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**CMX-ZG07**

**Manual**

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# CMX-ZG07

## Overview

The CMX-ZG07 modules are small, cost-effective evaluation and development board or application prototyping.

The JN51xx is an ultra-low-power, highly integrated single-chip device that enables Standard IEEE 802.15.4 RF connectivity for portable, extremely low-power embedded systems.

The CMX-ZG07 modules integrates a radio transceiver operating in the 2.4 GHz ISM band supporting O-QPSK modulation, an ARM Cortex-M4 processor, up to 640 kB flash, 152 kB SRAM and 128 kB ROM, 802.15.4 processor hardware and peripherals optimized to meet the requirements of the target applications.

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## Benefits

- Single chip device to run stack and application
- System BOM is low in component count and cost
- Flexible sensor interfacing

## Applications

- Zigbee 3.0, Thread networks
- Robust and secure Low-power wireless application
- Smart lighting, thermostats and home automation
- Home security and access
- Wireless sensor networks

## Features: Module

- 2.4GHz IEEE 802.15.4,
- Zigbee 3.0, Thread networks

- **CMX-ZG07**

CMX-ZG07 : PCB Printed Antenna 16x28mm

- TX current 178mA
- RX current 11mA
- 1.9-3.6V operation

## Features: Microcontroller

- Arm Cortex-M4 processor, running at a frequency of up to 48 MHz
- Memory Protection Unit (MPU)
- Serial Wire Debug (SWD) with 8 breakpoints and 4 watchpoints
- On-Chip memory
  - 640 KB flash
  - 152 KB SRAM
- 2 x I2C-bus interface, operate as either master or slave
- 10 x PWM
- 2 x Low-power timers
- 2 UART, one with flow control
- SPI Master & Slave port with 3 selects
- 2 x SPI-bus, master or slave
- Battery and Temperature Sensor
- Watchdog timer and POR
- Up to 22 DIO

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## 1. Introduction

The standard in the ISM band of 2.4 to 2.5 GHz, including CMX-ZG07 module is ZigBee3.0, uses IEEE 802.15.4 to provide developers with a fully integrated solution for application development, making product design and development quick and easy. These modules do not require expensive RF design and testing and contain all RF devices. It is possible to simply connect the sensor and the switches using the IO pins in the module. These modules use IEEE 802.15.4 wireless microcontrollers for developers using a wide range of chip development materials. Therefore, these modules contribute to developers commercializing wireless applications by reducing significant development costs and development time.

The available modules are specified below.

### 1.1. Variants

| Variant  | Description        |
|----------|--------------------|
| CMX-ZG07 | PCB Prited Antenna |

## 2. Specifications

VDD=3.0V @ +25°C

| Typical DC Characteristics           |                   | Notes                                                                   |
|--------------------------------------|-------------------|-------------------------------------------------------------------------|
|                                      | CMX-ZG07          |                                                                         |
| Deep sleep current                   | 1,350nA           |                                                                         |
| Sleep current                        | 1,800nA           | With active sleep timer                                                 |
| Radio transmit current               | 178mA             | IEEE 802.15.4<br>output power +20 dBm                                   |
| Radio receive current                | 11mA              | IEEE 802.15.4                                                           |
| Centre frequency accuracy            | +/-40ppm          |                                                                         |
| Typical RF Characteristics           |                   | Notes                                                                   |
| Receive sensitivity                  | -99dBm            | 1 % PER, as per IEEE 802.15.4<br>Maximum receiver input Power :<br>10Bm |
| Transmit power                       | 20 dBm            | MAX                                                                     |
| Maximum input signal                 | 15dBm             | For 1% PER, measured as sensitivity                                     |
| RSSI range                           | -100 dBm to 8 dBm | +/- 2 dB IEEE 802.15.4                                                  |
| RF Port impedance<br>– uFL connector | 50 ohm            | 2.4 - 2.5GHz                                                            |

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### 3. Product Development

A range of evaluation/developer kits is also available, allowing products to be quickly bread boarded. Efficient development of software applications is enabled by the provision of a complete, unlimited, software developer kit. Together with the available libraries for the IEEE802.15.4 MAC and the ZigBee3.0 network stacks, this package provides everything required to develop application code and to trial it with hardware representative of the final module. The modules can be user programmed both in development. Access to the on-chip peripherals, MAC and network stack software is provided through specific APIs.

