# SSD370S –
SATA III 6Gb/s SSD

Due to Ultra-slim (fit the standard dimensions of 2.5" SATA Hard Disk Drives), huge capacity, SATA 6Gb/s speed, and low power consumption, Solid State Drive is the perfect replacement storage device for Ultrabooks, PCs, Laptops, gaming systems, and handheld devices.

- Fully compatible with devices and OS that support the SATA III 6.0Gb/s standard

- Non-volatile Flash Memory for outstanding data retention

- Supports Trim and NCQ command

Features

- Advanced Global Wear-Leveling and Block management for reliability
- Supports Advanced Garbage Collection
- Built-in ECC (Error Correction Code) functionality
- Supports DEVSLP mode
- Supports Enhanced S.M.A.R.T. Function
- RoHS compliant
- Provides great shock resistance
- Slim, elegant, light design and aluminum case
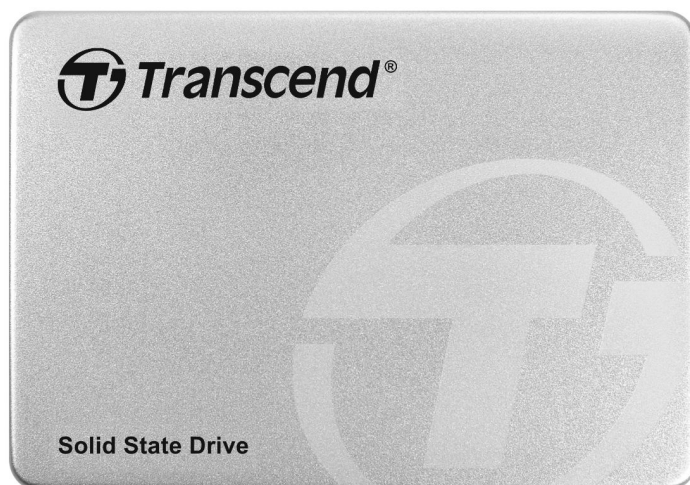
Specifications

Physical Specification			
Form Factor		2.5 inch	
Storage Capacities		32 GB to 1TB	
Dimensions	**Length**	100.00 ± 0.25 mm	3.937 ± 0.01 inch
	Width	69.85 ± 0.25 mm	2.750 ± 0.01 inch
	Height	6.8 ± 0.2 mm	0.268 ± 0.008 inch
Input Voltage		5V ± 5%	
Weight		Max. 63 g	
Connector		SATA 22 pins connector	

Environmental Specifications		
Operating Temperature		0 ºC to 70 ºC
Storage Temperature		− 40 ºC to 85 ºC
Humidity	**Operating**	0 % to 95 % (Non-condensing)
	Non-Operating	0 % to 95 % (Non-condensing)

Performance								
Model P/N	**ATTO**		**CrystalDiskMark**				**IOmeter**	
	Max. Read *	**Max. Write** *	**Sequential Read** **	**Sequential Write** **	**Random Read** (4KB QD32) **	**Random Write** (4KB QD32) **	**IOPS Random Read** (4KB QD32) ***	**IOPS Random Write** (4KB QD32) ***
TS32GSSD370S	230	40	230	40	90	40	20K	10K
TS64GSSD370S	450	80	440	80	170	80	40K	20K
TS128GSSD370S	550	170	520	170	270	170	70K	40K
TS256GSSD370S	560	320	520	320	300	300	70K	70K
TS512GSSD370S	560	460	520	460	300	300	75K	75K
TS1TSSD370S	560	460	520	460	300	300	75K	75K

Note: Maximum transfer speed recorded

* 25 ºC, test on GIGABYTE GA-Z87X-D3H, 4GB, Windows® 7 Professional with AHCI mode, benchmark utility ATTO (version 2.41), unit MB/s

** 25 ºC, test on GIGABYTE GA-Z87X-D3H, 4GB, Windows® 7 Professional with AHCI mode, benchmark utility CrystalDiskMark (version 5.1.2), copied file 1000MB, unit MB/s

