



StorFly® M.2 Type 2280 Solid-State Drive

PCIe Gen4 x4 / NVMe 1.4 - Series 3 - Industrial

VTPM28CG

Datasheet - Rev. 1.2



1. Description

The StorFly Series 3 SSD is designed for the ideal mix of performance, power, size, cost, and longevity for mainstream SSD applications including system boot and more moderate data workloads. The Series 3 is a solid choice for moderate workload applications including networking, telecom, medical, and automation solutions.

Features

Capacity

- VTPM28CGXI: 320GB, 640GB, 1280GB
- VTPM28CGCI: 480GB, 960GB, 1920GB, 3840GB

NAND: 3D TLC / pSLC

Sequential Performance⁽¹⁾

- 128kB Sequential Read: up to 5,100 MB/s
- 128kB Sequential Write: up to 4,260 MB/s

Random Performance⁽¹⁾

- 4kB IOPS Read: up to 354,000
- 4kB IOPS Write: up to 629,800

Power⁽¹⁾: 3.3V±5%

- 128kB Sequential Read: 6.1 W
- 128kB Sequential Write: 5.4 W
- 4kB Random Read: 2.4 W
- 4kB Random Write: 2.8 W
- Idle: 0.8 W

Temperature Ranges

- Industrial: -40°C to 85°C
- Non-Operating: -40°C to 85°C

Reliability

- Advanced LDPC ECC
- MTBF: >2M hours

Endurance⁽¹⁾

- JESD219A: 10,000 TBW
- Sequential: 40,000 TBW

vtGuard® Power Fail Protection

- Integrated power fail protection
- Preserves static data in the event of power failure
- Cache/buffer contents restored at power-on

NOTE: Dependent on following the Industry Standards in Sec 7

SMART Attribute Reporting

- Monitors device health
- Anticipates and predicts failures

Mechanical Dimensions

- M.2 Type 2280-D2-M Form Factor
- Dimensions [L x W x H mm (inches)]

320GB, 480GB, 640GB, 960GB, 1920GB:

80.00 (3.14) x 22.00 (0.866) x 2.10 (0.082) MAX

1280GB, 3840GB

80.00 (3.14) x 22.00 (0.866) x 3.30 (0.130) MAX

Compliance

- PCIe Specification, Revision 4.0
- NVMe Specification, Revision 1.4
- FCC, CE, UL, RoHS, WEEE

Environmental (Non-operating)

- Humidity (non-condensing): 5% to 95%
- Shock: 1500G, half-sine wave, 0.5ms duration
- Vibration: 20G, 20 Hz to 2000 Hz

Data Security

- Integrated AES-256 encryption (data-at-rest)
- Sanitize Block Erase
- TCG/Opal 2.0 compliant SEDs (Option)

VTPM28CGCIxxx-AJ110CU Specification in [Addendum](#)

(1) Based on the VTPM28CGXI 1280GB device
(2) For more details on Performance and Power Consumption, please refer to [Section 3.0](#), [Section 4.0](#)



Electrostatic Discharge (ESD) can damage this device. When handling the device, always wear a grounded wrist strap and use a static dissipative surface.



Any damage to the unit that occurs after its removal from the shipping package and ESD protective bag is the responsibility of the user.

Part Numbering System

V T PM28CG X/C I xxx – yyyy

Where:	
V	= Virtium
T	= Storage
PM28CG	= Interface: NVMe, PCIe 4.0 High Performance Gen 4x4 NVMe 1.4 = Form Factor: M.2 Type 2280-D2-M
X/C	= Product Class: X = XE; C = CE
I	= Operating Temperature: I = Industrial (-40°C to 85°C)
xxx	= Capacity (1GB = 1,000,000,000 bytes) 320 = 320 GB 480 = 480 GB 640 = 640 GB 960 = 960 GB 1T2 = 1280 GB 1T9 = 1920 GB 3T8 = 3840 GB
yyyy	= Virtium Proprietary

Order Information for Generic Product

Part Number	Capacity (GB)	NAND	Operating Temperature	Dimensions (L x W x H)
VTPM28CGXI320-0011	320	pSLC	-40°C to 85°C	80.0mm x 22.0mm x 2.1mm (max)
VTPM28CGXI640-0011	640			
VTPM28CGXI1T2-0011	1280	pSLC	-40°C to 85°C	80.0mm x 22.0mm x 3.3mm (max)
VTPM28CGCI480-0011	480	3D TLC	-40°C to 85°C	80.0mm x 22.0mm x 2.1mm (max)
VTPM28CGCI960-0011	960			
VTPM28CGCI1T9-0011	1920			
VTPM28CGCI3T8-0011	3840	3D TLC	-40°C to 85°C	80.0mm x 22.0mm x 3.3mm (max)

