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**Solid State Drives**

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**HG3 Series**

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**Product Brief**

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# 1. SCOPE

This document describes the specifications of the following model

## 1.1 2.5inch Case Type

Product Number	Capacity
THNSxC064GBSJ	64 GB
THNSxC128GBSJ	128 GB
THNSxC256GBSJ	256 GB
THNSxC512GBSJ	512 GB

## 1.2 1.8inch case Type

Product Number	Capacity
THNSxC064GAMJ	64 GB
THNSxC128GAMJ	128 GB
THNSxC256GAMJ	256 GB

## 1.3 1.8inch case-less Type

Product Number	Capacity
THNSxC064GMMJ	64 GB
THNSxC128GMMJ	128 GB
THNSxC256GMMJ	256 GB

# 2. GENERAL DESCRIPTION

The drive features an ATA-8 and Serial ATA revision 2.6 interface embedded controller that requires a simplified adapter board for interfacing to a Serial ATA or Serial ATA compatible bus. The drive is distinctive for its small and light body.

The drive has no mechanical moving parts.

The drive is a memory storage device using NAND Flash Memories with high performance and reliability.

### 3. KEY FEATURES

- Fast access and fast transfer rate
  - Interface speed up to 3 Gbps and data transfer 220 MB/s in read, 180 MB/s in write
  - Read cache and write cache enhancing system throughput.
- Intelligent Interface
  - ATA-8 ACS2 and Serial ATA revision 2.6 interface specifications supported.
  - Translation mode which enables any drive configuration.
  - Support 28 bit LBA (Logical Block Address) mode commands and 48-bit LBA mode commands.
  - Multi word DMA, Ultra-DMA modes and Advanced PIO mode settings / commands supported.
  - Data Set Management command set of Trim supported
- Data integrity
  - Automatic retries and corrections for read errors.
  - The drive has a capability of FDE (Full Disk Encryption) function (Optional)
    - Note: Standard model isolates FDE circuit
- High reliability
  - Shock (operating/non-operating) capability is up to 14.709km/s<sup>2</sup> (1500G).
- Low power consumption
  - Low power consumption by Adaptive Power Mode.
  - Low power consumption by Serial ATA Device Initiated Power Management supported.
  - Power consumption control by Advanced Power Management (APM) supported

#### BASIC SPECIFICATION

Product Number	THNSxC064GBSJ THNSxC064GAMJ THNSxC064GMMJ	THNSxC128GBSJ THNSxC128GAMJ THNSxC128GMMJ	THNSxC256GBSJ THNSxC256GAMJ THNSxC256GMMJ	THNSxC512GBSJ
Formatted Capacity ( gigabytes )	64	128	256	512
Total Number of User Addressable Sectors in LBA Mode	125,045,424	250,069,680	500,118,192	1,000,215,216

## 4. PERFORMANCE

Host Transfer rate	300 MB/sec
Data Read (Max)	220 MB/sec
Data Write (Max)	180 MB/sec

## 5. POWER REQUIREMENTS

### 5.1 Supply Voltage

#### 5.1.1 2.5inch Case Type

Allowable voltage	5.0V $\pm$ 5%
Allowable noise/ripple	100 mV p-p or less
Allowable supply rise time	2 –100 msec

Note) The drive has over current protect circuit. (Rated current: 3.15A)

#### 5.1.2 1.8inch case Type ,1.8inch case-less Type

Allowable voltage	3.3V $\pm$ 5%
Allowable noise/ripple	100 mV p-p or less
Allowable supply rise time	2 –100 msec

Note) The drive has over current protect circuit. (Rated current: 3.15A)

### 5.2 Power Consumption

#### 5.2.1 2.5inch Case Type

Operation	THNSxC064GBSJ (64 GB)	THNSxC128GBSJ (128 GB)	THNSxC256GBSJ (256 GB)	THNSxC512GBSJ (512 GB)
Read	1.2W Typ..	1.4W Typ.	1.7W Typ.	1.8W Typ.
Write	2.8W Typ.	3.0W Typ.	3.3W Typ.	3.4W Typ..
Idle (note 1)	51mW Typ.	52mW Typ.	52mW Typ.	53mW Typ.
Standby (note 2)	51mW Typ.	52mW Typ.	52mW Typ.	53mW Typ.
Sleep (note 2)	50mW Typ.	52mW Typ.	52mW Typ.	53mW Typ.