*** 25 ºC, test on GIGABYTE GA-Z87X-D3H, 4GB, Windows® 7 Professional with AHCI mode, benchmark utility IOmeter2008 with 4K file size and queue depth of 32, unit IOPs

**** The recorded performance is obtained while the SSD is not operating as an OS disk Physical Specification

Actual Capacity

Model P/N	LBA	Cylinder	Head	Sector
TS32GSSD370S	62,533,296	16,383	16	63
TS64GSSD370S	125,045,424	16,383	16	63
TS128GSSD370S	250,069,680	16,383	16	63
TS256GSSD370S	500,118,192	16,383	16	63
TS512GSSD370S	1,000,215,216	16,383	16	63
TS1TSSD370S	2,000,409,264	16,383	16	63

*Tested with IOmeter running sequential reads/writes and idle mode

Power Requirements

Input Voltage		5V ± 5% @ 25 °C
Mode P/N / Power Consumption		**Typical (mA)**
TS32GSSD370S	Max Write*	180
	Max Read*	175
	Idle*	70
TS64GSSD370S	Max Write*	255
	Max Read*	240
	Idle*	70
TS128GSSD370S	Max Write*	385
	Max Read*	245
	Idle*	70
TS256GSSD370S	Max Write*	625
	Max Read*	255
	Idle*	70
TS512GSSD370S	Max Write*	920
	Max Read*	620
	Idle*	120
TS1TSSD370S	Max Write*	700
	Max Read*	355
	Idle*	70

Reliability			
Data Retention	1 years		
MTBF	1 million hours		
Endurance (Terabytes Written)	Capacity	*TBW	**TBW (base on JEDEC Standard)
	32 GB	26 (TB)	13 (TB)
	64 GB	40 (TB)	20 (TB)
	128 GB	52 (TB)	26 (TB)
	256 GB	102 (TB)	51 (TB)
	512 GB	204 (TB)	102 (TB)
	1 TB	408 (TB)	204 (TB)
DWPD (Drive Writes Per Day for 3years)	0.19 DWPD		

*Tested under burn-in tool, TBW value may vary due to host environment

**Tested under JESD219A endurance workloads specification

Vibration	
Operating	5 G (peak-to-peak), 5 - 800 Hz
Non-Operating	20 G (peak-to-peak), 5 - 800 Hz

