

# EGUC-F2S3

**M.2 2280 to Dual Isolated**

**CAN FD Module**

**Customer:**

**Customer**

**Part Number:**

**Innodisk**

**Part Number:**

**Innodisk**

**Model Name:**

**Date:**

|                 |                 |
|-----------------|-----------------|
| <b>Innodisk</b> | <b>Customer</b> |
| <b>Approver</b> | <b>Approver</b> |
|                 |                 |

Total Solution For  
Embedded Peripherals

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## REVISION HISTORY

| Revision | Description    | Date      |
|----------|----------------|-----------|
| 1.0      | First Released | Feb, 2025 |
|          |                |           |

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# 1. Product Introduction

## 1.1. Overview

Innodisk EGUC-F2S3 is designed with standard M.2 2280 form factor; EGUC-F2S3 supports USB 2.0 to two independent CAN FD and can connect with either M.2 slot or USB pin header, optimized for higher performance and lower power, which brings you a flexible expansion solution for embedded systems.

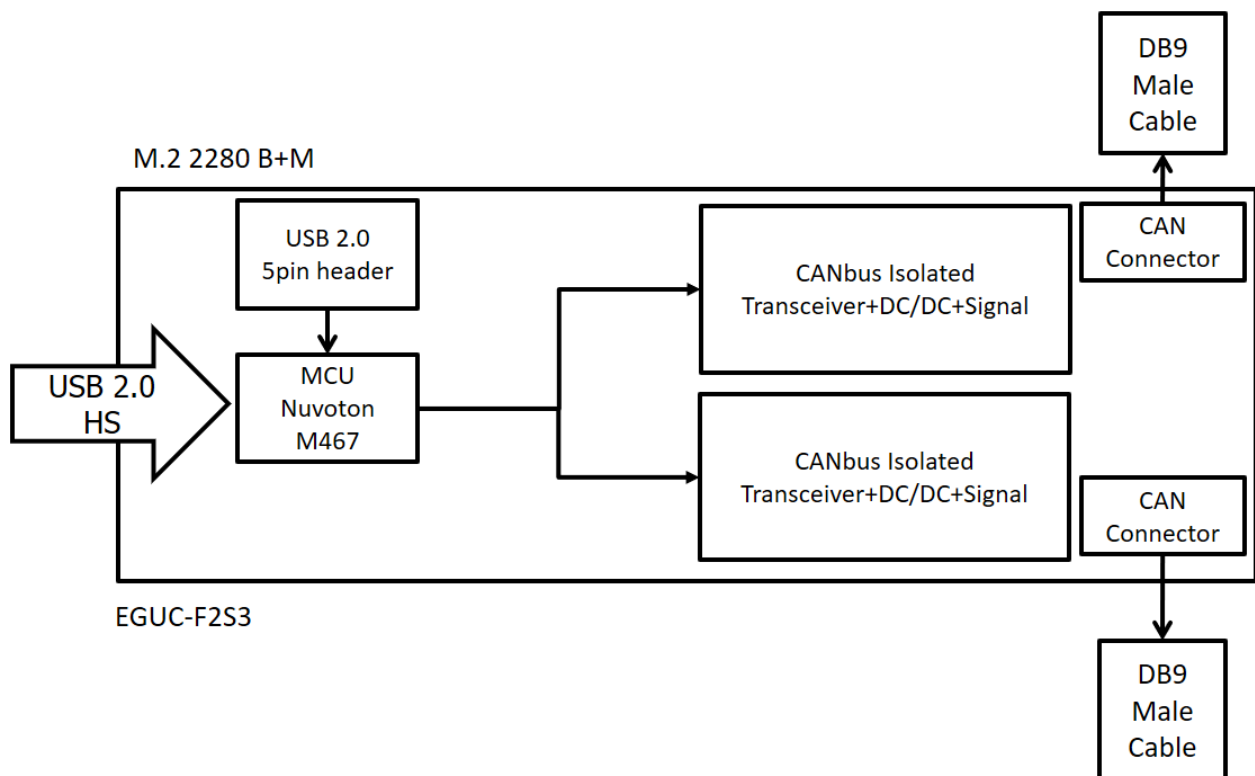


Figure 1: Block Diagram

## 1.2. Features

- ISO 11898-2:2016 compliant (CAN FD)
- Baud rate support 5/10/20/50/100/125/250/500(default)/800/1000K
- Data rate support 2/4/5Mbps
  - 2M support normal rate 100k and above
  - 4M/5M support normal rate 250K and above
- Support CAN message acceptance filter, listen-only mode
- Keeps configuration after hardware reboot

- CAN2.0 Up to 7,800 frame/s (RX baud rate 1M, EID, 8byte data)
- CANFD Up to 6,000 frame/s (RX baud rate 1M, data rate 5M, EID, 64byte data)
- Additional driver to support Linux SocketCAN
- Termination resistor enabled/disabled by DIP switch
- Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection
- Complaint with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
- Industrial Temperature (-40°C to +85°C) support

