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Texas Instruments
RI-INL-R9QM-30

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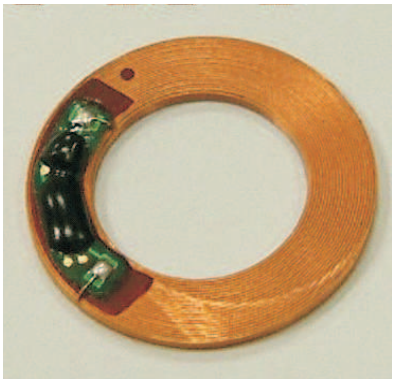
24 MM LF CIRCULAR INLAY

FEATURES

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

APPLICATIONS

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



DESCRIPTION

Texas Instruments 24 mm LF circular disk inlays provide superior performance and operate at a resonance frequency of 134.2 kHz. The products are compliant to ISO/IEC 11784/11785 global open standards. Texas Instruments LF inlays are manufactured with TI's patented tuning process to provide consistent read and write performance. Prior to delivery, the inlays undergo complete functional and parametric testing, in order to provide the high quality customers have come to expect from TI. The inlays are 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, and for various encapsulation processes.

ORDERING INFORMATION(1)

T_A	PACKAGE(2)		ORDERABLE PART NUMBER	QUANTITY
–25°C to +70°C	PCB with overmolded chip on board and capacitors, attached to coil	Plastic antistatic trays with 50 units per tray, 3 boxes with 1200 units per box in 1 packaging unit (large box)	RI-INL-R9QM	3.600
			RI-INL-W9QM	

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI website at www.ti.com.
(2) Package drawings, thermal data, and symbolization are available at www.ti.com/packaging.

ABSOLUTE MAXIMUM RATINGS(1)

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

	RI-INL-R9QM	RI-INL-W9QM	UNIT
Operating Temperature	–25 to +70	–25 to +70	°C
Storage Temperature			

(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.

OPERATING CHARACTERISTICS

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

PARAMETER	PART NUMBER		UNIT
	RI-INL-R9QM	RI-INL-W9QM	
Functionality	Read Only	Read/Write	
Memory (Bits)	64	80(1)	
Memory (Pages)	1	1	
Resonance Frequency	134.2(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	≤ 60(3)		cm
Typical Reading Time	70		ms
Reading Activation Field Strength @ 25 °C	120.5		dBµA/m (typ)
Programming Field Strength @ 25°C	—	129	
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		
Mechancial Shock	IEC 68-2-27, Test Ea; 200 g, 3 ms		
Vibration	IEC 68-2-6, Test Fc; 5 g, 10 - 500 Hz		
Dimensions	24.1 × 14.3 × 2.7		mm
Weight	2 ± 0.5		g
Spec	LF circular disk inlay	Data Sheet # 11-09-22-184	

(1) It is recommended to split each 80 bit page into 64 user programmable bits plus a 16 bit CRC CCITT Block Check Character as is done by TI-RFid™ LF readers.
(2) Overmolding lowers the resonance frequency
(3) Depending on RF regulation in country of use, the Reader Antenna configuration used, and the environmental conditions.

PACKAGE OPTION ADDENDUM

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
RI-INL-R9QM-30	ACTIVE	RFIDN	TKD	0	1200	Pb-Free (RoHS)	Call TI	N / A for Pkg Type
RI-INL-W9QM-30	ACTIVE	RFIDN	TKD	0	1200	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.

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