* Note: Reference to the IEC 60068-2-6 Testing procedures; Operating-Sine wave, 5-800Hz/1 oct., 1.5mm, 3g, 0.5 hr./axis, total 1.5 hrs.
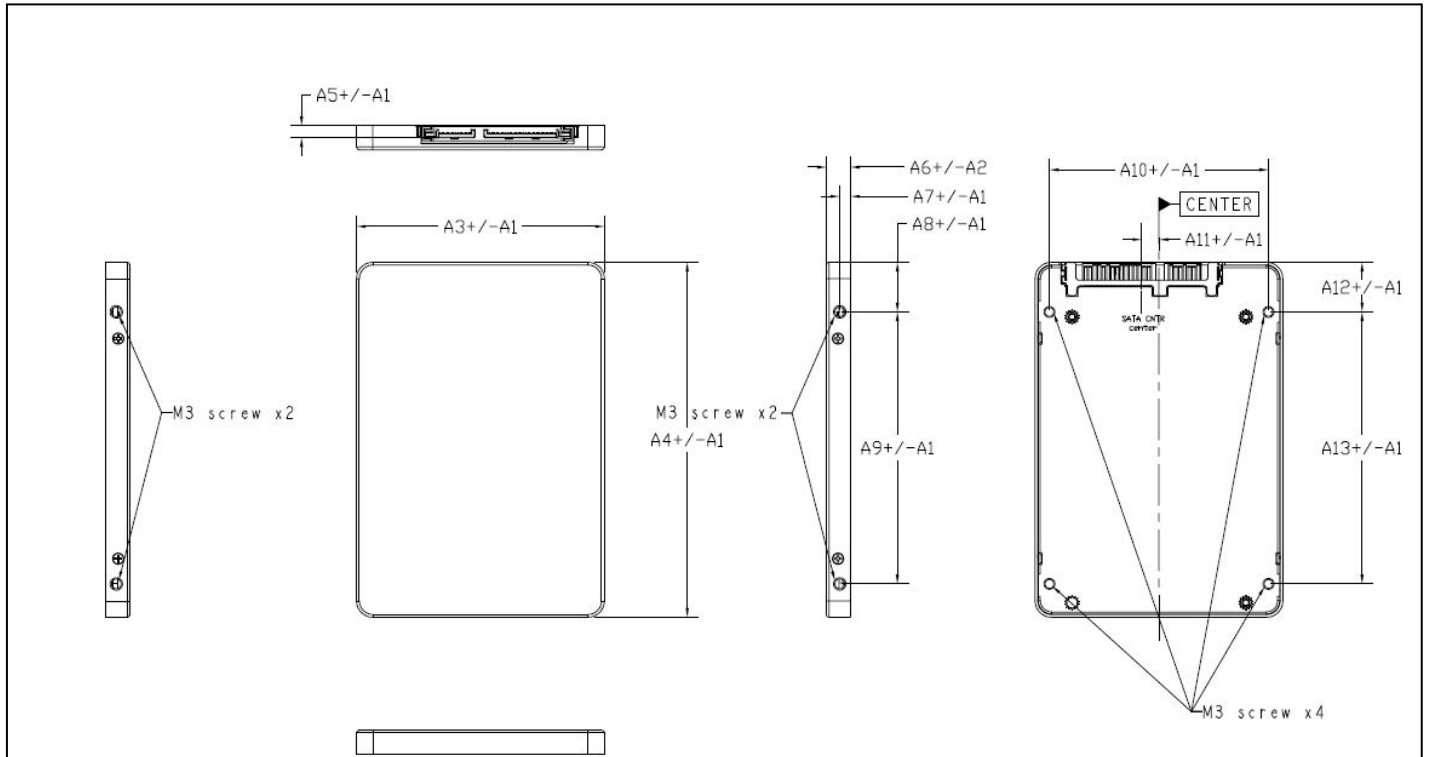
Shock	
Operating	1500 G, 0.5 ms
Non-Operating	1500 G, 0.5 ms

* Reference to IEC 60068-2-27 Testing procedures; Operating-Half-sine wave, 1500g, 0.5ms, 3 times/dir., total 18 times.

Regulations	
Compliance	CE, FCC and BSMI

Package Dimensions

The figure below illustrates the Transcend 2.5" SATA Solid State Drive. All dimensions are in mm.

Item	Milimeter	Item	Milimeter
A1	0.25	A11	4.8
A2	0.2	A12	14.0
A3	69.85	A13	76.6
A4	100.0		
A5	3.5		
A6	6.8		
A7	3.0		
A8	14.0		
A9	76.6		
A10	61.72		

*Note: Tighten mounting screws with no more than 2 Kgf-cm of torque.

Pin Assignments

Pin No.	Pin Name	Pin No.	Pin Name
S1	GND	S2	A+
S3	A-	S4	GND
S5	B-	S6	B+
S7	GND	P1	NC
P2	NC	P3	DEVSLP
P4	GND	P5	GND
P6	GND	P7	5V
P8	5V	P9	5V
P10	GND	P11	DAS
P12	GND	P13	NC
P14	NC	P15	NC

Pin Layout

GND S1 | A+ S2 | A- S3 | GND S4 | B- S5 | B+ S6 | GND S7 | NC P1 | NC P2 | DEVSLP P3 | GND P4 | GND P5 | GND P6 | 5V P7 | 5V P8 | 5V P9 | GND P10 | DAS P11 | GND P12 | NC P13 | NC P14 | NC P15