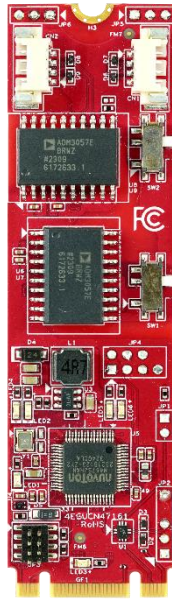


Figure 2: Picture

## 2. Product Specifications

### 2.1. Device Parameters

Table 1: Device Parameters

|                          |                              |
|--------------------------|------------------------------|
| <b>Form Factor</b>       | M.2 2280 B+M                 |
| <b>Input I/F</b>         | USB 2.0 High Speed (480Mbps) |
| <b>Output I/F</b>        | CAN FD                       |
| <b>Output Connector</b>  | DB-9 x 2                     |
| <b>Dimension (WxLxH)</b> | 22 x 80 x 5.55 mm            |

## 2.2. Performance

### 2.2.1. CAN FD RX Performance (frame/per second)

| EID, FDF, BRS, DLC64  |             |           |      |
|-----------------------|-------------|-----------|------|
| Normal rate/Data rate | Performance |           |      |
|                       | single prot | dual port |      |
|                       |             | CAN1      | CAN2 |
| 1M/5M                 | 6145        | 6145      | 6145 |

| EID, FDF, BRS, DLC8   |             |           |       |
|-----------------------|-------------|-----------|-------|
| Normal rate/Data rate | Performance |           |       |
|                       | single prot | dual port |       |
|                       |             | CAN1      | CAN2  |
| 1M/5M                 | 14478       | 14477     | 14477 |

| EID, FDF, DLC8        |             |           |      |
|-----------------------|-------------|-----------|------|
| Normal rate/Data rate | Performance |           |      |
|                       | single prot | dual port |      |
|                       |             | CAN1      | CAN2 |
| 1M/5M                 | 6736        | 6736      | 6736 |

### 2.2.2. CAN FD TX Performance (frame/per second)

| EID, FDF, BRS, DLC64  |             |           |      |
|-----------------------|-------------|-----------|------|
| Normal rate/Data rate | Performance |           |      |
|                       | single prot | dual port |      |
|                       |             | CAN1      | CAN2 |
| 1M/5M                 | 5587        | N/A       | N/A  |

| EID, FDF, BRS, DLC8   |             |           |      |
|-----------------------|-------------|-----------|------|
| Normal rate/Data rate | Performance |           |      |
|                       | single prot | dual port |      |
|                       |             | CAN1      | CAN2 |
| 1M/5M                 | 12542       | N/A       | N/A  |

| EID, FDF, DLC8        |             |           |      |
|-----------------------|-------------|-----------|------|
| Normal rate/Data rate | Performance |           |      |
|                       | single prot | dual port |      |
|                       |             | CAN1      | CAN2 |
| 1M/5M                 | 6354        | N/A       | N/A  |



## 2.3. Electrical Specifications

### 2.3.1. Power Requirement

EGUC-F2S3 can connect with either M.2 2280 slot or USB pin header.

**Table 2: Power Requirement**

| Item          | Connector         | Rating       |
|---------------|-------------------|--------------|
| Input voltage | M.2 Golden Finger | +3.3 DC +-5% |
| Input voltage | 5pin header       | +5V DC +-5%  |

### 2.3.2. Power Consumption

**Table 3: Power Consumption**

| Voltage (V) | Idle (RMS)(mA) | Work (RMS)(mA) | Work (MAX)(mA) |
|-------------|----------------|----------------|----------------|
| 3.3V        | 134            | 300            | 700            |

## 2.4. Environmental Specifications

### 2.4.1. Temperature Ranges

**Table 4: Temperature Ranges**

| Temperature | Range                           |
|-------------|---------------------------------|
| Operating   | Industrial Grade: -40°C to +85° |
| Storage     | -55°C to +95°                   |

### 2.4.2. Humidity

Relative Humidity: 10-95%, non-condensing

### 2.4.3. Shock and Vibration

**Table 5: Shock and Vibration**

| Reliability      | Test Conditions                 | Reference Standards |
|------------------|---------------------------------|---------------------|
| Vibration        | 7 Hz to 2K Hz, 20G, 3 axes      | IEC 68-2-6          |
| Mechanical Shock | Duration: 0.5ms, 1500 G, 3 axes | IEC 68-2-27         |

### 2.4.4. Mean Time between Failure (MTBF)

Reliability prediction methodology provides the basis for reliability evaluation and analysis. The

purpose of the prediction is to predict the life time of the product in units of failure rate and MTBF.

