



**MD7105-A06**

**Preliminary**

**2.4GHz GFSK Transceiver**

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# **A7105 module specification**

**MD7105-A06**

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## General Description

The MD7105-A06 module is designed for 2.4GHz ISM band wireless applications using AMICCOM A7105 GFSK transceiver. This module features a fully programmable frequency synthesizer by SPI. The maximum data rate is 500Kbps.

## Electrical specification

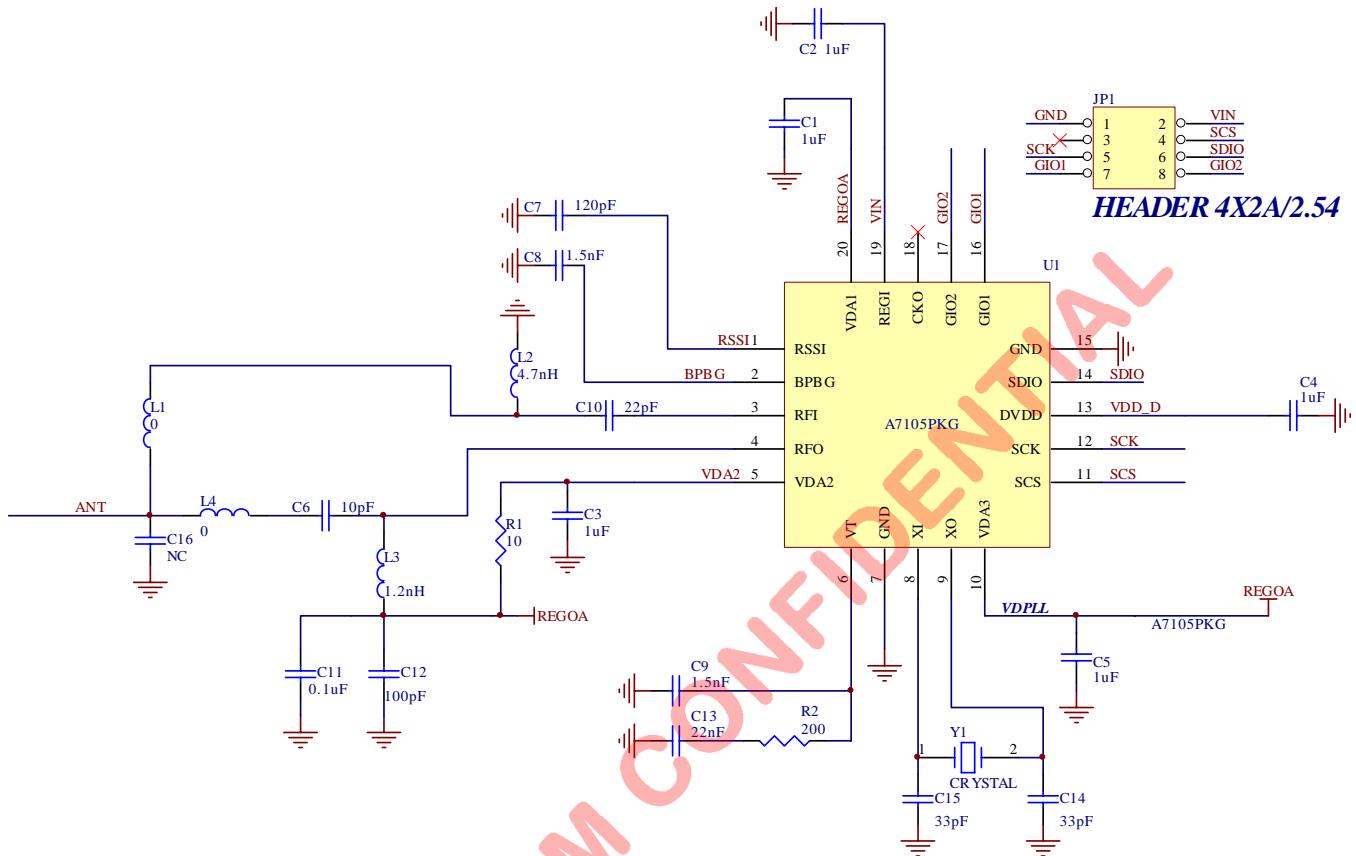
| Item                  | Specification  | Remark          |
|-----------------------|--|-----------------|
| Supply voltage        | 1.9V~3.6V  |                 |
| Current consumption   | 1uA (typical) @ Sleep mode<br>0.3mA (typical) @ Idle mode<br>1.7mA (typical) @ Stand-by mode<br>9mA (typical) @ PLL Mode<br>16mA (typical) @ Rx mode<br>20mA (typical) @ Tx mode (Pout = 0dBm) |                 |
| Frequency             | 2400 – 2483 MHz  | ISM band        |
| Transmit output power | 0 dBm @ room temperature   | typical         |
| Rx sensitivity        | -105 dBm (typical) @ 10Kbps mode, Dev = 40 KHz<br>-98 dBm (typical) @ 250Kbps mode, Dev = 93 KHz<br>-94 dBm (typical) @ 500Kbps mode, Dev = 186 KHz  | BER $\leq$ 1E-3 |
| Modulation            | FSK or GFSK  |                 |
| Transmission distance | 18 meter   | BER $\leq$ 1E-3 |
| Interface             | 4X2 pin 2.45mm header  |                 |
| Dimension             | 23.3mm(L) x 12.4mm(W) x 4.2mm(H)   |                 |
| Operating temperature | -40 ~ 85 °C  |                 |

