

Goldkey Technology Corporation

6F-2, No. 716, Chung-Cheng Road, Chung-Ho Dist.,
New Taipei City 235, Taiwan, R. O. C.

Tel : +886-2-7731-8808 ; Fax : +886-2-7731-6606

凌航科技股份有限公司

235 新北市中和區中正路 716 號 6 樓之 2

電話: +886-2-7731-8808 ; 傳真 : +886-2-7731-6606

產 品 規 格 書
(Specification)

產 品 類 別 (ITEM)	SSD / STORAGE
品 名 規 格 (DESCRIPTION)	2.5 inch SATA3 SSD
凌 航 型 號 (Goldkey Model)	NFS10 Series
規 格 書 版 本 (Specification Rev.)	06

Prepared by	Approved by
Jaco	Willy

Total Pages	Product Rev.	Date
12	00	2023/07/01

Specifications		Page 1 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		



Revision History

Specification Rev.	Date	Reason/Issue	Revised Description	Author
01	2020/08/17	Initial	Initial	Initial
02	2020/10/27	Add Capacity	Add 480GB ,960GB	Jaco
03	2020/11/24	Add Capacity	Add 256GB/512GB/1024GB	Jaco
04	2020/11/25	Add Capacity	Add 2000GB	Jaco
05	2021/03/25	Add Capacity	Add 500GB/1000GB	Jaco
06	2023/07/01	Add controller	Add SM2259XT2/SM2259XT3	Jaco

Specifications		Page 2 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		

Specifications Overview:

Summary	Solution	SM2259XT/59XT2/59XT3 + 3D QLC NAND FLASH			
	Interface	SATA 6.0Gbps Compliance with SATA Revision 3.1 (Compatible with SATA 1.5/3Gbps interface)			
Connector Type	SATA 7+15 pin				
Form Factor	2.5 inch				
Characteristic	Capacity	240/ 256GB	480/ 500/ 512GB	960/ 1000/ 1TB	2000GB /2TB
	Sequence read *1 (MB/s) (Min.)	500	500	500	500
	Sequence write *1 (MB/s) (Min.)	440	460	470	470
Storage medium	3D QLC NAND FLASH				
Electrical Specifications	Input voltage	5V ± 5%			
	Idle mode (W) (Max.)	0.9			
	Sequential Read (W) *1 (Max.)	1.9			
	Sequential Write (W) *1 (Max.)	1.8			
FLASH Management	TRIM command 、 Global Wear leveling 、 S.M.A.R.T. 、 Bad block management 、 NCQ				
Reliability	MTBF (hours)	1,000,000			
	Endurance (TBW)	35	70	140	280
Temperature Range	Working temperature	0~+70°C			
	Storage temperature	-40~85°C			
Mechanical Characteristics	Thickness (mm)	6.9±0.5			
	Width (mm)	69.8±0.5			
	Length (mm)	99.8±0.5			
	Weight	46g (Max.)			



Note:

- *1 Measured by CrystalDiskMark V8.0.4 (x64) at empty disk with SATA 6Gbps host 1GB
- *2 Performance may differ according to flash configuration, SDR configuration, and platform.
- *3 The table above is for reference only. The criteria for MP (mass production) and for accepting goods shall be discussed based on different flash configuration.

Ordering Information for Compliant Products

Part Number	Description	Solution	Capacity
NFS101SA324-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	240GB
NFS101SA356-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	256GB
NFS101SA348-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	480GB
NFS101SA350-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	500GB
NFS101SA351-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	512GB
NFS101SA396-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	960GB
NFS101SA310-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	1000GB
NFS101SA31T-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	1024GB
NFS101SA320-6007000	2.5 inch SATA3 SSD	SM2259XTx + 3D QLC NAND	2000GB

Specifications		Page 4 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		



Table of Contents

- 1. General Descriptions 6**
 - 1.1. Introduction 6
 - 1.2. Performance 6
- 2. Block Diagram 7**
- 3. Product Specifications 8**
- 4. Interface Description..... 9**
 - 4.1. Pin Assignment and Descriptions 9
- 5. Electrical Specification 10**
 - 5.1. Operating Voltage 10
 - 5.2. Power Consumption 10
- 6. Reliability Specifications 11**
 - 6.1. Environmental 11
 - 6.2. Mean Time Between Failures (MTBF) 11
 - 6.3. Certification and Compliance 11
 - 6.4. Endurance 11
- 7. Mechanical Characteristics 12**
 - 7.1. Dimension 12

Specifications		Page 5 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		



1. General Descriptions

1.1. Introduction

Neo Forza's 2.5 inch SSD (Solid State Drive) is a high performance and high reliability storage device based on New 3D QLC NAND Flash technology that is designed to solve the bottleneck of computing system by traditional hard disk drives (HDD). Neo Forza's 2.5 inch SSD is fully compliant with the standard 2.5 inch form factor. With a high performance and low power consumption, Neo Forza's 2.5 inch SSD is a great choice of storage device for NB and Tablet PC.

