ShenZhen Renice Technology Co., Ltd

X10B M.2 NVMe SSD

Datasheet

V.1.3

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1. Introduction

Product Overview

Renice X10B SSD designed as the standard M.2 form factor with PCIe interface and industrial 3D-TLC NAND Flash memory technology. Integrating high speed PCIe Gen 4x4 and NVMe 1.3 compliant, it provides low latency and excellent read/write performance. Equipped with advanced ECC ability optimized for 3D TLC NAND, the X10B NVMe M.2 delivers capacities up to 8TB.

1.1 Feature

- **Interface:** M.2 PCIe Gen4x4 (Compatible with PCIe Gen4x2/ PCIe Gen3x4)
- **NAND Flash**: 3D TLC
- **Performance:**
  - Read: up to 3,200MB/s
  - Write: up to 3,000MB/s
- **Capacities:** M.2 2280: 960GB~7680GB
- M.2 2242: 240GB~1920GB
- M.2 2230: 240GB~960GB

- **Temperature Range:**
  - Operating Temperature: -40°C to +85°C
  - Storage Temperature: -50°C to +90°C
- **Operating Voltage:** 3.3V±5%
- **Power Consumption:**
  - Active mode (Typ.) <7W
  - Idle mode < 1W
- **High Reliability:**
  - Mean Time Between Failure (MTBF) > 2,000,000 hours
- **Intelligent features:**
  - End-to-End data protection
  - Dynamics and Static Wear Leveling
  - Support SMART and TRIM
  - Advanced bit error detection and correction optimized for 3D NAND
  - Support S.M.A.R.T
  - Temperature adaptive function
  - AES 256-bit encryption (on request)
  - Secure Erase for quick delete (on request)

