

# Apacer

The Most **Reliable**  
Storage For Industries

SH24D-M280



## SH24D-M280

### Overview

#### Tailor-made Rugged Solutions for Rugged Applications

Apacer SH24D is a series of rugged, defense-grade solid-state drives and modules specifically designed for rugged applications to protect highly sensitive data. Utilizing 3D NAND for higher capacity up to 640GB and providing more power efficiency than 2D NAND, SH24D is implemented with LDPC (Low Density Parity Check) ECC engine and 3D NAND SLC-liteX technology to extend SSD endurance with higher number of P/E cycles up to 100,000 times and increase data reliability.

Incorporating hardware-based AES 256-bit encryption and Smart Read Refresh™, Apacer SH24D not only offers high performance, reliability and data security, but also extends the expected operational lifetime multiplied by Global Wear Leveling. Data integrity and stability of data transmission can be further guaranteed by DataDefender™, ensuring that products are protected from power disruptions and can function smoothly even in harsh environments. Moreover, the level of protection against data loss increases with DataRAID™ to provide fault tolerance and improve data availability in the event of a drive failure.

#### Multiple Protection Technologies that Safeguard Sensitive Data

In addition to the aforementioned built-in implementations, Apacer SH24D provides a wide range of optional solutions and cutting-edge technologies featuring multiple approaches to protection, including TCG Opal 2.0/SED, Instant Keychange, MIL Erase, Digital Destruction and Write Protect. These security features can be triggered either via software or hardware methods, except TCG Opal 2.0 which can only be activated via software commands. With these technologies available for employment, mission-critical data is safeguarded against unauthorized access at all times and no data will be compromised as Apacer SH24D adheres to MIL compliance standards.



## Withstood 8 Tough US DoD Military Standard Tests

Apacer SH24D-M280 is a combination of the latest firmware, software and hardware technologies that guarantee that rugged solutions are perfectly customized and engineered for customers' requirements. With protective technologies and robust design, Apacer SH24D provides the highest standard of reliability – whether in terms of data security, data integrity and data protection. The US Department of Defense has a complex series of MIL standards. Apacer rugged series has passed their tests that cover:

1. **Shock**
2. **Vibration:** Reaches the highest requirements of MIL-STD 810G 514.6 for Fixed Wing Jet Aircraft.
3. **Humidity**
4. **High/Low Temp.**
5. **Thermal Shock:** Exposes components to high and low temperatures that cycle rapidly.
6. **Altitude:** Simulates the effects of high pressure in an aircraft flying at 80,000 feet.
7. **Salt Fog:** Uses a five percent salt spray to simulate accelerated corrosion in a relatively slow airflow environment.
8. **Radiation:** Simulates the full-spectrum interference environment that heat and sunlight can create.