Block Diagram

```
                    ┌─────────────────────────────┐
                    │          SATA Host          │
                    └─────────────────────────────┘
                                  ↕
        ┌────────────────────────────────────────────┐        ┌──────────┐
        │              SATA Interface                │        │          │
        │                                            │   ↔    │   DRAM   │
        │              SSD Controller                │        │          │
        │                                            │        └──────────┘
        │              Flash Interface               │
        └────────────────────────────────────────────┘
            ↕         ↕              ↕         ↕
        ┌────────────────────────────────────────────┐
        │   NAND       NAND       NAND       NAND     │
        │   Flash      Flash      Flash      Flash    │
        └────────────────────────────────────────────┘
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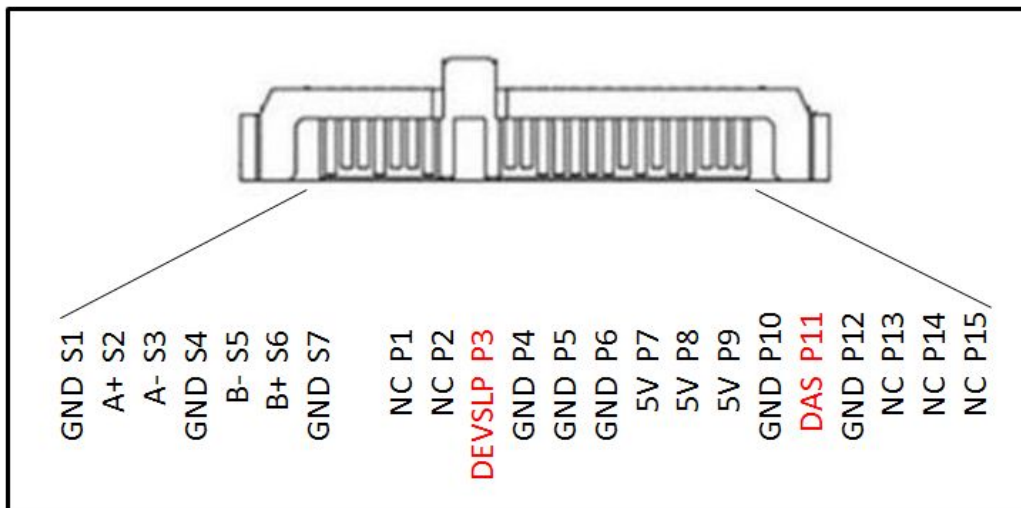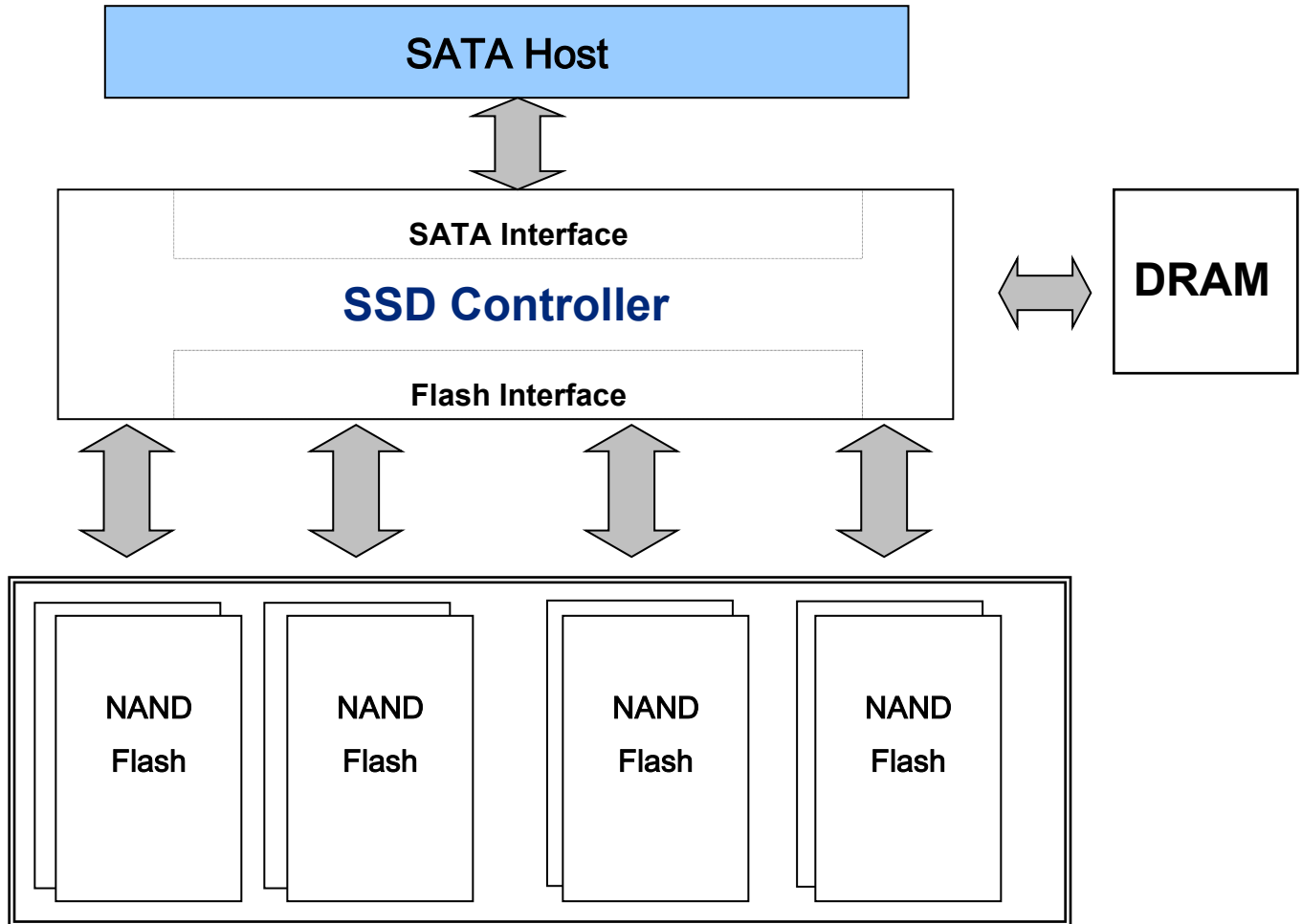
*The quantity of NAND flash varies by capacity.

Features

- **Global Wear Leveling – Advanced algorithm to enhance the Wear-Leveling Efficiency**
  Global wear leveling ensures that every block has an even erase count. This helps to extend the life expectancy.

- **Advanced Garbage Collection**

  Transcend's SSDs have a perfect garbage collection mechanism to help improve performance. Advanced Garbage collection can efficiently improve memory management to ensure the SSD's stable performance. With Transcend advanced flash management, the drive can still keep high performance even after a long operating time.

