

TG512GG4M-KSREMI2S

M.2 2280 NVME 4.0 Drive Datasheet

Rev:1.2

Revision History

Version	Date	Description
V1.0	4/12/2025	First release.
V1.1	26/1/2026	Modify Nand flash model.
V1.2	24/2/2026	Add PCBA physical dimension.

Note:

Company will not give any notice for change of products specifications. This product manual is only for reference. Please contact tinyGo for more detail technical parameters and information.

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1. Product introduction

1.1. Summary

TG512GG4M-KSREMI2S is a high performance and high reliability storage device which consists nonvolatile NAND Flash memories and semiconductor components, PCIe Gen4 standard, supports the NVME1.4 protocol. To solve the performance bottleneck in computer system using mechanical hard disk brought by no mechanical parts, make the work reduce the failure rate in vibration and shock and other special circumstances, is a high reliability the storage device.

1.2. Product model list

Model	Controller	Flash	Capacity	Sequential Read	Sequential Write	PCB Color
TG512GG4M-KSREMI2S	Realtek RTS5772DL	MB57L2TFN72A	512GB	5000-5200 MB/S	4500-4800MB/S	Black

1.3. Specifications

1.3.1. Interface protocol: NVME 1.4.

1.3.2. Input voltage: DC 3.3V ($\pm 5\%$).

1.3.3. Operating temperature: 0°C ~ +70°C.

1.3.4. Storage temperature: -20°C ~ +85°C.

1.3.5. Write endurance: Write 100GB /Day, theoretically can use 8 years.

1.3.6. Read life: Unlimited.

1.3.7. MTBF: 1,000,000 hours.

1.3.8. Support Capacity: 512GB.

1.3.9. Firmware: VF120C6B.

1.4. Features

1.4.1. PCIe GEN 4 (32GT/s) x 4 Lane interface.

1.4.2. Support wear leveling.

1.4.3. Support Garbage collection.

1.4.4. Support Over-provisioning.

1.4.5. Support power management and intelligent management technology.

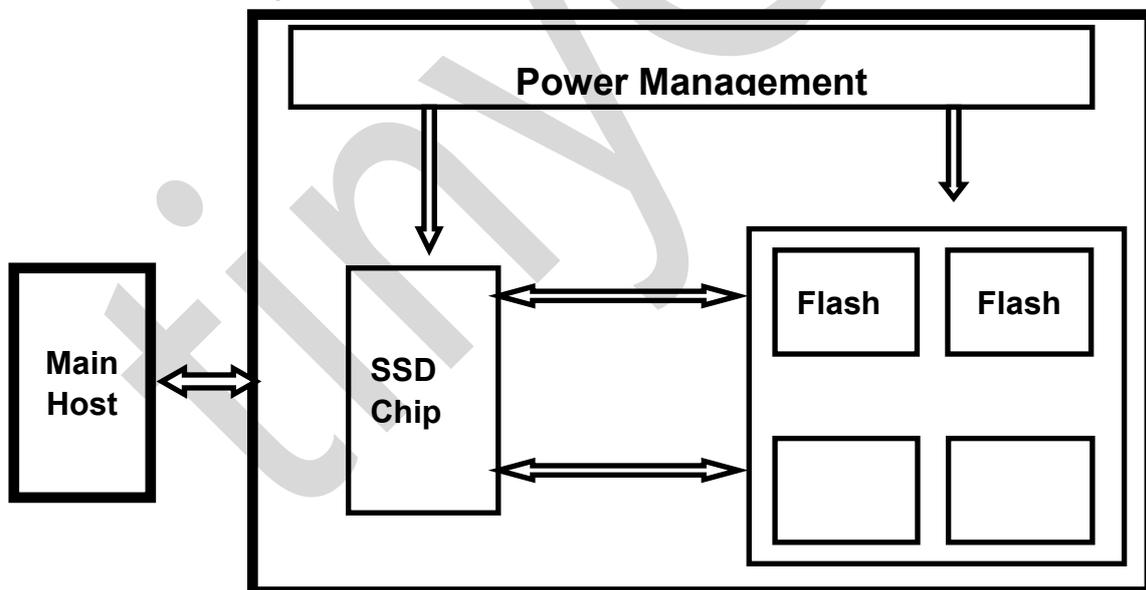
1.4.6. Support Native Command Queuing (NCQ) .

