

# APPROVAL SHEET



**MODEL:** BM-1023 CY

**Customer's P/N:** GZ1023CYQ2AE2

**Descriptions:** BM1023CY\_QFN33\_Bluetooth\_AtechOEM-2022\_G  
P\_S

**Atech's P/N:** 99.BM41BC.50.01

| Customer Reply     |  | Atech        |       |
|--------------------|--|--------------|-------|
| <b>Approved By</b> |  | <b>Sales</b> | Rolex |

## Revision History

| <b>Edition #</b> | <b>Reason for revision</b> | <b>Issue Date</b> | <b>Written by</b> |
|------------------|----------------------------|-------------------|-------------------|
| 1                | Initial Document           | 2018/5/8          | Kai               |
| 2                | Modify Document            | 2018/6/21         | Kai               |
| 3                | Modify Document            | 2018/8/27         | Kai               |
| 4                | Modify Document            | 2019/1/10         | Kai               |
| 5                | Add Footprint              | 2022/1/25         | Kai               |
| 6                | Add Footprint Recommend    | 2023/1/18         | Kai               |
| 7                | Change Module Picture      | 2023/8/17         | Kai               |
|                  |                            |                   |                   |
|                  |                            |                   |                   |
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**AtechOEM Inc.**

7F., AAEON Building, No.43, Sec. 4, Keelung Rd., Taipei City, Taipei, 10607, Taiwan  
(R.O.C.)

tel: +886-2-2377-0282      Fax: +886-2-2377-0283      <http://www.atechoem.com/wl/>

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## 1. PRODUCT INFORMATION

■ Product Name : BM-1023 CY

■ Product Description: BT 4.1+ HS-compliant Module

■ Product Features:

|                 |                        |
|-----------------|------------------------|
| Chips           | Cypress CYW20704       |
| Flash           | 1MB                    |
| Host Interface  | UART                   |
| Standard        | BT 4.1+ HS-compliant   |
| RF band         | 2.4~2.4835GHz ISM band |
| RF Output Power | Class I (< 10dBm)      |
| Sensitivity     | <-80dBm                |
| Antenna         | External antenna       |
| Power voltage   | 3.3V                   |
| Dimension       | 12x12x2.2 mm           |

