

(Preliminary)

HF RFID Reader/Writer Evaluation Kit Data sheet



Scope

This Data sheet, is applied to HF RFID reader/writer evaluation kit.

-Specific applications: To evaluate Murata's HF RFID tag products.

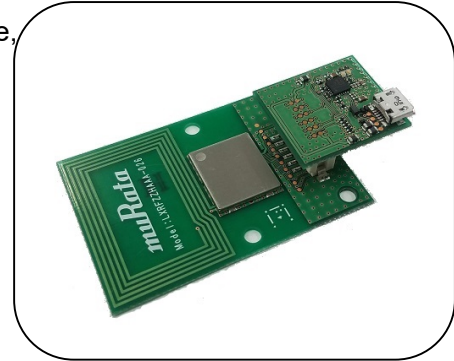
-Unsuitable Application: It is not allowed to install on/in any products which are released to the market.

1. General Descriptions

HF RFID Reader/Writer Evaluation Kit includes a reader writer device, an interface board.

The device uses TRF7970A (Texas Instruments).

It complies with ISO14443A and ISO15693.



[Features]

- Optimized antenna design for Murata tag
- FCC / IC / ETSI / Japan Radio law certified device
(FCC ID : VPYLXRF026 , IC : 772C-LXRF026 , CE Mark acquired)
- Low cost
- Host interface : 4-Wire SPI
- 100% green material for RoHS compliance
- Included item list

Evaluation Kit	LXRFZZHAAA-028-KIT
Reader Writer	LXRFZZHAAA-026-EVAL
Interface Board	LXRFZZHBBA-044-EVAL
micro B USB cable	micro B USB cable

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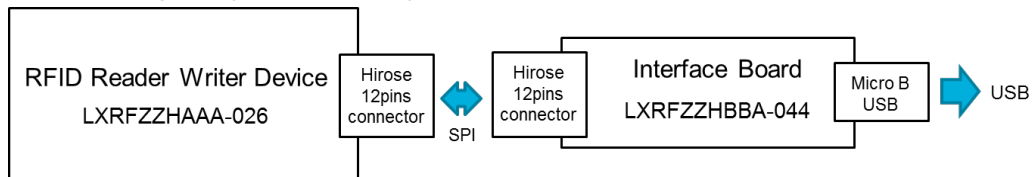
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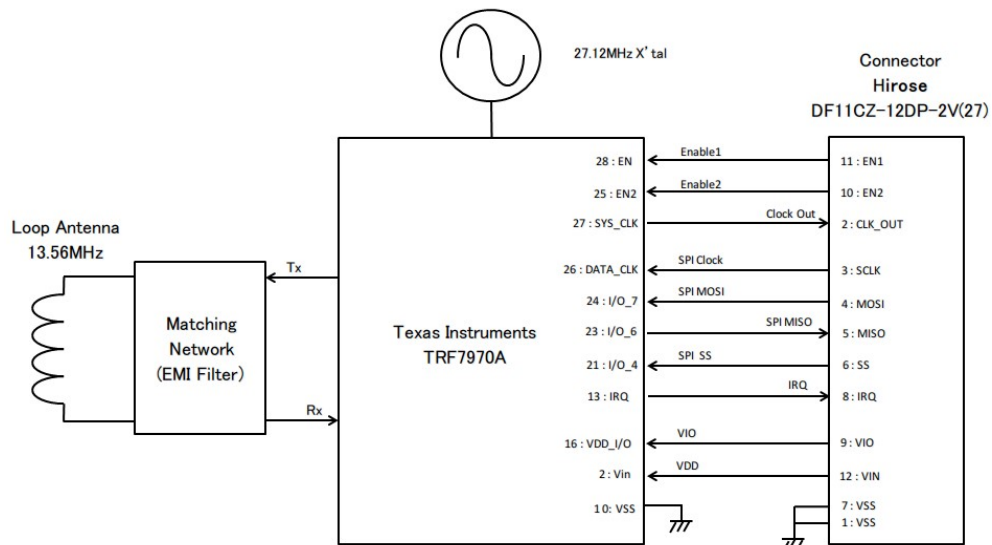
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2. Block Diagram

Block Diagram (Evaluation Kit)



Block Diagram (RFID Reader Writer Device)



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3. Mechanical Information

[Dimension]

Please refer the datasheet for detail of dimensions of each item.

