

SOSAM M.2 NVMe 2280

PCIe 3.0 256GB SSD

Datasheet Ver1.0

I. Introduction

1 Overview

SOSAM PCIE SSD is a high performance and high reliability storage device based on NAND Flash technology that designed to solve the bottleneck of computing system by traditional hard disk drives. Our PCIE SSD can be a good storage device for NB and Tabletop PC.

SOSAM PCIE SSD purely consists of semiconductor devices and NAND flash memories, which give rugged features against shock and vibration, used in extreme environment such as industrial PC to increase MTBF. Furthermore, Our PCIE SSD has highly advanced flash memory management algorithm to guarantee.

2 Part Type Introduction

This chapter is about the specifications of the M.2 NVMe 2280 Solid State Drive with PCIe 3.0 interface.

Part Number	Form factor	Flash	Interface
KMSP3M8256AH1S4C	M.2 2280	3D TLC	M.2 NVMe

Table 1 Capacity Specifications

Capacity	Available Capacity	CDM R / W(MB/s)	CDM Random R / W (IOPS)
256GB	238.47GB	3200/2700	466567/390702

Outline

Based spec	Interface	M.2 NVMe
	Dimension	80*22*2.15 mm
	Weight	5.6g
	Capacity	256GB
	Controller	MAP1202C
	Flash type	3D TLC NAND Flash
Read/Write Performance	ASSD Sequential Read	Up to 2500MB/s
	ASSD Sequential Write	Up to 2400MB/s
	ATTO Sequential Read	Up to 3000MB/s
	ATTO Sequential Write	Up to 2500MB/s
Power Consumption	Power Supply	3.3V+5%
	Standby	11.5mW
	Maximum Ripple	70 mV(peak to peak)
	4KB Random Write	2.5W
Reliability	TBW(endurance) : 140TBW	
	Read endurance: unlimited	
	MTBF: > 1,000,000 hours	
	Data retention: >20years @ 25℃	
	Data destroy do not support	
	Sudden power-off recovery support	
	S.M.A.R.T,NCQ,Trim and dynamic power management support	
	Static and dynamic wear-leveling	
	Bad block management algorithm	
	ECC: LDPC ECC	
Environment	Storage temperature: -40~85 ℃	
	Operation temperature: 0~75℃	
	Humidity: 5%~95%	
	Vibration	15G (10 to 2000Hz)
Warranty	3 years	