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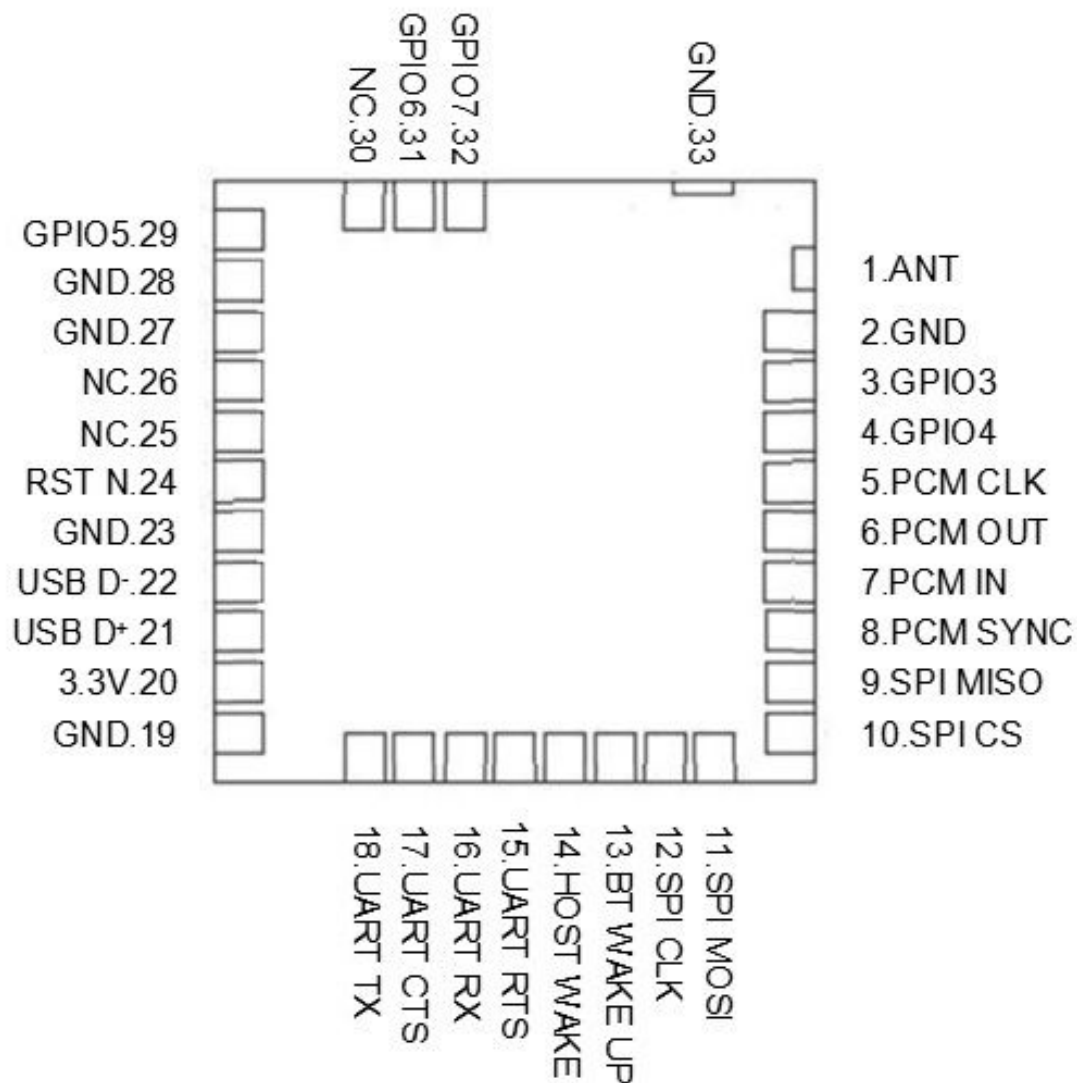
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## 2. Technical Information

