

# 2.5" SATA SSD

## 3MG-P Series

**Customer:** \_\_\_\_\_

**Customer**

**Part**

**Number:** \_\_\_\_\_

**Innodisk**

**Part**

**Number:** \_\_\_\_\_

**Innodisk**

**Model Name:** \_\_\_\_\_

**Date:** \_\_\_\_\_

<b>Innodisk Approver</b>	<b>Customer Approver</b>

**Total Solution For  
Industrial Flash Storage**

## Table of contents

<b>LIST OF FIGURES .....</b>	<b>6</b>
<b>1. PRODUCT OVERVIEW .....</b>	<b>7</b>
<b>1.1 INTRODUCTION OF INNODISK 2.5" SATA SSD 3MG-P.....</b>	<b>7</b>
<b>1.2 PRODUCT VIEW AND MODELS .....</b>	<b>7</b>
<b>1.3 SATA INTERFACE .....</b>	<b>7</b>
<b>1.4 2.5-INCH FORM FACTOR .....</b>	<b>8</b>
<b>2. PRODUCT SPECIFICATIONS.....</b>	<b>9</b>
<b>2.1 CAPACITY AND DEVICE PARAMETERS.....</b>	<b>9</b>
<b>2.2 PERFORMANCE .....</b>	<b>9</b>
<b>2.3 ELECTRICAL SPECIFICATIONS .....</b>	<b>9</b>
<b>2.3.1 Power Requirement .....</b>	<b>9</b>
<b>2.3.2 Power Consumption.....</b>	<b>10</b>
<b>2.4 ENVIRONMENTAL SPECIFICATIONS .....</b>	<b>10</b>
<b>2.4.1 Temperature Ranges .....</b>	<b>10</b>
<b>2.4.2 Humidity .....</b>	<b>10</b>
<b>2.4.3 Shock and Vibration.....</b>	<b>10</b>
<b>2.4.4 Mean Time between Failures (MTBF) .....</b>	<b>10</b>
<b>2.5 CE AND FCC COMPATIBILITY .....</b>	<b>11</b>
<b>2.6 RoHS COMPLIANCE .....</b>	<b>11</b>
<b>2.7 RELIABILITY.....</b>	<b>11</b>
<b>2.8 TRANSFER MODE .....</b>	<b>11</b>
<b>2.9 PIN ASSIGNMENT .....</b>	<b>11</b>
<b>2.10 MECHANICAL DIMENSIONS .....</b>	<b>12</b>
<b>2.11 ASSEMBLY WEIGHT .....</b>	<b>13</b>
<b>2.12 SEEK TIME .....</b>	<b>14</b>
<b>2.13 HOT PLUG.....</b>	<b>14</b>
<b>2.14 NAND FLASH MEMORY .....</b>	<b>14</b>
<b>3. THEORY OF OPERATION .....</b>	<b>15</b>
<b>3.1 OVERVIEW .....</b>	<b>15</b>
<b>3.2 SATA III CONTROLLER .....</b>	<b>15</b>
<b>3.3 ERROR DETECTION AND CORRECTION.....</b>	<b>16</b>
<b>3.4 WEAR-LEVELING .....</b>	<b>16</b>
<b>3.5 BAD BLOCKS MANAGEMENT.....</b>	<b>16</b>
<b>3.6 POWER CYCLING .....</b>	<b>16</b>
<b>3.7 GARBAGE COLLECTION/TRIM.....</b>	<b>16</b>
<b>3.8 iCELL TECHNOLOGY.....</b>	<b>17</b>
<b>4. INSTALLATION REQUIREMENTS .....</b>	<b>18</b>

<b>4.1 2.5" SATA SSD 3MG-P PIN DIRECTIONS.....</b>	<b>18</b>
<b>4.2 ELECTRICAL CONNECTIONS FOR 2.5" SATA SSD 3MG-P .....</b>	<b>18</b>
<b>4.3 FORM FACTOR.....</b>	<b>18</b>
<b>4.4 DEVICE DRIVE .....</b>	<b>19</b>
<b>5. PART NUMBER RULE .....</b>	<b>20</b>

## REVISION HISTORY

Revision	Description	Date
Preliminary	First Released	May, 2013
Rev. 1.0	<ol style="list-style-type: none"> <li>1. Add CE/FCC certifications</li> <li>2. Add RoHS declaration</li> </ol>	July, 2013
Rev. 1.1	<ol style="list-style-type: none"> <li>1. Performance update</li> <li>2. LBA update</li> </ol>	July, 2013
Rev. 1.2	<ol style="list-style-type: none"> <li>1. Add iCell feature</li> <li>2. Modify part number rule</li> </ol>	Sep., 2013
Rev. 1.3	<ol style="list-style-type: none"> <li>1. Add 512GB</li> <li>2. Modify LBA and user capacity value</li> </ol>	Oct., 2013
Rev. 1.4	<ol style="list-style-type: none"> <li>1. Update CHS values</li> <li>2. Update mechanical drawing</li> </ol>	Nov. 2013
Rev. 1.5	<ol style="list-style-type: none"> <li>1. Update CHS values, performance</li> </ol>	JAN. 2014
Rev. 1.6	<ol style="list-style-type: none"> <li>1. Note 512GB w/iCell housing: 9.2mm height</li> </ol>	MAR. 2014
Rev. 1.7	<ol style="list-style-type: none"> <li>1. Update 512GB and DGS25-XXXD67TX3XC/ DGS25-XXXD67TX1XC performance</li> <li>2. Update power consumption</li> <li>3. Update part number decoder code 13<sup>th</sup> (Flash Type)</li> <li>4. Update Ver. 3 mechanical drawing</li> </ol>	APR. 2014
Rev. 2.0	<ol style="list-style-type: none"> <li>1. Modify Part number rule</li> <li>2. Add E-mark certification</li> <li>3. Add SAEJ1113 Report</li> </ol>	Sep., 2014

