Product Preview

uTRFABC15V4

HIGH PERFORMANCE ISO 14443 TYPE A & B,ISO 18092 PASSIVE MODE RF COUPLER

Revision 0.1

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1 INTRODUCTION

The uTRFABC15V4 The mTRFABC15V2 is a RF coupler that fully comply to ISO 14443 Type A & B standard and ISO 18092 passive mode (or Sony Felica Type C) format. It can work with ISO 14443 type A, B and C compliance contactless smart cards.

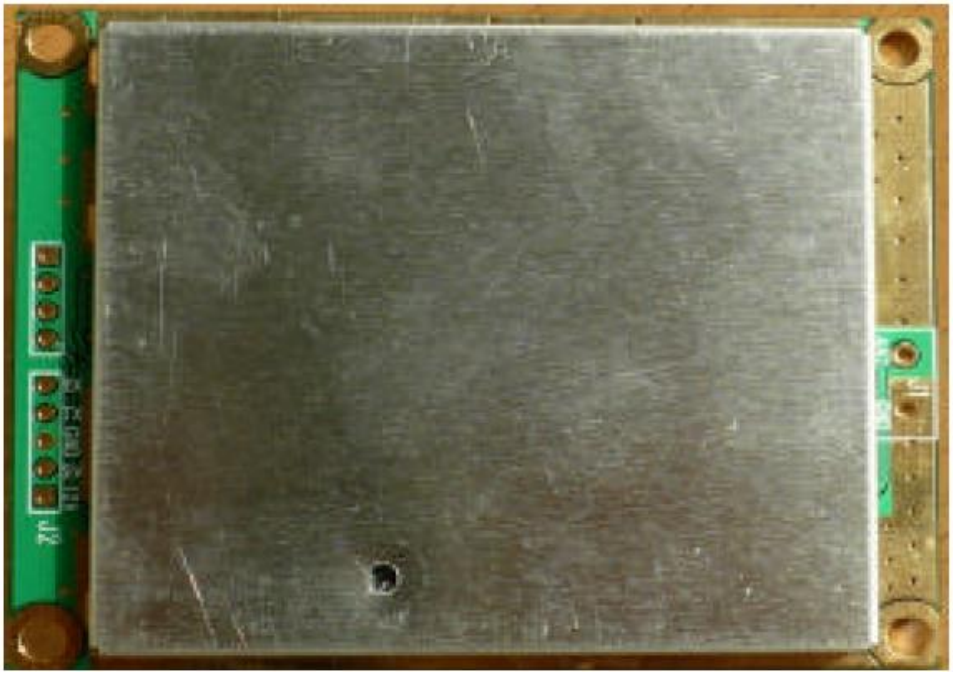
uTRFABC15V4 has built-in high speed processor to handle the communication data between host and card. The general transaction speed is over 10 times faster than earlier version RF modules (e.g. uTRFAPRDABC06V2). uTRFABC15V4 features antenna short circuit protection to prevent system damage due to unintentionally removal of antenna. It also support multiple cards operation with built-in ISO 14443 anti-collision mechanism.

uTRFABC15V4 is functional compatible with uTRFABC15. The typical read/write distance is shown below:

Card Name*	**Protocol**	**Typical R/W distance# (cm)**
NXP Ultralight	Type A	9.5
NXP Mifare Standard	Type A	8.5
Microtech SweepGo	Type B	7
Sony Felica	Type C	10

** All product names are the property of their respective owners.*

 # Base on data rate 106Kbps (212kbps for Type C)



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2 FEATURES

2.1 HOST INTERFACE

CMOS-TTL level RS-232 with automatic baud rate detection. Baud rate supported - 115.2kbps, 230.4kbps, 460.8kbps and 921.6kbps.

- Three host protocol supported: APDU mode, pass-through mode and RAW data mode.

2.2 POWER SUPPLY

uTRFABC15V4 operates with a 12V and 5V DC power supply:

- +12 volts maximum consumption 200mA (RF ON), 10mA (RF OFF)
- +5 volts maximum consumption 180mA

2.3 CARD TYPES SUPPORTED

- ISO/IEC 14443-2 through 4, Type A Card
- ISO/IEC 14443-2 through 4, Type B Card
- ISO/IEC 18092, Type C Card (e.g. SONY Felica Card RC-S833)
- RF Carrier: 13.56MHz transmission
- RF data rate: 106kpbs, 212kbps, 424kbps (Type A & B), 212kbps (Type C)

2.4 SECURITY

- Mifare crypto 1 compability

2.5 EMC & EMI CONFORMITY

- EN 301 489-1/-3 (EN55022 in Class B)

2.6 APPLICATION AREA

- Automatic fare collection (AFC)
- Access control
- E-Purse facilities
- ID card

2.7 DIMENSIONS

- Main board: 78mm x 61mm x 10mm
- Remote antenna: uTRFANT02 (dimensions: 101mmx126mmx15mm)

2.8 OPERATING ENVIRONMENT

- Temperature range: 0 to 70 degree C
- Relative humidity range:40% to 90%

2.9 ROHS COMPLAINT

- EU directive 2002/95/EC

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3 GENERAL OVERVIEW

The uTRFABC15V4 is an ISO 14443 Type A, B & C RF coupler for contactless mode smart card applications. The block diagram of the uTRFABC15V4 is shown in Figure 1.