#### 5.2.2 1.8inch case Type,1.8inch case-less Type

Operation	THNSxC064GAMJ THNSxC064GMMJ (64 GB)	THNSxC128GAMJ THNSxC128GMMJ (128 GB)	THNSxC256AMSJ THNSxC256MMSJ (256 GB)
Read (note 3)	1.1W Typ..	1.3W Typ.	1.5W Typ.
Write (note 3)	2.6W Typ.	2.7W Typ.	2.9W Typ.
Idle (note 1)	47mW Typ.	47mW Typ.	47mW Typ.
Standby (note 2)	47mW Typ.	47mW Typ.	47mW Typ.
Sleep (note 2)	47mW Typ.	47mW Typ.	47mW Typ.

(note 1) The read/write current is specified 220 MB/s in read, 180 MB/s in write. (Peak current is typically within 20 $\mu$ s)

(note 2) The values are based on using S-ATA power management features. The Slumber mode is used for the idle mode power consumption measurements. Idle mode may execute background write operation then the drive power consumption temporarily changes to write power.

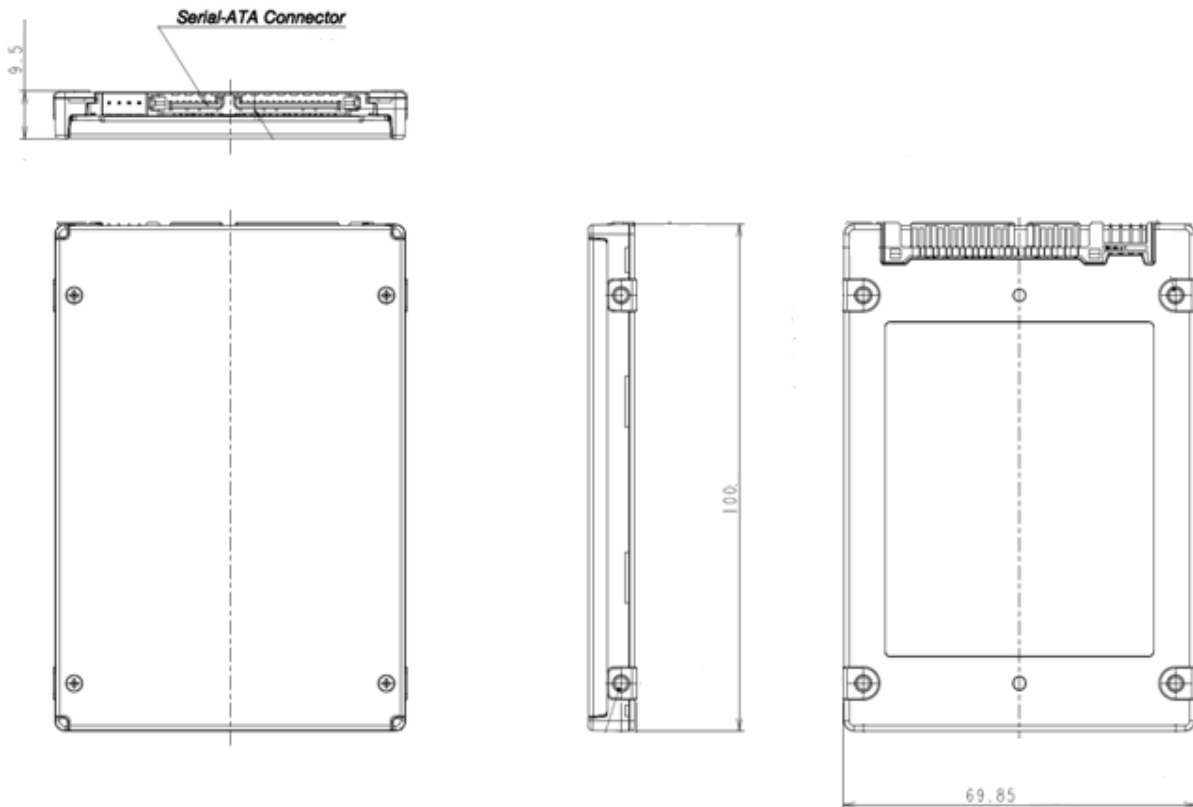
(note 3) The values are based on using S-ATA power management features. The Slumber mode is used for Standby and Sleep modes power consumption measurements.