1.4.7. Support TRIM (Disable Delete Notify) command.

1.4.8. Support Error Checking And Correcting(ECC).

1.4.9. Support HMB mode.

2. Block diagram



3. Measurements

Parameter	Value
Length	80 ± 0.2 mm
width	22 ± 0.1 mm
PCB height	0.8 ± 0.1 mm
Max PCBA height	2.37 ± 0.1 mm

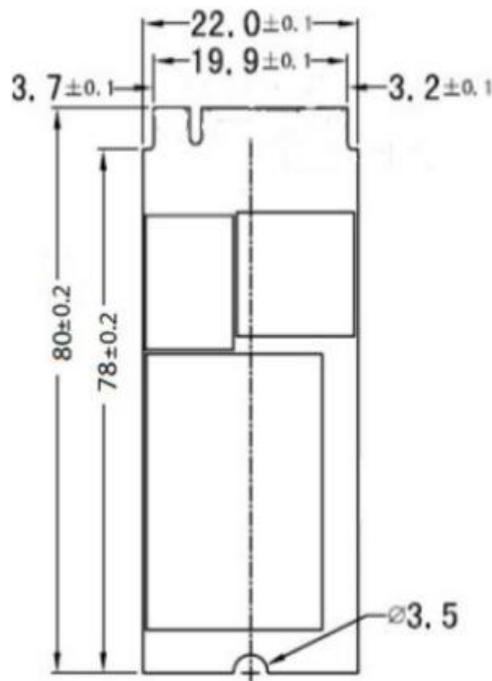


Figure 1

4. Interface description/Pin description (e.g. Figure 2)

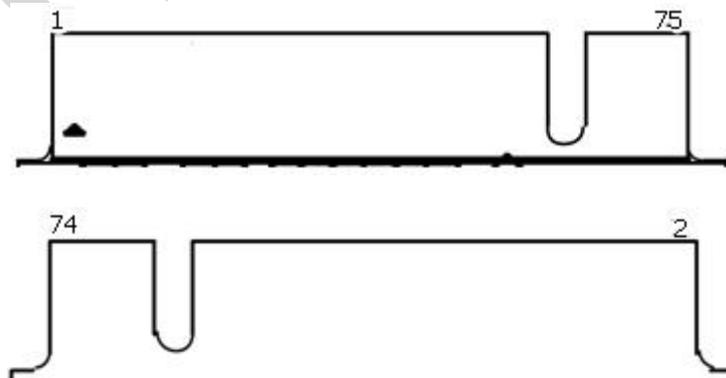


Figure 2

DATASHEET

Solid State Drive

PIN	PIN Definition	PIN	PIN Definition
1	GND	2	DC 3.3V
3	GND	4	DC 3.3V
5	PETn3	6	/
7	PETp3	8	/
9	GND	10	DAS
11	PERn3	12	DC 3.3V
13	PERp3	14	DC 3.3V
15	GND	16	DC 3.3V
17	PETn2	18	DC 3.3V
19	PETp2	20	/
21	GND	22	/
23	PERn2	24	/
25	PERp2	26	/
27	GND	28	/
29	PETn1	30	/
31	PETp1	32	/
33	GND	34	/
35	PERn1	36	/
37	PERp1	38	/
39	GND	40	/
41	PETn0	42	/
43	PETp0	44	/
45	GND	46	/
47	PERn0	48	/
49	PERp0	50	PERSTn
51	GND	52	CLKREQn
53	REFCLKn	54	/
55	REFCKLp	56	UART
57	GND	58	UART
Key M			
67	/	68	/
69	/	70	DC 3.3V
71	GND	72	DC 3.3V
73	GND	74	DC 3.3V
75	GND	76	