## List of Tables

<b>TABLE 1: DEVICE PARAMETERS .....</b>	<b>9</b>
<b>TABLE 2: PERFORMANCE .....</b>	<b>9</b>
<b>TABLE 3: INNODISK 2.5" SATA SSD 3MG-P POWER REQUIREMENT.....</b>	<b>9</b>
<b>TABLE 4: POWER CONSUMPTION.....</b>	<b>10</b>
<b>TABLE 5: TEMPERATURE RANGE FOR 2.5" SATA SSD 3MG-P .....</b>	<b>10</b>
<b>TABLE 6: SHOCK/VIBRATION TESTING FOR 2.5" SATA SSD 3MG-P .....</b>	<b>10</b>
<b>TABLE 7: 2.5" SATA SSD 3MG-P MTBF .....</b>	<b>11</b>
<b>TABLE 8: INNODISK 2.5" SATA SSD 3MG-P PIN ASSIGNMENT .....</b>	<b>11</b>

## List of Figures

<b>FIGURE 1: INNODISK 2.5" SATA SSD 3MG-P .....</b>	<b>7</b>
<b>FIGURE 2: INNODISK FiD 2.5" SATA SSD 3MG-P BLOCK DIAGRAM .....</b>	<b>15</b>
<b>FIGURE 3: SIGNAL SEGMENT AND POWER SEGMENT .....</b>	<b>18</b>

# 1. Product Overview

## 1.1 Introduction of Innodisk 2.5" SATA SSD 3MG-P

Innodisk 2.5" SATA SSD 3MG-P products provide high capacity flash memory Solid State Drive (SSD) that electrically complies with Serial ATA (SATA) standard. It supports SATA III standard (6.0GHz) with high performance. Innodisk 2.5" SATA SSD 3MG-P is designed for industrial field, and supports several standard features, including TRIM, NCQ, and S.M.A.R.T. The SSD have good performance, no latency time and small seek time. It effectively reduces the booting time of operation system and the power consumption is less than hard disk drive (HDD).

## 1.2 Product View and Models

Innodisk 2.5" SATA SSD 3MG-P is available in follow capacities:

- 2.5" SATA SSD 3MG-P 8GB
- 2.5" SATA SSD 3MG-P 16GB
- 2.5" SATA SSD 3MG-P 32GB
- 2.5" SATA SSD 3MG-P 64GB
- 2.5" SATA SSD 3MG-P 128GB
- 2.5" SATA SSD 3MG-P 256GB
- 2.5" SATA SSD 3MG-P 512GB



**Figure 1: Innodisk 2.5" SATA SSD 3MG-P**

## 1.3 SATA Interface

Innodisk 2.5" SATA SSD 3MG-P supports SATA III interface, and compliant with SATA I and SATA II. SATA III interface can work with Serial Attached SCSI (SAS) host system, which is used in server computer. Innodisk 2.5" SATA SSD 3MG-P is compliant with Serial ATA Gen 1, Gen 2 and Gen 3 specification (Gen 3 supports 1.5Gbps /3.0Gbps/6.0Gbps data rate). SATA connector uses a 7-pin signal segment and a 15-pin power segment.

## 1.4 2.5-inch Form Factor

The Industry-standard 2.5-inch form factor design with metal material case is easy for installation, which has a compact design 70.00mm (W) x100.00mm (L) x 6.8 mm (H). If the SSD capacity is 512GB within iCell option, the mechanical dimension will be 69.85mm (W) x100.10mm (L) x 9.20mm (H).



## 2. Product Specifications

### 2.1 Capacity and Device Parameters

2.5" SATA SSD 3MG-P device parameters are shown in Table 1.

**Table 1: Device parameters**

Capacity	LBA	Cylinders	Heads	Sectors	User Capacity(MB)
8GB	13695696	15525	16	63	6687
16GB	29323728	16383	16	63	14318
32GB	60579792	16383	16	63	29579
64GB	121138416	16383	16	63	59149
128GB	242255664	16383	16	63	118288
256GB	484490160	16383	16	63	236567
512GB	968959152	16383	16	63	473125

### 2.2 Performance

Burst Transfer Rate: 6.0Gbps

**Table 2: Performance**

Capacity	8GB	16GB	32GB	64GB	128GB	256GB	512GB
Sequential Read (max.)	90MB/sec	240MB/sec	450MB/sec	460MB/sec	460MB/sec	460MB/sec	300MB/s
Sequential Write (max.)	13MB/sec	40MB/sec	80MB/sec	150MB/sec	240MB/sec	240MB/sec	280MB/s

Note: Base on CrystalDiskMark 3.01 with file size 1000MB

### 2.3 Electrical Specifications

#### 2.3.1 Power Requirement

**Table 3: Innodisk 2.5" SATA SSD 3MG-P Power Requirement**

Item	Symbol	Rating	Unit
Input voltage	V <sub>IN</sub>	+5 DC +- 5%	V

### 2.3.2 Power Consumption

**Table 4: Power Consumption**

Mode	Power Consumption (mA)
Read	630 (max.)
Write	1000 (max.)
Idle	120 (max.)

\* Target: 2.5" SATA SSD 3MG-P 512GB

## 2.4 Environmental Specifications

### 2.4.1 Temperature Ranges

**Table 5: Temperature range for 2.5" SATA SSD 3MG-P**

Temperature	Range
Operating	Standard Grade: 0°C to +70°C
	Industrial Grade: -40°C to +85°C
Storage	-55°C to +95°C

### 2.4.2 Humidity

Relative Humidity: 10-95%, non-condensing

### 2.4.3 Shock and Vibration

**Table 6: Shock/Vibration Testing for 2.5" SATA SSD 3MG-P**

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 Failures (MTBF)

Table 7 summarizes the MTBF prediction results for various 2.5" SATA SSD 3MG-P configurations. The analysis was performed using a RAM Commander™ failure rate prediction.