2. Revision History

Date	Revision	Page(s)	Description
05/20/2022	0.2	All	Preliminary, Early Release
3/20/2024	1.0	All	Production Release Updated datasheet to the latest Format.
3/27/2024	1.1	Addendum	Added Customer specific configuration and part number VTPM28CGCI3T8-AJ110CU
6/5/2024	1.2	Addendum	Added Customer Specific Configuration and part number VTPM28CGCI1T9-AJ110CU

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3. Specifications

Capacity

Unformatted Capacity (GB) ⁽¹⁾	User-Addressable LBA ⁽²⁾	User-Addressable Capacity Bytes
320	625,142,448	320,072,933,376
480	937,703,088	480,103,981,056
640	1,250,263,728	640,135,028,736
960	1,875,385,008	960,197,124,096
1280	2,500,506,288	1,280,259,219,456
1920	3,750,748,848	1,920,383,410,176
3840	7,501,476,528	3,840,755,982,336

(1) 1GB = 1,000,000,000 bytes. LBA: Logical Block Address; Logical Block Size = 512 Bytes/1 Sector.
 (2) LBA: Logical Block Address; Logical Block Size = 512 Bytes/1 Sector.

Performance

Capacity (GB)	Performance Throughput ⁽¹⁾ 128kB File, Queue Depth (QD) = 32		IOPS ⁽¹⁾ 4kB File, Queue Depth (QD) = 32	
	Sequential Read MB/s	Sequential Write MB/s	100% Random Read	100% Random Write
VTPM28CGXIxxx-0011H				
320	5,136	4,719	447,400	630,300
640	5,118	4,686	386,200	627,400
1280	5,100	4,260	354,000	629,800
VTPM28CGCIxxx-0011H				
480	4,740	2,620	235,600	526,800
960	5,130	4,720	445,300	629,000
1920	5,110	4,728	383,500	631,300
3840	5,090	4,520	339,000	620,000

(1) Performance is based on fresh out-of-box condition formatted with NTFS filesystem and running CrystalDiskMark 8.0.0 with file size 1024MB. Actual results may vary depending on file system, workload, and SSD condition.

Power Consumption - 3.3V Supply

Capacity (GB)	Sequential Read ⁽¹⁾ 128kB, QD = 32	Sequential Write ⁽¹⁾ 128kB, QD = 32	Random Read ⁽¹⁾ 4kB, QD = 32	Random Write ⁽¹⁾ 4kB, QD = 32	Idle	Unit
VTPM28CGXIxxx-0011H						
320	5.7	5.5	3.4	2.9	0.8	W
640	6.2	5.6	2.4	2.9	0.8	W
1280	6.1	5.4	2.4	2.8	0.8	W
VTPM28CGCIxxx-0011H						
480	3.8	2.8	2.3	2.4	0.8	W
960	5.7	3.5	2.3	2.5	0.8	W
1920	6.7	5.3	3.7	2.7	0.8	W
3840	6.7	8.8	3.9	3.1	0.8	W

(1) Power consumption tests were done using Keysight power analyzer

Temperature and Humidity

Part Number	Operating Temperature ⁽²⁾	Non-Operating ⁽¹⁾ Temperature	Humidity (Non-Condensing)
VTPM28CGCIxxx-0011H	-40°C to 85°C	-40°C to 85°C	5% to 95%
VTPM28CGCIxxx-0011H	-40°C to 85°C	-40°C to 85°C	5% to 95%
(1) Maximum non-operating temperature assumes data is stored on the SSD. Temperatures above 85°C are beyond NAND specification for data retention. Please see <i>Temperature Considerations for Industrial Embedded SSDs</i> whitepaper under the industrial SSD section of Virtium website (Virtium.com) (2) The "Operational Temperature" refers to case temperature as detected via the S.M.A.R.T detection tool.			

Shock and Vibration

Reliability	Test Conditions	Reference Standards
Shock	1500G, half-sine wave, 0.5ms duration	JESD22-B110B.01
Vibration	20G, 20 Hz to 2000 Hz	JESD22-B103B.01

Interface

Interface	PCI Express Base Specification Rev 4.0
Protocol	NVM Express Revision 1.4

4. Reliability

Endurance

VTPM28CGCIxxx-0011H				
Capacity (GB)	JESD218A ⁽¹⁾ & JESD219 Enterprise Workloads		100% Sequential Workloads	
	Total Bytes Written TBW (TB)	Drive Writes per day (5 years)	Total Bytes Written TBW (TB)	Drive Writes per day (5 years)
320	2,600	4.45	10,000	5.7
640	5,300	4.54	20,000	5.7
1280	10,000	4.28	40,000	5.7
(1) JESD218A assumes an active temperature at 55°C and a retention temperature at 40°C				