1.2. Performance

Table 1-1 Performance Specifications

Capacity	Sequence *1	
	Read (MB/s) min.	Write (MB/s) min.
240GB/256GB	500	440
480GB/500GB/512GB	500	460
960GB/1000GB/1TB	500	470
2000GB	500	470

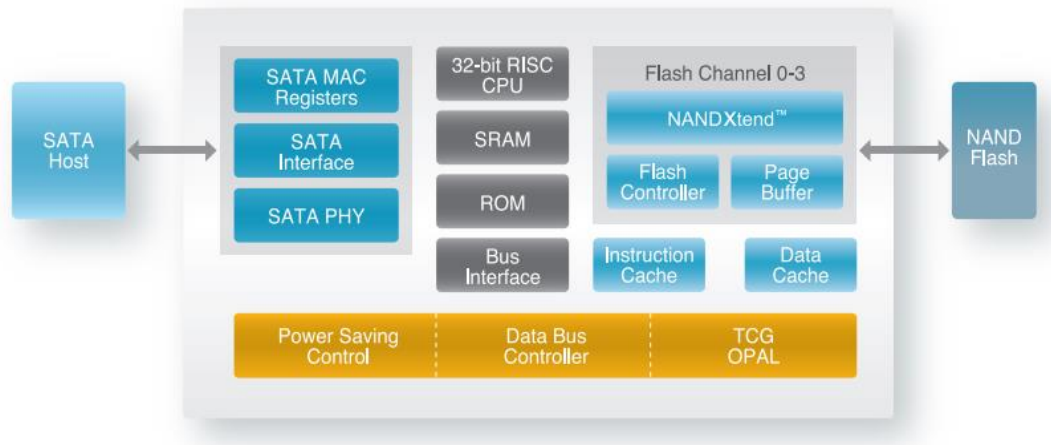
Note:

*1 Measured by CrystalDiskMark 7.0.0 (x64) at empty disk with SATA 6Gbps host

*2 Performance may differ according to flash configuration, SDR configuration, and platform.

Specifications		Page 6 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		

2. Block Diagram



Specifications		Page 7 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		



3. Product Specifications

- **Capacity**

240GB/256GB/480GB/500GB/512GB/960GB/1000GB/1TB/2000GB

- **Compatibility**

- ◆ SATA Revision 3.1
- ◆ Compliant with Standard ATA/ATA PI-8 and ACS-2 command compliant
- ◆ Compatible with SATA 1.5Gbps, 3Gbps and 6Gbps interface
- ◆ Supports 28-bit and 48-bit LBA (Logical Block Addressing) mode commands

- **Additional Capabilities**

- ◆ S.M.A.R.T. (Self-Monitoring, analysis and reporting Technology) feature set support
- ◆ Data Set Management command (TRIM)
- ◆ Static wear-leveling algorithm
- ◆ Native Command Queuing (NCQ) up to 32 commands support
- ◆ Support Global Wear Leveling extends SSD lifespan
- ◆ RoHS Compliant
- ◆ Power Consumption (Maximum): <1.9W
- ◆ Operating Temperature Range: 0°C ~ 70°C
- ◆ Storage Temperature Range: -40°C ~ 85°C

Specifications		Page 8 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		

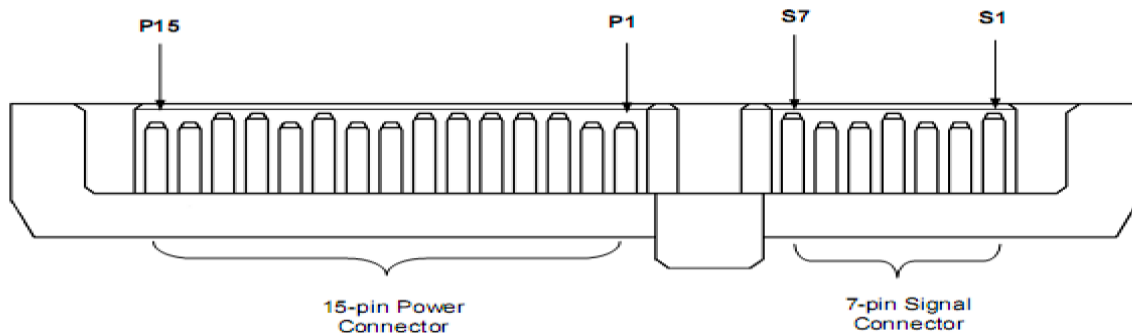
4. Interface Description

4.1. Pin Assignment and Descriptions

SATA Interface (7+15 Pin)

