

# Product Specification



SI-SPK-41A-01.1

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Smart Label Inlay

HF Inlay H145 TiPIs 45x45

## Features

- ISO/IEC 15693-2, -3; ISO/IEC 18000-3 Compliant
- 13,56-MHz Operating Frequency
- 2048-Bit User Memory in 64 blocks × 32-Bit
- User Lock Per Block
- Application Family Identifier (AFI)
- Data Storage Format Identifier (DSFID)

## Applications

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

## Description

SMARTRAC 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 2048 bits, organized in 64 blocks.

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

This inlay is considered to replace TI-inlay  
RI-I11-112A-03 Tag-it(TM) HF-I Plus Transponder Inlays Square  
and  
RI-I11-112B-03 Tag-it(TM) HF-I Plus Transponder Inlays Square

with the following technical parameters as described below.

## Pin Configuration and Functions

According to IC specification: Tag-it HF-I Plus Transponder IC (TMS37112)

## Go/NoGo-Test

All inlays are tested inline in the machine by a Go/NoGo-Test. There is no functional test of the whole memory of the chip applied. All inlays, who fail the Go/NoGo-Test will be marked with a black inkdot as shown on the last page.

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## Specifications

	PART NUMBER
	HF Inlay H145 TiPIs 45x45
Integrated Circuit (IC)	Tag-it™ HF-I Transponder IC TMS37112
Supported standard	ISO/IEC 15693-2, -3; ISO/IEC 18000-3
Recommended operation frequency	13,56 MHz
Passive resonance frequency (at 25°C)	14,1 MHz ± 0,4 MHz
Factory-programmed read-only number	64 bits
Memory (user programmable)	2k bits organized in 64 blocks × 32-Bit
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 × 45 mm (~ 1,77 in × ~ 1,77 in)
Foil width	48 mm ± 0,5 mm (1,89 in ± 0,02 in)
Foil pitch	50,8 mm ± 0,2 mm (2 in ± 0,0079 in)
Thickness	Chip area: 0,343 mm ± 0,1 Antenna area (Al both sides): 0,078 mm ± 0,01 Antenna area (Al one side): 0,068 mm ± 0,008
Base material	Substrate: PET (polyethyleneterephthalate); Antenna: aluminium
Smallest bending radius allowed	18 mm (~ 0,71 in)
Bending diameter	≥ 50mm, tension less then 10N
Operating temperature	–20°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
Shear Force on Chip	≥ 2,8 N
Delivery	Single-row tape wound on cardboard reel with 340-mm diameter Reel outer width: approximately 70 mm (about 2,75 in) Reel inner width: approximately 60 mm (about 2,36 in) Hub diameter: 76,2 mm (3 in)
Typical quantity of good units per reel	5000 Inlay roll contains No chipless leader and trailer. Rolls start and end with functional inlays

## Electrostatic Discharge Caution

These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

A high current density of an electrostatic discharge from the foil can damage the chip (IC). Therefore, it is recommended to use ionizer or antistatic rollers in the manufacturing process. Any conductive parts in touch with Tag-it HF-I Plus Inlays should have a high-impedance discharge to ground. We recommend approximately 1 MΩ to avoid ESD damage.

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**SMARTRAC** ((•))

### Packaging and Label

The products are packed very carefully in order to protect them from moisture absorption, ESD impact and damages during their handling, storage and transportation.