#### 3.1. JN5XXX Single Chip Wireless Microcontroller

CMX-ZG07 is constructed around the JN51XX single chip wireless microcontroller, which includes the radio system, a 32-bit Arm cortex-M4 CPU, Flash, RAM & EEPROM memory and a range of analogue and digital peripherals

## 4. Pin Configurations

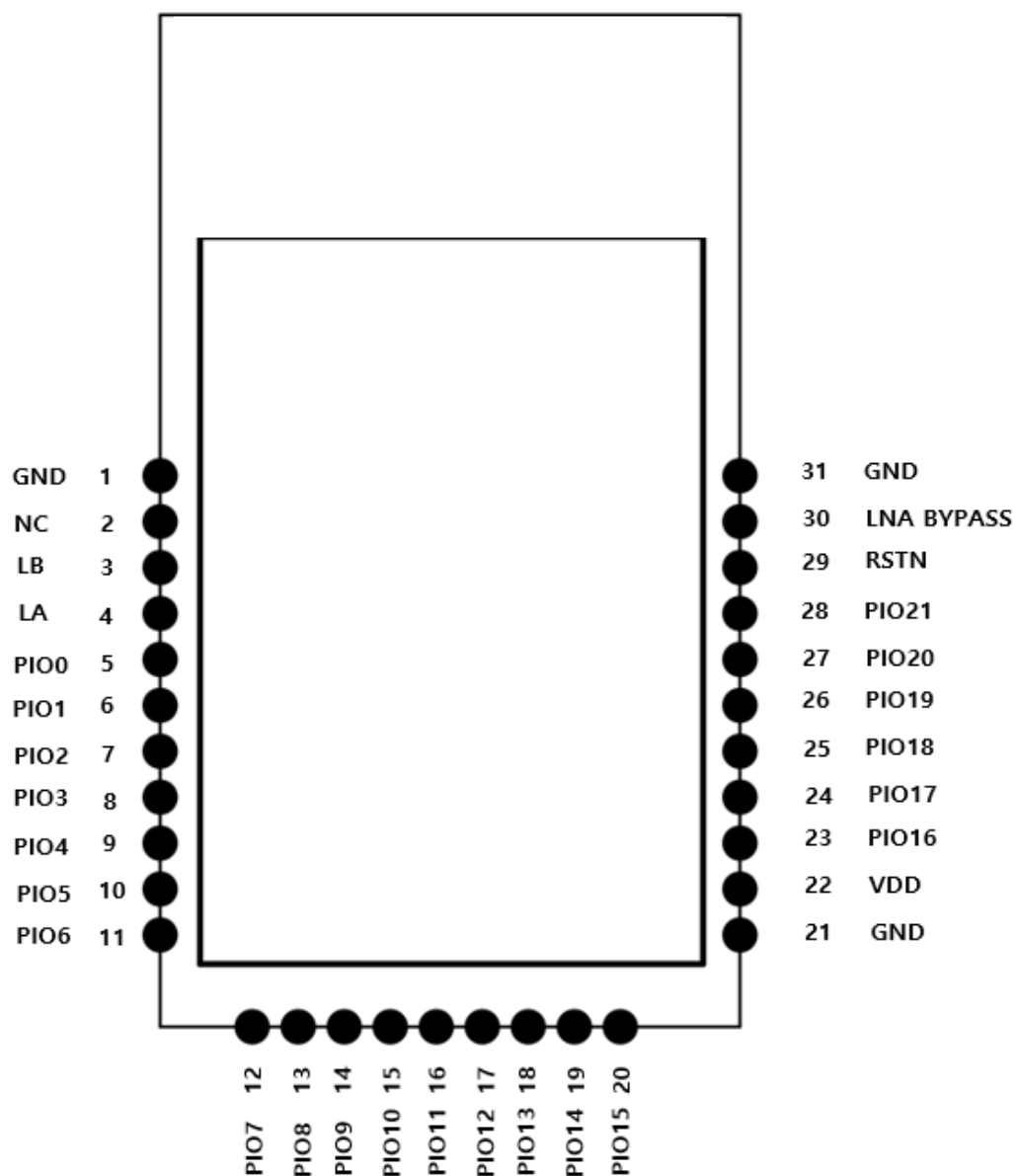


Figure 1: Pin Configuration (top view)

Note : that the same basic pin configuration applies for all module designs.