VTPM28CGCIxxx-0011H				
Capacity (GB)	JESD218A ⁽¹⁾ & JESD219 Enterprise Workloads		100% Sequential Workloads	
	Total Bytes Written TBW (TB)	Drive Writes per day (3 years)	Total Bytes Written TBW (TB)	Drive Writes per day (3 years)
480	330	0.63	1,500	2.85
960	690	0.65	3,000	2.85
1920	1590	0.75	6,000	2.85
3840	2400	0.57	12,000	2.85
(1) JESD218A assumes an active temperature at 55°C and a retention temperature at 40°C				

Mean Time Between Failures (MTBF)

The SSD achieves a MTBF of greater than 2,000,000 hours predicted and is derived from the component reliability data using Telcordia SR-332 methods at 40°C and tested under standard environmental operating conditions.

vtGuard® Power-Fail Protection

vtGuard is an integrated power failure protection technology that will preserve data on the SSD if a sudden power failure should occur. This technology ensures that the SSD will be recoverable after intermittent sudden power failure events, although a rebuild of the mapping tables may delay readiness of the SSD on the ensuing power cycle on larger capacities. Normal use shall implement graceful power down sequence.

This Feature is dependent on following the industry standards set forth by the Technical Committee T13 and JEDEC as outlined in the documents available from these organizations.

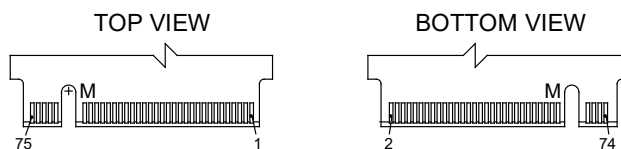
Referenced documents are listed in Section x "Industry Standards" of this Datasheet

5. Physical Specifications

Pin Layout / Assignments

Pin	Signal	Description	Pin	Signal	Description
1	CONFIG_3	Ground	2	3.3V	3.3V Source
3	GND	Ground	4	3.3V	3.3V Source
5	PETn3	PCIe Lane 3 Tx-	6	N/C	No Connect
7	PETp3	PCIe Lane 3 Tx+	8	N/C	No Connect
9	GND	Ground	10	LED1#	Device Active Signal#
11	PERn3	PCIe Lane 3 Rx-	12	3.3V	3.3V Source
13	PERp3	PCIe Lane 3 Rx+	14	3.3V	3.3V Source
15	GND	Ground	16	3.3V	3.3V Source
17	PETn2	PCIe Lane 2 Tx-	16	3.3V	3.3V Source
19	PETp2	PCIe Lane 2 Tx+	20	N/C	No Connect
21	CONFIG_0	Ground	22	N/C	No Connect
23	PERn2	PCIe Lane 2 Rx-	24	N/C	No Connect
25	PERp2	PCIe Lane 2 Rx+	26	N/C	No Connect
27	GND	Ground	28	N/C	No Connect
29	PETn1	PCIe Lane 1 Tx-	30	N/C	No Connect
31	PETp1	PCIe Lane 1 Tx+	32	N/C	No Connect
33	GND	Ground	34	N/C	No Connect
35	PERn1	PCIe Lane 1 Rx-	36	N/C	No Connect
37	PERp1	PCIe Lane 1 Rx+	38	DEVSLP	No Connect
39	GND	Ground	40	N/C	No Connect
41	PETn0	PCIe Lane 0 Tx-	42	N/C	No Connect
43	PETp0	PCIe Lane 0 Tx+	44	N/C	No Connect
45	GND	Ground	46	N/C	No Connect
47	PERn0	PCIe Lane 0 Rx-	48	N/C	No Connect
49	PERp0	PCIe Lane 0 Rx+	50	PERST#	PCIe Reset#
51	GND	Ground	52	CLKREQ#	PCIe Device Clock Request#
53	REFCLKN	PCIe Reference Clock-	54	PEWake#	No Connect
55	REFCLKP	PCIe Reference Clock+	56	N/C	No Connect
57	GND	Ground	58	N/C	No Connect
Key			Key		
67	N/C	No Connect	68	SUSCLK	No Connect
69	CONFIG_1	No Connect	70	3.3V	3.3V Source
71	GND	Ground	72	3.3V	3.3V Source
73	GND	Ground	74	3.3V	3.3V Source
75	CONFIG_2	Ground	-	-	-