### Shock

MIL-STD-202G MIL-STD-883K

### Thermal Shock

MIL-STD-810G Method 503.5  
Procedure I-C

### Vibration

MIL-STD-810G

### Altitude

MIL-STD-810G  
Method 500.5

### Humidity

MIL-STD-810G  
Method 507.5

### Salt fog

MIL-STD-810G  
Method 509.5

### High/ Low Temp.

MIL-STD-810G Method 501.5  
MIL-STD-810G Method 502.5

### Radiation Test

MIL-STD-810G Method 505.5  
procedur 2

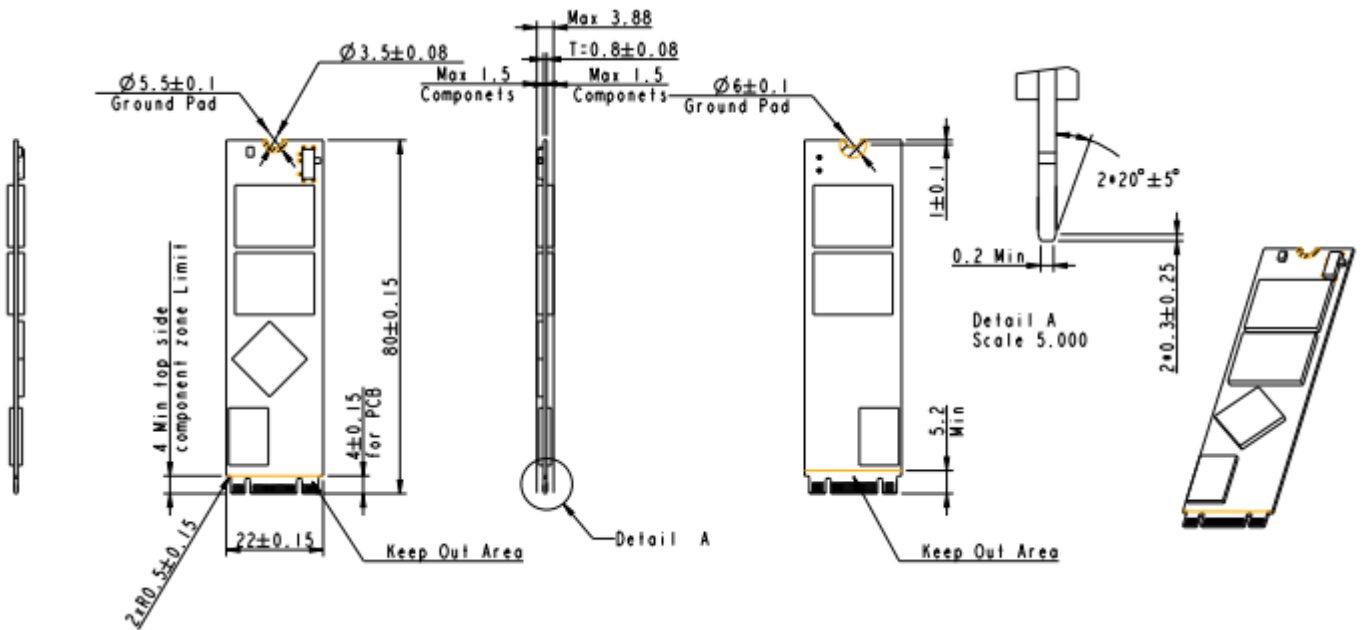
## Feature

- SH24D rugged series
- 3D NAND SLC-liteX Technology
- Supports TCG Opal 2.0 / AES 256-bit encryption
- Low-Density Parity-Check (LDPC) Code
- Global Wear Leveling
- SMART Read Refresh™
- S.M.A.R.T.
- ATA Secure Erase
- TRIM
- End-to-End Data Protection
- DataDefender™

## Specifications

<b>Model</b>	SH24D-M280
<b>Interface</b>	SATA 3.2 (6Gb/s)
<b>Connector</b>	M.2 B & M key
<b>Form Factor</b>	M.2 2280-D5-B-M
<b>NAND Flash Type</b>	3D TLC
<b>Capacity</b>	160GB~640GB
<b>External DRAM</b>	Yes
<b>Sustained Read Performance (MB/sec)</b>	Up to 560
<b>Sustained Write Performance (MB/sec)</b>	Up to 490
<b>ECC Engine</b>	Low-Density Parity-Check (LDPC) Code
<b>IOPS (4K Random Write)</b>	85K
<b>Standard Operating Temperature ( °C )</b>	0 ~ + 70
<b>Wide Temperature ( °C )</b>	-40 ~ + 85
<b>Storage Temperature ( °C )</b>	-55 ~ + 100
<b>Shock</b>	MIL-STD-202G, Condition A MIL-STD-883K, Condition B
<b>Vibration</b>	MIL-STD-810G, Method 514.6, Procedure I, Category 24 MIL-STD-810G, Method 514.6, Procedure I, Category 7
<b>Operating Voltage</b>	3.3 V ± 5%
<b>Power Consumption</b>	Active mode: 625 mA / Idle mode: 85 mA
<b>Dimension (L x W x H )</b>	80.00 x 22.00 x 3.88 (mm)
<b>MTBF (hours)</b>	>5,000,000

## Mechanical Specification



Unit: mm

For more information,  
contact your Apacer representative

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