Table 2 outline of the driver

II. Block Diagram

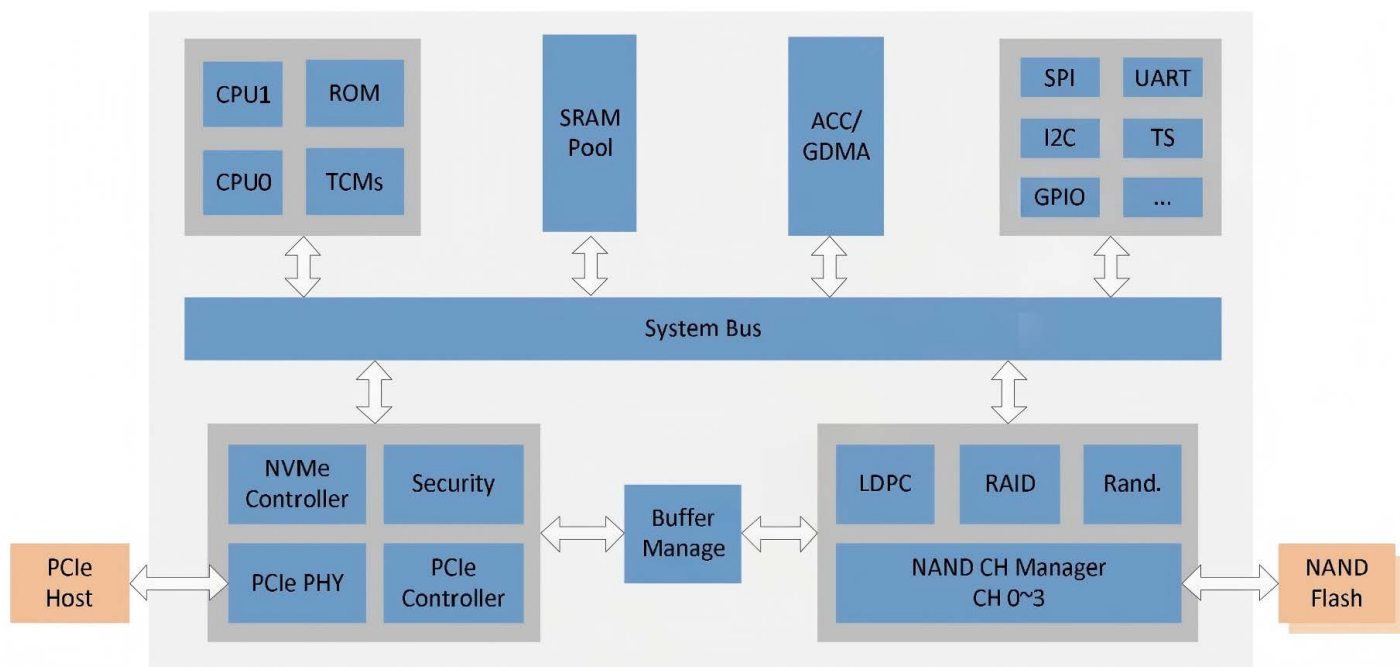


Figure 1 MAP1202C Block Diagram

III. Product Specifications

3.1 Physical Dimensions

Parameter	Value
Length	80 ± 0.15 mm
Width	22 ± 0.15 mm
Height	2.15 ± 0.1 mm

Table 3 Physical dimensions of the driver

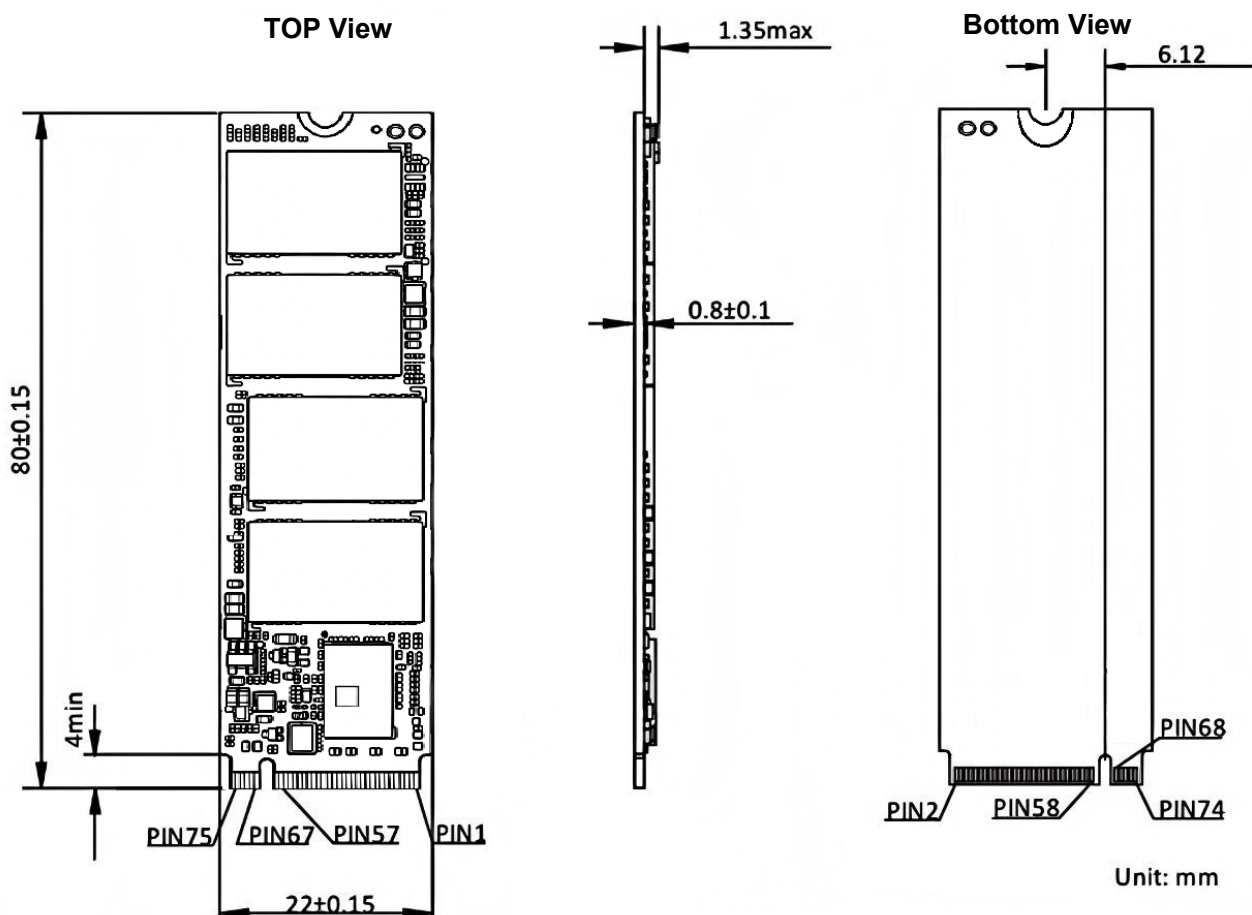


Figure 2 Physical dimensions

III. Product Specifications

3.2 Pin definitions

TOP Side			Bottom Side		
Pin#	Function	Definition	Pin#	Function	Definition
P1	GND	Ground	P2	+3.3V	3.3V Source
P3	GND	Ground	P4	+3.3V	3.3V Source
P5	PETn3	Host Receiver Differential Signal Pair ,Lane 3	P6	Reserved	No Connect
P7	PETp3	Host Receiver Differential Signal Pair ,Lane 3	P8	Reserved	No Connect
P9	GND	Ground	P10	DAS	Device Activity Signal
P11	PERn3	Host Transmitter Differential Signal Pair,Lane 3	P12	+3.3V	3.3V Source
P13	PERp3	Host Transmitter Differential Signal Pair,Lane 3	P14	+3.3V	3.3V Source
P15	GND	Ground	P16	+3.3V	3.3V Source
P17	PETn2	Host Receiver Differential Signal Pair ,Lane 2	P18	+3.3V	3.3V Source
P19	PETp2	Host Receiver Differential Signal Pair ,Lane 2	P20	Reserved	No Connect
P21	GND	Ground	P22	Reserved	No Connect
P23	PERn2	Host Transmitter Differential Signal Pair,Lane 2	P24	Reserved	No Connect
P25	PERp2	Host Transmitter Differential Signal Pair,Lane 2	P26	Reserved	No Connect
P27	GND	Ground	P28	DNU	Do not use
P29	PETn1	Host Receiver Differential Signal Pair ,Lane 1	P30	Reserved	No Connect

