable and High Read/Write Performance**
- **64 Bit Read Only, 80 Bit Read/Write**
- **ISO 11784/11785 Compliant**
- **Insensitive to Almost All Non Metallic Materials**

APPLICATIONS

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

DESCRIPTION

Texas Instruments' 85 mm disk transponders are providing 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. Prior to delivery, the transponders undergo complete functional and parametric testing, in order to provide the high quality customers have come to expect from TI. The transponder 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.

ABSOLUTE MAXIMUM RATINGS(1)

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

	RI-TRP-R9UR	RI-TRP-W9UR	UNIT
Operating Temperature	–25 to +85	–25 to +70	°C
Storage Temperature	–40 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.

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.

TI-RFid is a trademark of Texas Instruments.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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OPERATING CHARACTERISTICS

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

PARAMETER	PART NUMBER		UNIT
	RI-TRP-R9UR	RI-TRP-W9UR	
Functionality	Read Only	Read/Write	
Memory (Bits)	64	80(1)	
Memory (Pages)	1	1	
Operating Frequency	134.2		kHz
Modulation	FSK (Frequency Shift Keying) 134.2 kHz / 123.2 kHz		
Transmission Principle	HDX (Half Duplex)		
Power Source	Powered from the reader signal (batteryless)		
Typical Reading Range	≤ 150(2)		cm
Typical Programming Range	—	30% of specified reading range	
Typical Reading Time	70		ms
Typical Programming Time	—	309	ms
Typical Programming Cycles	—	100,000	
Case Material	Acrylate-Styrene-Acrylonitrile (ASA), black		
Protection Class	IP 53		
EMC	Programmed code is not affected by normal electromagnetic interference or x-rays		
Signal Penetration	Transponder can be read through virtually all non-metallic material		
Mechanical Shock	IEC 68-2-27, Test Ea; 15 g, 18 ms, half sine, 2 axes, 5 shocks per axis		
Vibration	IEC 68-2-6, Test Fc; 10 g, 20 – 500 Hz, 2 axes, 10 cycles per axis		
Dimensions	Ø 85.5 mm ± 0.5 mm × 5.5 mm ± 0.5 mm		
Weight	35		g

(1) We recommend that you split each 80 bit page into 64 user programmable bits plus a 16 bit wide CRC CCITT Block Check Character as is done by TI-RFid™ LF readers.
(2) Depending on RF regulation in country of use, the Reader Antenna configuration used, and the environmental conditions.

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-R9UR-30	OBSOLETE	RFIDP	TEE	0		Pb-Free (RoHS)	Call TI	N / A for Pkg Type	-25 to 85		
RI-TRP-W9UR	OBSOLETE	RFIDP	TEE	0		TBD	Call TI	Call TI	-25 to 70		
RI-TRP-W9UR-30	OBSOLETE	RFIDP	TEE	0		Pb-Free (RoHS)	Call TI	N / A for Pkg Type	-25 to 70		

(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.

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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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