- **Failure Rate:** The total number of failures within an item population, divided by the total number of life units expended by that population, during a particular measurement interval under stated condition.
- **Mean Time between Failures (MTBF):** A basic measure of reliability for repairable items: The mean number of life units during which all parts of the item perform within their specified limits, during a particular measurement interval under stated conditions.

**Table 7: 2.5" SATA SSD 3MG-P MTBF**

Product	Condition	MTBF (Hours)
Innodisk 2.5" SATA SSD 3MG-P	Telcordia SR-332 GB, 25°C	>3,000,000

## 2.5 CE and FCC Compatibility

2.5" SATA SSD 3MG-P conforms to CE and FCC requirements.

## 2.6 RoHS Compliance

2.5" SATA SSD 3MG-P is fully compliant with RoHS directive.

## 2.7 Reliability

Parameter	Value
Read Cycles	Unlimited Read Cycles
Wear-Leveling Algorithm	Support
Bad Blocks Management	Support
Error Correct Code	Support
Flash endurance	3000 P/E cycles
TBW(Sequential Write)	
8GB	21.6
16GB	43.2
32GB	86.4
64GB	172.8
128GB	345.6
256GB	691.2
512GB	1382.4

## 2.8 Transfer Mode

2.5" SATA SSD 3MG-P support following transfer mode:

Serial ATA III 6.0Gbps

Serial ATA II 3.0Gbps

Serial ATA I 1.5Gbps

## 2.9 Pin Assignment

Innodisk 2.5" SATA SSD 3MG-P uses a standard SATA pin-out. See Table 8 for 2.5" SATA SSD 3MG-P pin assignment.

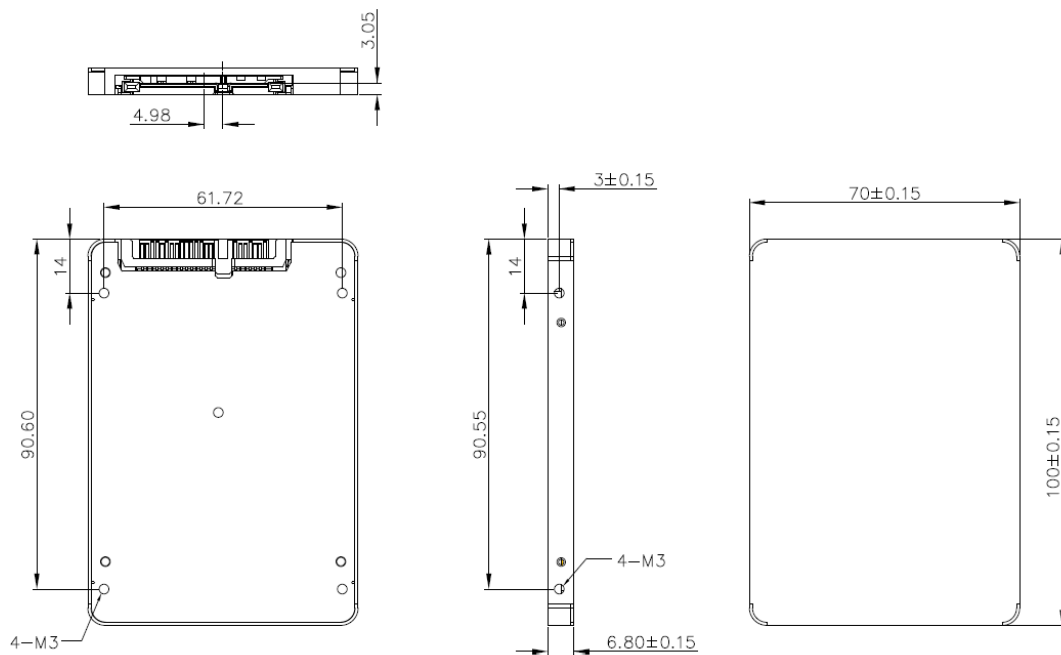
**Table 8: Innodisk 2.5" SATA SSD 3MG-P Pin Assignment**

Name	Type	Description
S1	GND	NA
S2	A+	Differential Signal Pair A
S3	A-	
S4	GND	NA