## 6. MECHANICAL SPECIFICATIONS

### 6.1 2.5inch Case Type

#### 6.1.1 Dimension

Width	69.85 mm
Height	9.5 mm
Length	100.0 mm



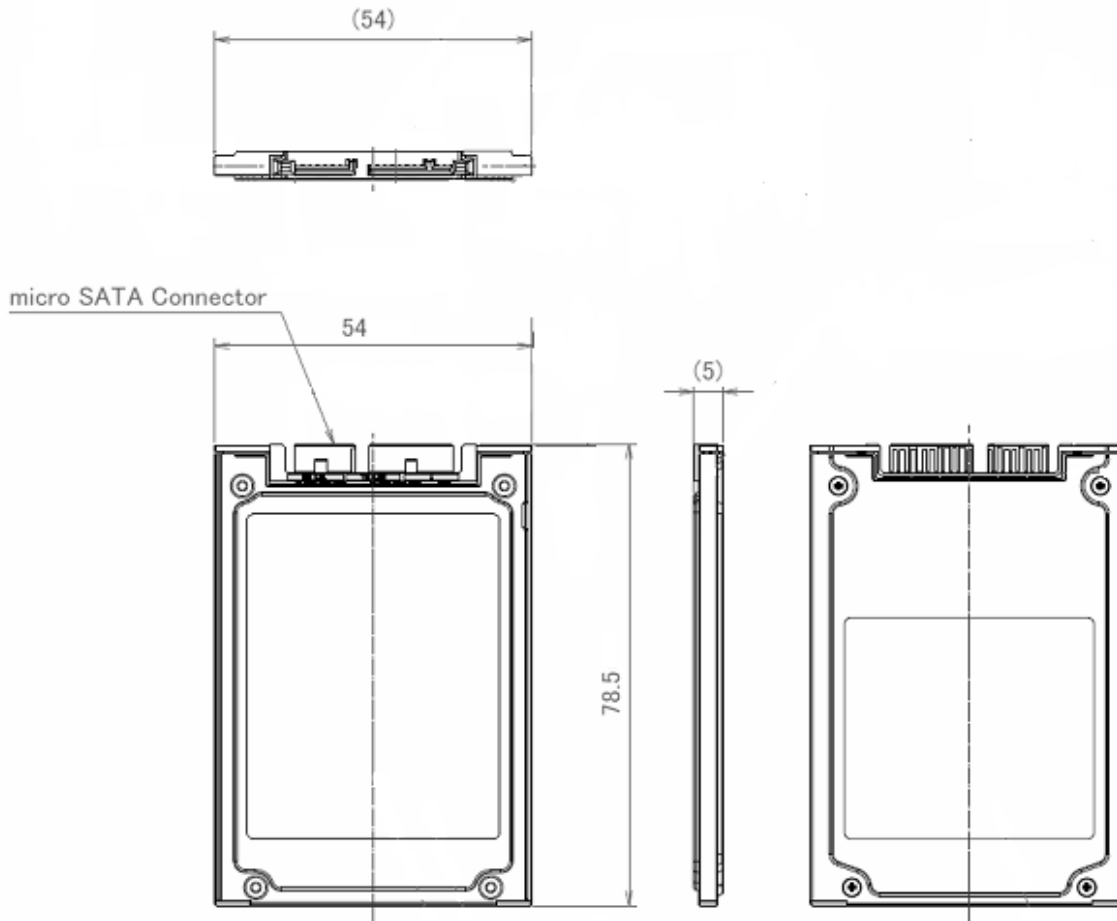
#### 6.1.2 Mass

Capacity	Mass
64GB	51 g (typ.)
128GB	
256GB	
512GB	58 g (typ.)