### 2.1 Module Pinout



Top View

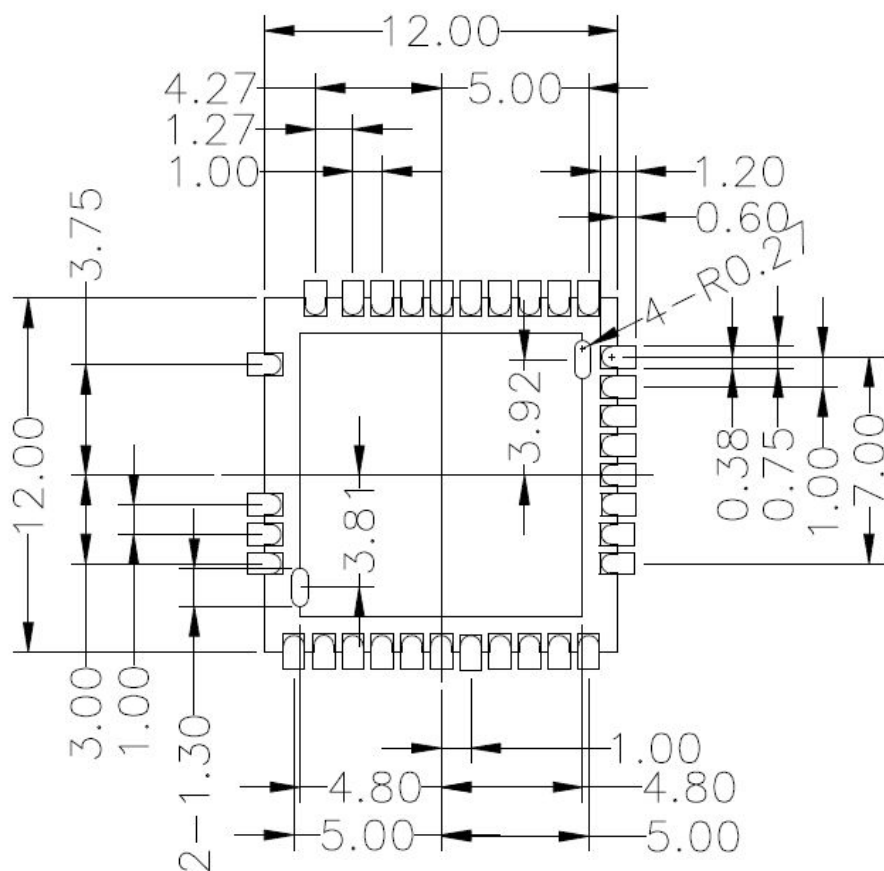
| Pin | Name       | Description             | Type/Remarks                                 |
|-----|------------|-------------------------|----------------------------------------------|
| 1   | ANT        | RF I/O antenna port     | RF                                           |
| 2   | GND        | Ground                  | Ground                                       |
| 3   | SPIO 3     | Programmable I/O        | General-purpose I/O.                         |
| 4   | GPIO 4     | Programmable I/O        | General-purpose I/O.                         |
| 5   | PCM CLK    | Synchronous data clock  | PCM/I2S clock                                |
| 6   | PCM OUT    | Synchronous data output | PCM/I2S data output                          |
| 7   | PCM IN     | Synchronous data input  | PCM/I2S data input                           |
| 8   | PCM SYSYNC | Synchronous data sync   | PCM sync/I2S word select                     |
| 9   | SPI MISO   | SPI data output         | BSC clock                                    |
| 10  | SPI CSB    | Chip select for SPI     | Serial flash active-low chip select          |
| 11  | SPI MOSI   | SPI data input          | BSC data                                     |
| 12  | SPI CLK    | SPI clock               | Serial flash SPI clock                       |
| 13  | BT WAKE UP | BT Wake pin             | Input, A signal from the host to the module  |
| 14  | HOST WAKE  | Host Wake Pin           | Output, A signal from the module to the host |
| 15  | UART RTS   | UART request to send    | UART request to send output                  |
| 16  | UART RX    | UART data input         | UART receive data                            |
| 17  | UART CTS   | UART clear to send      | UART clear to send input                     |
| 18  | UART TX    | UART data output        | UART transmit data                           |
| 19  | GND        | Ground                  | Ground                                       |
| 20  | 3.3V       | Power                   | 3.3 Voltage Input                            |
| 21  | USP DP     | USB Data+               | USB D+ signal. If not used, connect to GND.  |
| 22  | USB DN     | USB Data-               | USB D- signal. If not used, connect to GND.  |
| 23  | GND        | Ground                  | Ground                                       |
| 24  | RTS N      | Reset Pin               | Active-low reset input                       |
| 25  | NC         | -                       | -                                            |
| 26  | NC         | -                       | -                                            |
| 27  | GND        | Ground                  | Ground                                       |
| 28  | GND        | Ground                  | Ground                                       |
| 29  | GPIO 5     | Programmable I/O        | General-purpose I/O.                         |
| 30  | NC         | -                       | -                                            |
| 31  | GPIO 6     | Programmable I/O        | General-purpose I/O.                         |
| 32  | GPIO 7     | Programmable I/O        | General-purpose I/O.                         |
| 33  | GND        | Ground                  | Ground                                       |