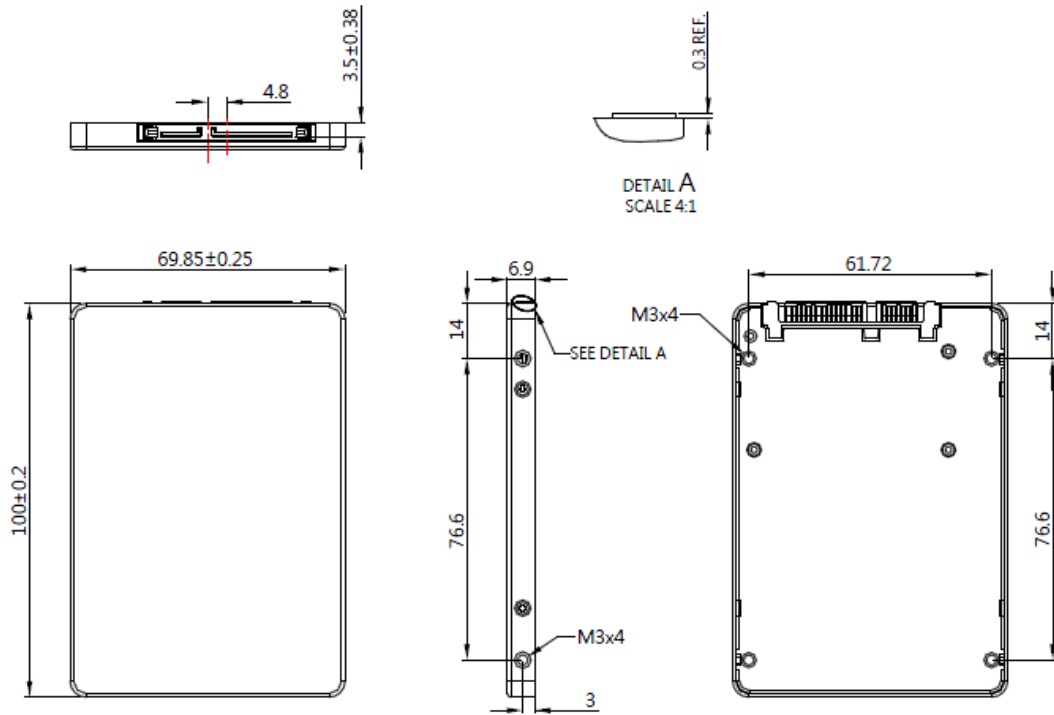
S5	B-	Differential Signal Pair B
S6	B+	
S7	GND	NA
<b>Key and Spacing separate signal and power segments</b>		
P1	NC	NA
P2	NC	NA
P3	NC	NA
P4	GND	NA
P5	GND	NA
P6	GND	NA
P7	V5	5V Power, Pre-Charge
P8	V5	5V Power
P9	V5	5V Power
P10	GND	NA
P11	DAS/DSS	Device Activity Signal / Disable Staggered
P12	GND	NA
P13	NC	NA
P14	NC	NA
P15	NC	NA

**2.10 Mechanical Dimensions**

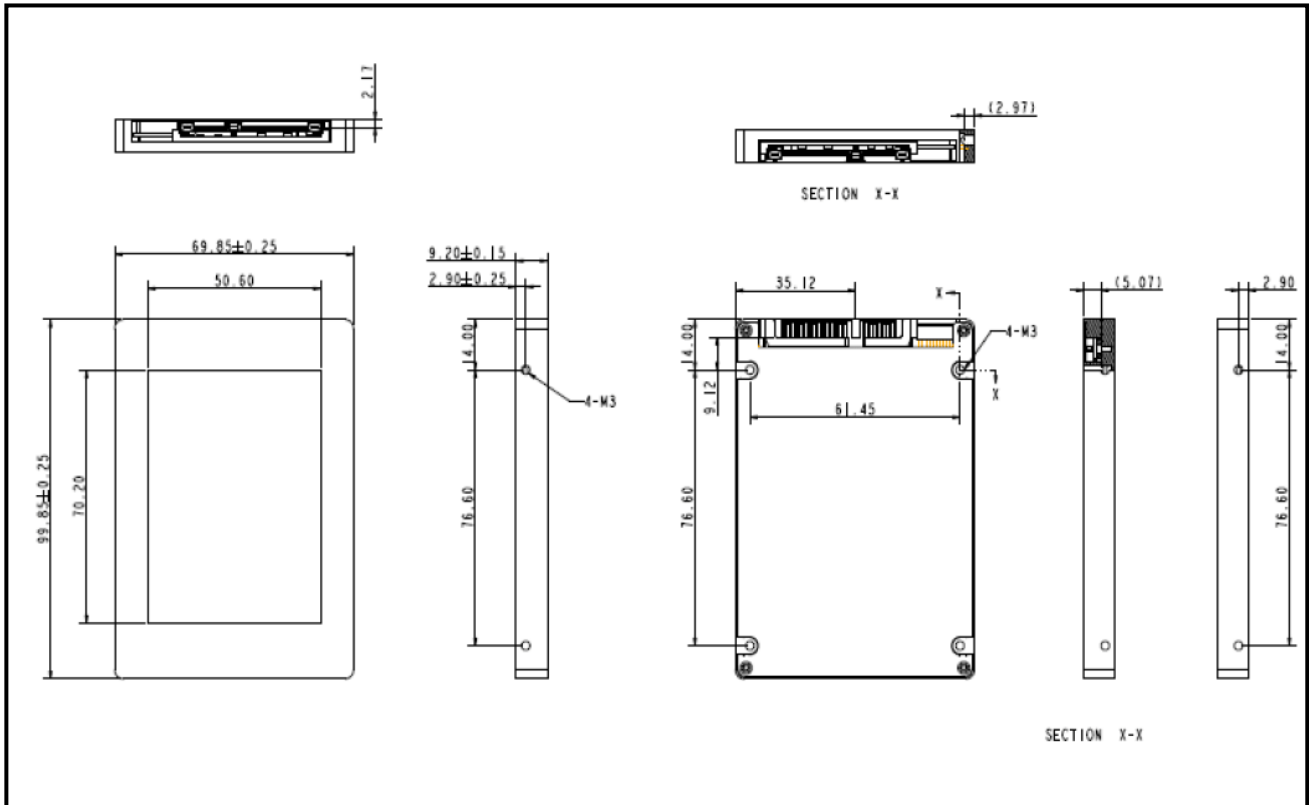
\* Ver. 1 (DGS25-XXXD67XX1QC(P))



\* Ver. 3 (DGS25-XXXD67XX3QC(P))



\*512GB /256GB/128GB with iCell



### **2.11 Assembly Weight**

An Innodisk 2.5" SATA SSD 3MG-P within MLC flash ICs, 16GB's weight is 100 grams approx. The total weight of SSD will be less than 105 grams.