#### Single-row tape with cardboard reel



#### Label Position

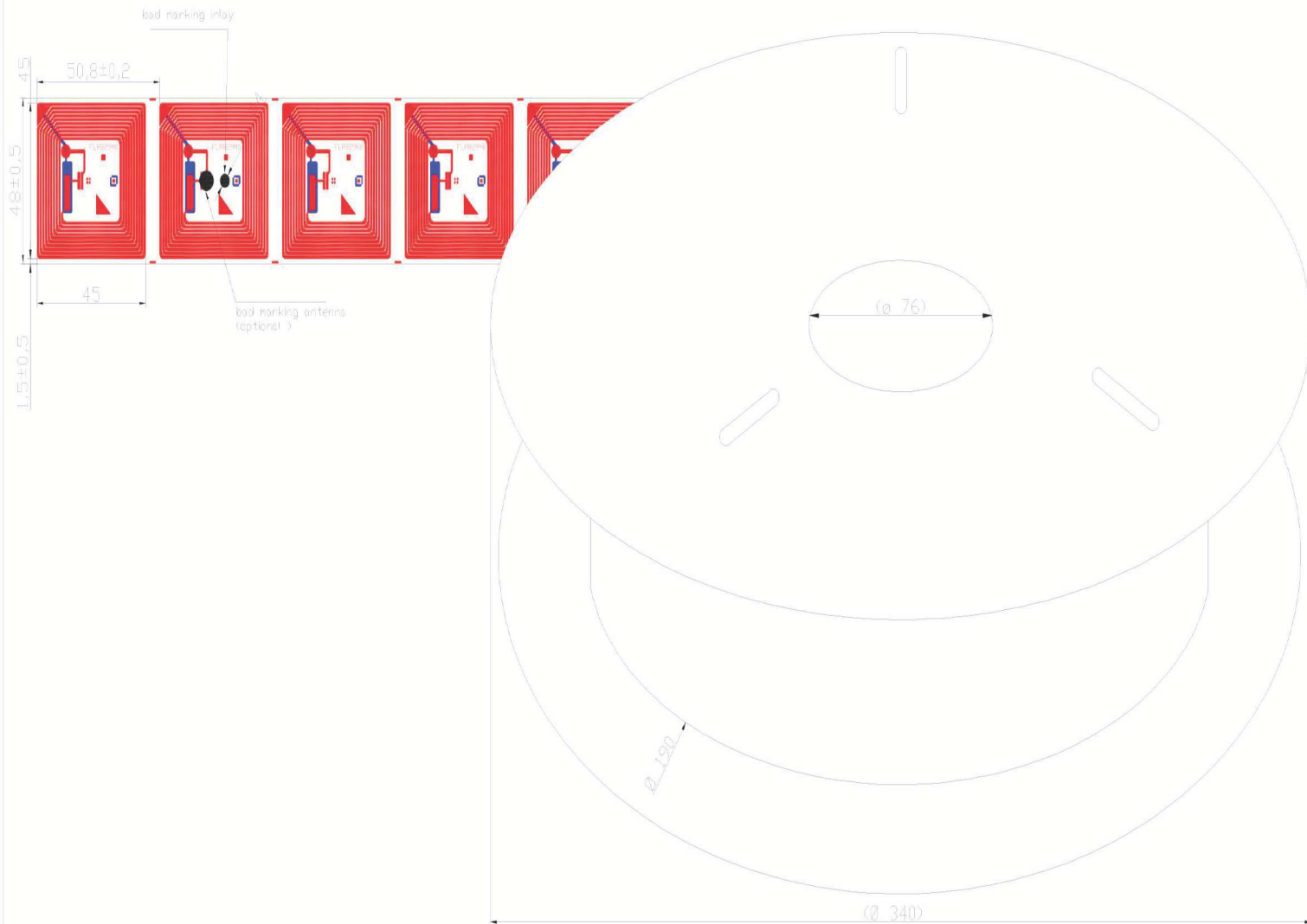


#### Package in ESD foil



#### Cardboard Packing Box





  
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 1.205.383.2244 • Outside USA  
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application area		allowance	surface	scale	1:1	mass
		tolerance		material, semifinished part		
		± 0.2		30µm Al (cat) / 38µm Pet / 10µm Al (bridge)		
				description		
				FLR829M0 H145		
				delivery form		
				Ø190mm core		
				drawing number		
				P300-15.213.022-V01.2		
				page		
				1/1		
				B		
V01.2	change card	02.12.15	hensche			
V01.1	initial release	20.10.15	hensche			
status	changes	date	name	SMARTRAC <sup>®</sup> SMARTRAC TECHNOLOGY GmbH Dresden		