(The reader writer device, antennas and interface board)

	Datasheet
Reader Writer	LXRFZZHAAA-026-EVAL_Datasheet_*.pdf
Interface Board	LXRFZZHBBA-044-EVAL_Datasheet_*.pdf

4. Characteristics

4-1. Basic configuration

LXRFZZHAAA-026-EVAL is the HF RFID Reader/Writer device.

The device uses TRF7970A(Texas Instruments).

Please refer the following data sheet for a functional description.

< TRF7970A data sheet>

TRF7970A Multiprotocol Fully Integrated 13.56-MHz RFID and Near Field
Communication (NFC) Transceiver IC

SLOS743K –AUGUST 2011–REVISED APRIL 2014

※In case the data sheet has been updated, please refer the latest version.

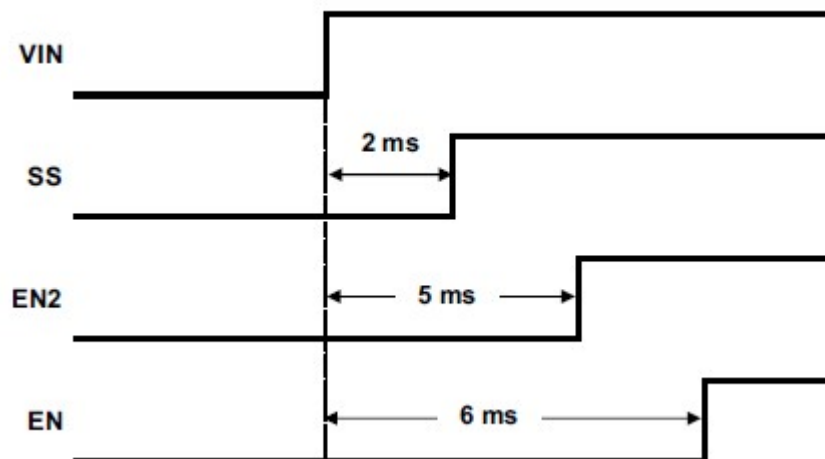
4-2. Ratings

4-2-1. Limiting values

Parameter	Symbol	Limiting values		Unit
		Min	Max	
Power Supply Voltage	V_{IN}	-0.3	5.8	V
Maximum current	I_{IN}		150	mA
Storage temperature	T_{STG}	-25	+85	°C

4-2-2. Operation condition

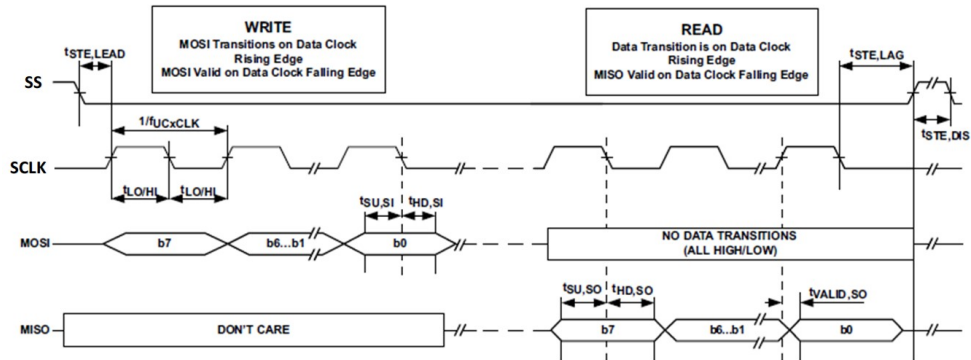
Parameter	Symbol	Min	Typ	Max	Unit
Power Supply Voltage	V_{IN}	4.5	5	5.5	V
Ambient Temperature	T_{amb}	-25	25	+65	°C
I/O Voltage	V_{IO}	1.8		V_{DD}	V
I/O Voltage – logic low	V_{IL}			$0.2 \times V_{IO}$	V
I/O Voltage – logic high	V_{IH}	$0.8 \times V_{IO}$			V

4-3. Start-up sequence

4-4.SPI Specification

SPI Mode1 (CPOL = 0, CPHA = 1).