### **2.12 Seek Time**

Innodisk 2.5" SATA SSD 3MG-P is not a magnetic rotating design. There is no seek or rotational latency required.

### **2.13 Hot Plug**

The SSD support hot plug function and can be removed or plugged-in during operation. User has to avoid hot plugging the SSD which is configured as boot device and installed operation system.

**Surprise hot plug** : The insertion of a SATA device into a backplane (combine signal and power) that has power present. The device powers up and initiates an OOB sequence.

**Surprise hot removal**: The removal of a SATA device from a powered backplane, without first being placed in a quiescent state.

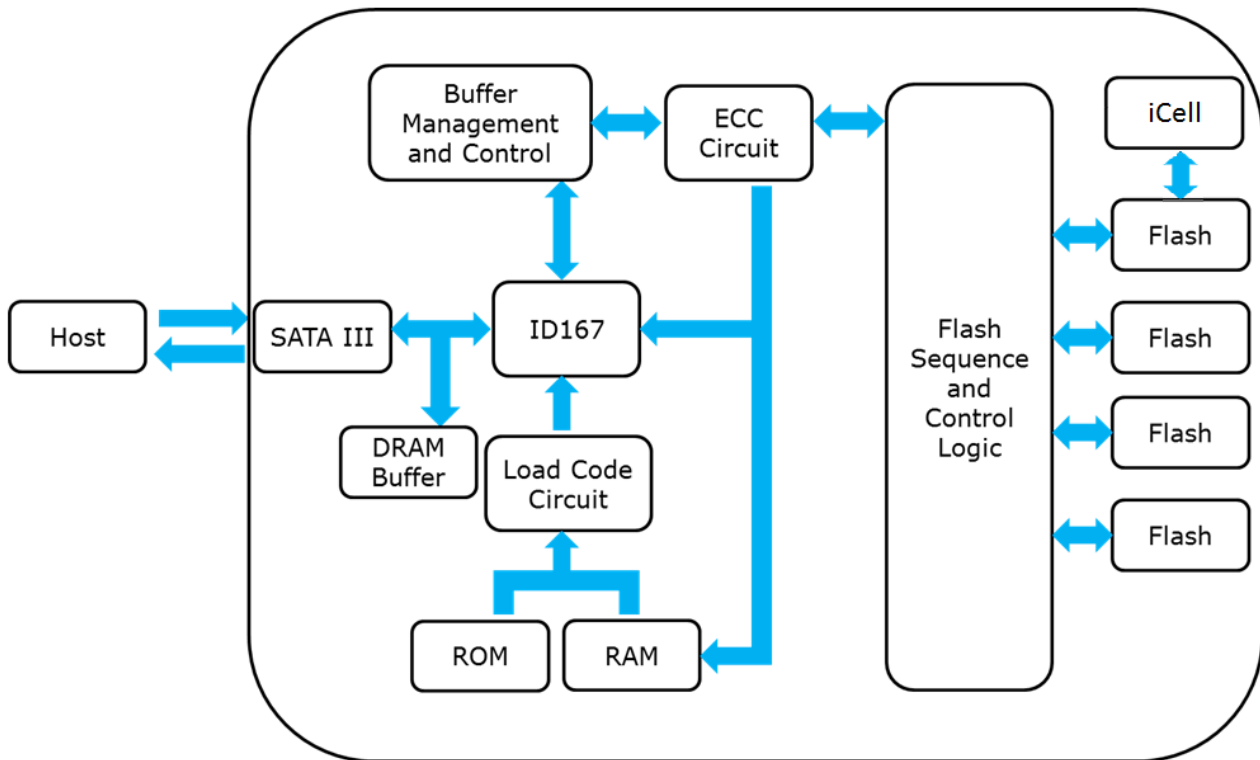
### **2.14 NAND Flash Memory**

Innodisk 2.5" SATA SSD 3MG-P uses Multi Level Cell (MLC) NAND flash memory, which is non-volatility, high reliability and high speed memory storage.

# 3. Theory of Operation

## 3.1 Overview

Figure 2 shows the operation of Innodisk 2.5" SATA SSD 3MG-P from the system level, including the major hardware blocks.



**Figure 2: Innodisk FiD 2.5" SATA SSD 3MG-P Block Diagram**

Innodisk 2.5" SATA SSD 3MG-P integrates a SATA III controller and NAND flash memories. Communication with the host occurs through the host interface, using the standard ATA protocol. Communication with the flash device(s) occurs through the flash interface.

## 3.2 SATA III Controller

Innodisk 2.5" SATA SSD 3MG-P is designed with ID 167, a SATA III 6.0Gbps (Gen. 3) controller, which supports external DDR3 DRAM. The Serial ATA physical, link and transport layers are compliant with Serial ATA Gen 1, Gen 2 and Gen 3 specification (Gen 3 supports 1.5Gbps/3.0Gbps/6.0Gbps data rate). The controller has 4 channels for flash interface.

### 3.3 Error Detection and Correction

Highly sophisticated Error Correction Code algorithms are implemented. The ECC unit consists of the Parity Unit (parity-byte generation) and the Syndrome Unit (syndrome-byte computation). This unit implements an algorithm that can correct 40 bits per 1024 bytes in an ECC block. Code-byte generation during write operations, as well as error detection during read operation, is implemented on the fly without any speed penalties.

### 3.4 Wear-Leveling

Flash memory can be erased within a limited number of times. This number is called the **erase cycle limit** or **write endurance limit** and is defined by the flash array vendor. The erase cycle limit applies to each individual erase block in the flash device.

Innodisk 2.5" SATA SSD 3MG-P uses a static wear-leveling algorithm to ensure that consecutive writes of a specific sector are not written physically to the same page/block in the flash. This spreads flash media usage evenly across all pages, thereby extending flash lifetime.