Table 4-1: SATA 7+15 pin

Signals	S1	GND	System Ground
	S2	RX+	Differential signals pair Receive
	S3	RX-	
	S4	GND	System Ground
	S5	TX-	Differential signals pair Transmit
	S6	TX+	
	S7	GND	System Ground
Power	P1	V33	+3.3V Power supply
	P2	V33	
	P3	DEVSLP	
	P4	GND	System Ground
	P5	GND	
	P6	GND	
	P7	V5/PC	+5V Power supply, 2nd Pre-charge
	P8	V5	+5V Power supply
	P9	V5	
	P10	GND	System Ground
	P11	DAS	Reserved
	P12	GND	System Ground
	P13	V12/PC	+12V Power supply, 2nd Pre-Charge
	P14	V12	+12V Power supply
	P15	V12	



Specifications		Page 9 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		

5. Electrical Specification

5.1. Operating Voltage

Table 5-1 List of the supply voltage

- Table 5-1 Operating Voltage

Item	Range
Supply Voltage	5.0V ± 5%

5.2. Power Consumption

Table 5-2 List of the power consumption

- Table 5-2 Power Consumption

Mode		Unit
Idle (Max.)	0.9	W
Sequential Read (Max.)	1.9	W
Sequential Write (Max.)	1.8	W

Note:

1. All values are typical and may vary depending on flash configurations or host system setting.
2. Active power is an average power measurement performed using CrystalDiskMark with 128KB sequential read/write transfer.

6. Reliability Specifications

6.1. Environmental

Environmental specifications are shown in Table 7-1

Table 7-1 Environmental Specifications

Environmental	Specifications
Temperature	0°C to 70°C (Working)
	-40°C to 85°C (Storage)

Result: No any abnormality is detected when power on

6.2. Mean Time Between Failures (MTBF)

Mean Time Between Failures (MTBF) is predicted based on reliability data for the individual components in SSD is more than 1,000,000 hours (Predicted data)

6.3. Certification and Compliance

- ROHS
- CE
- FCC

6.4. Endurance

The endurance of a storage device is predicted by TeraBytes Written based on several factors related to usage, such as the amount of data written into the drive, block management conditions, and daily workload for the drive. Thus, key factors, such as Write Amplifications (WAF) and the number of P/E cycles, can influence the lifespan of the drive.

Table 7-2 Endurance Specifications

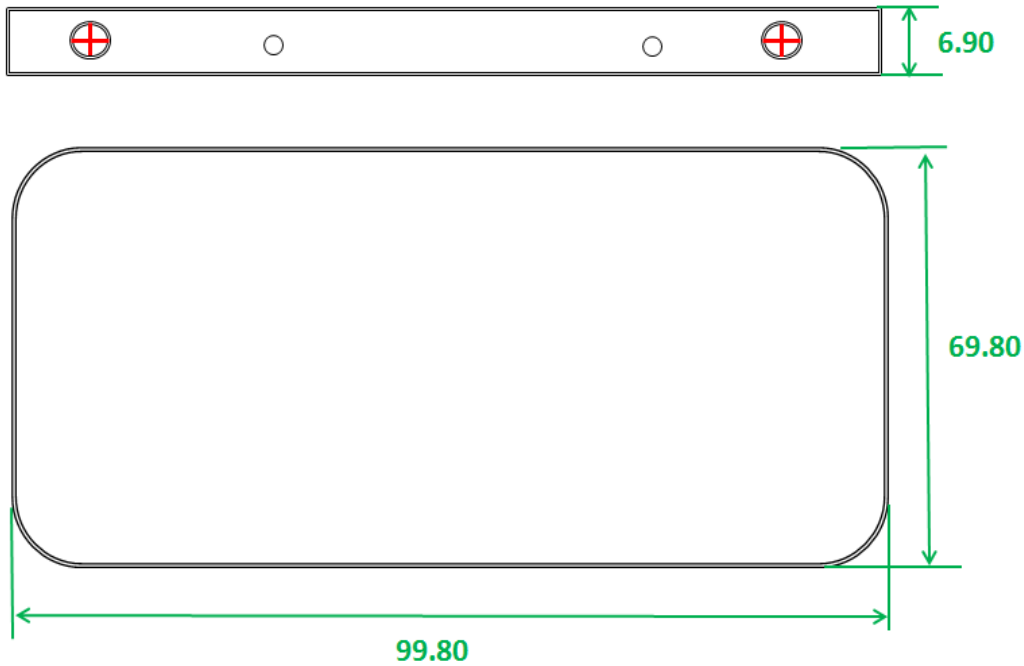
Total Byte Written (TBW)	240GB/256GB	480/512GB	960/1TB	2000GB
	35	70	140	280

Specifications		Page 11 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		

7. Mechanical Characteristics

7.1. Dimension

Length(mm)	Width(mm)	Thickness(mm) *
99.8±0.5	69.8±0.5	6.9 ±0.5



Specifications		Page 12 of 12	This document is the property of goldkey and may not be transferred from the custody of goldkey , except as authorized by goldkey
NFS10 Series	Rev: A		