However, DIO4 (pin 9) and DIO5 (pin 10) are not available on the CMX-ZG07

#### 4.1. Pin Assignment

| Symbol | Pin | Type | Description                                                                                          |
|--------|-----|------|------------------------------------------------------------------------------------------------------|
| GND    | 1   | GND  | ground                                                                                               |
| NC     | 2   | -    | NC                                                                                                   |
| LB     | 3   | -    | NC                                                                                                   |
| LA     | 4   | -    | NC                                                                                                   |
| PIO0   | 5   | I/O  | <b>GPIO0</b> — General Purpose digital Input/Output 0                                                |
|        |     |      | <b>USART0_SCK</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - synchronous clock    |
|        |     |      | <b>USART1_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - transmit data output |
|        |     |      | <b>PWM0</b> — Pulse Width Modulator output 0                                                         |
|        |     |      | <b>SPI1_SCK</b> — Serial Peripheral Interface-bus 1 clock input/output                               |
|        |     |      | <b>PDM0_DATA</b> — Pulse Density Modulation Data input from digital microphone (channel 0)           |
| PIO1   | 6   | I/O  | <b>GPIO1</b> — General Purpose digital Input/Output 1                                                |
|        |     |      | <b>USART1_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - receive data input   |
|        |     |      | <b>PWM1</b> — Pulse Width Modulator output 1                                                         |
|        |     |      | <b>SPI1_MISO</b> — Serial Peripheral Interface-bus 1 master data input                               |
|        |     |      | <b>PDM0_CLK</b> — Pulse Density Modulation Clock output to digital microphone (channel 0)            |
| PIO2   | 7   | I/O  | <b>GPIO2</b> — General Purpose digital Input/Output 2                                                |
|        |     |      | <b>SPI0_SCK</b> — Serial Peripheral Interface-bus 0 clock input/output                               |
|        |     |      | <b>PWM2</b> — Pulse Width Modulator output 2                                                         |
|        |     |      | <b>SPI1_MOSI</b> — Serial Peripheral Interface-bus 1 master output slave input                       |
|        |     |      | <b>USART0_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - receive data input   |
|        |     |      | <b>ISO7816_RST</b> — RST signal, output, for ISO7816 interface                                       |
|        |     |      | <b>MCLK</b> — External clock, can be provided to DMIC IP                                             |

| Symbol         | Pin | Type | Description                                                                                            |
|----------------|-----|------|--------------------------------------------------------------------------------------------------------|
| PIO3           | 8   | I/O  | <b>GPIO3</b> — General Purpose digital Input/Output 3                                                  |
|                |     |      | <b>SPI0_MISO</b> — Serial Peripheral Interface-bus 0 master input                                      |
|                |     |      | <b>PWM3</b> — Pulse Width Modulator output 3                                                           |
|                |     |      | <b>SPI1_SSELN0</b> — Serial Peripheral Interface-bus 1 slave select not 0                              |
|                |     |      | <b>USART0_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - transmit data output   |
|                |     |      | <b>ISO7816_CLK</b> — Clock output for ISO7816 interface                                                |
| PIO4           | 9   | I/O  | <b>GPIO4</b> — General Purpose digital Input/Output 4                                                  |
|                |     |      | <b>SPI0_MOSI</b> — Serial Peripheral Interface-bus 0 master output slave input                         |
|                |     |      | <b>PWM4</b> — Pulse Width Modulator output 4                                                           |
|                |     |      | <b>SPI1_SSELN1</b> — Serial Peripheral Interface-bus 1 slave select not 1                              |
|                |     |      | <b>USART0_CTS</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - Clear To Send input    |
|                |     |      | <b>ISO7816_IO</b> — IO of ISO7816 interface                                                            |
|                |     |      | <b>RFTX</b> — Radio Transmit Control Output                                                            |
|                |     |      | <b>ISP_SEL</b> — In-System Programming Mode Selection                                                  |
| PIO5/ISP_ENTRY | 10  | I/O  | <b>GPIO5/ISP_ENTRY</b> — General Purpose digital Input/Output 5; In-System Programming Entry           |
|                |     |      | <b>SPI0_SSELN</b> — Serial Peripheral Interface-bus 0 slave select no                                  |
|                |     |      | <b>SPI1_MISO</b> — Serial Peripheral Interface-bus 1 master data input                                 |
|                |     |      | <b>SPI1_SSELN2</b> — Serial Peripheral Interface-bus 1 slave select not 2                              |
|                |     |      | <b>USART0_RTS</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - Request To Send output |
|                |     |      | <b>RFRX</b> — Radio Receiver Control Output                                                            |
| PIO6           | 11  | I/O  | <b>GPIO6</b> — General Purpose digital Input/Output 6                                                  |
|                |     |      | <b>USART0_RTS</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - Request to Send output |
|                |     |      | <b>CT32B1_MAT0</b> — 32-bit CT32B1 match output 0                                                      |
|                |     |      | <b>PWM6</b> — Pulse Width Modulator output 6                                                           |
|                |     |      | <b>I2C1_SCL</b> — I2C-bus 1 master/slave SCL input/output                                              |
|                |     |      | <b>USART1_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - transmit data output   |
|                |     |      | <b>ADE</b> — Antenna Diversity Even output                                                             |
|                |     |      | <b>SPI0_SCK</b> — Serial Peripheral Interface 0- synchronous clock                                     |

