13.56-MHz ENCAPSULATED PLUS TRANSPONDER

FEATURES

- **ISO/IEC 15693-2,-3; ISO/IEC 18000-3 Compliant**
- **13.56-MHz Operating Frequency**
- **2048-Bit User Memory in 64 × 32-bit Blocks**
- **User and Factory Lock Per Block**
- **Application Family Identifier (AFI)**
- **Data Storage Format Identifier (DSFID)**
- **Combined Inventory Read Block**

APPLICATIONS

- **Laundry**
- **Process Automation**
- **Product Authentication**
- **Asset Management**

DESCRIPTION

Texas Instruments' 13.56-MHz encapsulated plus transponder is compliant with the ISO/IEC 15693 and ISO/IEC 18000-3 global open standards. This product offers a user accessible memory of 2048 bits, organized in 64 blocks and an extensive command set.

Designed for harsh environments, such as garment tracking in laundries, each transponder has a 64-bit factory programmed Read Only Number, which is also laser engraved on the transponder housing. Prior to delivery, transponders undergo complete functional and parametric testing to provide the high quality that customers have come to expect from TI.

The 13.56-MHz encapsulated plus transponders are well suited for a variety of applications including but not limited to: laundry garment tracking, process automation, product authentication, and asset management.

ABSOLUTE MAXIMUM RATINGS

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

	RF-HDT-DVBB	UNIT
Operating Temperature	–25 to 90	°C
Storage Temperature	–40 to 120 (130°C for total 50 hours, 220°C for total 30 seconds)	°C

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OPERATING CHARACTERISTICS

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

PARAMETER	RF-HDT-DVBB(1)	UNIT
Supported standard	ISO/IEC 15693-2,-3; ISO/IEC 18000-3	
Resonance frequency (at 25°C)	13.56 MHz ± 300 kHz	
Typ. required activation field strength to read (at 25°C)	112	dBµA/m
Typ. required activation field strength to write (at 25°C)	115	dBµA/m
Factory programmed read only number	64	bits
Memory (user programmable)	2k bits organized in 64 × 32-bit blocks	
Typical programming cycles (at 25°C)	100 000	
Data retention time (at 25°C)	>10 years	
Simultaneous identification of tags	Up to 50 tags per second (reader/antenna dependent)	
Dimensions	ø 22 ± 0.2 mm × 3 ± 0.2 mm	
Weight	2.1 ± 0.2	grams
Case material	PPS, black	
Protection class	IP 68	
Vibration	ISO/IEC 68.2.6 (10 g, 10 to 2000 Hz, 3 axis, 2.5 h)	
Mechanical shock	ISO/IEC 68.2.27 (100 g, 6 ms, 6 axis, 20 times per axis)	
Mechanical stability	Axial compression strength: 1000 N (10 s, static) Radial compression strength: 500 N (10 s, static) Isostatic water pressure: 45 bar (10 h)	
Chemical resistance	Typical chemicals used in laundry and dry-cleaning processes	
Delivery	1000 units in bulk	

(1) For highest possible read-out coverage, TI recommends operation of readers at a modulation depth of 20% or higher.

SUPPORTED COMMAND SET

REQUEST	REQUEST MODE(1)					
	REQUEST CODE	INVENTORY	ADDRESSED	NON-ADDRESSED	SELECT	AFI
ISO 15693 Mandatory and Optional Commands						
Inventory	0x01	√	–	–	–	√
Stay Quiet	0x02	–	√	–	–	–
Read_Single_Block	0x20	√	√	√	√	√
Write_Single_Block	0x21	–	√	√	√	–
Lock_Block	0x22	–	√	√	√	–
Read_Multi_Blocks	0x23	√	√	√	√	√
Write_Multi-Blocks	0x24	–	–	–	–	–
Select Tag	0x25	–	√	–	–	–
Reset to Ready	0x26	–	√	√	√	–
Write_AFI	0x27	–	√	√	√	–
Lock_AFI	0x28	–	√	√	√	–
Write DSFID	0x29	–	√	√	√	–
Lock DSFID	0x2A	–	√	√	√	–
Get_System_info	0x2B	√	√	√	√	√
Get_M_BLK_Sec_St	0x2C	√	√	√	√	√
TI Custom Commands						
Write_2_Blocks	0xA2	–	√	√	√	–
Lock_2_Blocks	0xA3	–	√	√	√	–

(1) √: Implemented, – : Not applicable

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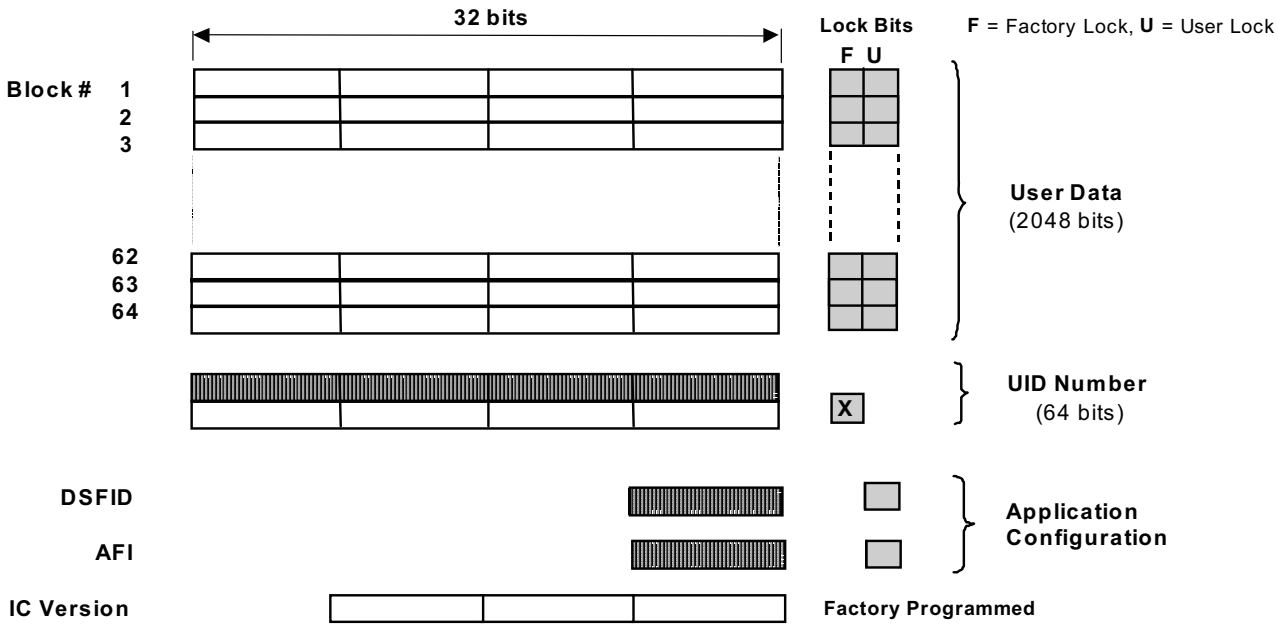
MEMORY ORGANIZATION



PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)
RF-HDT-DVBB-N1	OBSOLETE	RFIDP	TEC	0		TBD	Call TI	Call TI
RF-HDT-DVBB-N2	ACTIVE	RFIDP	TEC	0	1000	Pb-Free (RoHS)	Call TI	N / A for Pkg Type

(1) The marketing status values are defined as follows:
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(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.
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(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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