### 3.5 Bad Blocks Management

Bad Blocks are blocks that contain one or more invalid bits whose reliability are not guaranteed. The Bad Blocks may be presented while the SSD is shipped, or may develop during the life time of the SSD. When the Bad Blocks is detected, it will be flagged, and not be used anymore. The SSD implement Bad Blocks management, Bad Blocks replacement, Error Correct Code to avoid data error occurred. The functions will be enabled automatically to transfer data from Bad Blocks to spare blocks, and correct error bit.

### 3.6 Power Cycling

Innodisk's power cycling management is a comprehensive data protection mechanism that functions before and after a sudden power outage to SSD. Low-power detection terminates data writing before an abnormal power-off, while table-remapping after power-on deletes corrupt data and maintains data integrity. Innodisk's power cycling provides effective power cycling management, preventing data stored in flash from degrading with use.

### 3.7 Garbage Collection/TRIM

Garbage collection and TRIM technology is used to maintain data consistency and perform continual data cleansing on SSDs. It runs as a background process, freeing up valuable controller resources while sorting good data into available blocks, and deleting bad blocks. It also significantly reduces write operations to the drive, thereby increasing the SSD's speed and lifespan.



### **3.8 iCell Technology (Optional)**

iCell technology is designed to provide power buffering after host power off. The SSD controller can write all DRAM buffer data to flash, so SSD can ensure all data to be written into disk without any data loss.

\* iCell is optional feature with different part number.

## 4. Installation Requirements

### 4.1 2.5" SATA SSD 3MG-P Pin Directions

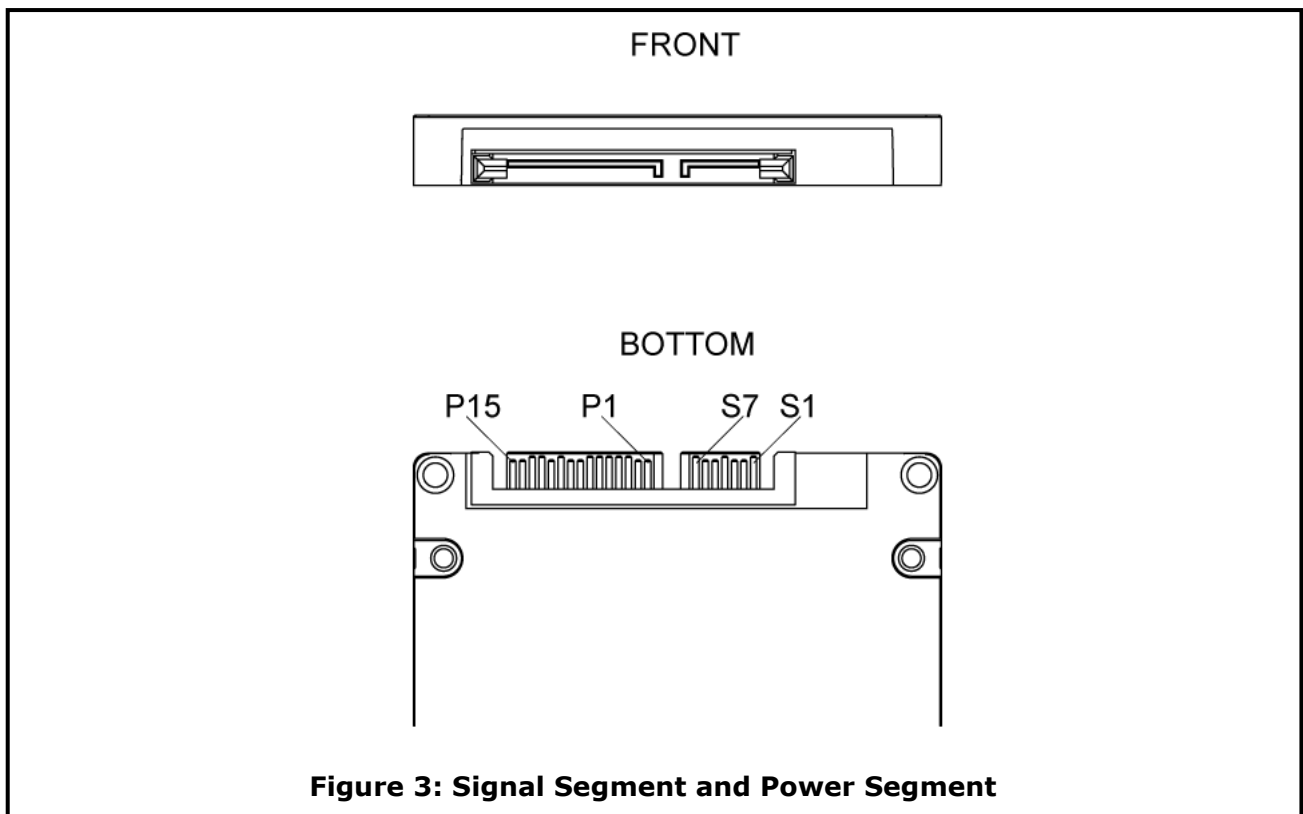


Figure 3: Signal Segment and Power Segment

### 4.2 Electrical Connections for 2.5" SATA SSD 3MG-P

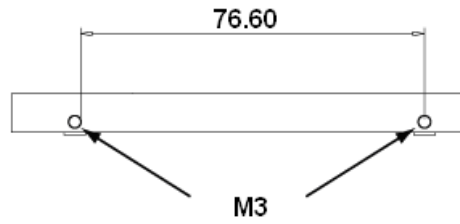
A Serial ATA device may be either directly connected to a host or connected to a host through a cable. For connection via cable, the cable should be no longer than 1 meter. The SATA interface has a separate connector for the power supply. Please refer to the pin description for further details.