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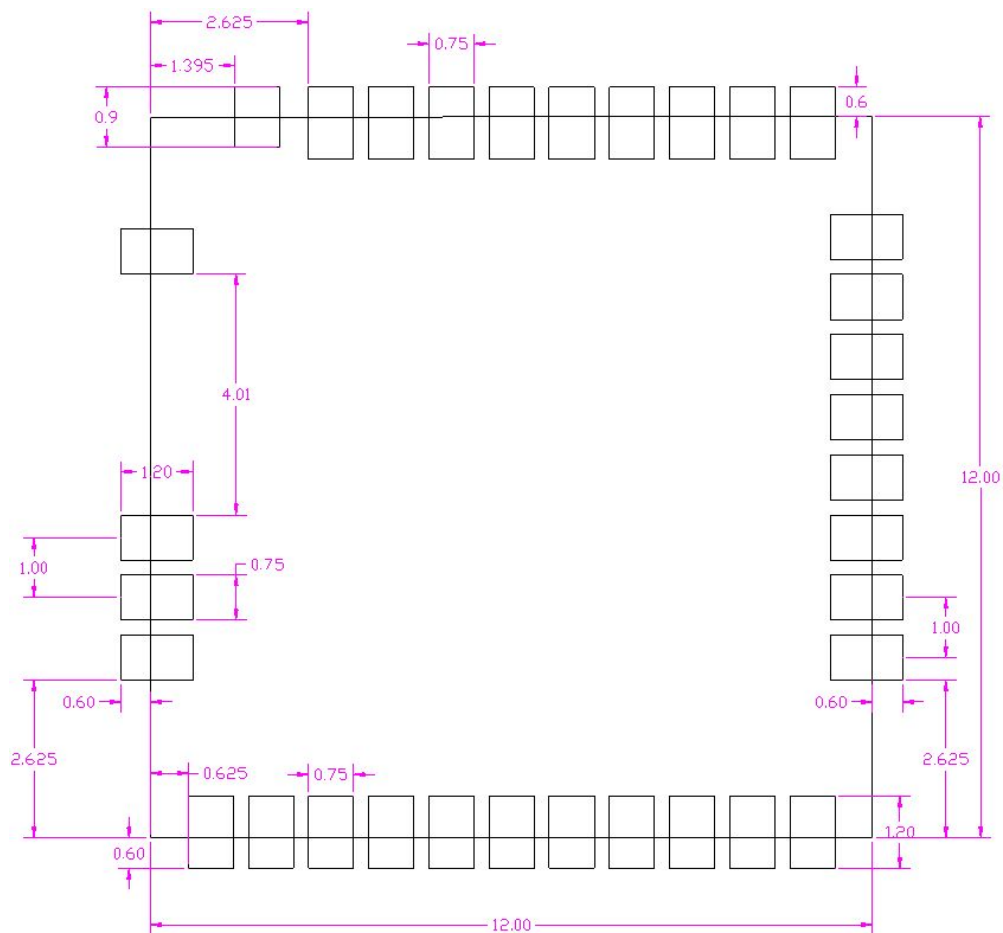
## 2.2 Mechanical Specification



單位：mm

Top View

## Footprint Recommend



單位：mm

Top View

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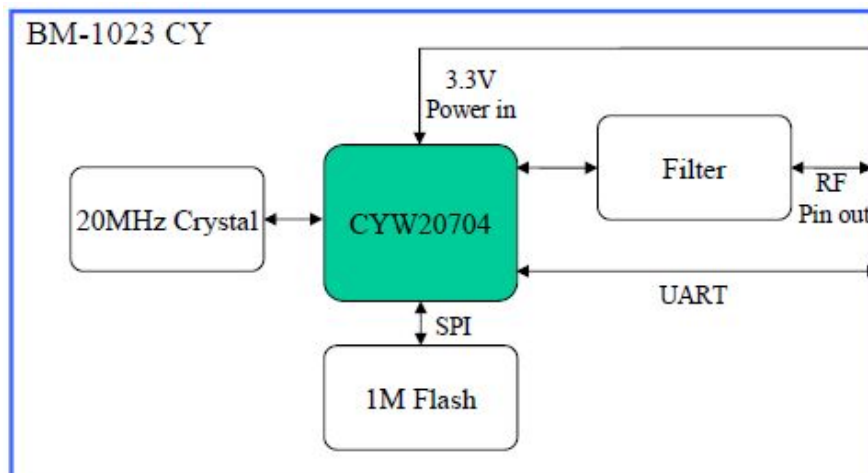
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## 2.3 Block Diagram