Recommended SCLK speed is less than 2MHz.



Parameter	Min	Typ	Max	Unit
tLO/HI (SCKL 50% duty)	250	62.5	50	ns
tSTE,LEAD (SS low to clock)		200		ns
tSTE,LAG (Last clock to SS high)		200		ns
tSTE,DIS (SS rising edge to next SS falling edge)	300			ns
tSU,SI (MOSI input data setup time)	15			ns
tHD,SI (MOSI input data hold time)	15			ns
tSU,SO (MISO input data setup time)	15			ns
tHD,SO (MISO input data hold time)	15			ns
tVALID,SO (MISO input data valid time)	30	50	75	ns

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4-5. Electrical Characteristics

Without notice; Ambient Temperature ($T_{amb} = +25^{\circ}\text{C}$), Operational voltage ranges.

	Parameter	Symbol	Conditions	Min	Typ	Max.	Unit	Remarks
1	Frequency	F	Standard :13.56MHz All Ambient Temperature	-50		50	ppm	Japanese radio law: Within+/-50ppm
2	Current Consumption1	I _{STBY}	Standby mode			5.0	mA	
3	Current Consumption2	I _{cw}	Non-modulated continuous wave output			150	mA	
4	Output Power	P	Non-modulated continuous wave output		22	24	dBm	
5	Harmonics	H	Second(27.12MHz)			50	uW	Japanese radio law : Not over 50uW
			Third(40.68MHz)			50	uW	Japanese radio law : Not over 50uW
6	Spurious Emission	Japanese radio law	S _J	13.56MHz		47.544	mV/m	Japanese radio law : Not over 47.544mV/m
				13.41MHz - 13.553MHz, 13.567MHz - 13.71MHz		1.061	mV/m	Japanese radio law : Not over 1.061.mV/m
				13.11MHz – 13.41MHz, 13.71MHz - 14.01MHz		316	uV/m	Japanese Radio law : Not over 316uV/m
				Except above frequency		150	uV/m	Japanese radion law : Not over 150V/m
		ETSI	S _E	30MHz -1000MHz		250	nW e.r.p.	EN302 291-1 : Not over 250 nW e.r.p
				47MHz - 74MHz, 87.5MHz – 118MHz, 174MHz – 230MHz, 470MHz – 862MHz		4	nW e.r.p.	EN302 291-1 : Not over 4nW e.r.p.

4-6. Applicable standards

LXRFZZHAAA-026-EVAL is approved by the following standards.

- R&TTE/ RE directive (EN 302 291series, EN 301 489series)
- FCC Part 15 Sub partC and RSS-210
- Japanese radio law