**Table 6: Mean Time between Failure (MTBF)**

| Product   | Condition                                                                                                                                                     | MTBF (Hours)      |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| EGUC-F2S3 | The analysis is at 25°C ambient temperature by Telcordia SR-332, Issues 4, Method I, Case 3 under Ground Benign, Controlled environment, 50% operation stress | <b>18,600,436</b> |

## 2.5. CE and FCC Compatibility

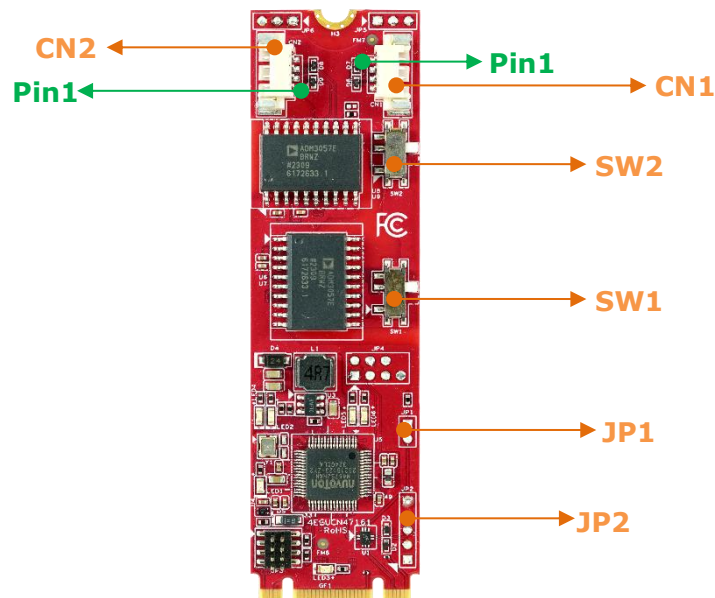
EGUC-F2S3 conforms to CE and FCC requirements.

## 2.6. RoHS Compliance

EGUC-F2S3 is fully compliant with RoHS directive.

## 2.7. Hardware

### 2.7.1. Layout

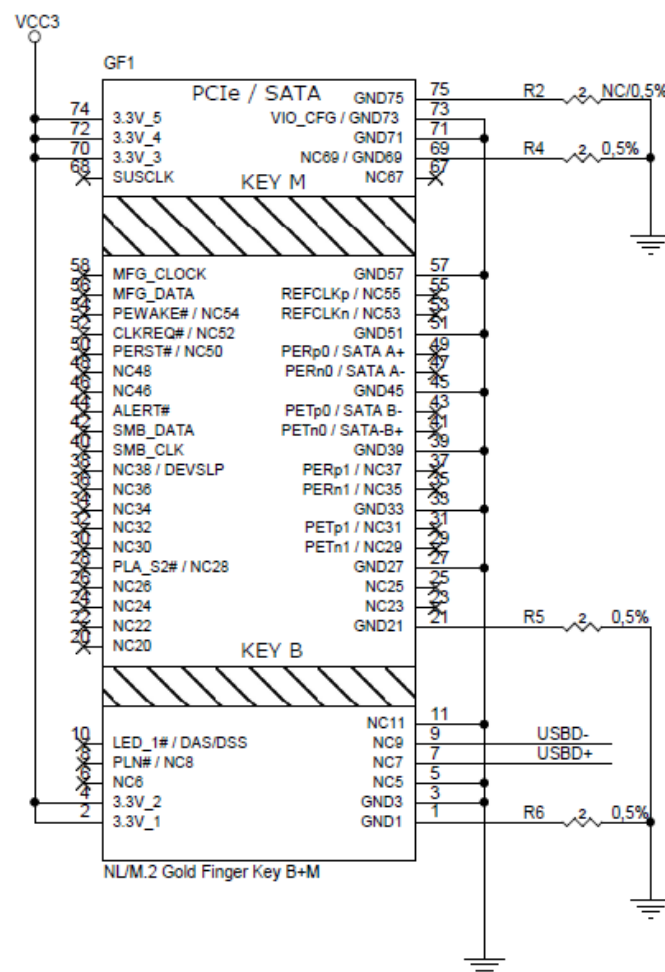


**Table 7: PCB Layout Legend**

| Label | Connector Type | Function |
|-------|----------------|----------|
|-------|----------------|----------|