## Interface

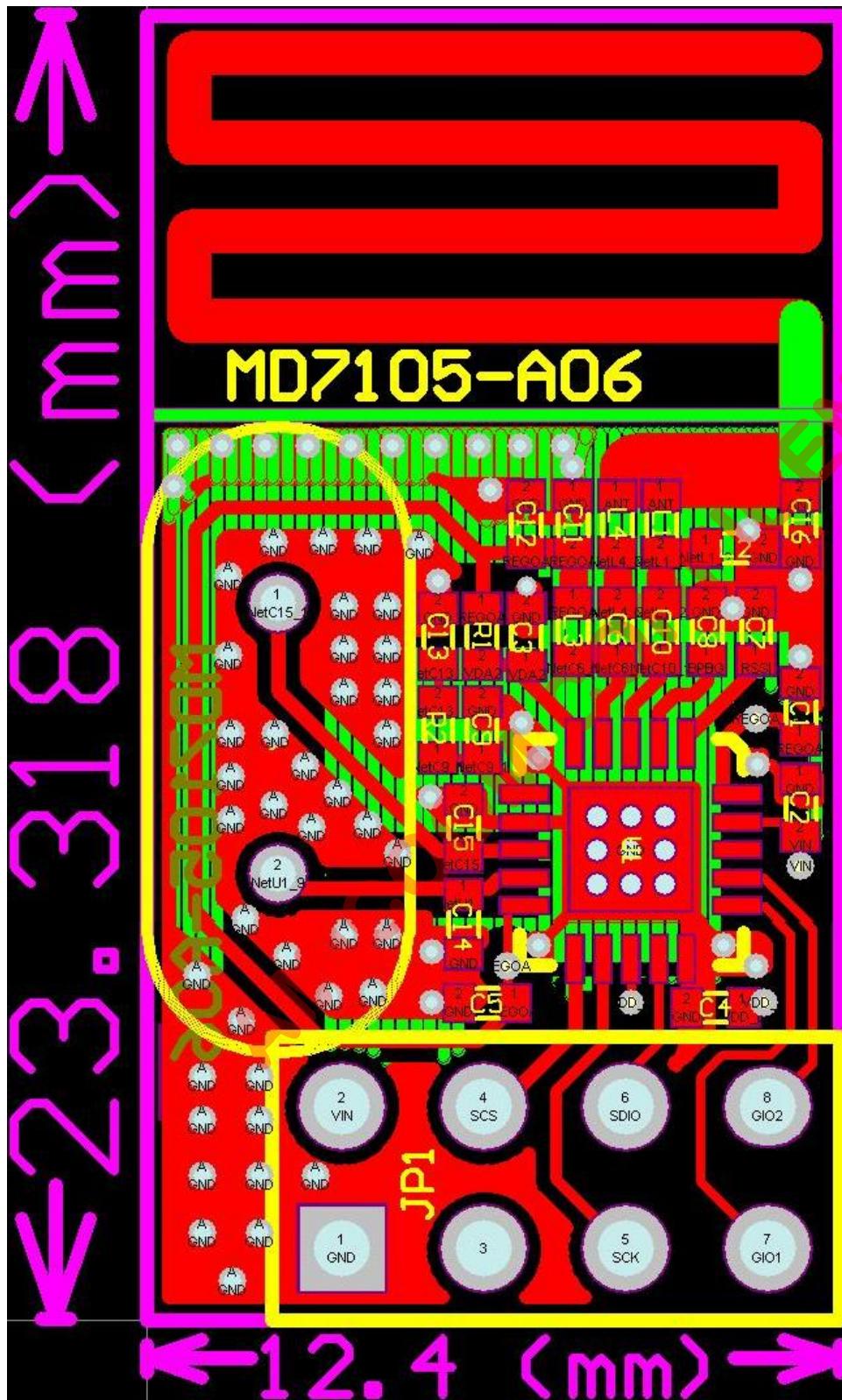
| Pin No. | Symbol | Function Description           | Remark      |
|---------|--------|--------------------------------|-------------|
| 1       | GND    | Ground                         | J1 Pin1     |
| 2       | VIN    | RF Module Supply Voltage Input | 1.9V ~ 3.6V |
| 3       | NC     | No Connection                  |             |
| 4       | SCS    | SPI Chip Selection             |             |
| 5       | SCK    | SPI Clock                      |             |
| 6       | SDIO   | SPI Data I/O                   |             |
| 7       | GIO1   | General Purpose I/O 1          |             |
| 8       | GIO2   | General Purpose I/O 2          |             |