## 2.4 Electrical Characteristics

|                              | Min | Typ. | Max. | Unit |
|------------------------------|-----|------|------|------|
| Supply Voltage               | 3   | 3.3  | 3.6  | V    |
| Normal Standby @ 3.3V        | -   | 0.35 | -    | mA   |
| TX & RX (Normal mode) @ 3.3V | -   | -    | 39   | mA   |
| Sleep @ 3.3V                 | -   | -    | 0.15 | mA   |

## Operating Conditions

|                               |                 |
|-------------------------------|-----------------|
| Voltage Range                 | 3.3V±0.3V       |
| Operating Temperature Range   | -30 °C ~ 85 °C  |
| Storage Temperature Range     | -40 °C ~ 105 °C |
| Relative Humidity (Operating) | ≤90%            |
| Relative Humidity (Storage)   | ≤90%            |

## 2.5 Radio Characteristics

| BT Classic (Basic Rate)                       | Frequency (GHz) | Min | Typ | Max | BT Spec.                             | Unit |
|-----------------------------------------------|-----------------|-----|-----|-----|--------------------------------------|------|
| Sensitivity at 0.1%BER                        | 2.402           | -   | -90 | -   | $\leq -70$                           | dBm  |
|                                               | 2.441           | -   | -90 | -   |                                      | dBm  |
|                                               | 2.480           | -   | -90 | -   |                                      | dBm  |
| RF Transmit Power                             | 2.402           | -   | 7   | -   | $\leq 20$                            | dBm  |
|                                               | 2.441           | -   | 7   | -   |                                      | dBm  |
|                                               | 2.480           | -   | 7   | -   |                                      | dBm  |
| Initial Carrier Frequency Tolerance           | 2.402           | -   | 40  | -   | $\pm 75$                             | kHz  |
|                                               | 2.441           | -   | 40  | -   |                                      | kHz  |
|                                               | 2.480           | -   | 40  | -   |                                      | kHz  |
| Drift Rate                                    |                 | -   | 5   | -   | $\pm 20$                             | kHz  |
| $\Delta f_{1\text{avg}}$ "Maximum Modulation" | 2.402GHz        | -   | 160 | -   | $140 < \Delta f_{1\text{avg}} < 175$ | kHz  |
|                                               | 2.441GHz        | -   | 160 | -   |                                      | kHz  |
|                                               | 2.480GHz        | -   | 160 | -   |                                      | kHz  |
| $\Delta f_{2\text{max}}$ "Minimum Modulation" | 2.402GHz        | -   | 135 | -   | $\geq 115$                           | kHz  |
|                                               | 2.441GHz        | -   | 135 | -   |                                      | kHz  |
|                                               | 2.480GHz        | -   | 135 | -   |                                      | kHz  |

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| BLE                                    | Frequency (GHz) | Min | Typ | Max | BT Spec.                     | Unit |
|----------------------------------------|-----------------|-----|-----|-----|------------------------------|------|
| Sensitivity at Limits<br>30.8%FER      | 2.402           | -   | -92 | -   | $\leq -70$                   | dBm  |
|                                        | 2.441           | -   | -92 | -   |                              | dBm  |
|                                        | 2.480           | -   | -92 | -   |                              | dBm  |
| RF Transmit Power                      | 2.402           | -   | 6   | -   | $\leq 10$                    | dBm  |
|                                        | 2.441           | -   | 6   | -   |                              | dBm  |
|                                        | 2.480           | -   | 6   | -   |                              | dBm  |
| Initial Carrier Frequency<br>Tolerance | 2.402           | -   | 40  | -   | $\pm 150$                    | kHz  |
|                                        | 2.441           | -   | 40  | -   |                              | kHz  |
|                                        | 2.480           | -   | 40  | -   |                              | kHz  |
| Drift Rate                             |                 | -   | 5   | -   | $\pm 20$                     | kHz  |
| $\Delta f_{avg}$ "Maximum Modulation"  | 2.402GHz        | -   | 250 | -   | $225 < \Delta f_{avg} < 275$ | kHz  |
|                                        | 2.441GHz        | -   | 250 | -   |                              | kHz  |
|                                        | 2.480GHz        | -   | 250 | -   |                              | kHz  |
| $\Delta f_{2max}$ "Minimum Modulation" | 2.402GHz        | -   | 230 | -   | $\geq 185$                   | kHz  |
|                                        | 2.441GHz        | -   | 230 | -   |                              | kHz  |
|                                        | 2.480GHz        | -   | 230 | -   |                              | kHz  |

