

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



## 2.5" SATA Solid State Disk

### Description

Due to Ultra-slim (fit the standard dimensions of 2.5" SATA Hard Disk Drives), huge capacity, SATA-3 speed, and low power consumption, Solid State Disk is perfect replacement storage device for Ultra book, PCs, Laptops, gaming systems, and handheld devices.

### Placement



### Features

- RoHS compliant
- SandForce Driven
- Internal AES encryption
- Fully compatible with devices and OS that support the SATA III 6Gb/s standard
- Non-volatile Flash Memory for outstanding data retention
- Built-in ECC (Error Correction Code) functionality and wear-leveling algorithm ensures highly reliable of data transfer
- Support Trim and NCQ command
- Shock resistance

### Dimensions

Side	Millimeters	Inches
A	99.80 ± 0.25	3.929 ± 0.01
B	69.80 ± 0.25	2.748 ± 0.01
C	7.00 ± 0.15	0.276 ± 0.006

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

## Specifications

Physical Specification		
Form Factor		2.5-inch HDD
Storage Capacities		64 GB to 256 GB
Dimensions (mm)	Length	99.80 ± 0.25
	Width	69.80 ± 0.25
	Height	7.00 ± 0.15
Input Voltage		5V ± 5%
Weight		52g
Connector		SATA 7+15 pins combo connector

Environmental Specifications		
Operating Temperature		0 °C to 70 °C
Storage Temperature		- 40 °C to 85 °C
Humidity	Operating	0% to 95% (Non-condensing)
	Non-Operating	0% to 95% (Non-condensing)

Performance										
Model P/N	ATTO		AS SSD		CrystalDiskMark				IOMeter	
	Max. Read *	Max. Write *	Sequential Read **	Sequential Write **	Sequential Read ***	Sequential Write ***	Random Read (4KB QD32) ***	Random Write (4KB QD32) ***	IOPS Random Read (4KB QD32) ****	IOPS Random Write (4KB QD32) ****
TS64GSSD320	532.39	499.12	155.78	69.08	162.2	71.82	42.03	70.68	9,977	85,608
TS128GSSD320	520.09	513.57	180.18	134.12	184.5	141.5	81.22	138.2	17,519	87,728
TS256GSSD320	553.65	529.53	461.11	304.82	462.5	346.1	229.1	264.8	42,435	90,278

Note: Maximum transfer speed recorded

\* 25 °C, test on Z87-C, 4GB, Windows® 7 with AHCI mode, benchmark utility ATTO (version 2.41), unit MB/s

\*\* 25 °C, test on Z87-C, 4GB, Windows® 7 with AHCI mode, benchmark utility AS SSD (version 1.6.4237.30508), unit MB/s

\*\*\* 25 °C, test on Z87-C, 4GB, Windows® 7 Professional with AHCI mode, benchmark utility CrystalDiskMark (version 3.0), copied file 1000MB, unit MB/s

\*\*\*\* 25 °C, test on Z87-C, 4GB, Windows® 7 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

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

Actual Capacity				
Model P/N	LBA	Cylinder	Head	Sector
TS64GSSD320	125,045,424	16,383	16	63
TS128GSSD320	250,069,680	16,383	16	63
TS256GSSD320	500,118,192	16,383	16	63

Power Requirements		
Input Voltage		5V $\pm$ 5% @25°C
Mode P/N / Power Consumption *		Typical (mA)
TS64GSSD320	Read	325
	Write	433
	Idle	122
TS128GSSD320	Read	333
	Write	438
	Idle	125
TS256GSSD320	Read	338
	Write	394
	Idle	121

\*Tested with IOMeter running sequential reads/writes and idle mode

Reliability		
Data Reliability		Supports 55 bits in 512 bytes
MTBF		1,000,000 hours
Endurance (Terabytes Written) *	64G	79 TBW
	128G	209 TBW
	256G	426 TBW

\* Tested under JESD219A client workload endurance specification

Vibration	
Operating *	5.0G(peak-to-peak), 5 - 800Hz
Non-Operating *	20G(peak-to-peak), 5 - 800Hz

\* 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.

