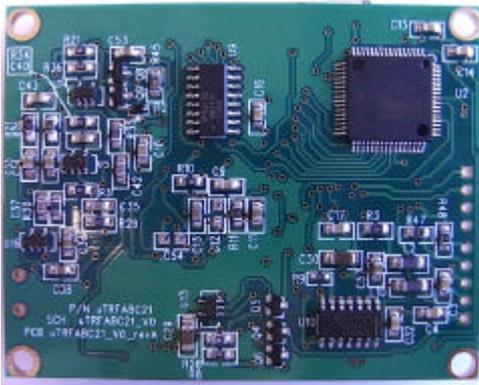


# Product Preview

## uTRFABC23

### Single 5V Supply ISO 14443 Type A & B, ISO 18092 Passive mode RF Coupler



The uTRFABC23 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.

uTRFABC23 has built-in high speed processor to handle the communication data between host and card. It can reduce the overall transaction time.

uTRFABC23 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.

The typical read/write distance is shown below:

Card Name	Protocol	Typical R/W distance (cm) <sup>1</sup>
NXP Mifare Standard	Type A	5
Microtech SweepGo	Type B	2
Sony Felica	Type C	3

1. Depends on card and antenna

All product names are the property of their respective owners.

#### 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. (fixed baud rate optional)
- Three host protocol supported: APDU mode, pass-through mode and RAW data mode.

#### 2. POWER SUPPLY

uTRFABC23 operates with a single 5V DC power supply. Maximum current consumption is 280mA.

#### 3. CARD TYPES SUPPORTED

- ISO/IEC 14443-2 through 4, Type A Card (e.g. Mifare standard, DESFire, Ultralight, Ultralight C)
- 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 (Type A & B), 212kpbs (Type C)

#### 4. SECURITY

- Mifare crypto I compability

#### 5. APPLICATION AREA

- Handheld mobile contactless reader
- Portable Automatic fare collection (AFC)
- E-Purse facilities
- Ticket inspection devices
- ID card application

## 6. EMC & EMI CONFORMITY

EN55022 in Class B (with proper shielding in outer casing)

## 7. DIMENSIONS

- Main board: 68mm x 54mm x 10mm
- Optional antenna: uTRFANT04G 30mmx50mmx6.2mm

## 8. OPERATING ENVIRONMENT

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

## 9. RoHs COMPLAINT

- EU directive 2002/95/EC

## 10. GENERAL OVERVIEW

The uTRFABC23 is an ISO 14443 Type A, B & C RF coupler for contactless mode smart card applications.

The block diagram of the uTRFABC23 is shown in Figure 1.

## 11. HIGH LEVEL COMMANDS

uTRFABC23 provides a complete set, yet simple host commands to make all the RF interactions transparent to the host user.

### Control Commands:

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

### 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

Command	Description
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

### 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

### 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

### Type C Command:

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

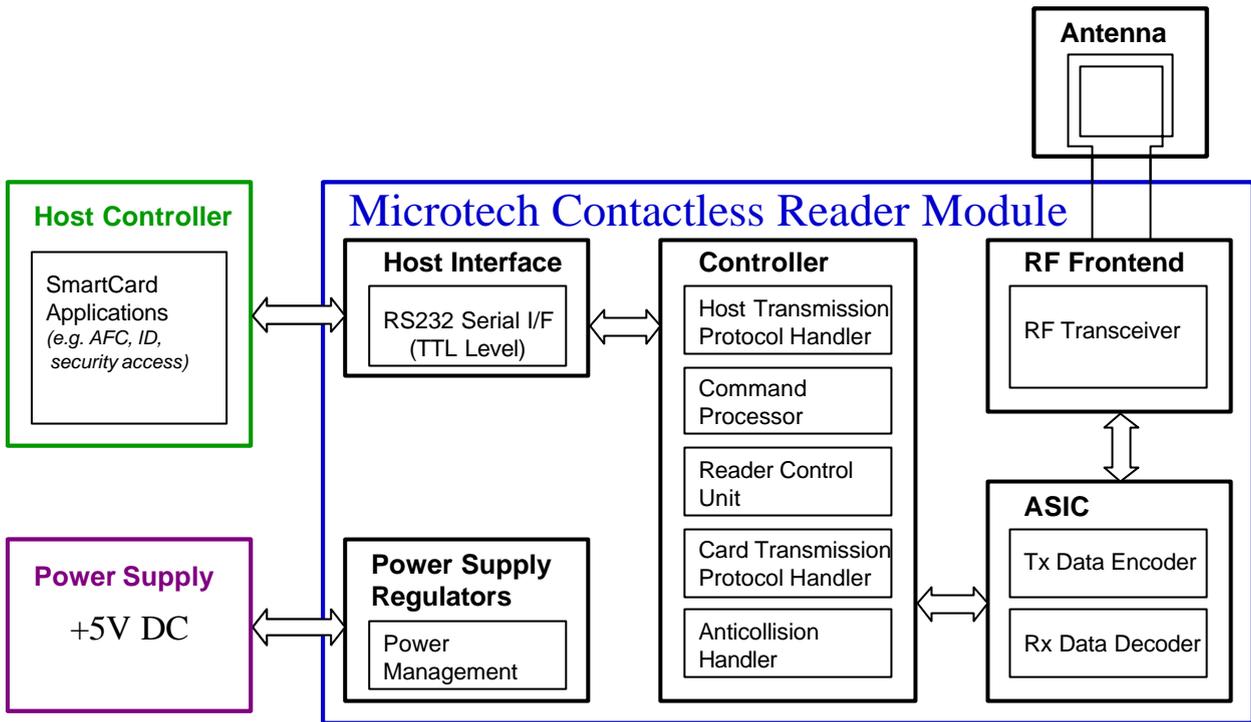


Figure 1. uTRFABC23 RF Coupler Block Diagram