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### 3. Packing and Label Information

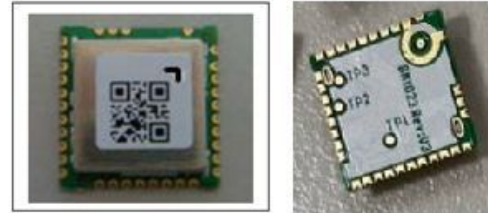
#### 3.1 Label Information

**BD LABEL : QR CODE**

內容定義

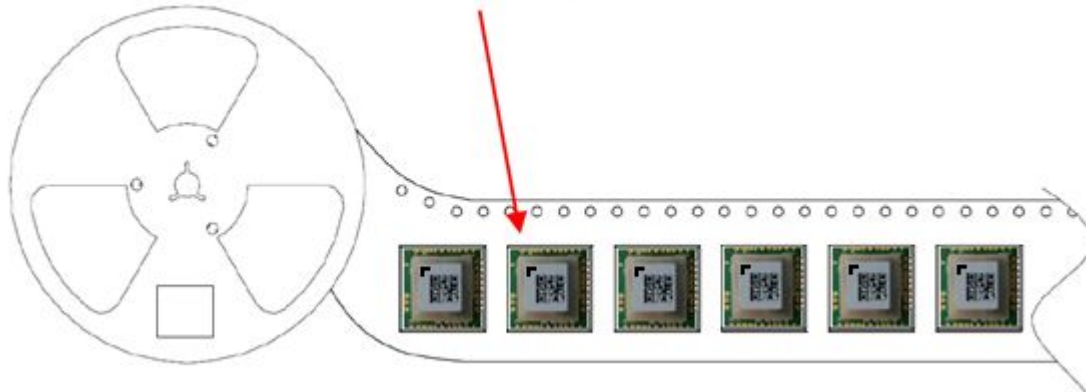
範圍=00190E

ZZZZZZ (16 進位流水號) 共 12 碼

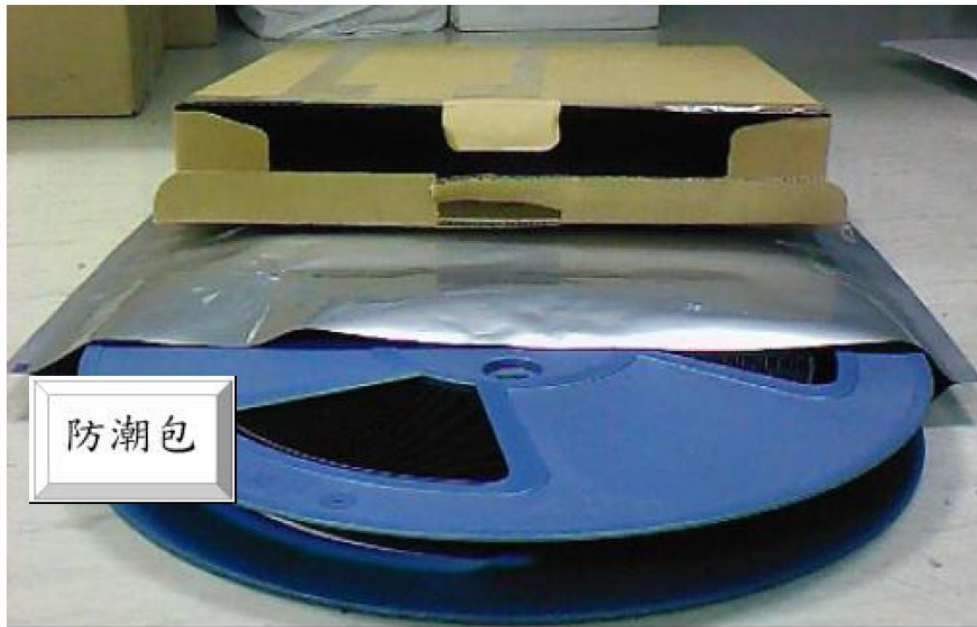


#### 3.2 Packaging

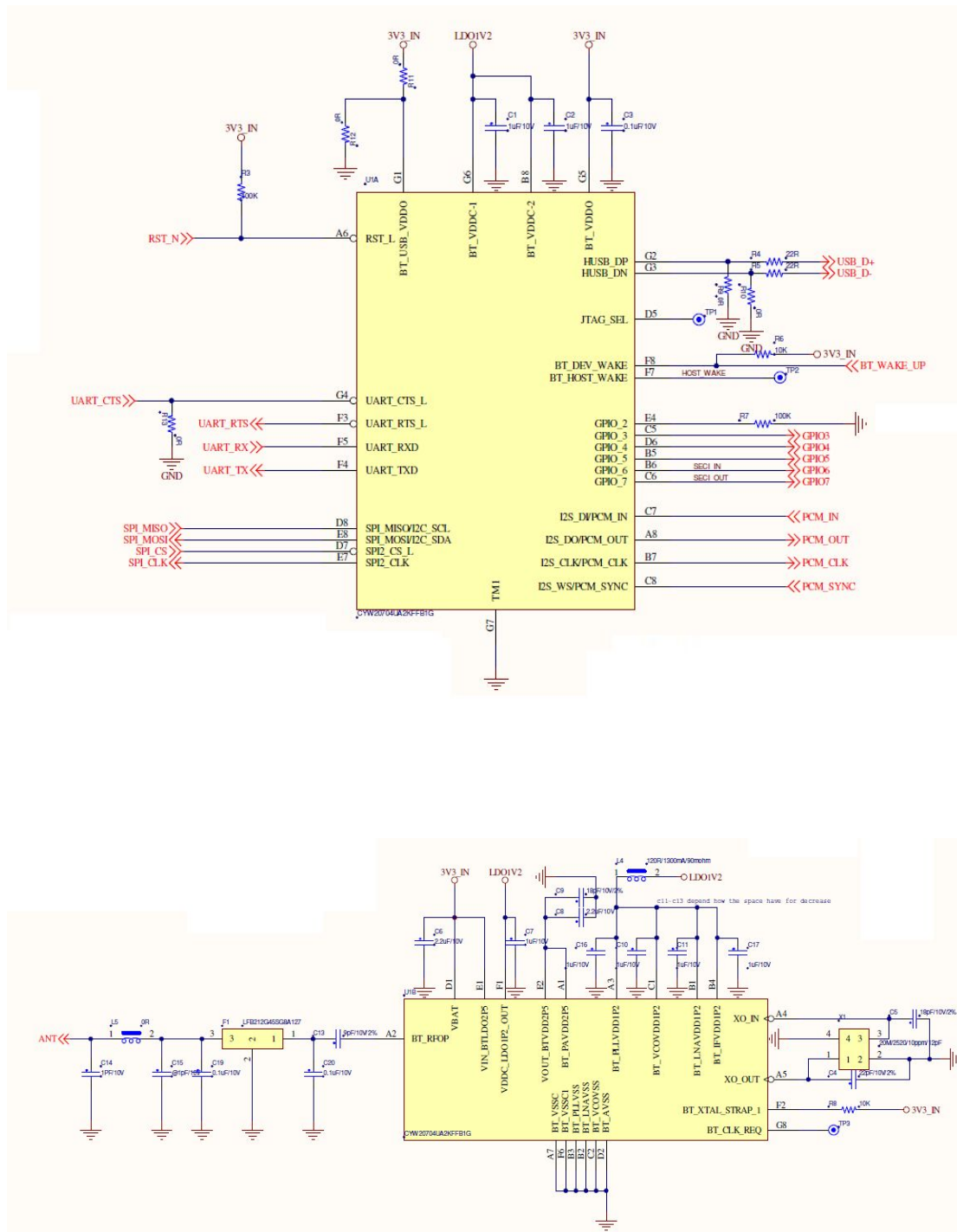
**TAPING** 放置方向 : LABEL 的 PIN#1 點 放置於左上方