2. Functional Block Diagram

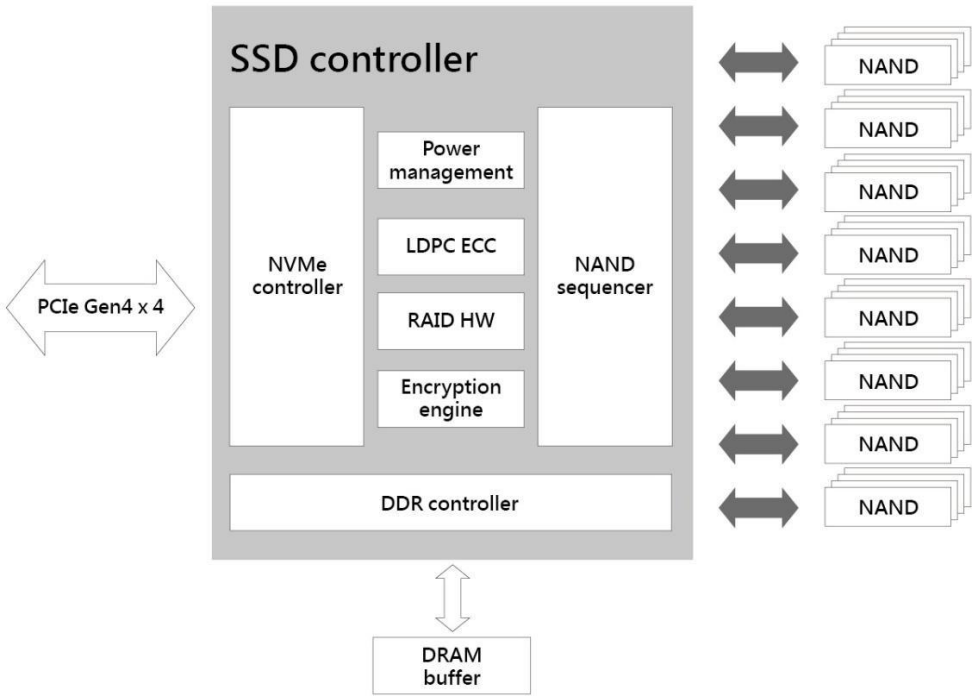


Figure 1: X10B NVMe M.2 2280 Functional Block Diagram

3. Product Specifications

3.1 Physical Specifications

Table 1: M.2 2280 Physical Specifications

PHYSICAL DIMENSIONS	VALUE	UNIT
Length	80	mm
Width	22	mm
Thickness	3.5	mm

Figure : M.2 2280 SSD mechanical dimensions

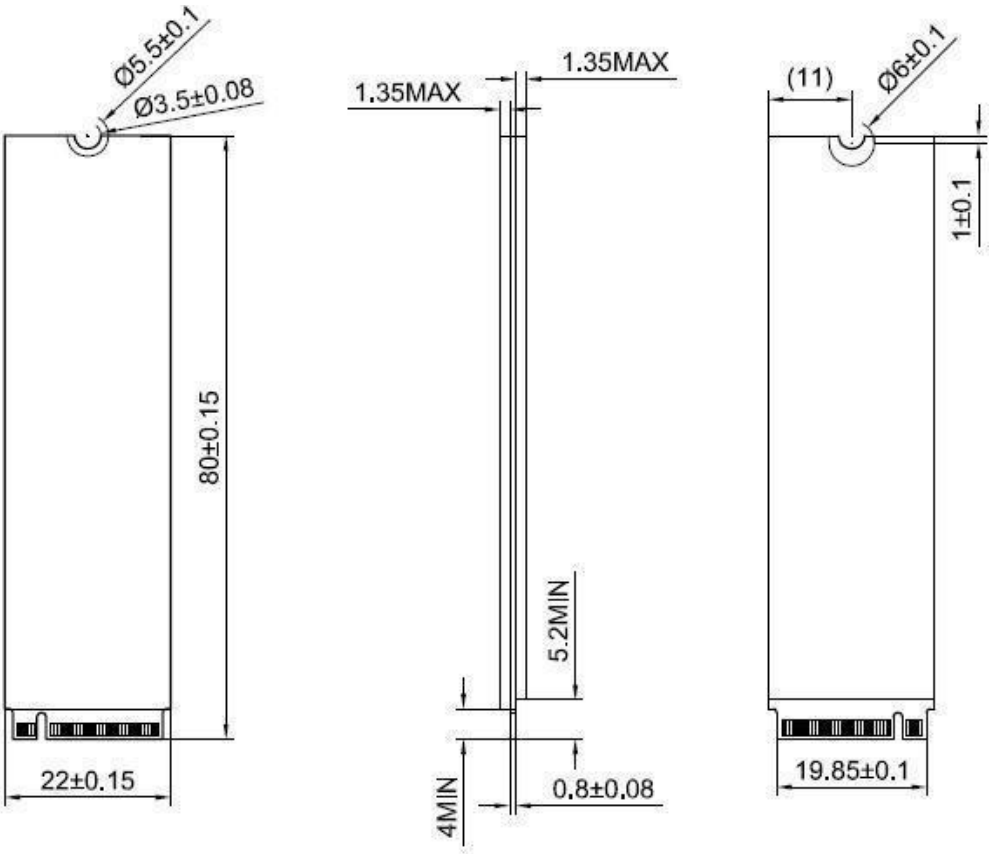


Table 2: M.2 2242 Physical Specifications

PHYSICAL DIMENSIONS	VALUE	UNIT
Length	42	mm
Width	22	mm
Thickness	3.5	mm

Figure : M.2 2242 SSD mechanical dimensions

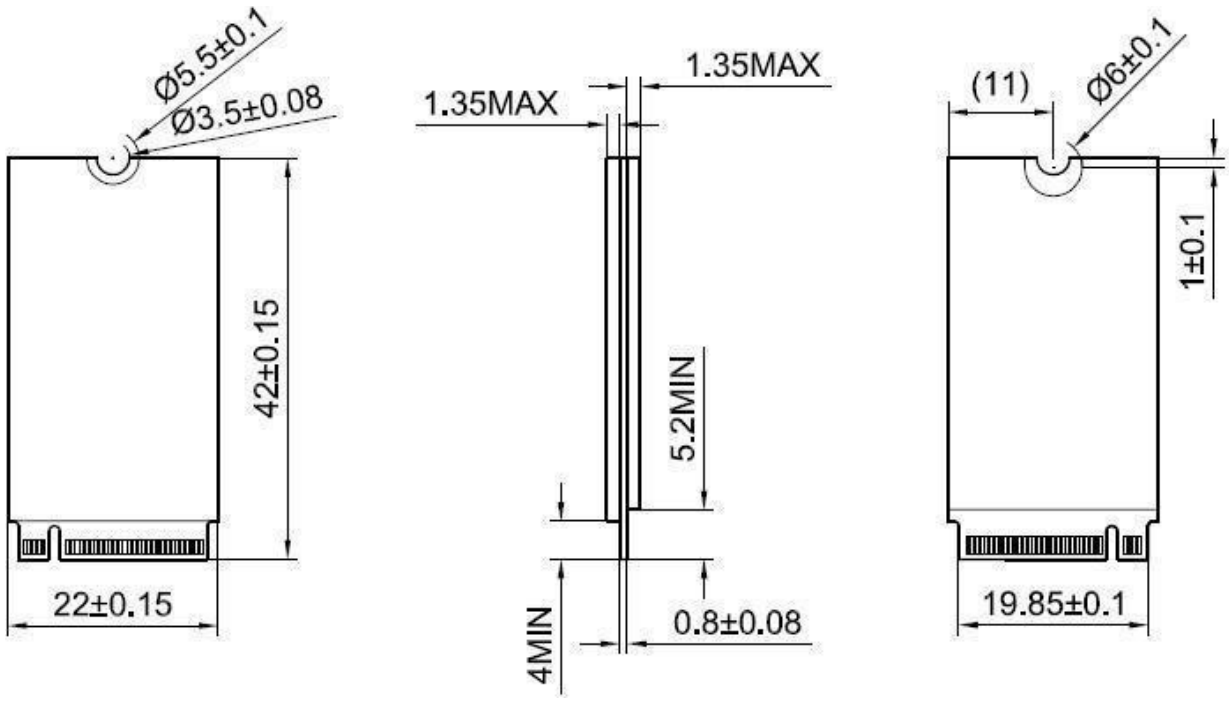
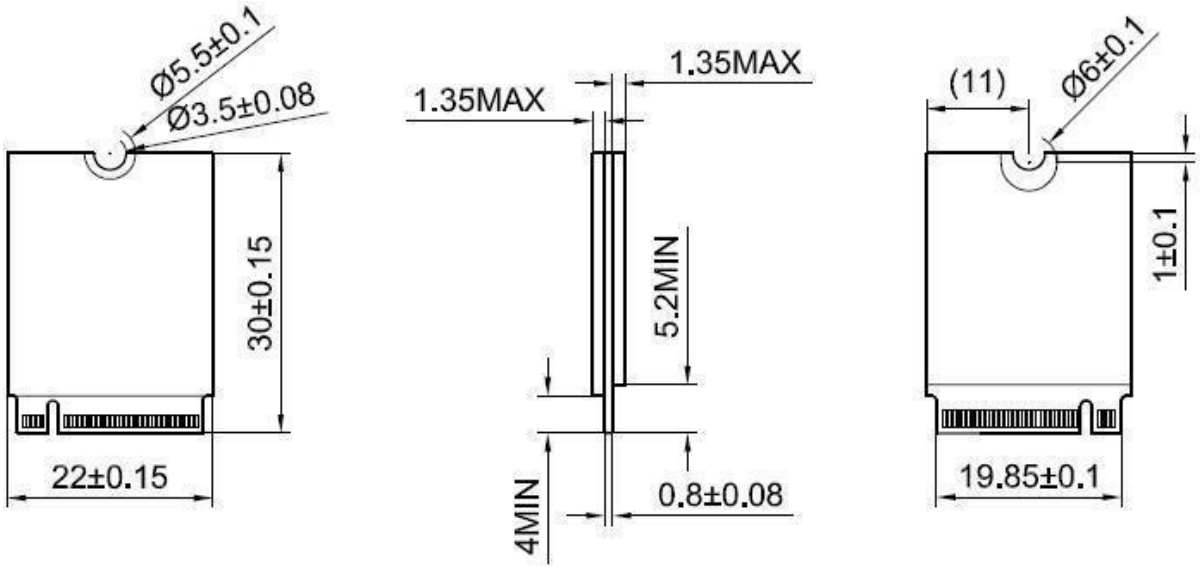


Table 2: M.2 2230 Physical Specifications

PHYSICAL DIMENSIONS	VALUE	UNIT
Length	30	mm
Width	22	mm
Thickness	3.5	mm

Figure : M.2 2242 SSD mechanical dimensions



3.2 Performance

3.2.1 Drive Performance

Table- PCIe M.2 SSD performance

Capacity	GB	240GB	480GB	960GB	1920GB	3840GB	7680GB
Sequential Read	MB/S	1600	3200	3200	3200	2800	2200
Sequential Write	MB/S	400	800	1800	3000	2800	2200
Sequential Read(4KB)	IOPS	60K	120K	240K	400K	400K	400K
Sequential Write(4KB)	IOPS	15K	15K	30K	48K	50K	50K
DWPD	0.6 @ JESD218 2 @ Sequential Write						
Form Factor		M.2 2230&M.2 2242		M.2 2280			

3.2.2 Environmental Specification

Operating temperature	-40 +85 °C
Storage temperature	-50 +95 °C
Power supply voltage range	U.2 / E1.S: 12.0 V ±10% M.2: 3.3 V ± 5%
Humidity (non-condensing)	5~95% (Operating)
Vibration	10 G (peak, 10–2000 Hz)
Shock (operating)	50 G, (11 ms duration, half sine wave)
Shock (non-operating)	1500 G, (0.5 ms duration, half sine wave)

3.2.3 Reliability

Products in the RENICE M.2 series meet or exceed SSD endurance and data retention requirements as specified in the JESD218 standard. Reliability specifications are listed in the following table.