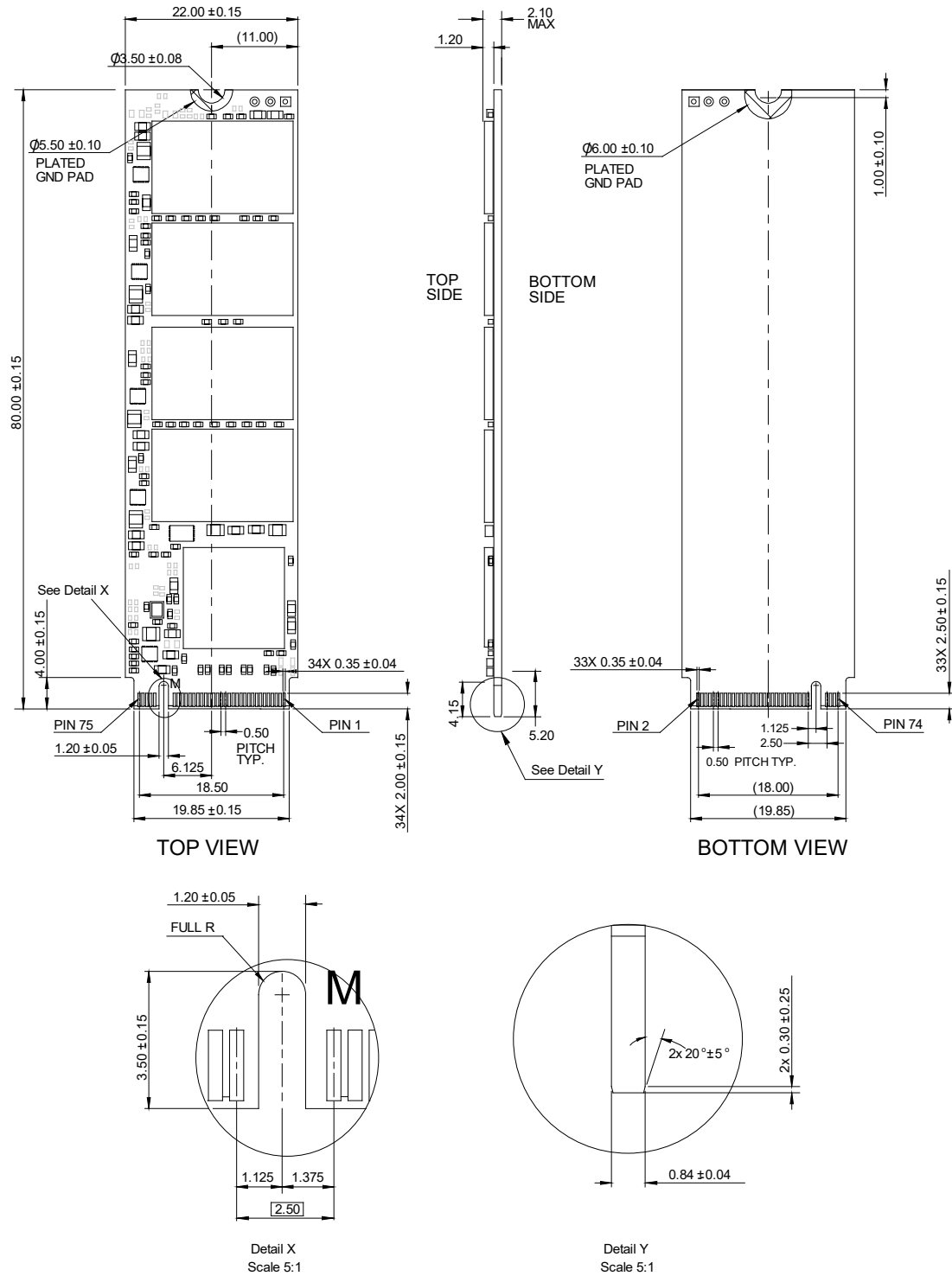
Note: Pins 59 - 66 are displaced by the connector key.