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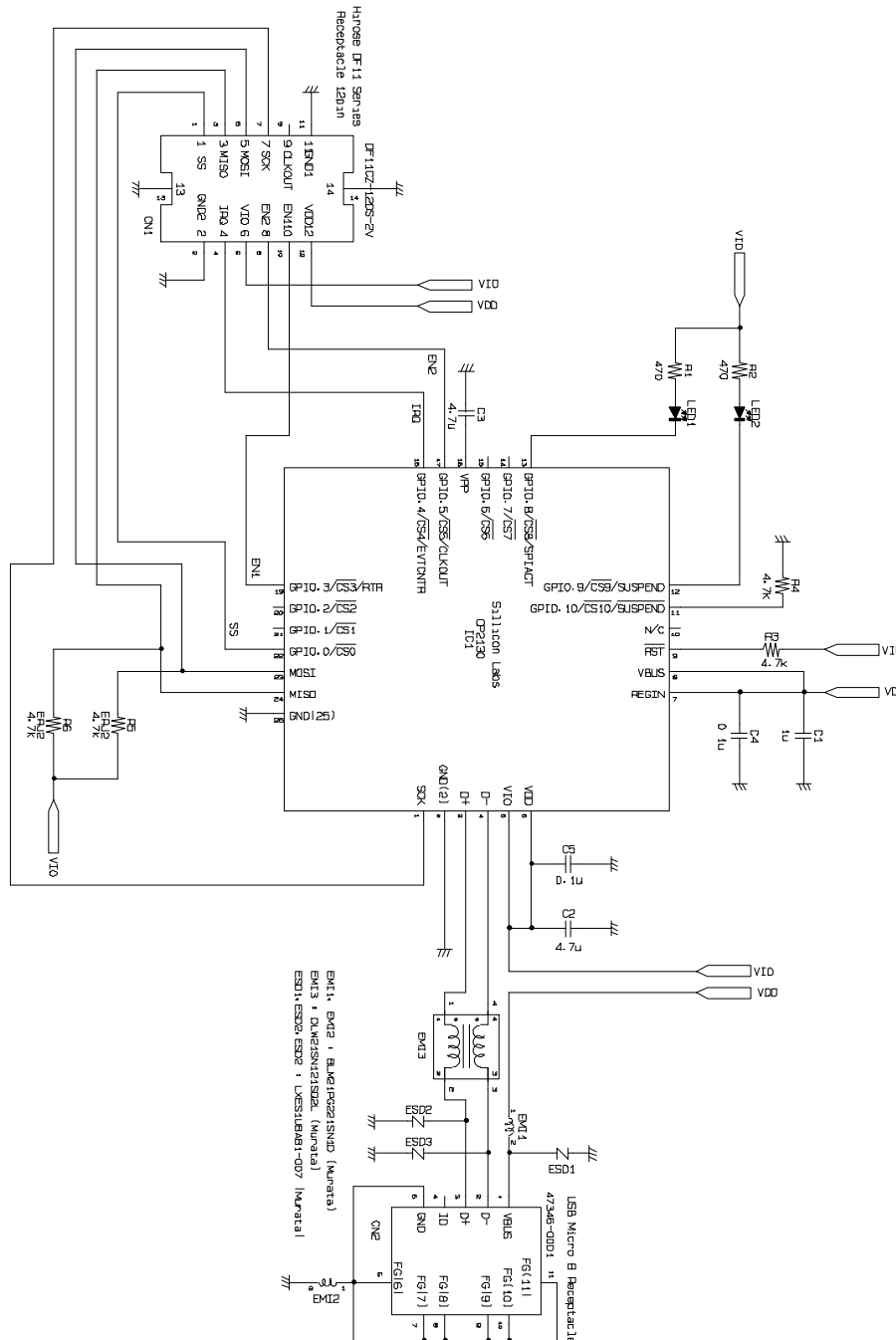
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5. Application Circuit

The circuit of USB-SPI bridge to control R/W device is shown as an example.

You can control R/W device by this circuit from the PC.

This circuit is available in the evaluation kit (LXRFZHAAA-028-KIT).



6. Contact window

URL: <http://www.murata.com/products/rfid>

Email: magicstrap@murata.com

For any inquiries/queries, please feel free to contact us.

NOTICE

1. Storage Conditions:

To avoid damaging, be sure to observe the following points.

- Store products where the ambient temperature is 15 to 35 °C and humidity 45 to 75% RH.

(Packing materials, In particular, may be deformed at the temperature over 40 °C.).

- Store products in non corrosive gas (Cl₂, NH₃, SO₂, NO_x, etc.).
- Stored products should be used within 6 months of receipt.

2. Handling Conditions:

Be careful in handling or transporting products because excessive stress or mechanical shock may break products.



Note:

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