### 4.3 Form Factor

Please prepare following things:

- Screw driver.
- Four M3 screws.
- SATA single cable (7-pin, Maximum length 1 meter).
- SATA power cable (15-pin).

Please turn off your computer, and open your computer's case. Find one of available 2.5-inch slot, and plug the SSD in. To use the screws fix the SSD. Plug in the SATA single cable, and power cable. Please boot the installation Operation System from CD-ROM, and install Operation System into SSD.



**Figure 4: 2.5" SATA SSD 3MG-P Mechanical Screw Hole**

#### 4.4 Device Drive

No additional device drives are required. Innodisk 2.5" SATA SSD 3MG-P can be configured as a boot device.

## 5. Part Number Rule

CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	<b>D</b>	<b>G</b>	<b>S</b>	<b>2</b>	<b>5</b>	<b>-</b>	<b>3</b>	<b>2</b>	<b>G</b>	<b>D</b>	<b>6</b>	<b>7</b>	<b>R</b>	<b>C</b>	<b>1</b>	<b>Q</b>	<b>C</b>	<b>P</b>	<b>-</b>	<b>X</b>	<b>X</b>
Description	Disk	2.5" SATA SSD 3MG-P					Capacity			Category			Flash mode	Operation Temp.	Internal Control	CH.	Flash	Optional		Customized Code	
<b>Definition</b>																					
<b>Code 1<sup>st</sup> (Disk)</b>												<b>Code 13<sup>th</sup> (Flash Type)</b>									
D : Disk												R: Toshiba 19 Synchronous Flash for 3ME/3MG-P/3MR-P series									
<b>Code 2<sup>nd</sup> (Feature Set)</b>												<b>Code 14<sup>th</sup> (Operation Temperature)</b>									
G: EverGreen												C: Standard Grade (0°C ~ +70°C)									
<b>Code 3<sup>rd</sup> ~5<sup>th</sup> (Form Factor)</b>																					
S25: 2.5" SATA SSD																					
<b>Code 7<sup>th</sup> ~9<sup>th</sup> (Capacity)</b>																					
08G: 8GB												<b>Code 15<sup>th</sup> (Internal control)</b>									
16G: 16GB												<b>Code 16<sup>th</sup> (Channel of data transfer)</b>									
32G: 32GB												S: Single Channel									
64G: 64GB												D: Dual Channels									
A28: 128GB												Q: Quad Channels									
B56: 256GB												<b>Code 17<sup>th</sup> (Flash Type)</b>									
C12: 512GB												C: Toshiba MLC									
<b>Code 10<sup>th</sup> ~12<sup>th</sup> (Series)</b>												<b>Code 18<sup>th</sup> (Optional)</b>									
D67: 2.5" SATA SSD 3MG-P												P: iCell									
												<b>Code 19<sup>th</sup> ~20<sup>th</sup> (Customized code)</b>									

# Appendix

## CE/FCC/RoHS


*Verification of Compliance*

Product Name : 2.5" SATA SSD 3MG-P/3IE-P/3MR  
 Model Number : D@S25-xxxD67\*#%※&  
 @: Feature set (G: EverGreen, H: iSLC, R: InnoRobust)  
 XXX: 8GB~512GB  
 \* : Flash Mode  
 # : Temperature (C : Commercial Temp W : Industrial Temp)  
 % : PCB Version (A, B, C... or 1, 2, 3...)  
 ※ : Channel (S : Single, D : Dual, Q : Quad, E : Eight)  
 & : Flash Vender (T : Micron SLC, S : Samsung SLC, N : Micron MLC,  
 B : Toshiba SLC, C : Toshiba MLC, F : Sandisk SLC, X : SLC)


Applicant : InnoDisk Corporation  
 Address : 9F, No.100, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221,  
 Taiwan

Report Number : O22-U070-1306-260  
 Issue Date : June 26, 2013  
 Applicable Standards : EN 55022:2010 Class B ITE  
 AS/NZS CISPR22:2009 Class B ITE  
 EN 55024:2010  
 EN 61000-4-2:2009  
 EN 61000-4-3:2006+A1:2008+A2:2010  
 EN 61000-4-4:2004+A1:2010

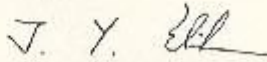
Based on the EMC Directive 2004/108/EC and the specifications of the customer, one sample of the designated product has been tested in our laboratory and found to be in compliance with the EMC standards cited above.



TAF 0905  
 FCC CAB Code TW1053  
 NVLAP Lab Code 200575-0  
 IC Code 4699A  
 VCCI Accp. No. R-1527, C-1609, T-1441, G-10,  
 C-4400, T-1334, G-614



**Central Research Technology Co.**  
 EMC Test Laboratory  
 11, Lane 41, Fushuen St., Jungshan Chiu,  
 Taipei, Taiwan, 104, R.O.C.  
 Tel: 886-2-25984568  
 Fax: 886-2-25984546


---

(Tsun-Yu Shih/ General Manager)  
 Date: June 26, 2013

## Verification of Compliance

Product Name : 2.5" SATA SSD 3MG-P/3IE-P/3MR  
 Model Number : D@S25-xxxD67\*#%※&  
 @: Feature set (G: EverGreen, H: iSLC, R:InnoRobust)  
 XXX: 8GB-512GB  
 \* : Flash Mode  
 # : Temperature (C : Commercial Temp W : Industrial Temp)  
 % : PCB Version (A, B, C... or 1, 2, 3...)  
 ※ : Channel (S : Single, D : Dual, Q : Quad, E : Eight)  
 & : Flash Vender (T : Micron SLC, S : Samsung SLC, N : Micron MLC,  
 B : Toshiba SLC, C: Toshiba MLC, F: Sandisk SLC, X: SLC)  
 Applicant : InnoDisk Corporation  
 Address : 9F, No.100, Sec. 1, Xintai 5th Rd., Xizhi Dist., New Taipei City 221,  
 Taiwan  
 Report Number : F-U070-1306-260  
 Issue Date : June 26, 2013

Applicable Standards : FCC Part 15, Subpart B Class B ITE  
 ANSI C63.4:2009  
 Industry Canada ICES-003 Issue 5  
 CSA-IEC CISPR22-10 Class B ITE

One sample of the designated product has been tested in our laboratory and found to be in compliance with the FCC rules cited above.