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## Application Circuit



## **Module dimension drawing (Top view)**



## Module photograph



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## Bill of Material

| Item | Component | Description           | Size        | Value | Tol.   | Remark          |
|------|-----------|-----------------------|-------------|-------|--------|-----------------|
| 1    | C1        | Y5V ceramic capacitor | 0402        | 1uF   | 20%    |                 |
| 2    | C2        | Y5V ceramic capacitor | 0402        | 1uF   | 20%    |                 |
| 3    | C3        | Y5V ceramic capacitor | 0402        | 1uF   | 20%    |                 |
| 4    | C4        | Y5V ceramic capacitor | 0402        | 1uF   | 20%    |                 |
| 5    | C5        | Y5V ceramic capacitor | 0402        | 1uF   | 20%    |                 |
| 6    | C6        | NPO ceramic capacitor | 0402        | 10pF  | 5%     |                 |
| 7    | C7        | X7R ceramic capacitor | 0402        | 120pF | 10%    |                 |
| 8    | C8        | X7R ceramic capacitor | 0402        | 1.5nF | 10%    |                 |
| 9    | C9        | X7R ceramic capacitor | 0402        | 1.5nF | 10%    | PLL Loop Filter |
| 10   | C10       | NPO ceramic capacitor | 0402        | 22pF  | 0.25pF |                 |
| 11   | C11       | Y5V ceramic capacitor | 0402        | 0.1uF | 20%    |                 |
| 12   | C12       | NPO ceramic capacitor | 0402        | 100pF | 5%     |                 |
| 13   | C13       | X7R ceramic capacitor | 0402        | 22nF  | 10%    | PLL Loop Filter |
| 14   | C14       | NPO ceramic capacitor | 0402        | 33pF  | 5%     |                 |
| 15   | C15       | NPO ceramic capacitor | 0402        | 33pF  | 5%     |                 |
| 16   | L2        | Thin Film Chip L      | 0402        | 4.7nH | 1%     | Viking          |
| 17   | L3        | Thin Film Chip L      | 0402        | 1.2nH | 1%     | Viking          |
| 18   | R1        | Chip R                | 0402        | 10    | 5%     |                 |
| 19   | R2        | Chip R                | 0402        | 200   | 5%     | PLL Loop Filter |
| 20   | U1        | TRx IC                | QFN20 (4X4) | A7105 |        | Amiccom         |
| 21   | U2        | Crystal               | US49        | 16MHz | 20ppm  | eCera           |