

# Apacer

The Most **Reliable**  
Storage For Industries

**SM23D-M280**



## SM23D-M280

### Overview

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

Apacer SM23D is a series of rugged, defense-grade solid-state drives and modules specifically designed for rugged applications to protect highly sensitive data.

Incorporating hardware-based AES 256-bit encryption and Smart Read Refresh™, Apacer SM23D-M280 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 Power Failure Management, ensuring that products are protected from power disruptions and can function smoothly even in harsh environments thanks to extensive testing.



#### Multiple Protection Technologies that Safeguard Sensitive Data

In addition to the aforementioned built-in implementations, Apacer SM23D-M280 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 SM23D-M280 adheres to MIL compliance standards.

## Withstood 8 Tough US DoD Military Standard Tests

Apacer SM23D-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. The US Department of Defense has a complex series of MIL standards. The SM23D 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. **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

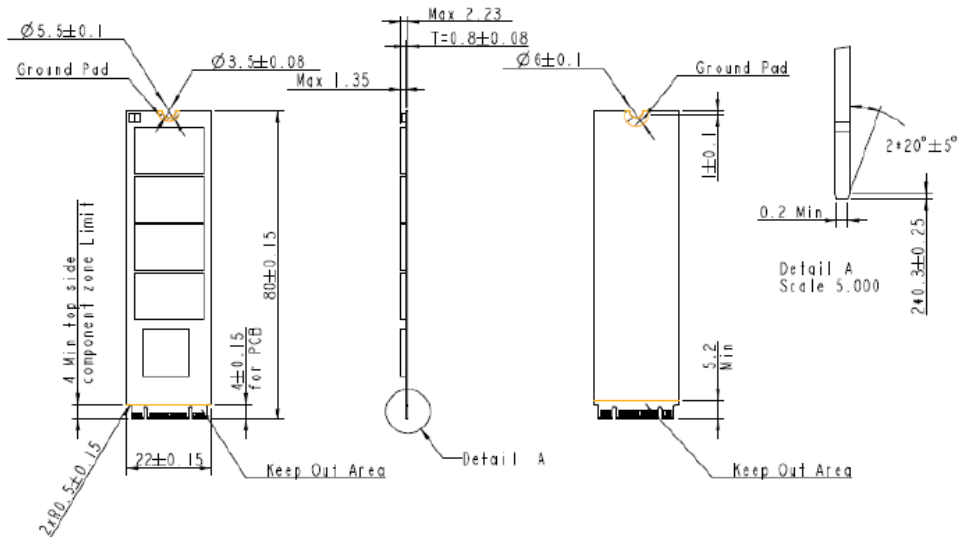
- SM23D rugged series
- Supports TCG Opal 2.0 / AES 256-bit encryption
- Global Wear Leveling
- Power Failure Management
- SMART Read Refresh™
- S.M.A.R.T.
- ATA Secure Erase
- TRIM

## Specifications

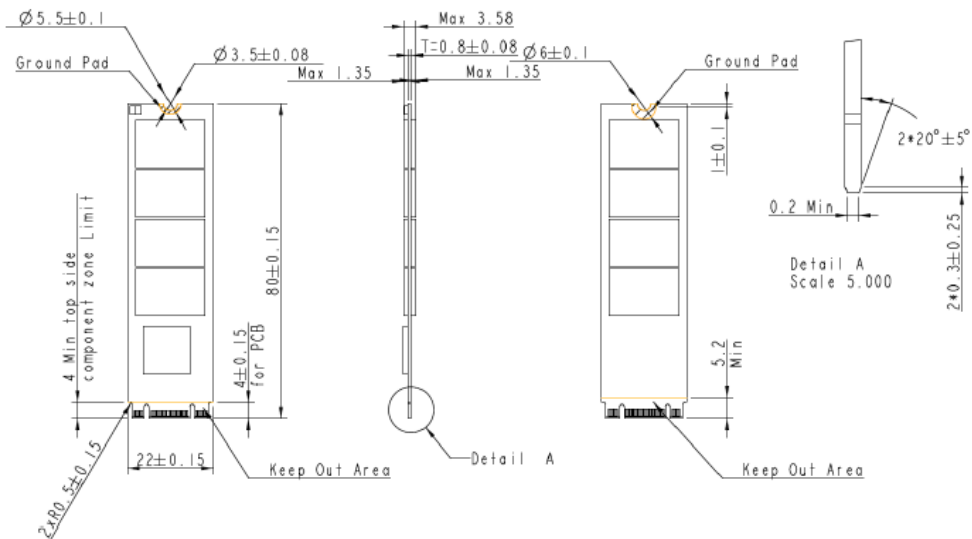
<b>Model</b>	SM23D-M280
<b>Interface</b>	SATA 3.2 (6Gb/s)
<b>Connector</b>	M.2 B & M key
<b>Form Factor</b>	M.2 2280-D5-B-M
<b>NAND Flash Type</b>	MLC
<b>Capacity</b>	Single side: 32, 64, 128, 256 GB Double side: 512GB Double side without TCG Opal 2.0 support: 1 TB
<b>External DRAM</b>	No
<b>Sustained Read Performance (MB/sec)</b>	Up to 560
<b>Sustained Write Performance (MB/sec)</b>	Up to 500
<b>ECC Engine</b>	Low-Density Parity-Check (LDPC) Code
<b>IOPS (4K Random Write)</b>	63K
<b>Standard Operating Temperature ( °C )</b>	0 ~ + 70
<b>Wide Temperature ( °C )</b>	-40 ~ + 85
<b>Storage Temperature ( °C )</b>	-55 ~ + 100
<b>Thermal sensor</b>	Yes
<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>	3.3V ± 5%
<b>Power Consumption</b>	Active mode: 725 mA / Idle mode: 120 mA
<b>Dimension (L x W x H )</b>	Single side: 80.00 x 22.00 x 2.23 (mm) Double side: 80.00 x 22.00 x 3.58 (mm)
<b>MTBF (hours)</b>	>5,000,000

## Mechanical Specification

### Single Side



### Double Side



Unit: mm

**For more information,  
contact your Apacer representative**

### Global Presence

Taiwan (Headquarters)  
Apacer Technology Inc.  
Tel: +886-2-2267-8000  
Fax: +886-2-2267-2261

Europe  
Apacer Technology B.V.  
Tel: +31-40-267-0000  
Fax: +31-40-290-0686

U.S.A.  
Apacer Memory America, Inc.  
Tel: +1-408-518-8699  
Fax: 1-510-249-9551

China  
Apacer Electronic(Shanghai)  
Co., Ltd.  
Tel: +86-21-6228-9939

Japan  
Apacer Technology Corp.  
Tel: +81-3-5419-2668  
Fax: +81-3-5419-0018

India  
Apacer Technologies Pvt. Ltd.  
Tel: +91-80-41529061~3  
Fax: +91-80-41700215