PARAMETER	VALUE
Mean Time Between Failures (MTBF) Mean Time Between Failures is a measure of how reliable a hardware product or a component is. The value describes the expected time between two failures.	2,000,000 hours
Uncorrectable Bit Error Rate (UBER) A metric for the rate of occurrence of data errors, equal to the number of data errors per bits read.	<1 sector per 10^{17}
Endurance Rating (TBW) TBW stands for total bytes written whose access pattern is compliant with JESD218 standard.	480GB : 300TB 960GB : 600TB 1920GB :1200TB 3840GB : 2400TB 7680GB : 4800TB

3.3 Pin Assignment

Table- PCIe M.2 connector signal name, power pin assignment and description

Pin Name	Signal Name	Description
1	GND	Ground
2	3.3V	3.3V Power
3	GND	Ground
4	3.3V	3.3V Power
5	PCIe 3 TXn	PCIe Lane 3 TX-
6	Reserved	Reserved
7	PCIe 3 TXp	PCIe Lane 3 TX+
8	Reserved	Reserved
9	GND	Ground
10	DAS	Device Activity Signal
11	PCIe 3 RXn	PCIe Lane 3 RX-
12	3.3V	3.3V Power
13	PCIe 3 RXp	PCIe Lane 3 RX+
14	3.3V	3.3V Power
15	GND	Ground
16	3.3V	3.3V Power
17	PCIe 2 TXn	PCIe Lane 2 TX-
18	3.3V	3.3V Power
19	PCIe 2 TXp	PCIe Lane 2 TX+
20	NC	No Connection
21	GND	Ground
22	UART RX	Manufacturing Use
23	PCIe 2 RXn	PCIe Lane 2 RX-
24	NC	No Connection
25	PCIe 2 RXp	PCIe Lane 2 RX+
26	Reserved	Reserved
27	GND	Ground
28	Reserved	Reserved
29	PCIe 1 TXn	PCIe Lane 1 TX-
30	Reserved	Reserved
31	PCIe 1 TXp	PCIe Lane 1 TX+
32	UART TX	Manufacturing Use
33	GND	Ground
34	Reserved	Reserved
35	PCIe 1 RXn	PCIe Lane 1 RX-
36	Reserved	Reserved
37	PCIe 1 RXp	PCIe Lane 1 RX+
38	Reserved	Reserved
39	GND	Ground
40	SCL	SMBus_SCL
41	PCIe 0 TXn	PCIe Lane 0 TX-
42	SDA	SMBus_SDA
43	PCIe 0 TXp	PCIe Lane 0 TX+
44	NC	No Connection
45	GND	Ground
46	NC	No Connection
47	PCIe 0 RXn	PCIe Lane 0 RX-

48	NC	No Connection
49	PCIe 0 RXp	PCIe Lane 0 RX+
50	PERST	PCIe Reset
51	GND	Ground
52	CLKREQ	PCIe Clock Request
53	Ref CLKN	PCIe Reference clk-
54	NC	No Connection
55	Ref CLKP	PCIe Reference clk+
56	NC	No Connection
57	GND	Ground
58	NC	No Connection
59	PCIe Module Key	
60	PCIe Module Key	
61	PCIe Module Key	
62	PCIe Module Key	
63	PCIe Module Key	
64	PCIe Module Key	
65	PCIe Module Key	
66	PCIe Module Key	
67	NC	No Connection
68	NC	No Connection
69	NC	No Connection
70	3.3V	3.3V Power
71	GND	Ground
72	3.3V	3.3V Power
73	GND	Ground
74	3.3V	3.3V Power
75	GND	Ground

4. Ordering Information

4.1 Valid Combinations

Part Number	Description
RIT240- EX10B-30	240GB TLC X10B M.2 2230 PCIe SSD Industrial Temp. -40°C to +85°C
RIT480- EX10B-30	480GB TLC X10B M.2 2230 PCIe SSD, Industrial Temp. -40°C to +85°C
RIT960- EX10B-30	960GB TLC X10B M.2 2230 PCIe SSD, Industrial Temp. -40°C to +85°C
RIT240- EX10B-42	240GB TLC X10B M.2 2242 PCIe SSD Industrial Temp. -40°C to +85°C
RIT480- EX10B-42	480GB TLC X10B M.2 2242 PCIe SSD Industrial Temp. -40°C to +85°C
RIT960- EX10B-42	960GB TLC X10B M.2 2242 PCIe SSD Industrial Temp. -40°C to +85°C
RIT1920- EX10B-42	1920GB TLC X10B M.2 2242 PCIe SSD Industrial Temp. -40°C to +85°C
RIT960- EX10B-80	960GB TLC X10B M.2 2280 PCIe SSD Industrial Temp. -40°C to +85°C
RIT1920- EX10B-80	1920GB TLC X10B M.2 2280 PCIe SSD Industrial Temp. -40°C to +85°C
RIT3840- EX10B-80	3840GB TLC X10B M.2 2280 PCIe SSD Industrial Temp. -40°C to +85°C
RIT7680- EX10B-80	7680GB TLC X10B M.2 2280 PCIe SSD Industrial Temp. -40°C to +85°C

4.2 Part Number Naming Rule