



## MOUNT-ON-METAL TRANSPONDER

### FEATURES

- **Best in Class Performance Through Patented HDX Technology**
- **Patented Transponder Tuning Provides Stable and High Read/Write Performance**
- **64-Bit Read-Only Memory (RI-TRP-R9VS)  
80-Bit Read-Write Memory (RI-TRP-W9VS)**
- **Insensitive to Almost All Non-Metallic Materials**

### APPLICATIONS

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

### DESCRIPTION

Texas Instruments mount-on-metal transponder provides superior performance and operates at a resonance frequency of 134.2 kHz. 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.

For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at [www.ti.com](http://www.ti.com).

### NOTE:

For more information, contact the sales office or distributor nearest you. This contact information can be found on our web site at <http://www.ti.com/rfid>.



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

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

	RI-TRP-R9VS, RI-TRP-W9VS
Operating Temperature	–25 to 70°C
Storage Temperature	–25 to 85°C

## OPERATING CHARACTERISTICS

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

	RI-TRP-R9VS	RI-TRP-W9VS
Functionality	Read only	Read/write
Memory (Bits)	64	80
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	
Typical Reading Range	≤120 cm <sup>(1)</sup>	
Typical Programming Range	—	30% of typical reading range
Typical Reading Time	70 ms	
Typical Programming Time	—	309 ms
Typical Programming Cycles	—	100,000
Case Material	Polypropylene, black	
Protection Class	IP 67	
Mounting	With screws or rivets on aluminum, iron, or steel	
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; 200 g, half sine, 3 ms, 3 axes, 6 shocks per axis	
Vibration	IEC 68-2-6, Test Fc; 20 g, 20 - 500 Hz, 3 axes, 10 cycles per axis	
Dimensions	102 mm ± 1 mm × 36 mm ± 1 mm × 16.5 mm ± 1 mm	
Weight	43 g	

(1) 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-R9VS-30	OBSOLETE	RFIDP	TEJ	0		Pb-Free (RoHS)	Call TI	N / A for Pkg Type	-25 to 70		
RI-TRP-W9VS-30	OBSOLETE	RFIDP	TEJ	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.

### Products

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
OMAP Applications Processors	<a href="http://www.ti.com/omap">www.ti.com/omap</a>
Wireless Connectivity	<a href="http://www.ti.com/wirelessconnectivity">www.ti.com/wirelessconnectivity</a>

### Applications

Automotive and Transportation	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Energy and Lighting	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Space, Avionics and Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
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