| Symbol | Pin | Type | Description                                                                                          |
|--------|-----|------|------------------------------------------------------------------------------------------------------|
| PIO7   | 12  | I/O  | <b>GPIO7</b> — General Purpose digital Input/Output 7                                                |
|        |     |      | <b>USART0_CTS</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - Clear to Send input  |
|        |     |      | <b>CT32B1_MAT1</b> — 32-bit CT32B1 match output 1                                                    |
|        |     |      | <b>PWM7</b> — Pulse Width Modulator output 7                                                         |
|        |     |      | <b>I2C1_SDA</b> — I2C-bus 1 master/slave SDA input/output                                            |
|        |     |      | <b>USART1_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - receive data input   |
|        |     |      | <b>ADO</b> — Antenna Diversity Odd Output                                                            |
|        |     |      | <b>SPI0_MISO</b> — Serial Peripheral Interface-bus 0 master input                                    |
| PIO8   | 13  | I/O  | <b>GPIO8</b> — General Purpose digital Input/Output 8                                                |
|        |     |      | <b>USART0_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - transmit data output |
|        |     |      | <b>CT32B0_MAT0</b> — 32-bit CT32B0 match output 0                                                    |
|        |     |      | <b>PWM8</b> — Pulse Width Modulator output 8                                                         |
|        |     |      | <b>ANA_COMP_OUT</b> — Analog Comparator digital output                                               |
|        |     |      | <b>PDM1_DATA</b> — Pulse Density Modulation Data input from digital microphone (channel 1)           |
|        |     |      | <b>SPI0_MOSI</b> — Serial Peripheral Interface-bus 0 master output slave input                       |
|        |     |      | <b>RFTX</b> — Radio Transmit Control Output                                                          |
| PIO9   | 14  | I/O  | <b>GPIO9</b> — General Purpose digital Input/Output 9                                                |
|        |     |      | <b>USART0_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - receive data input   |
|        |     |      | <b>CT32B1_CAP1</b> — 32-bit CT32B1 capture input 1                                                   |
|        |     |      | <b>PWM9</b> — Pulse Width Modulator output 9                                                         |
|        |     |      | <b>USART1_SCK</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - synchronous clock    |
|        |     |      | <b>PDM1_CLK</b> — Pulse Density Modulation Clock output to digital microphone (channel 1)            |
|        |     |      | <b>SPI0_SSELN</b> — Serial Peripheral Interface-bus 0 slave select no                                |
|        |     |      | <b>ADO</b> — Antenna Diversity Odd Output                                                            |

| Symbol       | Pin | Type | Description                                                                                          |
|--------------|-----|------|------------------------------------------------------------------------------------------------------|
| PIO10        | 15  | I/O  | <b>GPIO10</b> — General Purpose digital Input/Output 10                                              |
|              |     |      | <b>CT32B0_CAP0</b> — 32-bit CT32B0 capture input 0                                                   |
|              |     |      | <b>USART1_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - transmit data output |
|              |     |      | <b>RFTX</b> — Radio Transmit Control Output                                                          |
|              |     |      | <b>I2C0_SCL</b> — I2C-bus 0 master/slave SCL input/output (open drain)                               |
|              |     |      | <b>SPI0_SCK</b> — Serial Peripheral Interface-bus 0 clock input/output                               |
|              |     |      | <b>PDM0_DATA</b> — Pulse Density Modulation Data input from digital microphone (channel 0)           |
| PIO11        | 16  | I/O  | <b>GPIO11</b> — General Purpose digital Input/Output 1                                               |
|              |     |      | <b>CT32B1_CAP0</b> — 32-bit CT32B1 capture input 0                                                   |
|              |     |      | <b>USART1_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - receive data input   |
|              |     |      | <b>RFRX</b> — Radio Receiver Control Output                                                          |
|              |     |      | <b>I2C0_SDA</b> — I2C-bus 0 master/slave SDA input/output (open drain)                               |
|              |     |      | <b>SPI0_MISO</b> — Serial Peripheral Interface-bus 0 master input slave output                       |
|              |     |      | <b>PDM0_CLK</b> — Pulse Density Modulation Clock output to digital microphone (channel 0)            |
| PIO12/SWCLK  | 17  | I/O  | <b>GPIO12</b> — General Purpose digital Input/Output 12                                              |
|              |     |      | <b>SWCLK</b> — Serial Wire Debug Clock                                                               |
|              |     |      | <b>PWM0</b> — Pulse Width Modulator output 0                                                         |
|              |     |      | <b>I2C1_SCL</b> — I2C-bus 1 master/slave SCL input/output (open drain)                               |
|              |     |      | <b>SPI0_MOSI</b> — Serial Peripheral Interface-bus 0 master output slave input                       |
|              |     |      | <b>ANA_COMP_OUT</b> — Analog Comparator digital output                                               |
|              |     |      | <b>IR_BLASTER</b> — Infra-Red Modulator output                                                       |
| PIO13/ SWDIO | 18  | I/O  | <b>GPIO13</b> — General Purpose digital Input/Output 13                                              |
|              |     |      | <b>SPI1_SSELN2</b> — Serial Peripheral Interface-bus 1, slave select not 2                           |
|              |     |      | <b>SWDIO</b> — Serial Wire Debug Input/Output                                                        |
|              |     |      | <b>PWM2</b> — Pulse Width Modulator output 2                                                         |
|              |     |      | <b>I2C1_SDA</b> — I2C-bus 1 master/slave SDA input/output (open drain)                               |
|              |     |      | <b>SPI0_SSELN</b> — Serial Peripheral Interface-bus 0, slave select not                              |

