Tag-it™ HF-I STANDARD TRANSPONDER INLAYS LARGE RECTANGLE

Check for Samples: RI-I02-114A-01, RI-I02-114B-01

FEATURES

- **ISO/IEC 15693-2, -3; ISO/IEC 18000-3 Compliant**
- **13.56-MHz Operating Frequency**
- **256-Bit User Memory in 8-Bit × 32-Bit Blocks**
- **Application Family Identifier (AFI)**
- **Fast Simultaneous Identification (Anti-Collision)**

APPLICATIONS

- **Product Authentication**
- **Library**
- **Supply-Chain Management**
- **Asset Management**
- **Ticketing/Stored Value**

DESCRIPTION

Texas Instruments Tag-it™ HF-I standard transponder inlays consist of 13.56-MHz high-frequency (HF) transponders that are compliant with the ISO/IEC 15693 and ISO/IEC 18000-3 global open standards. These products offer a user-accessible memory of 256 bits, organized in eight blocks, and an optimized command set available in five different antenna shapes, with frequency offset for integration into paper, PVC, or other substrates.

The Tag-it HF-I standard transponder inlays are manufactured with TI's patented laser tuning process to provide consistent read performance. Prior to delivery, the transponders undergo complete functional and parametric testing, in order to provide the high quality that customers have come to expect from TI.

The Tag-it HF-I standard transponder inlays are well suited for a variety of applications including, but not limited to, product authentication, library, supply-chain management, asset management, and ticketing/stored value applications.

Table 1. Specifications[1]

	PART NUMBER	
	RI-I02-114A-01	RI-I02-114B-01
Supported standard	ISO/IEC 15693-2, -3; ISO/IEC 18000-3	
Recommended operating frequency	13.56 MHz	
Passive resonance frequency (at 25°C)	13.86 MHz ± 200 kHz (includes frequency offset to compensate further integration into paper)	14.4 MHz ± 200 kHz (includes frequency offset to compensate PVC lamination)
Typical required activation field strength to read (at 25°C)	94 dBµA/m[2]	94 dBµA/m[3]
Typical required activation field strength to write (at 25°C)	97 dBµA/m[2]	97 dBµA/m[3]
Factory-programmed read-only number	64 bits	
Memory (user programmable)	256 bits organized in 8-bit × 32-bit blocks	
Typical programming cycles (at 25°C)	100,000	
Data retention time (at 55°C)	>10 years	
Simultaneous identification of tags	Up to 50 tags per second (reader/antenna dependent)	
Antenna size	45 mm × 76 mm (~1.77 in × ~2.99 in)	
Foil width	48 mm ± 0.5 mm (1.89 in ± 0.02 in)	
Foil pitch	96 mm +0.1 mm/–0.4 mm (3.78 in)	
Thickness	Chip area: 0.34 mm ±0.02 Antenna area (Al both sides): 0.085 mm ±0.01 Antenna area (Al one side): 0.075 mm ±0.008	
Base material	Substrate: PET (polyethylenetherephtalate); Antenna: aluminum	
Operating temperature	–25°C to 70°C	
Storage temperature (single inlay)	–40°C to 85°C (warpage may occur at upper temperature range)	
Storage temperature (on reel)	–40°C to 40°C	
Delivery	Single-row tape wound on cardboard reel with 500-mm diameter Reel outer width: approximately 60 mm (~2.36 in) Reel inner width: approximately 50 mm (~1.97 in) Hub diameter: 76.2 mm (3 in)	
Typical quantity of good units per reel	5,000	

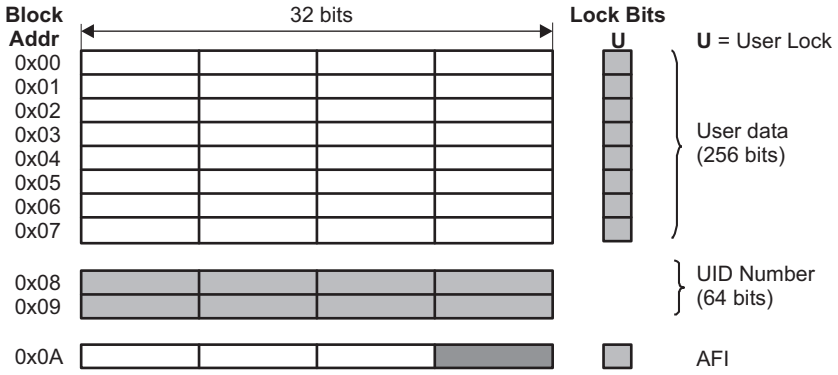
(1) For highest possible read-out coverage, operate readers at a modulation depth of 20% or higher.
(2) After integration into paper
(3) After PVC lamination

Table 2. Supported Command Set

REQUEST	REQUEST MODE[1]					
	REQUEST CODE	INVENTORY	ADDRESSED	NON-ADDRESSED	AFI	OPT. FLAG
ISO 15693 Mandatory and Optional Commands						
Inventory	0x01	✓	–	–	✓	0
Stay Quiet	0x02	–	✓	–	–	0
Read_Single_Block	0x20	–	✓	✓	–	1
Write_Single_Block	0x21	–	✓	✓	–	1
Lock_Block	0x22	–	✓	✓	–	1

(1) ✓ = Implemented, – = Not applicable

Memory Organization



PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/ Ball Finish	MSL Peak Temp (3)	Samples (Requires Login)
RI-I02-114A-01	ACTIVE	RFIDN	TFF	0	5000	Pb-Free (RoHS)	Call TI	N / A for Pkg Type	
RI-I02-114B-01	ACTIVE	RFIDN	TFF	0	5000	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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