NFC Tag 2 click

PID: MIKROE-2462

NFC Tag 2 click carries the NT3H1101 NTAG I2C energy harvesting NFC Forum Type 2 Tag from NXP. The click is designed to run on a 3.3V power supply only. It communicates with the target MCU over I2C interface and the INT pin (field detection) on the mikroBUS™ line.

NT3H1101 NTAG I2C and energy harvesting

NT3H1101 NTAG I2C - energy harvesting NFC Forum Type 2 Tag with field detection pin.

An additional externally powered SRAM mapped into the memory allows a fast data transfer between the RF and I2C interfaces and vice versa, without the write cycle limitations of the EEPROM memory.

The **FD (field detection) LED** is turned ON when an **NFC field is detected**. Power is generated from the RF field of an NFC device. For example, the NFC Tag 2 click can be powered by your mobile phone. This eliminates the need for an external power supply or a battery.

At room temperature, NT3H1101 NTAG I2C could provide typically **5 mA** at 2 V on the VOUT pin of NT3H1101 which is attached to the FD LED.

How it works

The NT3H1101 NTAG I2C which can be found on **NFC Tag 2 click** is the first product of NXP's NTAG family **offering both contactless and contact interfaces**.

In addition to the passive NFC Forum compliant contactless interface, the IC features an **I2C contact interface**, which can communicate with a microcontroller if the NT3H1101 NTAG I2C is powered from an external power supply.

An additional externally powered SRAM mapped into the memory allows a **fast data transfer** between the RF and I2C interfaces and vice versa, without the write cycle limitations of the EEPROM memory.

Additional resources

NFCWorld+ keeps an up-to-date, accurate and exhaustive list of NFC-supported phones.

Key features

- Energy harvesting
- NT3H1101 NTAG I2C
  - Contactless transmission of data
  - NFC Forum Type 2 Tag compliant
  - Operating frequency of 13.56 MHz
  - Data transfer of 106 kbit/s
- Interface: I2C
- 3.3V power supply

SPECIFICATION

Product Type	RFid/NFC
On-board modules	NT3H1101 NTAG I2C
Key Features	NT3H1101 NTAG I2C, data transfer of 106 kbit/s, NFC Forum Type 2 Tag compliant, energy harvesting
Interface	I2C
Power Supply	3.3V
Compatibility	mikroBUS
Click board size	L (57.15 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **NFC Tag 2 click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS™			Pin	Notes
Not connected	NC	**1**	AN	PWM	**16**	NC	Not connected
Not connected	NC	**2**	RST	INT	**15**	**FD**	Field detection output
Not connecred	NC	**3**	CS	TX	**14**	NC	Not connected
Not connected	NC	**4**	SCK	RX	**13**	NC	Not connected
Not connected	NC	**5**	MISO	SCL	**12**	**SCL**	I2C Clock
Not connected	NC	**6**	MOSI	SDA	**11**	**SDA**	I2C Data
Power supply	**+3.3V**	**7**	3.3V	5V	**10**	NC	Not connected
Ground	**GND**	**8**	GND	GND	**9**	**GND**	Ground

OnBoard LEDs

Designator	Name	Type	Description
LD1	PWR	LED	Indicates the power is on.
LD2	FD	LED	Field Detection indication.

Programming

Code examples for NFC Tag click, written for MikroElektronika hardware and compilers are available on Libstock.

Code snippet

This code snippet demonstrates the writing of an NDEF message on NFC Tag 2 click.

```
01 void write_ndef( void )
02 {
03 uint8_t ndef_rec[] = { 0x03,        // NDEF Message
04                       15,          // Message size
05                       0xD1,        // Record header
06                       1,           // Type Length - 1 byte
07                       11,          // Payload Length - 11 bytes
08                       'U',         // Type / URI
09                       0x01,        // Payload
10                       'm', 'i', 'k', 'r', 'o', 'e', '.', 'c', 'o', 'm',
11                       0xFE };      // NDEF Message End Mark
12     memset( NT2_click.user_memory, 0, 888 );
13     nfctag2_memory_write( 0, NT2_click.user_memory, 888 );
14     nfctag2_memory_write( 0, ndef_rec, sizeof( ndef_rec ) );
15 }
```