| Symbol     | Pin | Type | Description                                                                                       |
|------------|-----|------|---------------------------------------------------------------------------------------------------|
| PIO14/ADC0 | 19  | I/O  | <b>ADC0</b> — ADC input 0                                                                         |
|            |     |      | <b>GPIO14</b> — General Purpose digital Input/Output 14                                           |
|            |     |      | <b>SPI1_SSELN1</b> — Serial Peripheral Interface-bus 1, slave select not 1                        |
|            |     |      | <b>CT32B0_CAP1</b> — 32-bit CT32B0 capture input 1                                                |
|            |     |      | <b>PWM1</b> — Pulse Width Modulator output 1                                                      |
|            |     |      | <b>SWO</b> — Serial Wire Output                                                                   |
|            |     |      | <b>USART0_SCK</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - synchronous clock |
|            |     |      | <b>MCLK</b> — External clock, can be provided to DMIC IP                                          |
|            |     |      | <b>RFTX</b> — Radio Transmit Control Output                                                       |
| PIO15/ADC1 | 20  | I/O  | <b>ADC1</b> — ADC input 1                                                                         |
|            |     |      | <b>GPIO15</b> — General Purpose digital Input/Output 15                                           |
|            |     |      | <b>SPI1_SCK</b> — Serial Peripheral Interface-bus 1, clock input/output                           |
|            |     |      | <b>ANA_COMP_OUT</b> — Analog Comparator digital output                                            |
|            |     |      | <b>PWM3</b> — Pulse Width Modulator output 3                                                      |
|            |     |      | <b>PDM1_DATA</b> — Pulse Density Modulation Data input from digital microphone (channel 1)        |
|            |     |      | <b>I2C0_SCL</b> — I2C-bus 0 master/slave SCL input/output (open drain)                            |
|            |     |      | <b>RFRX</b> — Radio Receiver Control Output                                                       |
| GND        | 21  | GND  | ground                                                                                            |
| VDD        | 22  | P    | VDD                                                                                               |
| PIO16/ADC2 | 23  | I/O  | <b>ADC2</b> — ADC input 2                                                                         |
|            |     |      | <b>GPIO16</b> — General Purpose digital Input/Output 16                                           |
|            |     |      | <b>SPI1_SSELN0</b> — Serial Peripheral Interface-bus 1, slave select not 0                        |
|            |     |      | <b>PWM5</b> — Pulse Width Modulator output 5                                                      |
|            |     |      | <b>PDM1_CLK</b> — Pulse Density Modulation Clock output to digital microphone (channel 1)         |
|            |     |      | <b>SPIFI_CSN</b> — Quad-SPI Chip Select Not, output                                               |
|            |     |      | <b>ISO7816_RST</b> — RST signal, output, for ISO7816 interface                                    |
|            |     |      | <b>I2C0_SDA</b> — I2C-bus 0 master/slave SDA input/output (open drain)                            |

| Symbol     | Pin | Type | Description                                                                                          |
|------------|-----|------|------------------------------------------------------------------------------------------------------|
| PIO17/ADC3 | 24  | I/O  | <b>ADC3</b> — ADC input 3                                                                            |
|            |     |      | <b>GPIO17</b> — General Purpose digital Input/Output 17                                              |
|            |     |      | <b>SPI1_MOSI</b> — Serial Peripheral Interface-bus 1, master output slave input                      |
|            |     |      | <b>SWO</b> — Serial Wire Output                                                                      |
|            |     |      | <b>PWM6</b> — Pulse Width Modulator output 6                                                         |
|            |     |      | <b>SPIFI_IO3</b> — Quad-SPI Input/Output 3                                                           |
|            |     |      | <b>ISO7816_CLK</b> — Clock output for ISO7816 interface                                              |
|            |     |      | <b>CLK_OUT</b> — Clock out                                                                           |
| PIO18/ADC4 | 25  | I/O  | <b>ADC4</b> — ADC input 4                                                                            |
|            |     |      | <b>GPIO18</b> — General Purpose digital Input/Output 18                                              |
|            |     |      | <b>SPI1_MISO</b> — Serial Peripheral Interface-bus 1, master data input                              |
|            |     |      | <b>CT32B0_MAT1</b> — 32-bit CT32B0 match output 1                                                    |
|            |     |      | <b>PWM7</b> — Pulse Width Modulator output 7                                                         |
|            |     |      | <b>SPIFI_CLK</b> — Quad-SPI Clock output                                                             |
|            |     |      | <b>ISO7816_IO</b> — IO of ISO7816 interface)                                                         |
|            |     |      | <b>USART0_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - transmit data output |
| PIO19/ADC5 | 26  | I/O  | <b>ADC5</b> — ADC input 5                                                                            |
|            |     |      | <b>GPIO19</b> — General Purpose digital Input/Output 19                                              |
|            |     |      | <b>ADO</b> — Antenna Diversity Odd Output                                                            |
|            |     |      | <b>PWM4</b> — Pulse Width Modulator output 4                                                         |
|            |     |      | <b>SPIFI_IO0</b> — Quad-SPI Input/Output 0                                                           |
|            |     |      | <b>USART1_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - receive data input   |
|            |     |      | <b>CLK_IN</b> — External clock                                                                       |
|            |     |      | <b>USART0_RXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 0 - receive data input   |