TAPE 包裝方式：捲盤、防潮包裝、靜電袋、披隆盒



## 4. Reference Schematics



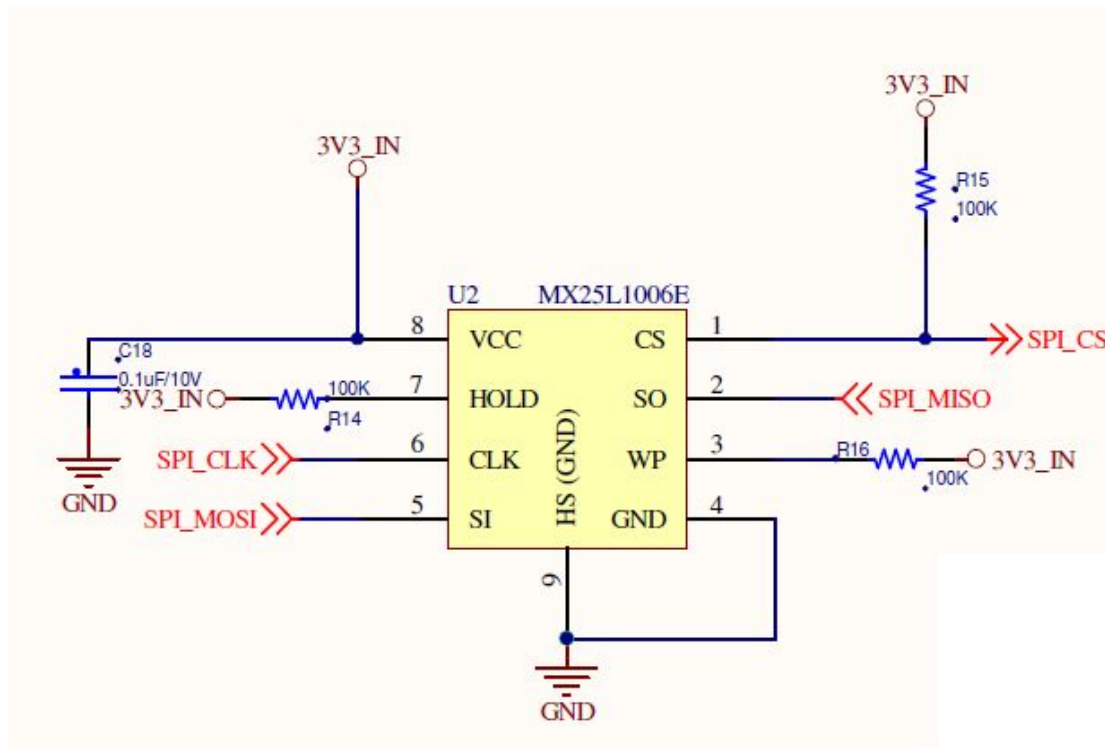
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## 5. Firmware

Firmware File :

BCM20703A2\_001.002.011.0195.0000\_Generic\_UART\_20MHz\_fcbga\_BU.cgr

Firmware Local Name :

BCM20703A2 Generic UART 20Mhz fcbga\_BU

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