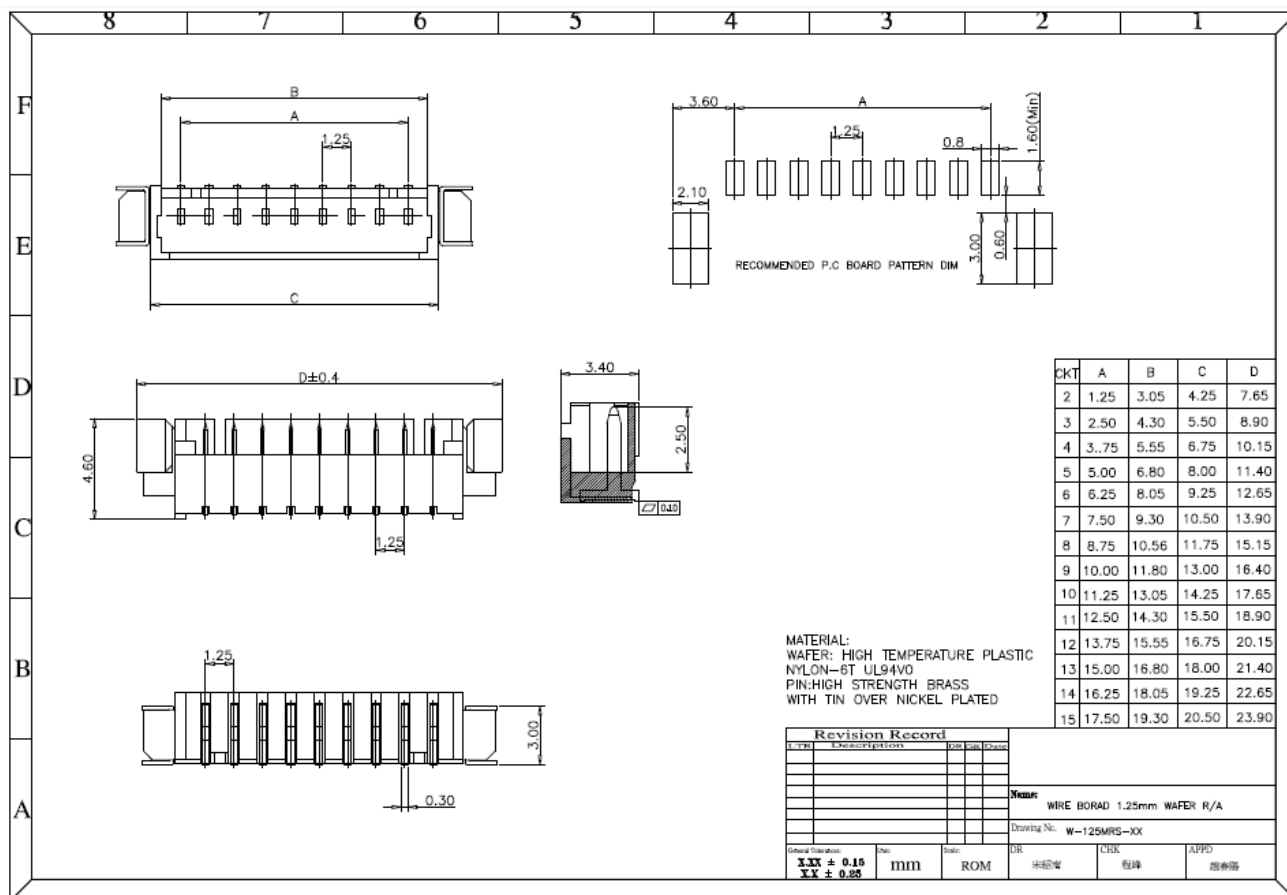
|                |                                               |                                                        |
|----------------|-----------------------------------------------|--------------------------------------------------------|
| <b>CN1</b>     | Wire to board SMD 1*4P 90°<br>P:1.25mm        | CAN bus Port 1                                         |
| <b>CN2</b>     | Wire to board SMD 1*4P 90°<br>P:1.25mm        | CAN bus Port 2                                         |
| <b>JP1</b>     | Pin Header DIP 1*2P 180°<br>P:2.0mm           | Switch USB 2.0 signal from M.2 to<br>JP2<br>(Reserved) |
| <b>JP2</b>     | Pin Header DIP 1*5P(w/o pin4) 180°<br>P:2.0mm | Alternative USB 2.0 input<br>(Reserved)                |
| <b>SW1-SW2</b> | DIP Switch                                    | Enable/Disable Termination<br>Resistor                 |

### 2.7.2. Pin Define



**Figure 3 Pin Define**

### 2.7.3. I/O Connector Mechanical Drawing & Pin Defines



**Figure 4: Wire to Board SMD 1\*4P Connector Drawing (CN1/CN2)**

**Table 8: Wire to Board SMD 1\*4P Connector Pin Define (CN1/CN2)**

| Pin #       | 1  | 2     | 3     | 4   |
|-------------|----|-------|-------|-----|
| Signal Name | NC | CAN-H | CAN-L | GND |