Pin Layout

Mechanical Dimensions

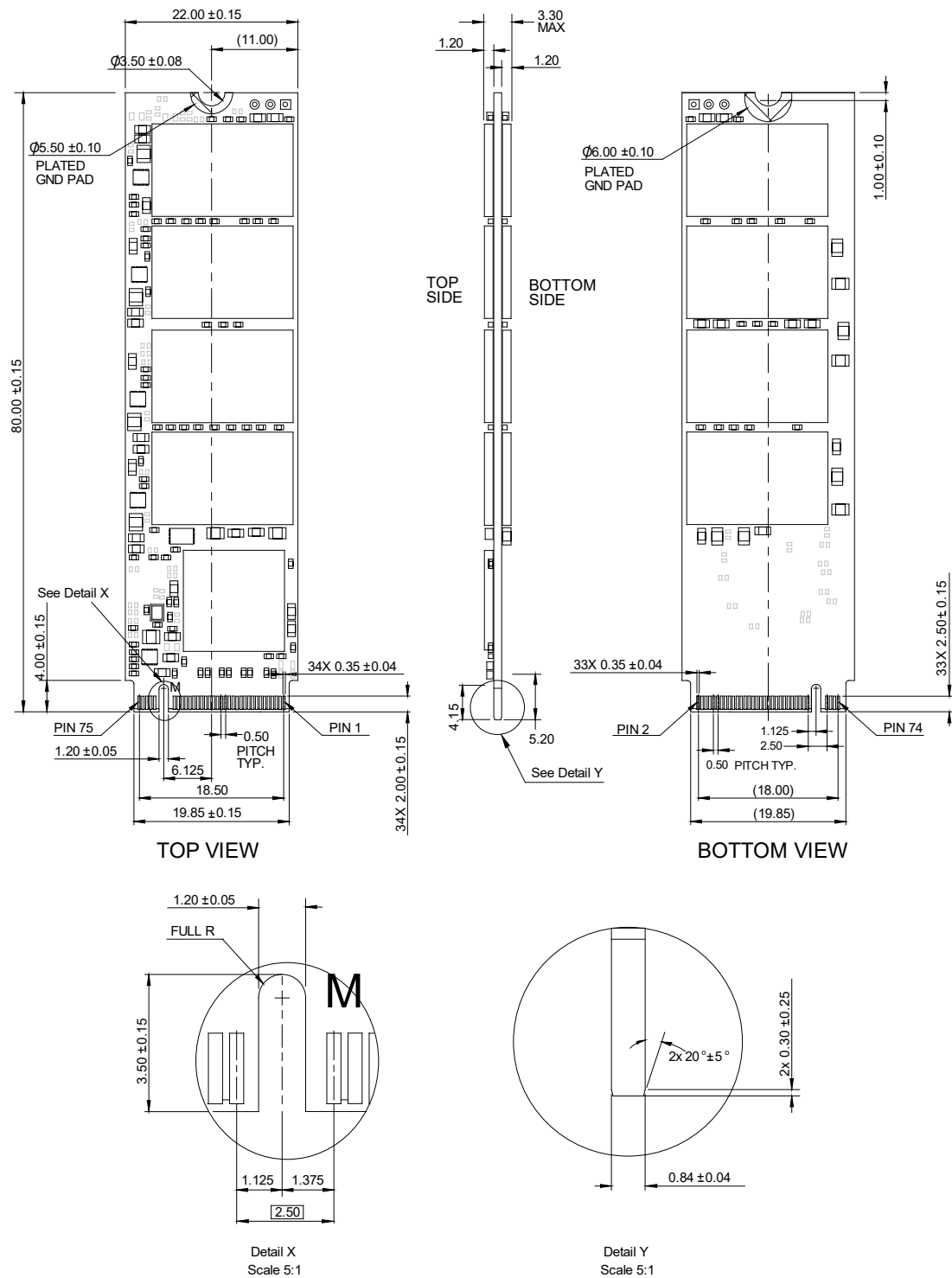
320GB, 480GB, 640GB, 960GB, 1920GB



Note:

1. All dimensions are in millimeters
2. The dimensional diagram is for reference only

1280GB, 3840GB



Note:

1. All dimensions are in millimeters
2. The dimensional diagram is for reference only

6. NVMe Command Set Specifications

Introduction

NVM Express, or NVMe, is a register level interface that is intended to simplify the configuration of NVMe devices. The standard is comprised of various terms that are important to know when implementing NVMe devices.

Note: This section is intended for informational purposes and presents an overview of the NVMe command set specification. The user should consult the cited NVMe Specification, Revision 1.4 for details.

Admin Command Set

Opcode (Hex)	Command	Opcode (07)	Opcode (06:02)	Opcode (01:00)	Namespace Identifier Used
		Generic Command	Function	Data Transfer	
00h	Delete I/O Submission Queue	0b	000 00b	00b	No
01h	Create I/O Submission Queue	0b	000 00b	01b	No
02h	Get Log Page	0b	000 00b	10b	Yes
04h	Delete I/O Completion Queue	0b	000 01b	00b	No
05h	Create I/O Completion Queue	0b	000 01b	01b	No
06h	Identify	0b	000 01b	10b	Yes
08h	Abort	0b	000 10b	00b	No
09h	Set Features	0b	000 10b	01b	Yes
0Ah	Get Features	0b	000 10b	10b	Yes
10h	Firmware Activate	0b	001 00b	00b	No
11h	Firmware Image Download	0b	001 00b	01b	No
80h	Format NVM	1b	000 00b	00b	Yes
0Ch	Asynchronous Event Request	0b	000 11b	00b	No

NVMe I/O Command Set

Opcode (Hex)	Command	Opcode (06:02) Function	Opcode (01:00) Data Transfer
00h	Flush	000 00b	00b
01h	Write	000 00b	01b
02h	Read	000 00b	10b
04h	Write Uncorrectable	000 01b	00b
05h	Compare	000 01b	01b
08h	Write Zeros	000 10b	00b
09h	Dataset Management	000 10b	01b

NVMe Log Pages

The following table lists the mandatory log pages that are supported by the M.2 NVMe PCIe SSD.