| Symbol     | Pin | Type | Description                                                                                          |
|------------|-----|------|------------------------------------------------------------------------------------------------------|
| PIO20/ACP  | 27  | I/O  | <b>ACP</b> — Analog Comparator Positive input                                                        |
|            |     |      | <b>GPIO20</b> — General Purpose digital Input/Output 20                                              |
|            |     |      | <b>IR_BLASTER</b> — Infra-Red Modulator output                                                       |
|            |     |      | <b>PWM8</b> — Pulse Width Modulator output 8                                                         |
|            |     |      | <b>RFTX</b> — Radio Transmit Control Output                                                          |
|            |     |      | <b>SPIFI_IO2</b> — Quad-SPI Input/Output 2                                                           |
|            |     |      | <b>USART1_TXD</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - transmit data output |
| PIO21/ACM  | 28  | I/O  | <b>ACM</b> — Analog Comparator Negative input                                                        |
|            |     |      | <b>GPIO21</b> — General Purpose digital Input/Output 21                                              |
|            |     |      | <b>IR_BLASTER</b> — Infra-Red Modulator output                                                       |
|            |     |      | <b>PWM9</b> — Pulse Width Modulator output 9                                                         |
|            |     |      | <b>RFRX</b> — Radio Receiver Control Output                                                          |
|            |     |      | <b>SWO</b> — Serial Wire Output                                                                      |
|            |     |      | <b>SPIFI_IO1</b> — Quad-SPI Input/Output 1                                                           |
|            |     |      | <b>USART1_SCK</b> — Universal Synchronous/Asynchronous Receiver/Transmitter 1 - synchronous clock    |
| RSTN       | 29  | I    | <b>RSTN</b> — Reset Not input                                                                        |
| LNA BYPASS | 30  | I    | Connect to GPIO signal to control Front End Module State                                             |
| GND        | 31  | GND  | <b>ground</b>                                                                                        |

---

## 4.2. Pin Descriptions

### 4.2.1. Power Supplies

A single power supply pin, VDD is provided.

## 5. Electrical Characteristics

In most cases, the Electrical Characteristics are the same for both module and chip. They are described in detail in the chip datasheet. Where there are differences, they are detailed below.

### 5.1. Maximum Ratings

Exceeding these conditions will result in damage to the device.