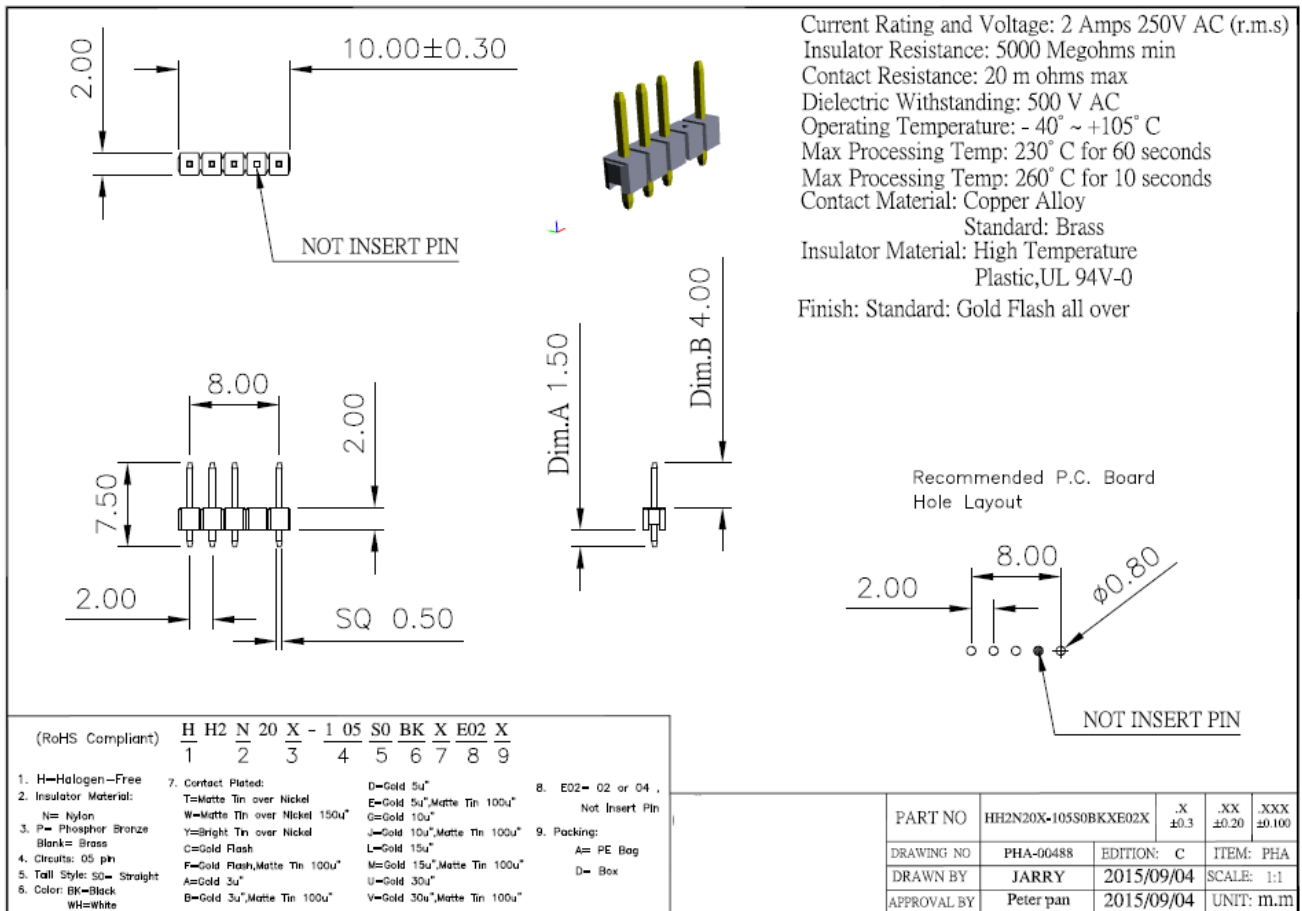
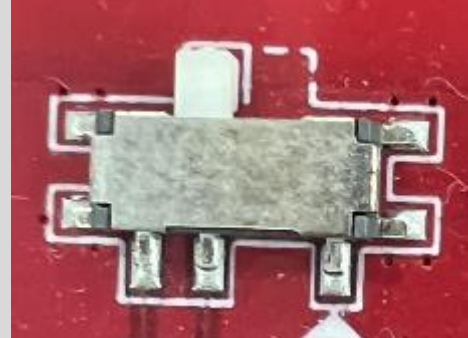
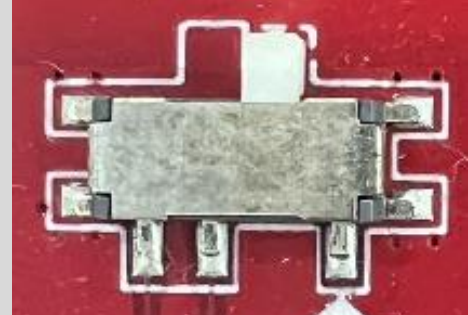


Figure 5: Pin Header DIP 1\*5P Drawing (JP2)