Command	Protocol
00h	Reserved
01h	Error Information
02h	SMART / Health Information
03h	Firmware Slot Information
04h	Changed Namespace List
05h	Commands Supported and Effects
06h	Device Self-test
07h	Telemetry Host-Initiated
08h	Telemetry Controller-Initiated
09h-6Fh	Reserved
70h	Discovery (refer to the NVMe over Fabrics specification)
71h-7Fh	Reserved for NVMe over Fabrics
80h-BFh	I/O Command Set Specific
C0h-FFh	Vendor specific

SMART / Health Log Information

Bytes	Description														
0	Critical Warning: This field indicates critical warnings for the state of the controller. Each bit corresponds to a critical warning type; multiple bits may be set. If a bit is cleared to '0', then that critical warning does not apply. Critical warnings may result in an asynchronous event notification to the host. Bits in this field represent the current associated state and are not persistent. <table> <tr> <th>Bit</th><th>Definition</th></tr> <tr> <td>0</td><td>If set to '1', then the available spare space has fallen below the threshold.</td></tr> <tr> <td>1</td><td>If set to '1', then a temperature is above an over temperature threshold or below an under temperature threshold (refer to section 5.21.1.4).</td></tr> <tr> <td>2</td><td>If set to '1', then the NVM subsystem reliability has been degraded due to significant media related errors or any internal error that degrades NVM subsystem reliability.</td></tr> <tr> <td>3</td><td>If set to '1', then the media has been placed in read only mode.</td></tr> <tr> <td>4</td><td>If set to '1', then the volatile memory backup device has failed. This field is only valid if the controller has a volatile memory backup solution.</td></tr> <tr> <td>7:5</td><td>Reserved</td></tr> </table>	Bit	Definition	0	If set to '1', then the available spare space has fallen below the threshold.	1	If set to '1', then a temperature is above an over temperature threshold or below an under temperature threshold (refer to section 5.21.1.4).	2	If set to '1', then the NVM subsystem reliability has been degraded due to significant media related errors or any internal error that degrades NVM subsystem reliability.	3	If set to '1', then the media has been placed in read only mode.	4	If set to '1', then the volatile memory backup device has failed. This field is only valid if the controller has a volatile memory backup solution.	7:5	Reserved
Bit	Definition														
0	If set to '1', then the available spare space has fallen below the threshold.														
1	If set to '1', then a temperature is above an over temperature threshold or below an under temperature threshold (refer to section 5.21.1.4).														
2	If set to '1', then the NVM subsystem reliability has been degraded due to significant media related errors or any internal error that degrades NVM subsystem reliability.														
3	If set to '1', then the media has been placed in read only mode.														
4	If set to '1', then the volatile memory backup device has failed. This field is only valid if the controller has a volatile memory backup solution.														
7:5	Reserved														
2:1	Composite Temperature: Contains a value corresponding to a temperature in degrees Kelvin that represents the current composite temperature of the controller and namespace(s) associated with that controller. The manner in which this value is computed is implementation specific and may not represent the actual temperature of any physical point in the NVM subsystem.														
3	Available Spare: Contains a normalized percentage (0 to 100%) of the remaining spare capacity available.														
4	Available Spare Threshold: When the Available Spare falls below the threshold indicated in this field, an asynchronous event completion may occur. The value is indicated as a normalized percentage (0 to 100%).														
5	Percentage Used: The percentage of NVM subsystem life used based on the actual usage and the prediction of NVM life. A value of 100 indicates that the estimated endurance of the NVM in the NVM subsystem has been consumed, but may not indicate an NVM subsystem failure. The value is allowed to exceed 100. Percentages greater than 254 shall be represented as 255. This value shall be updated once per power-on hour (when the controller is not in a sleep state).														
31:6	Reserved														
47:32	Data Units Read: Contains the number of 512 byte data units the host has read from the controller; this value does not include metadata. This value is reported in thousands (i.e., a value of 1 corresponds to 1000 units of 512 bytes read) and is rounded up. When the LBA size is a value other than 512 bytes, the controller shall convert the amount of data read to 512 byte units.														

Bytes	Description
63:48	Data Units Written: Contains the number of 512 byte data units the host has written to the controller; this value does not include metadata. This value is reported in thousands (i.e., a value of 1 corresponds to 1000 units of 512 bytes written) and is rounded up. When the LBA size is a value other than 512 bytes, the controller shall convert the amount of data written to 512 byte units.
79:64	Host Read Commands: Contains the number of read commands completed by the controller.
95:80	Host Write Commands: Contains the number of write commands completed by the controller.
111:96	Controller Busy Time: Contains the amount of time the controller is busy with I/O commands. The controller is busy when there is a command outstanding to an I/O Queue (specifically, a command was issued via an I/O Submission Queue Tail doorbell write and the corresponding completion queue entry has not been posted yet to the associated I/O Completion Queue). This value is reported in minutes.
127:112	Power Cycles: Contains the number of power cycles.
143:128	Power On Hours: Contains the number of power-on hours. This may not include time that the controller was powered and in a non-operational power state.
159:144	Unsafe Shutdowns: Contains the number of unsafe shutdowns. This count is incremented when a shutdown notification (CC.SHN) is not received prior to loss of power.
175:160	Media and Data Integrity Errors: Contains the number of occurrences where the controller detected an unrecovered data integrity error. Errors such as uncorrectable ECC, CRC checksum failure, or LBA tag mismatch are included in this field.
191:176	Number of Error Information Log Entries: Contains the number of Error Information log entries over the life of the controller.