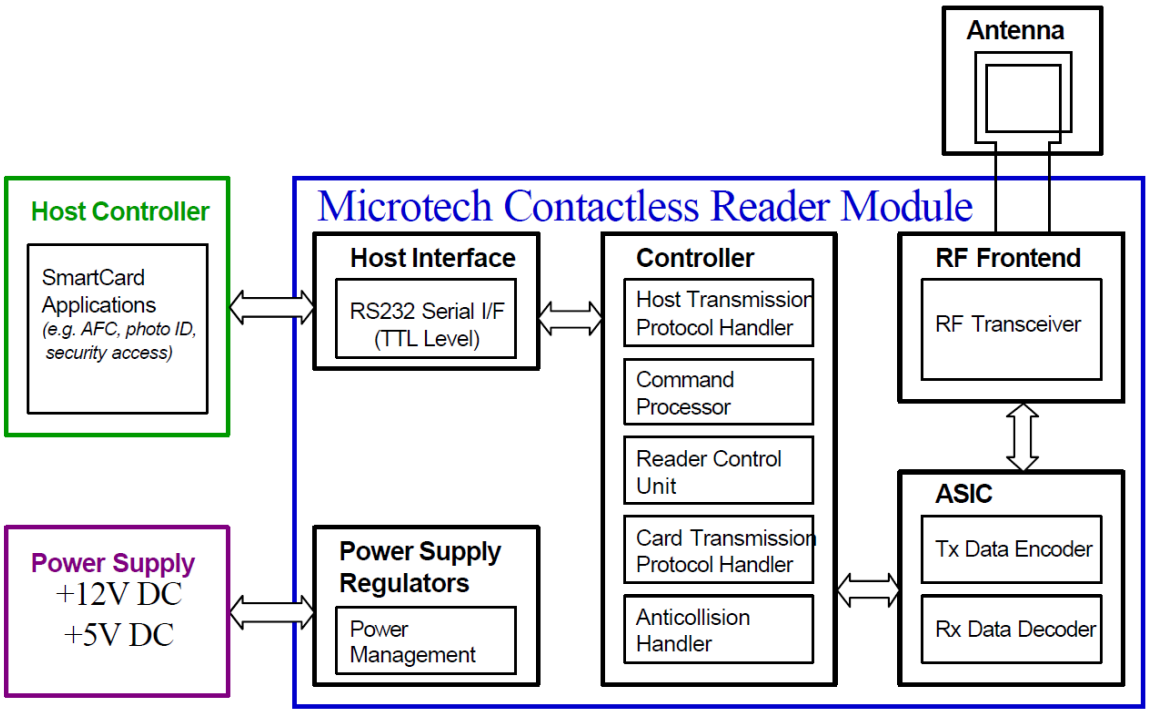

Figure 1: uTRFABC15V4 RF Coupler Block Diagram

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4 HIGH LEVEL COMMANDS

uTRFABC15V4 provides a complete set, yet simple host commands to make all the RF interactions transparent to the host user.

4.1 CONTROL COMMANDS:

Command	Description
Get Reader	Get reader identification
Resend	Request resend last response
Power ON RF	Power ON RF carrier
Power OFF RF	Power OFF RF carrier
Abort Response	Response to unsupported commands

4.2 TYPE A (MIFARE) COMMANDS:

Command	Description
Get Card Type A	Detect and select a Type A card
Get Type A SNR	Detect and select a Type A card with specified SNR
Deselect Card	Deselect the current card
Halt	Send a "Halt" command to card
Mifare Read	Read back of Mifare standard card
Mifare_write	Write back to Mifare standard card
Mifare_Decrement_transfer	Decrement the content of a block of Mifare standard card
Mifare_Increment_transfer	Increment the content of a block of Mifare standard card
Mifare_restore_transfer	Copy the content of a block to another block of Mifare standard card
Type A card load key to reader EEPROM	Load key in reader EEPROM
Mifare Crypto 1 authentication with key in reader EEPROM	Mifare Crypto 1 authentication with key in reader EEPROM
Mifare Crypto 1 authentication with key input	Mifare Crypto 1 authentication with user input key

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4.3 TYPE A COMMANDS:

Command	Description
Set Timeout	Set the timeout for Type A commands
Transmit type A pass through	Data exchange between reader and card in pass through mode

4.4 TYPE B COMMANDS:

Command	Description
Set Timeout	Set the timeout for Type B commands
Transmit type B pass through	Data exchange between reader and card in pass through mode

4.5 TYPE C COMMANDS:

Command	Description
Set Timeout	Set the timeout for POLL C commands
Transmit type C pass through	Data exchange between reader and card in pass through mode

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