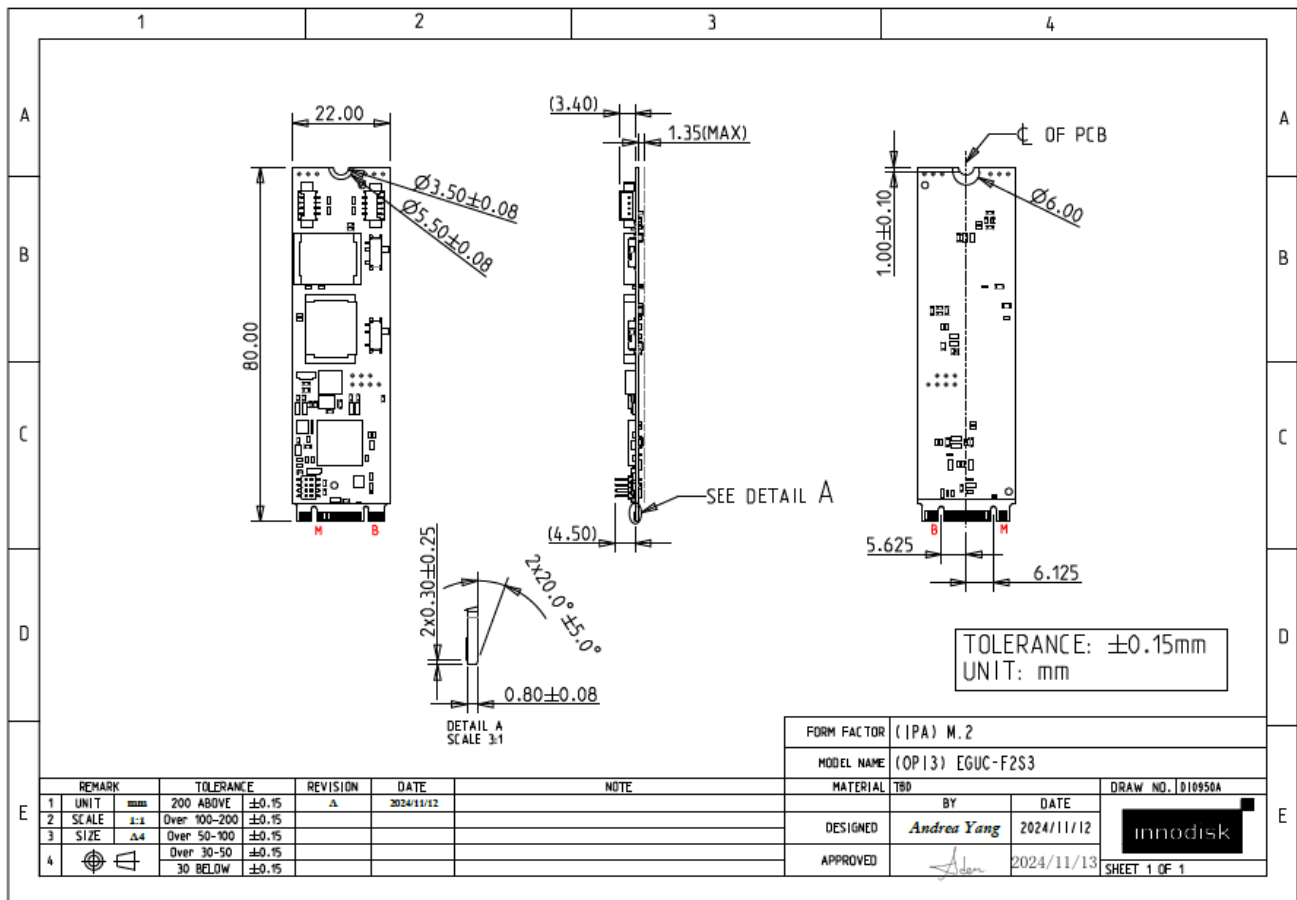
Table 9: USB Pin Header DIP 1\*5P Pin Define (JP2)

| Pin #       | 1  | 2      | 3      |  | 4   |
|-------------|----|--------|--------|--|-----|
| Signal Name | NC | USB_D- | USB_D+ |  | GND |

**Table 10: DIP Switch Setting (SW1-SW2)**

|                                                                                   |                              |
|-----------------------------------------------------------------------------------|------------------------------|
|  | Enable Termination Resistor  |
|  | Disable Termination Resistor |