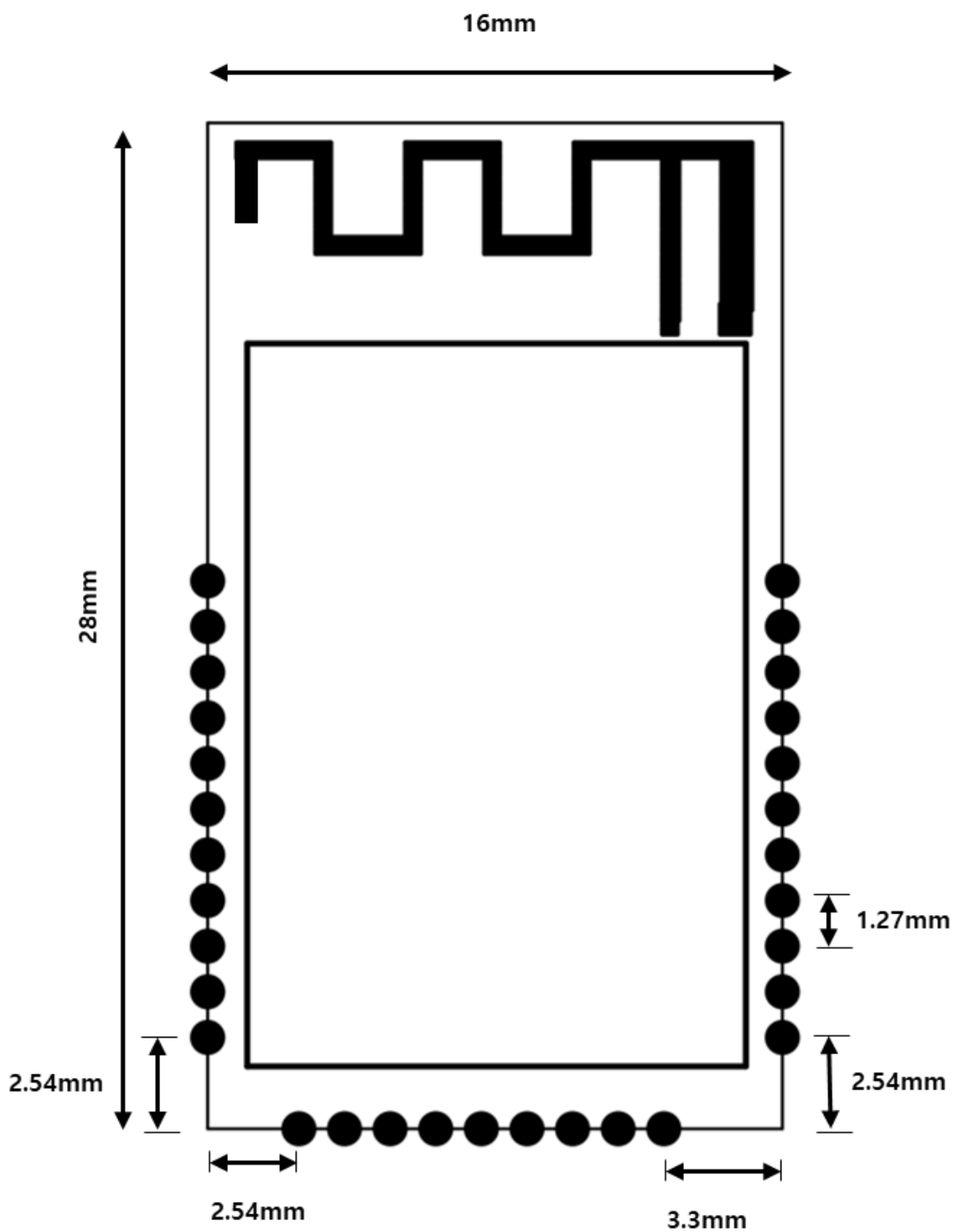
| Parameter                 | Min   | Max        |
|---------------------------|-------|------------|
| Device supply voltage VDD | -0.3V | 3.6V       |
| All Pins                  | -0.3V | VDD + 0.3V |
| Storage temperature       | -40°C | 85°C       |