5. Performance

5.1. Read & Write Speed Test

Model: TG512GG4M-KSREMI2S

Motherboard: GIGABYTE B660M D2H DDR4

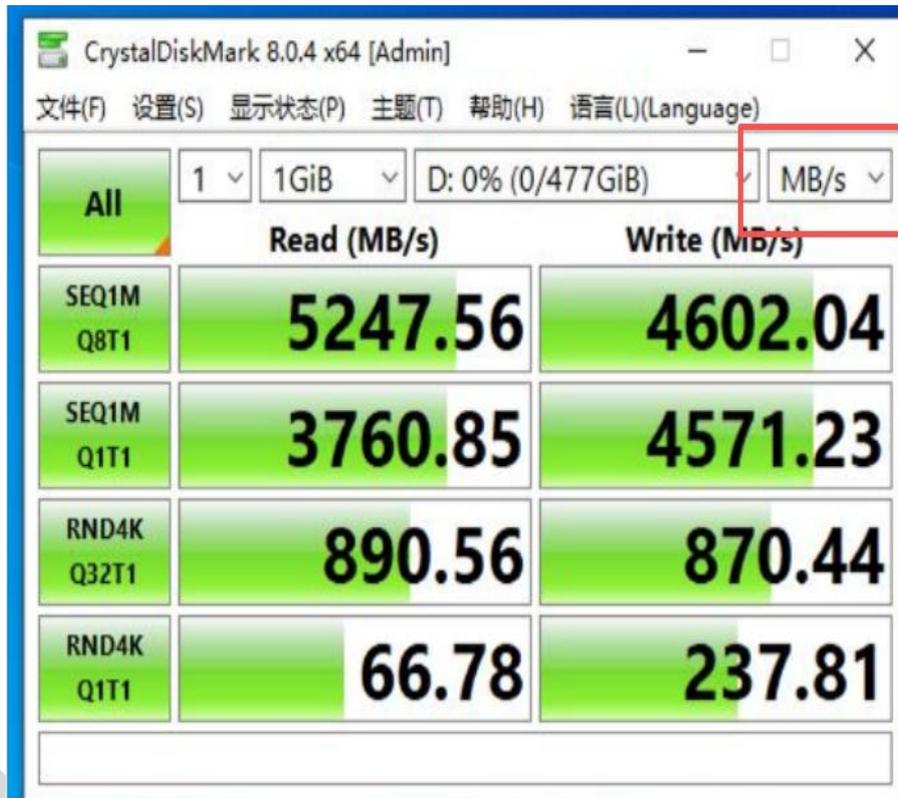
CPU: Intel® Core(TM) i5-12400 2.50 GHz

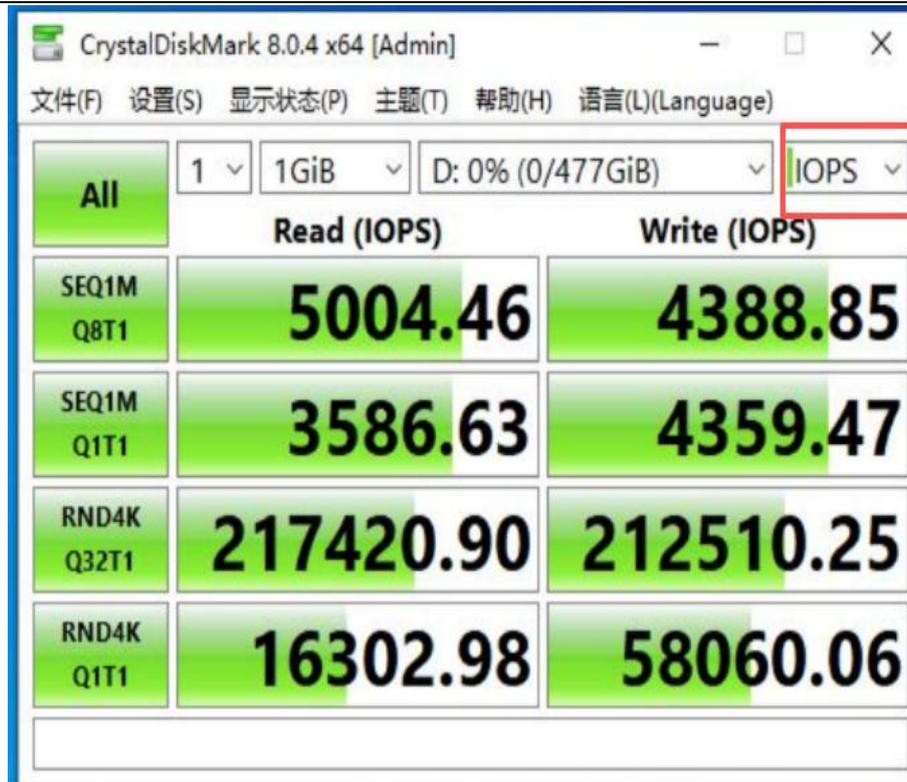
Memory: Kingston 4GB

OS: WIN10 Professional

BIOS Set: AHCI model

Test Software: CrystalDiskMark8.0.4





5.2. Data Throughput Test

Model: TG512GG4M-KSREMI2S

Motherboard: GIGABYTE B660M D2H DDR4

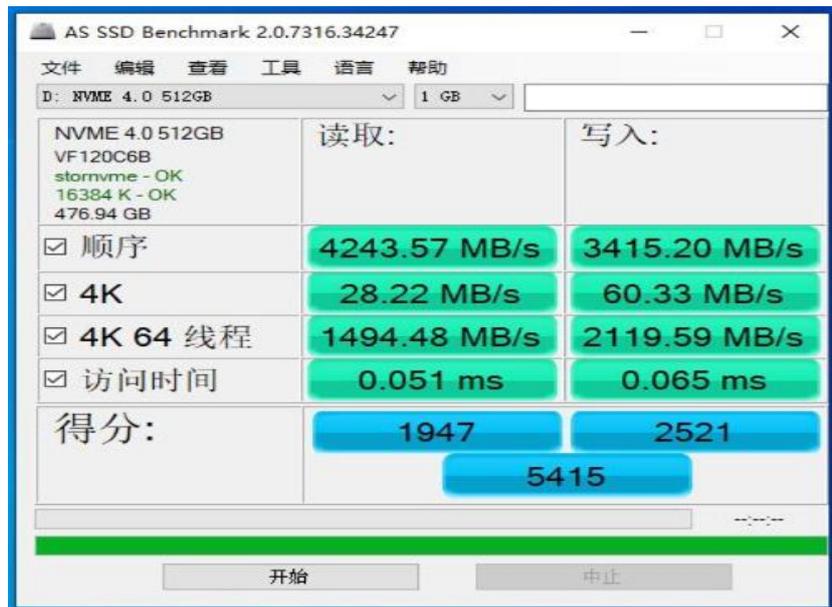
CPU: Intel® Core(TM) i5-12400 2.50 GHz

Memory: Kingston 4GB

OS: WIN10 Professional

BIOS Set: AHCI model

Test Software: AS SSD Benchmark



5.3. Access time

Model: TG512GG4M-KSREMI2S
 Motherboard: GIGABYTE B660M D2H DDR4
 CPU: Intel® Core(TM) i5-12400 2.50 GHz
 Memory: Kingston 4GB
 OS: WIN10 Professional
 BIOS Set: AHCI model

Test Software: HD Tune Pro 3.50

Random Access time: 0.01ms

6. Power consumption

Input voltage: DC 3.3V (±5%)

Model test: TG512GG4M-KSREMI2S

Test Project		Power Consumption	Unit
Idle		0.67	W
4K	Sequential Read	1.58	W
	Sequential Write	1.61	W
	Random Read	1.63	W
	Random Write	1.69	W
512K	Sequential Read	1.43	W
	Sequential Write	1.38	W
	Random Read	1.49	W
	Random Write	1.65	W

7. Label Information