#### 2.7.4. EGUC-F2S3 Mechanical Drawing



**Figure 6: EGUC-F2S3 Drawing**

### 2.7.5. Cable Mechanical Drawing & Pin Defines

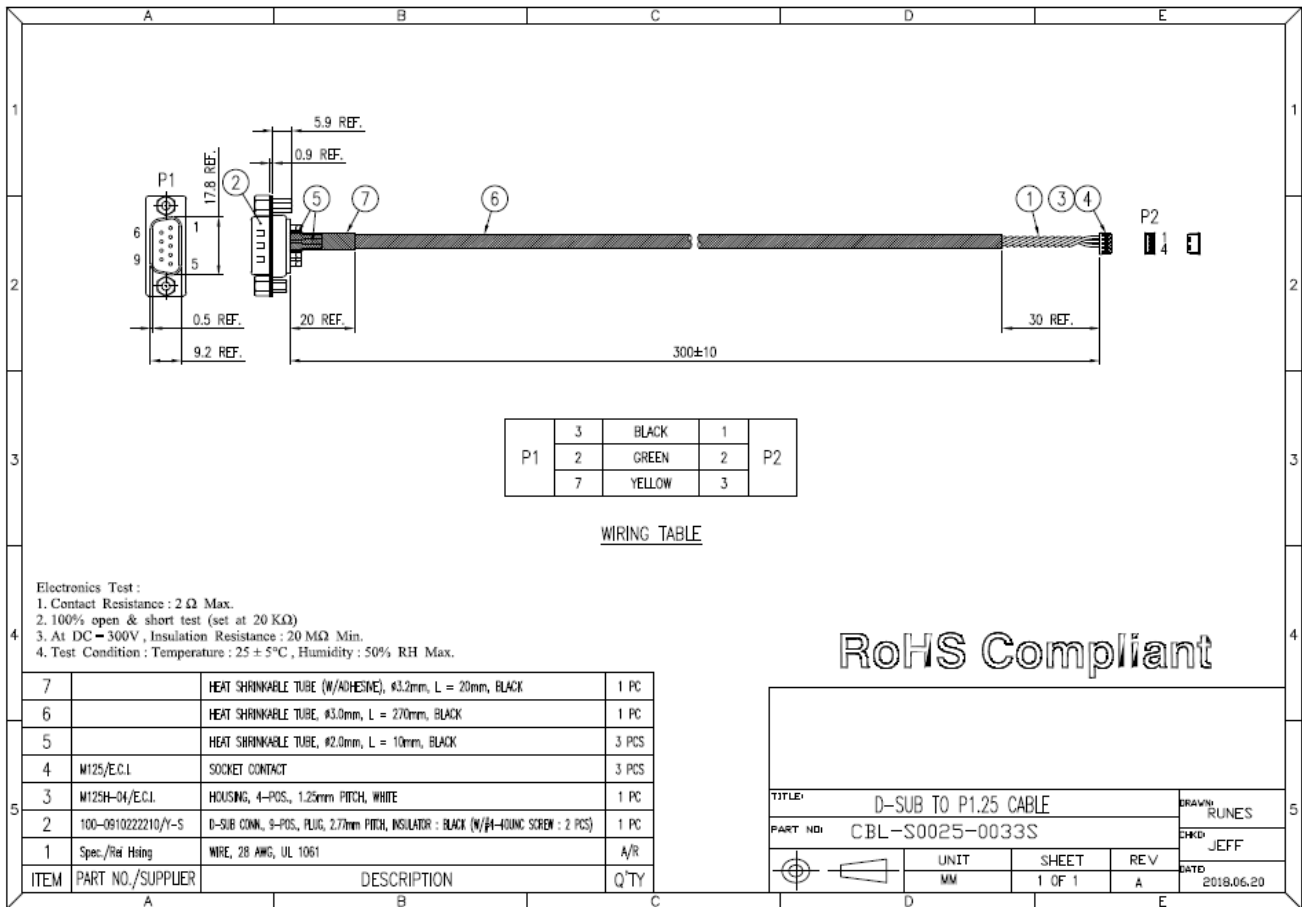


Figure 7: DB9 Cable Drawing

Table 11: DB9 Cable Pin Define

| Pin #       | 1  | 2     | 3   | 4  | 5  | 6  | 7     | 8  | 9  |
|-------------|----|-------|-----|----|----|----|-------|----|----|
| Signal Name | NC | CAN-L | GND | NC | NC | NC | CAN-H | NC | NC |

### 2.7.6. Packing List

- EGUC-F2S3 x1
- DB9 Cable x2

### 2.8. Software Support

|                          |                                   |
|--------------------------|-----------------------------------|
| Windows                  | 10(32/64bit), 11                  |
| Linux (cdc-acm driver)   | Kernel 2.6 and above, 32/64bit    |
| Linux (SocketCAN driver) | Kernel 2.6.38 and above, 32/64bit |

## 3. Installation Guide

Please download driver, software API and user manual from Myinnodisk web site.

<https://myinnodisk.innodisk.com/myinnodisk/Login.aspx>



## 4. Appedix

Report No.: 24B1047R-0E3012100115-A

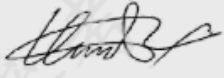


|                                                                                                                                                                     |                                                                                                                            |                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|   |                                                                                                                            | Test report No: 24B1047R-0E3012100115-A |
| <b>CE TEST REPORT</b>                                                                                                                                               |                                                                                                                            |                                         |
| Product Name                                                                                                                                                        | M.2 2280(USB HS) to four isolated CAN FD                                                                                   |                                         |
| Trademark                                                                                                                                                           | Innodisk                                                                                                                   |                                         |
| Model and /or type reference                                                                                                                                        | EGUC-F4S3, EGUC-F%S3<br>(%: Output items:(2:2Ports,4:4Ports))                                                              |                                         |
| Applicant's name / address                                                                                                                                          | Innodisk Corporation / 5F., No. 237, Sec. 1, Datong Rd.,<br>Xizhi Dist., New Taipei City 221005, Taiwan (R.O.C.)           |                                         |
| Manufacturer's name / address                                                                                                                                       | Innodisk Corporation / 5F., No. 237, Sec. 1, Datong Rd.,<br>Xizhi Dist., New Taipei City 221005, Taiwan (R.O.C.)           |                                         |
| Test method requested, standard                                                                                                                                     | EN 55032:2015/A1:2020, Class B<br>EN 55035:2017/A11:2020<br>BS EN 55032:2015+A1:2020, Class B<br>BS EN 55035:2017+A11:2020 |                                         |
| Verdict Summary                                                                                                                                                     | IN COMPLIANCE                                                                                                              |                                         |
| Documented By<br>(Senior Adm. Specialist / Anny Chou)                                                                                                               | Anny Chou                                                                                                                  |                                         |
| Approved By<br>(Director / Vincent Lin)                                                                                                                             |                                         |                                         |
| Date of Report                                                                                                                                                      | 2024/11/29                                                                                                                 |                                         |
| Date of Issue                                                                                                                                                       | 2025/01/02                                                                                                                 |                                         |
| Report No.                                                                                                                                                          | 24B1047R-0E3012100115-A                                                                                                    |                                         |
| Report Version                                                                                                                                                      | V1.0                                                                                                                       |                                         |