TOP Side			Bottom Side		
Pin#	Function	Definition	Pin#	Function	Definition
P31	PETp1	Host Receiver Differential Signal Pair ,Lane 1	P32	Reserved	No Connect
P33	GND	Ground	P34	Reserved	No Connect
P35	PERn1	Host Transmitter Differential Signal Pair,Lane 1	P36	Reserved	No Connect
P37	PERp1	Host Transmitter Differential Signal Pair,Lane 1	P38	DEVSLP	No Connect
P39	GND	Ground	P40	SMB_CLK(0/1.8V)	SMBus Clock
P41	PETn0	Host Receiver Differential Signal Pair ,Lane 0 (This is an output of the SSD)	P42	SMB_DATA(0/1.8V)	SMBus Dab
P43	PETp0	Host Receiver Differential Signal Pair ,Lane 0 (This is an output of the SSD)	P44	Reserved	No Connect
P45	GND	Ground	P46	Reserved	No Connect
P47	PERn0	Host Transmitter Differential Signal Pair,Lane 0 (This is an input of the SSD)	P48	Reserved	No Connect
P49	PERp0	Host Transmitter Differential Signal Pair,Lane 0 (This is an input of the SSD)	P50	PERST#(0/3.3V)	PE-Reset is a functional reset to the card as defined by the PCIe Mini CEM specification.
P51	GND	Ground	P52	CLKREQ#(0/3.3V)	Clock Request is a reference clock request signal as defined by the PCIe Mini CEM specification
P53	REFCLKn	Reference clock	P54	PEWAKE#(0/3.3V)	No Connect
P55	REFCLKp	Reference clock	P56	Vendor-specific	Vendor Specific / Manufacturing Pin
P57	GND	Ground	P58	Vendor-specific	Vendor Specific / Manufacturing Pin
Key M			Key M		
P67	Reserved	No Connect	P68	SUSCLK(0/3.3V)	No Connect
P69	PEDET	No Connect	P70	+3.3V	3.3V Source
P71	GND	Ground	P72	+3.3V	3.3V Source
P73	GND	Ground	P74	+3.3V	3.3V Source
P75	GND	Ground			

4.2 Interface Specification

4.2.1 Interface Mode

- Supports 4 flash channels with 4 chip enable (CE) pins per channel
- Supports ONFI 4.0/3.0 and Toggle 3.0/2.0 interface, frequency up to 667 MT/s
- Supports Asynchronous SDR, Synchronous DDR and Toggle DDR NAND
- Supports Flash I/O power 1.8V/1.2V operation
- Multi-plane operation
- Programmable driving strength fits different types of NAND configurations

V. Reliability

- Performance-optimized LDPC engine provides maximum error correction capability for 2D MLC/TLC as well as 3D MLC/TLC
- End-to-end data protection with CRC parity (512Byte + 2Byte)
- SECDED² SRAM ECC error handling and prevention on major memory buffers
- RAID engine provides multi-page protection for NAND flash data

- Data Integrity and Security³
 - Built-in AES-128/256 Encryption
 - TCG Opal 2.0 compliant
 - Built-in hardware SHA256 and True Random Number Generator (TRNG)
- Power Management
 - Supports different power states (PS0, PS1, PS2, PS3, PS4)
 - PS4 power consumption under 2mW
 - Thermal throttling is supported with configurable temperatures
- Peripherals
 - SPI bus interface to allow controller to boot up from external ROM
 - UART interface for debugging
 - Two temperature sensors at different locations on chip
- Package
 - TFBGA 288-ball/315-ball Package
 - Die Form
 - Lead-free and RoHS compliant

VI. Ordering Information

Capacity	PN
256GB	KMSP3M8256AH1S4C

Attachment

Test platform :

System: Window11 Professional

Processor: Intel i7-14700K CPU@3.4GHz

Mainboard: Asus TUFGAMING B760M-PLUS D4

Memory bank: 16GB DDR4

Hard disk: VME SSD (1024GB)

Test SSD: Controller:MAP1202C,NVMe 256GB

For More Information

For Technical Support:

If additional support is needed, please visit the SOSAM Web site at www.kumi2020.com

for the following topics:

- **Warranty Services:** Includes the warranty service policy and the RMA requestforms.
- **Technical Information:** Includes product data sheets and various USB whitepapers.
- **Tools Section:** Includes frequently asked questions (FAQs).

For More Information or Further Technical Support Please Contact:

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