7. Industry Standards

Reference Title	Date / Revision	Location
NVMe	NVMe 1.4	NVM Express Working Group. NVM Express (NVMe) Specification, Revision 1.4, June 10, 2019. http://www.nvmexpress.org
PCI-SIG	Revision 4.0	PCI Express Base Specification, Revision 4.0 Ver 1.0, October 5, 2017. https://pcisig.com/
PCI-SIG	Revision 1.1	PCI Express M.2 Specification, Revision 1.1, December 15, 2016. https://pcisig.com/
JEDEC	JESD22-B110B.01	Mechanical Shock – Device and Subassembly, Revision of JESD22-B110B, June 2019, http://www.jedec.org
JEDEC	JESD22-B103B.01	Vibration, Variable Frequency, Minor revision to JESD22-B103-B, September 2016, http://www.jedec.org
JEDEC	JESD218A	Solid-State Drive (SSD) Requirements and Endurance Test Method, February 2011, http://www.jedec.org
JEDEC	JESD219	Solid-State Drive (SSD) Endurance Workloads, September 2010, http://www.jedec.org

8. Certifications and Compliance

Compliance / Certification	Description
FCC Compliant	Part 15 Class B Computing Device Peripheral
EC Compliant	EMC Directive 2014/30/EU
RoHS Compliant	Restriction of Hazardous Substance Directive
UL Certified	Underwriters Laboratories, Inc. 94V-0
WEEE Certified	Waste, Electrical and Electronic Equipment Directive

9. Contact Information

Corporate Headquarters and Manufacturing Location:
30052 Tomas, Rancho Santa Margarita, CA 92688 USA

Main Website:

www.virtium.com

Contacts / Sales:

<http://www.virtium.com/contacts-sales/>

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Customer Support

custserv@virtium.com



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<https://twitter.com/Virtium>



<https://www.facebook.com/virtium>

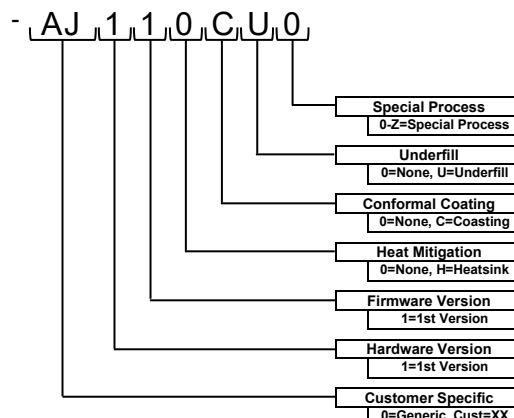
10. ADDENDUM Deviations from Generic Product

Product Name: StorFly® M.2 Type 2280 Solid-State Drive

Customer Name: Annapolis Micro

Requested Changes to Generic Product:

- Customer Specific PN#
- Capacity: 1920GB, 3840GB
- Conformal Coating
- Underfill BGA



Order Information

Part Number	Capacity (GB)	NAND	Operating Temperature	Dimensions (L x W x H)
VTPM28CGCI1T9-AJ110CU	1920	3D TLC	-40°C to 85°C	80.0mm x 22.0mm x 2.1mm (max)
VTPM28CGCI3T8-AJ110CU	3840	3D TLC	-40°C to 85°C	80.0mm x 22.0mm x 3.3mm (max)

By Purchasing this product, you agree to the terms and information provided in the Addendum.

Capacity

Unformatted Capacity (GB) ⁽¹⁾	User-Addressable LBA ⁽²⁾	User-Addressable Capacity Bytes
1920	3,750,748,848	1,920,383,410,176
3840	7,501,476,528	3,840,755,982,336

(1) 1GB = 1,000,000,000 bytes. LBA: Logical Block Address; Logical Block Size = 512 Bytes/1 Sector.
 (2) LBA: Logical Block Address; Logical Block Size = 512 Bytes/1 Sector.

Performance

Capacity (GB)	Performance Throughput ⁽¹⁾ 128kB File, Queue Depth (QD) = 32		IOPS ⁽¹⁾ 4kB File, Queue Depth (QD) = 32	
	Sequential Read MB/s	Sequential Write MB/s	100% Random Read	100% Random Write
1920	5,110	4,728	383,500	631,300
3840	5,090	4,520	339,000	620,000

(1) Performance is based on fresh out-of-box condition formatted with NTFS filesystem and running CrystalDiskMark 8.0.0 with file size 1024MB. Actual results may vary depending on file system, workload, and SSD condition.