- **Enhanced S.M.A.R.T. function**
  Transcend SSD supports S.M.A.R.T. command (Self-Monitoring, Analysis, and Reporting Technology) that allows the user to read the health information of the SSD. Transcend also define some innovated S.M.A.R.T. features which allows the user to evaluate the status of the SSD in a much more efficient way.

- **DEVSLP**
  DEVSLP is a new host-controlled SATA interface power state which together enables a SATA host and device to enter an ultra-low interface power state, including the possibility of completely powering down host and device PHYs.

- **Bad-block management**
  When the flash encounters ECC fail, program fail or erase fail, the controller will mark the block as bad block to prevent using this block and cause data loss in the future.

Ordering Information

Capacity	Model P/N
32GB	TS32GSSD370S
64GB	TS64GSSD370S
128GB	TS128GSSD370S
256GB	TS256GSSD370S
512GB	TS512GSSD370S
1TB	TS1TSSD370S

The technical information above is based on industry standard data and has been tested to be reliable. However, Transcend makes no warranty, either expressed or implied, as to its accuracy and assumes no liability in connection with the use of this product. Transcend reserves the right to make changes to the specifications at any time without prior notice.

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good memories start here

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Revision History		
Version	**Date**	**Modification Content**
1.0	2017/11/30	Initial release
1.1	2017/01/22	Update DWPD