Test report No: 24B1047R-0E3012110014-A

## FCC TEST REPORT

|                                                       |                                                                                                                  |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Product Name                                          | M.2 2280(USB HS) to four isolated CAN FD                                                                         |
| Trademark                                             | Innodisk                                                                                                         |
| Model and /or type reference                          | EGUC-F4S3, EGUC-F%S3<br>(%: Output items:(2:2Ports,4:4Ports))                                                    |
| Applicant's name / address                            | Innodisk Corporation / 5F., No. 237, Sec. 1, Datong Rd.,<br>Xizhi Dist., New Taipei City 221005, Taiwan (R.O.C.) |
| Manufacturer's name / address                         | Innodisk Corporation / 5F., No. 237, Sec. 1, Datong Rd.,<br>Xizhi Dist., New Taipei City 221005, Taiwan (R.O.C.) |
| Test method requested, standard                       | FCC CFR Title 47 Part 15 Subpart B:2023, Class B                                                                 |
| Verdict Summary                                       | IN COMPLIANCE                                                                                                    |
| Documented By<br>(Senior Adm. Specialist / Anny Chou) | Anny Chou                                                                                                        |
| Approved By<br>(Director / Vincent Lin)               |                               |
| Date of Report                                        | 2024/11/29                                                                                                       |
| Date of Issue                                         | 2025/01/02                                                                                                       |
| Report No.                                            | 24B1047R-0E3012110014-A                                                                                          |
| Report Version                                        | V1.0                                                                                                             |

innodisk

宜鼎國際股份有限公司  
Innodisk Corporation  
REACH Declaration

Tel: (02) 7703-3000 Fax: (02) 7703-3555 Internet: <https://www.innodisk.com/>

Innodisk Corporation pursues its social responsibility for global environmental preservation by committing to be compliant with REACH regulation (REGULATION (EC) No 1907/2006).

We hereby confirm that the product(s),

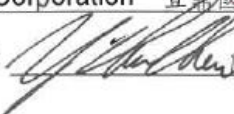
**Scope: Flash Memory, DRAM Module and Embedded Peripherals Products.**

- The standard products of **not listed** in the Appendix2 meet the requirements of REACH SVHC regulations (SVHCs < 0.1% in Article), as described in the candidate list table currently including 223 substances and shown on the ECHA website. (<http://echa.europa.eu/de/candidate-list-table>).
- The standard products listed in the Appendix2 contain(s) one or more hazardous substances or constituents exceeding 0.1 % by weight in article if not otherwise specified in candidate list table.  
Where the threshold value is exceeded, the substances in question are to be declared in accompanying. (SVHCs > 0.1% in Article).
- Comply with REACH Annex XVII.

**Guarantor**



Company name 公司名稱: Innodisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人:  陳怡全

Company Representative Title 公司代表人職稱: QA Manager 品保經理

Date 日期: 2022 / 02 / 08

### RoHS 自我宣告書 (RoHS Declaration of Conformity)

**Manufacturer Products: All Innodisk EM FLASH, DRAM and EP products**

- 一、 宜鼎國際股份有限公司（以下稱本公司）特此保證售予貴公司之所有產品，皆符合歐盟 2011/65/EU 及 (EU) 2015/863 關於 RoHS 之規範要求。  
Innodisk Corporation declares that all products sold to the company, are complied with European Union RoHS Directive (2011/65/EU) and (EU) 2015/863 requirement.
- 二、 本公司同意因本保證書或與本保證書相關事宜有所爭議時，雙方宜友好協商，達成協議。  
Innodisk Corporation agrees that both parties shall settle any dispute arising from or in connection with this Declaration of Conformity by friendly negotiations.
- 三、 本公司聲明我們的產品符合 RoHS 指令的附件中 7(a)、7(c)-I、6(c) 允許豁免。  
We declare, our products permitted by the following exemptions specified in the Annex of the RoHS directive.
- ※ 7(a) Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead).
- ※ 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound.
- ※ 6(c) Copper alloy containing up to 4% lead by weight.  
(This exemption applies to products that use antennas)

| Name of hazardous substance | Limited of RoHS ppm (mg/kg) |
|-----------------------------|-----------------------------|
| 鉛 (Pb)                      | < 1000 ppm                  |
| 汞 (Hg)                      | < 1000 ppm                  |
| 鎘 (Cd)                      | < 100 ppm                   |
| 六價鉻 (Cr 6+)                 | < 1000 ppm                  |
| 多溴聯苯 (PBBs)                 | < 1000 ppm                  |
| 多溴二苯醚 (PBDEs)               | < 1000 ppm                  |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP)      | < 1000 ppm                  |
| 鄰苯二甲酸丁酯苯甲酯 (BBP)            | < 1000 ppm                  |
| 鄰苯二甲酸二丁酯 (DBP)              | < 1000 ppm                  |

|                  |            |
|------------------|------------|
| 鄰苯二甲酸二異丁酯 (DIBP) | < 1000 ppm |
|------------------|------------|

### 立保證書人 (Guarantor)

Company name 公司名稱: Innodisk Corporation 宜鼎國際股份有限公司

Company Representative 公司代表人: Randy Chien 簡川勝

Company Representative Title 公司代表人職稱: Chairman 董事長

Date 日期: 2021 / 06 / 09



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November 20, 2025