Power Consumption - 3.3V Supply

Capacity (GB)	Sequential Read ⁽¹⁾ 128kB, QD = 32	Sequential Write ⁽¹⁾ 128kB, QD = 32	Random Read ⁽¹⁾ 4kB, QD = 32	Random Write ⁽¹⁾ 4kB, QD = 32	Idle	Unit
1920	6.7	5.3	3.7	2.7	0.8	W
3840	6.7	8.8	3.9	3.1	0.8	W

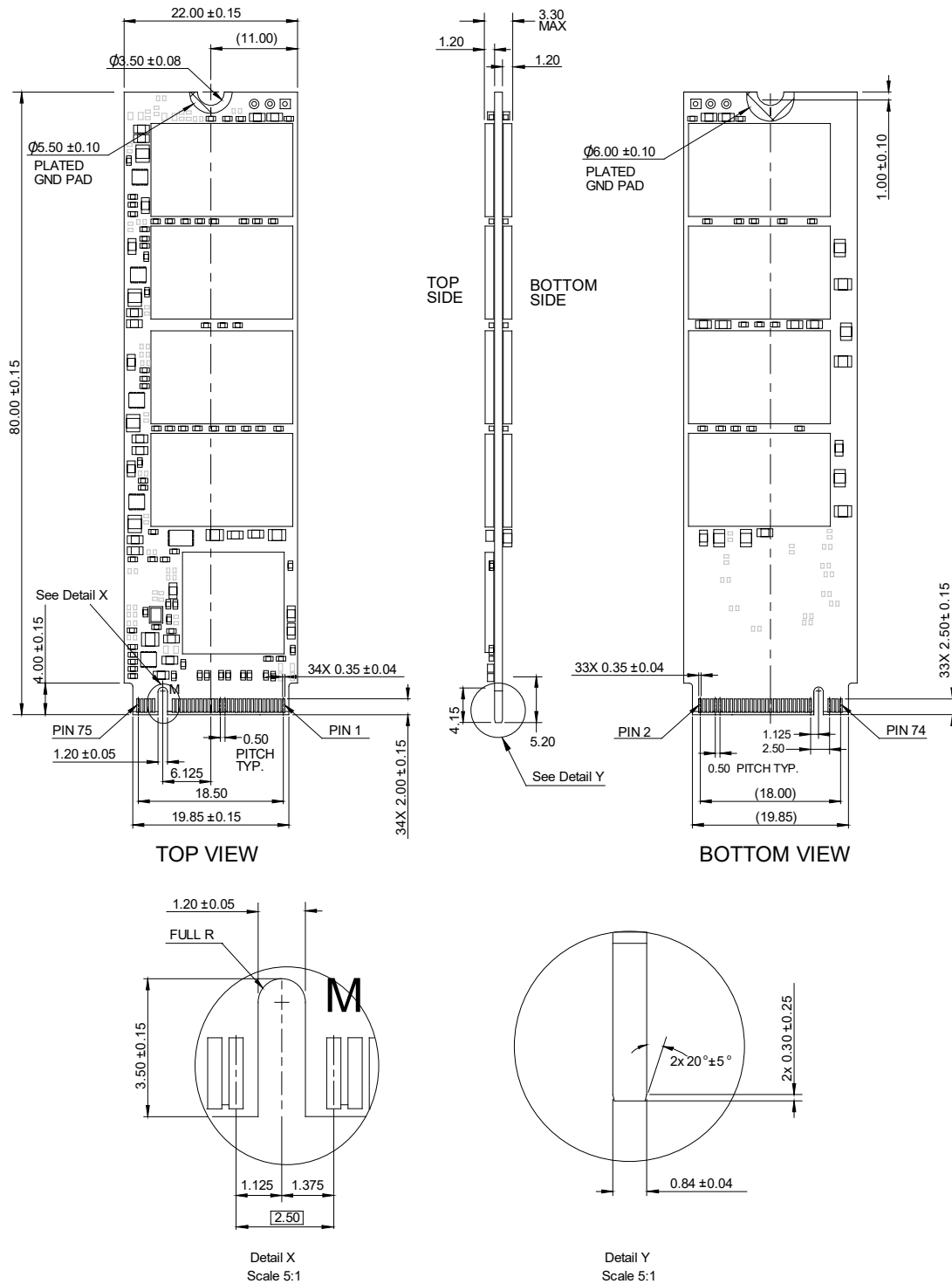
(1) Power consumption tests were done using Keysight power analyzer

Endurance

Capacity (GB)	JESD218A ⁽¹⁾ & JESD219 Enterprise Workloads		100% Sequential Workloads	
	Total Bytes Written TBW (TB)	Drive Writes per day (3 years)	Total Bytes Written TBW (TB)	Drive Writes per day (3 years)
1920	1590	0.75	6,000	2.85
3840	2400	0.57	12,000	2.85
(1) JESD218A assumes an active temperature at 55°C and a retention temperature at 40°C				

Mechanical Dimensions

1920, 3840GB



Note:

1. All dimensions are in millimeters

2. The dimensional diagram is for reference only



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