Advanced Card Systems Ltd.
Card & Reader Technologies

ACM1281 NFC Reader Module Reference Information

ACM1281 NFC Reader Module Technical Reference Information V1.00

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Version History

Date	By	Changes	Version
2015-03-16		•	1.00
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1.0. Description

The ACM1281 NFC Reader module is a 13.56MHz transceiver designed to read Radio Frequency Identification (RFID) tags. This module is based on an NXP Semiconductors RC531 completely integrated for all kinds of passive contactless communication methods and protocols at 13.56MHz. The ACM1281's antenna is integrated into the circuit board so there is no external antenna required.

2.0. Features

- USB 2.0 Full Speed Interface
- Contactless Smart Card Reader:
  - 13.56MHz Carrier Frequency
  - Read/Write speed of up to 848 kbps
  - Built-in antenna for contactless tag access, with card reading distance of up to 50 mm (depending on tag type)
  - Supports ISO 14443 Part 4 Type A and B cards and MIFARE® Classic series
  - Built-in anti-collision feature (only one tag is accessed at any time)
  - Supports extended APDU (max. 64 kbytes)
  - Integrated Antenna
- Contact Smart Card Reader:
  - Supports ISO 7816 Class A, B and C (5 V, 3V and 1.8 V)
  - Supports CAC (Common Access Card)
  - Supports PIV (Personal Identity Verification Card)
  - Supports microprocessor cards with T=0 or T=1 protocol
  - Supports memory cards
  - ISO 7816 compliant SAM slot
- Built-in Peripherals:
  - Two user-controllable LEDs
  - User-controllable buzzer
- USB Firmware Upgradability
- Supports Android™ OS 3.1 and above
- Compliant with the following standards:
  - ISO 14443
  - ISO 7816
  - CE
  - FCC
  - PC/SC
  - CCID
  - Microsoft® WHQL
  - RoHS

3.0. Absolute Maximum Ratings

SYMBOL	Description	Min	Max	Units
VDD	Support Voltage to J7's Pin 1 and Pin 4	4	6	V
$T_{amb,abs}$	Storage Temperature Range	-40	85	℃

Stress beyond those listed under the Absolute Maximum Ratings may cause permanent damage to device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions are not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability

4.0. Recommended Operation Conditions

SYMBOL	Description	Min	Normal	Max	Units
VDD	Support Voltage to J7's Pin 1 and Pin 4	4.75	5	5.25	V
$T_{storage}$	Storage Temperature Range	-10	25	60	℃
$T_{operation}$	Operation Temperature Range	0	25	50	℃
Humidity	Humidity Range	-	-	90	%
F_c	Carrier Frequency Range	13.553	13.56	13.567	MHz
$I_{operation}$	Current Consumption	-	100	200	mA

5.0. Pin Descriptions

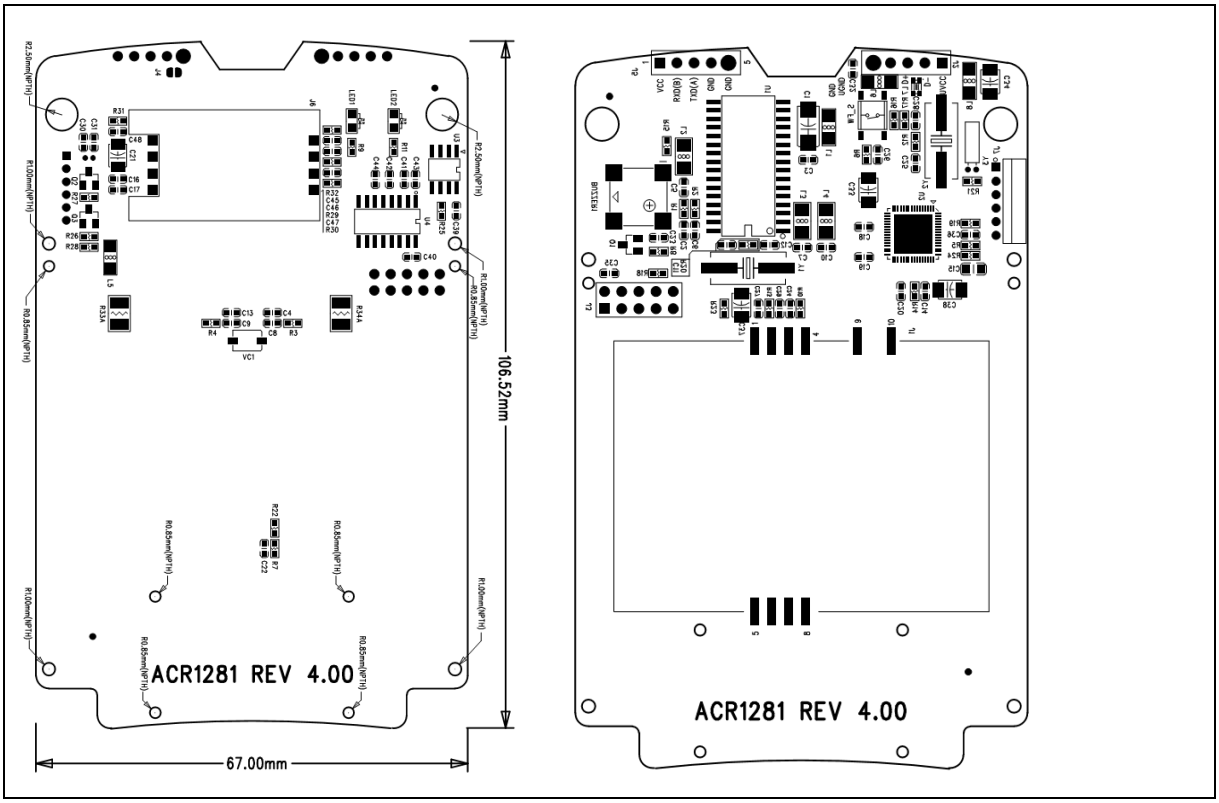
The ACM1281 has a five pins connector interface between the module and the host, identified by ref J7. Pins assignment are given in the table below

PIN	NAME	Type	Description
1	UVCC	Power	Supply Voltage
2	D-	Input/output	Differential data lines that conform to the USB v2.0 standard
3	D+	Input/output	Differential data lines that conform to the USB v2.0 standard
4	UGND	Power	Power Ground
5	GND	Power	Shielding Ground

6.0. Antenna

The integrated antenna is etched in the copper on the layer 2 and layer 3 of the circuit board. The antenna consists of three loops of 0.03" wide copper with 0.03" spacing.

7.0. Mechanical Dimensions



8.0. Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC/IC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

The device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation

Warning: Changes or modifications not expressly approved by the Advanced Card Systems Ltd. could void the user's authority to operate the equipment.

Installation in end-user equipment

This device has been modularly approved and is intended solely for use in Advanced Card Systems Ltd. products. Advanced Card Systems Ltd. will retain control over the final installation of the device, such that compliance in the end-user equipment is assured. The end-user equipment will be tested for spurious and radiated emissions to ensure the end device complies with FCC Part 15 limits.

9.0. Labeling of end-user equipment

This device has been modularly approved. The manufacturer, product name, and FCC this product must appear on the outside label of the end-user equipment as follows:

FCC ID: V5MACM1281

Product Code: ACM1281