NVLAP LAB CODE: 200575-0

TAF 0905  
 FCC CAB Code TW1053  
 IC Code 4699A  
 VCCI Accept. No. R-1527, C-1639, E-1441, G-10,  
 C-4400, T-1334, G-614



**Central Research Technology Co.**  
 EMC Test Laboratory  
 11 Lane 41, Fushuen St., Jungshan Chiu,  
 Taipei, Taiwan, 104, R.O.C.  
 Tel: 886-2-25984558  
 Fax: 886-2-25984546

(Tsun-Yu Shih/ General Manager)

Date: June 26, 2013

Tel:(02)2696-3000 Fax:(02)2696-2000 Website: http://www.innodisk.com/

**RoHS 自我宣告書 (RoHS Declaration of Conformity)****Model Name :** 2.5" SATA SSD 3MG-P/3IE-P/3MR Series**P/N :** D@S25-XXXD67\*#%※&

@: Feature set (G:Green, H:SLC, R:InnoRobust)

XXX: 06G-C12(512G)

\*: Flash Mode

#: Temperature (C: Commercial Temp, W: Industrial Temp)

%: PCB Version (A, B, C... or 1, 2, 3...)

※: Channel (S: Single, D: Dual, Q: Quad, F: Eight)

&amp;: Flash Vendor (T: Micron SLC, S: Samsung SLC, N: Micron MLC, B: Toshiba SLC, C: Toshiba MLC, P: Sandisk SLC, X: SLC)

- 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 2011/05/EU 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) 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.

Name of hazardous substance	Limited of RoHS ppm (mg/kg)
Cd	< 100 ppm
Pb	< 1000 ppm
Hg	< 1000 ppm
Chromium VI (Cr+6)	< 1000 ppm
Polybromodiphenyl ether (PBDE)	< 1000 ppm
Polybrominated Biphenyls (PBB)	< 1000 ppm

**立保證書人**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: Richard Lee 李鍾亮Company Representative Title 公司代表人職稱: CEO 執行長Date 日期: 2013 / 07 / 01



GRAND-DUCHÉ DE LUXEMBOURG

Ministère du Développement durable  
et des Infrastructures  
Département des Transports

L-2938 Luxembourg

SOCIÉTÉ NATIONALE DE  
CERTIFICATION ET D'HOMOLOGATION  
s.à r.l.

Registre de Commerce: B 27180

L-5201 Sandweiler



**Référence:** E13\*10R00\*10R04\*13360\*00

**Annexes:** - Rapport Technique  
- Fiche de Renseignements du constructeur

Sandweiler, le 21 août 2014

Communication concernant:<sup>(2)</sup>  
Communication concerning:



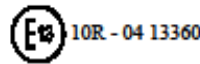
- la délivrance d'une homologation  
approval granted
- l'extension d'homologation  
approval extended
- le refus d'homologation  
approval refused
- le retrait d'homologation  
approval withdrawn
- l'arrêt définitif de la production  
production definitively discontinued

d'un type de sous-ensemble électrique/électronique<sup>(2)</sup> en ce qui concerne le Règlement N° 10.  
of a type of electrical/electronic sub-assembly with regard to Regulation N° 10.

**Numéro d'homologation par type:**  
Approval number:

E13\*10R00\*10R04\*13360\*00

**Marque d'homologation:**  
Approval mark:



- |    |   |  |
|----|---|--|
| 1. | <b>Fabricant (marque commerciale du constructeur):</b><br>Make (trade name of manufacturer):  | Innodisk   |
| 2. | <b>Type:</b><br>Type:<br><br><b>Dénomination(s) commerciale(s) générale(s):</b><br>General commercial description(s):<br><br><b>Version(s)/Variante(s):</b><br>Version(s)/Variant(s):                   | 2.5" SATA SSD 3MR-P<br><br>2.5" SATA SSD<br><br>2.5" SATA SSD 3M*-P<br>(where * can be G or R) |
| 3. | <b>Moyens d'identification du type, s'ils sont marqués sur le composant / entité technique<sup>(2)</sup>:</b><br>Means of identification of type, if marked on the component / separate technical unit: | Type name print on the label and label and stick on the housing                                |





# Test report

**E. u. T.:** 2.5" SATA SSD  
*Test with optional Industrial PC-System  
"ADVANTECH – ARK-VH200"*

**Model:** 2.5" SATA SSD 3MR-P  
**Version:** 2.5"SATA SSD 3M\*-P (where \* can be G or R)

**Applicant:** Innodisk Corporation  
5F., No. 237, Sec. 1, Datong Rd., Xinzhi  
Dist., New Taipei City 221,  
Taiwan (R.O.C.)

**Date of tests:** 07 / 07 / 2014 to 08 / 08 / 2014

**Place of tests:** Perl- Sinz

**Project No.:** 27804\_07072014\_3MR-P\_SAE

**Date of Report:** 08 / 13 / 2014

**Pages complete:** 31

No part of this report may be reproduced except as authorised by written permission.  
The test data of this test report relate only to the individual item which have been tested.