SIC73F1

134.2 kHz, Multipage 1360-bit R/W HDX RFID Transponder

REV 2.0

Features Summary

Highlight Features

- Half-Duplex contactless read/write data transmission
- Multipage Transponder (MPT)
- On-chip rectifier and voltage limiter

Interface and Peripheral

- Compliant with ISO 11784/11785 HDX Animal tag ID data
- Support to SEMI E144-0312
- Uplink modulation: FSK (Frequency Shift Keying)
- Uplink data rate: 134.2 kHz (data0) and 124.2 kHz (data1)

Memory

- 1,360 bits EEPROM
- 17 pages read/write memory
- 100,000 erase/write cycles
- 10 years non-volatile data retention

Operating Conditions

- Carrier frequency f_c is 134.2 kHz
- Operating temperature: –25°C to 85°C

Package

- Glass Transponder 32 mm (Bio-glass with black epoxy)

Applications

- Wafer carrier tracking
- Access Control
- Industrial

Revision History

Revision	Date	Description	Change/Update Comment
1.0	15 Oct 2022	1st Release	Initial release
2.0	15 Mar 2023	Update	• Update ordering information • Update the glass tag specification

Ordering information

Part No.	Description	Package	Standard Packing
PF1AGU63G10SUF120T1	SIC73F1-20, Multipage 1360-bit R/W memory HDX LF RFID Glass Transponder 32mm, TnR, RFID	Glass Transponder	2,000 pcs/Reel
PF1AGU63G10SUF120C8	SIC73F1-20, Multipage 1360-bit R/W memory HDX LF RFID, Glass Transponder 32mm, Canister, RFID TAG	Glass Transponder	900 pcs/Canister

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0. Notation

0.1 Styles and Fonts for key words

This part defines styles and fonts used for the key words throughout this document. The key words are names of signal, register, pin, state of operation and command. The styles, fonts, and their indications are shown in Table 0-1.

Table 0-1: Style and Fonts key word

Symbol	Indication
Signal	Signal name
Register	Register name or Bit name
pin RX	Pin name
"State of Operation"	State of operation
Command	Command name for RF interface
"Flag"	Flag name in response state

- To refer to a register address and a value in a register, a hexadecimal number proceeding with letter "0x" is used, for example 0x0A.
- To refer to a bit located in a register address, a symbol "." following by a number reflecting the bit location starting from 0 to 7 is used. For example, 0x0A.0 refers to bit 0, least significant bit, in the register 0x0A.
- To refer to a set of consecutive bits located in a register address, a format ".[msb:lsb]" is used after a register value. For example, a value of 0x0A.[3:0] refers to bit 3 ,2, 1, and 0 in the register 0x0A.
- To refer to a binary value in some registers, the letter "b" is placed at the end of the binary number, for example "1010b".
- To refer to logic level, the number in single quote '1' and '0' are used to refer to binary logic level.

0.2 Abbreviation

Table 0-2: Abbreviation

Abbreviation	Term
EEPROM	Electrically Erasable Programmable Read-Only Memory
RF	Radio Frequency
T_{amb}	Ambient Temperature

1. Specification

1.1 Absolute Maximum Rating

Conditions above the listed maximum ratings may cause permanent damage to the device. Exposure to the absolute maximum rating conditions for an extended period may affect the device's reliability. Only one absolute maximum rating can be applied at a time.

Table 1-1: Absolute Maximum Rating

Parameter	Rating
Operating temperature range	-25 °C to +85 °C
Programming temperature range	0 °C to +70 °C
Storage temperature range	-40 °C to +125 °C

1.2 Electrical Characteristics

Table 1-2: AFE Characteristic

Parameter	Description	Min	Typ	Max	Unit	Conditions
T_{op}	Operating Temperature	-25	+25	+85	°C	
f_{op}	RF operating frequency		134.2		kHz	
f_{mod0}	Modulation frequency data '0'	132.7	134.2	135.7	kHz	
f_{mod1}	Modulation frequency data '1'	122.2	124.2	126.2	kHz	f_{mod0} = 134.2 kHz

Table 1-3: EEPROM Characteristic

Parameter	Description	Min	Typ	Max	Unit	Conditions
MEM	Memory		1360		bits	MPT functionality
t_{ret}	EEPROM Data Retention	10			Years	T_{amb} = +55°C
N_{CY}	EEPROM write cycles	100k			Cycles	

2. Package information

2.1 Glass transponder 32 mm

2.1.1 Package dimension

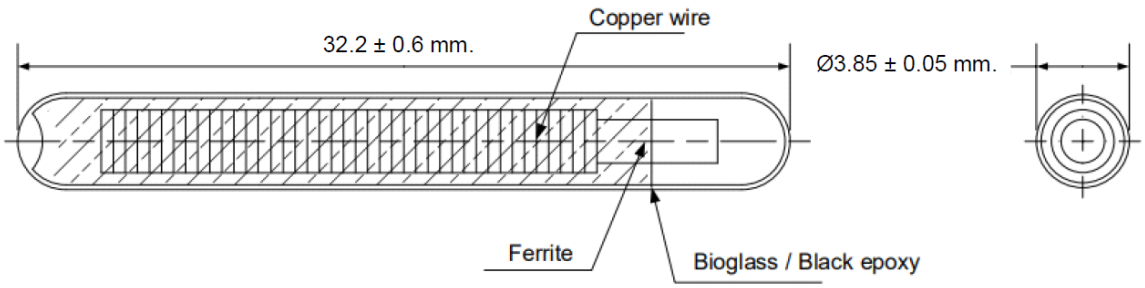

Figure 2-1: Drawing and dimension

Table 2-1: Package dimension and information

Item	Parameter	Value	Tolerance	Unit
Glass transponder	Length	32.20	± 0.60	mm
	Diameter	3.85	± 0.05	mm
	Wire material	Cu	-	-
	Glass type	Bio-glass	-	-

3. Disclaimer

- The information described herein is subject to change without notice.
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