## 6.2 1.8inch case Type

### 6.2.1 Dimension

Width	54.0 mm
Height	5.0 mm
Length	78.5 mm



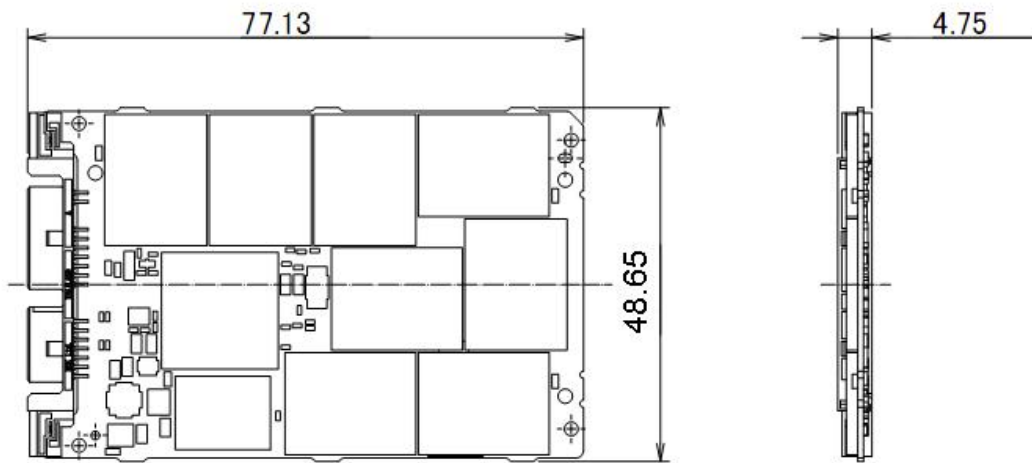
### 6.2.2 7.2 Mass

Mass	48 g (typ.)
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### 6.3 1.8inch case-less Type

#### 6.3.1 Dimension

Width	48.65 mm
Height	4.75 mm
Length	77.13 mm



#### 6.3.2 Mass

Mass	16 g(typ.)
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## 7. ENVIRONMENTAL LIMITS

### 7.1 Temperature and Humidity

#### 7.1.1 Temperature

Operating	0°C (Tc) - 70°C (Tc) Gradient 30°C (Ta) / h maximum
Non- operating	- 40°C- 85°C Gradient 30°C / h maximum
Under shipment	- 40°C- 85°C Gradient 30°C / h maximum (Packed in Toshiba's original shipping package)

Note: Ta: Ambient Temperature, Tc: Temperature of all components

#### 7.1.2 Humidity

Operating	8% - 90% R.H. (No condensation)
Non- operating	8% - 95% R.H. (No condensation)
Under shipment	5% - 95% R.H. (Packed in Toshiba's original shipping package)

### 7.2 Vibration

Operating	196m/s <sup>2</sup> (20G) Peak, 10~2,000Hz, (20min /Axis)x3 Axis
Non operating	196m/s <sup>2</sup> (20G) Peak, 10~2,000Hz, (12Cycle/Axis)x3 Axis, x20min.

### 7.3 Shock

Operating	[14.709km/s <sup>2</sup> (1500G)] 0.5 msec half sine wave
Non-operating	
Under shipment	100 cm free drop Apply shocks in each direction of the drive's three mutually perpendicular axes, one axis at a time. (Packed in Toshiba's original shipping package)

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