### 5.2. Operating Conditions

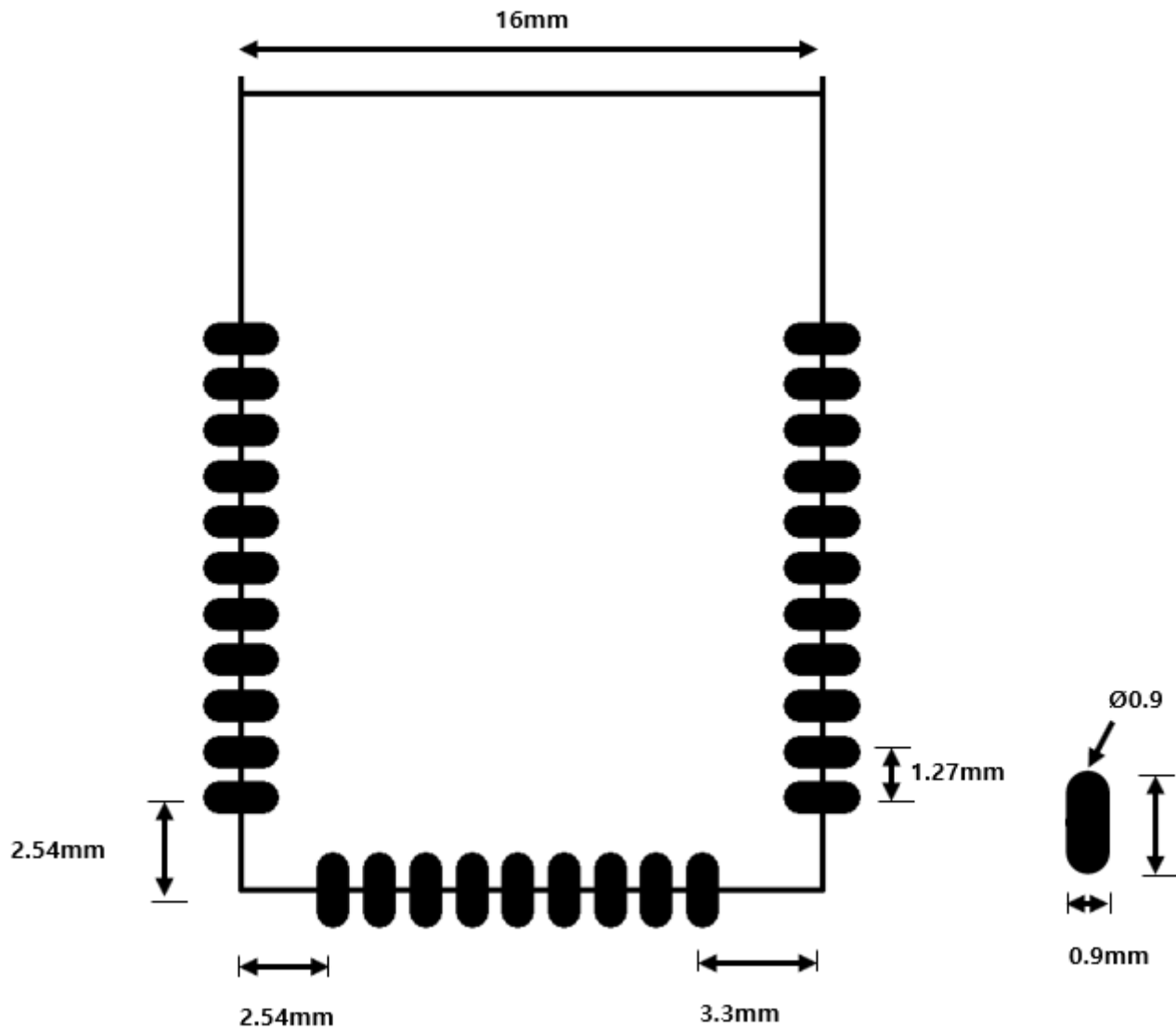
| Supply                    | Min   | Max  |
|---------------------------|-------|------|
| VDD                       | 1.9V  | 3.6V |
| Ambient temperature range | -20°C | 70°C |

## Appendix A Additional Information

### A.1. Outline Drawing : CMX-ZG07



## A.2. Module PCB Footprint



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## **Compliance Information**

### **FCC**

This 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. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device should be installed and operated with minimum 20Cm between the radiator and your body.

### **ISED**

This device contains license-exempt transmitter(s)/receiver that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:(1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes:(1) Cet appareil ne doit pas provoquer d'interférences.(2) Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent provoquer un fonctionnement indésirable de l'appareil.

This equipment should be installed and operated with minimum 20 cm between the radiator and your body.

Cet appareil doit être installé et utilisé avec un minimum de 20 cm entre le radiateur et votre corps.

## **INTEGRATION INSTRUCTIONS**

### **List of applicable FCC/ISED rules**

This module complies with Part 15.247 of the FCC rule.

This module complies with RSS-247 of ISED rule.

### **Summarize the specific operational use conditions**

This device should be installed and operated with minimum 20Cm between the radiator and user body.

### **Limited module procedures**

Not applicable

### **Trace antenna designs**

Not applicable

### **RF exposure considerations**

This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This device should be installed and operated with minimum 20Cm between the radiator and user body.

The host manual shall include the RF exposure statements.

If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

### **Antennas**

The module itself has antenna. (Printed Antenna)

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### **Label and compliance information**

The module is labeled with its own FCC/IC. If the FCC ID/IC is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. In that case, the final end product must be labeled in a visible area with the following;

For FCC: "Contains FCC ID: CCECMX-ZG07"

For ISSED: "Contains IC: 22254-CMXZG07"

The host manual shall include the following regulatory statement:

For FCC:

This 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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device should be installed and operated with minimum 20Cm between the radiator and your body.

For ISSED:

This device contains license-exempt transmitter(s)/receiver that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:(1) This device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes aux RSS exempts de licence d'Innovation, Sciences et Développement économique Canada. Son fonctionnement est soumis aux deux conditions suivantes:(1) Cet appareil ne doit pas provoquer d'interférences.(2) Cet appareil doit accepter toute interférence, y compris les interférences qui peuvent provoquer un fonctionnement indésirable de l'appareil.

This equipment should be installed and operated with minimum 20 cm between the radiator and your body.

Cet appareil doit être installé et utilisé avec un minimum de 20 cm entre le radiateur et votre corps.

### **Information on test modes and additional testing requirements**

Testing of the host product with all the transmitters installed - referred to as the composite investigation test- is recommended, to verify that the host product meets all the applicable FCC rules. The host manufacturer can use the software to control the RF signal during test.

For more information, please contact us.

### **Additional testing, Part 15 Subpart B disclaimer**

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

The host product may need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

### **Note EMI Considerations**

Not applicable