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

Shock	
Operating *	1500G, 0.5ms
Non-Operating *	1500G, 0.5ms

\* 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

TS64GSSD320  
TS256GSSD320

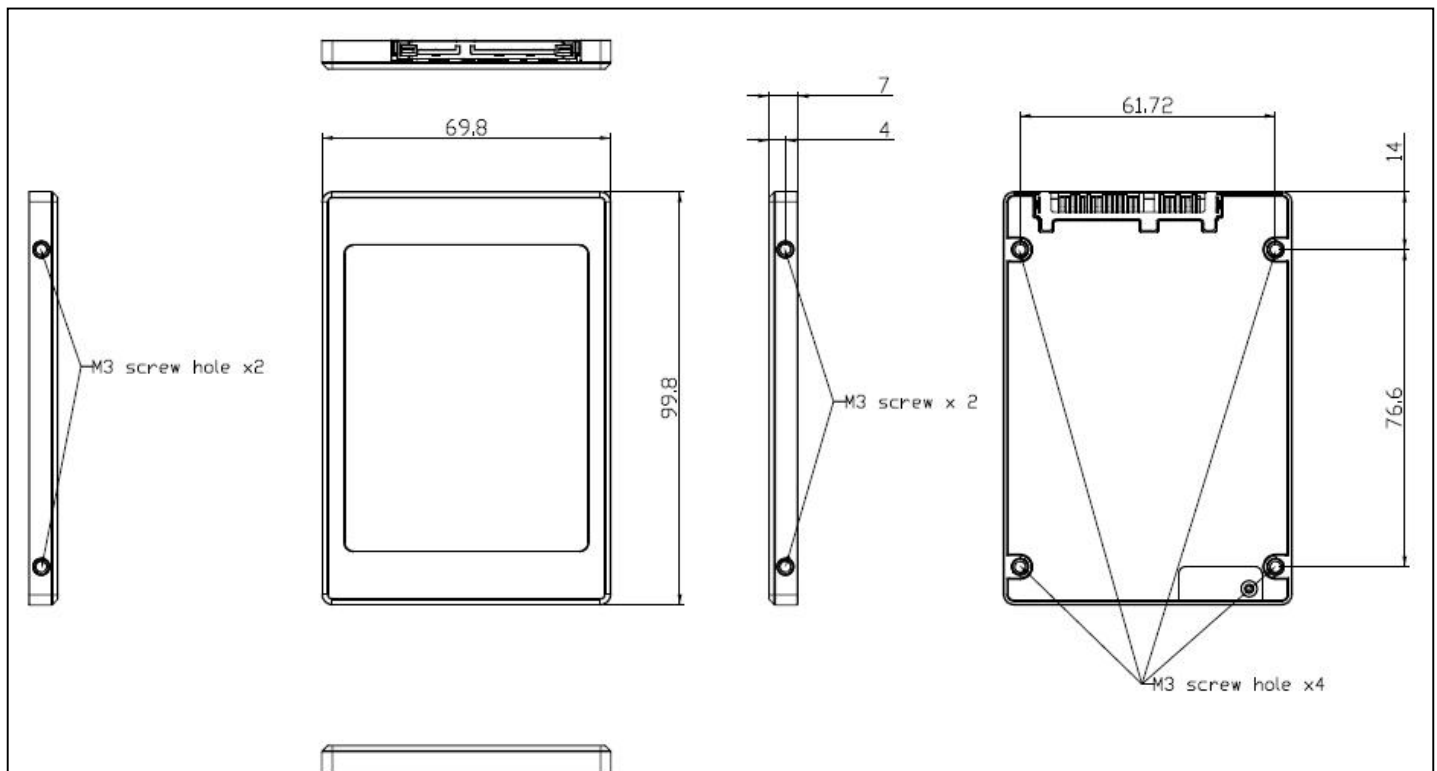
TS128GSSD320



2.5" SATA Solid State Disk

## Package Dimensions

Below figure illustrates the Transcend 2.5" SATA Solid State Disk. All dimensions are in mm.



\*Note: Tighten mounting screws with no more than 3 Kg-cm of torque.

TS64GSSD320  
TS256GSSD320

TS128GSSD320

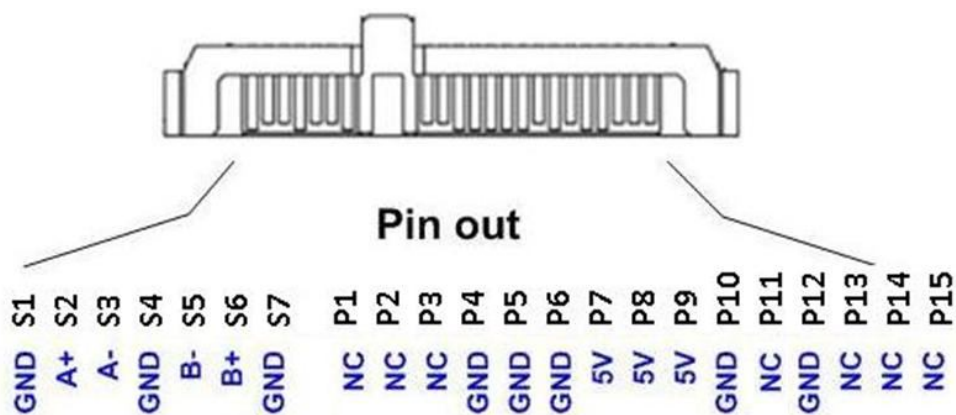


2.5" SATA Solid State Disk

## 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	NC
P4	GND	P5	GND
P6	GND	P7	5V
P8	5V	P9	5V
P10	GND	P11	NC
P12	GND	P13	NC
P14	NC	P15	NC

## Pin Layout



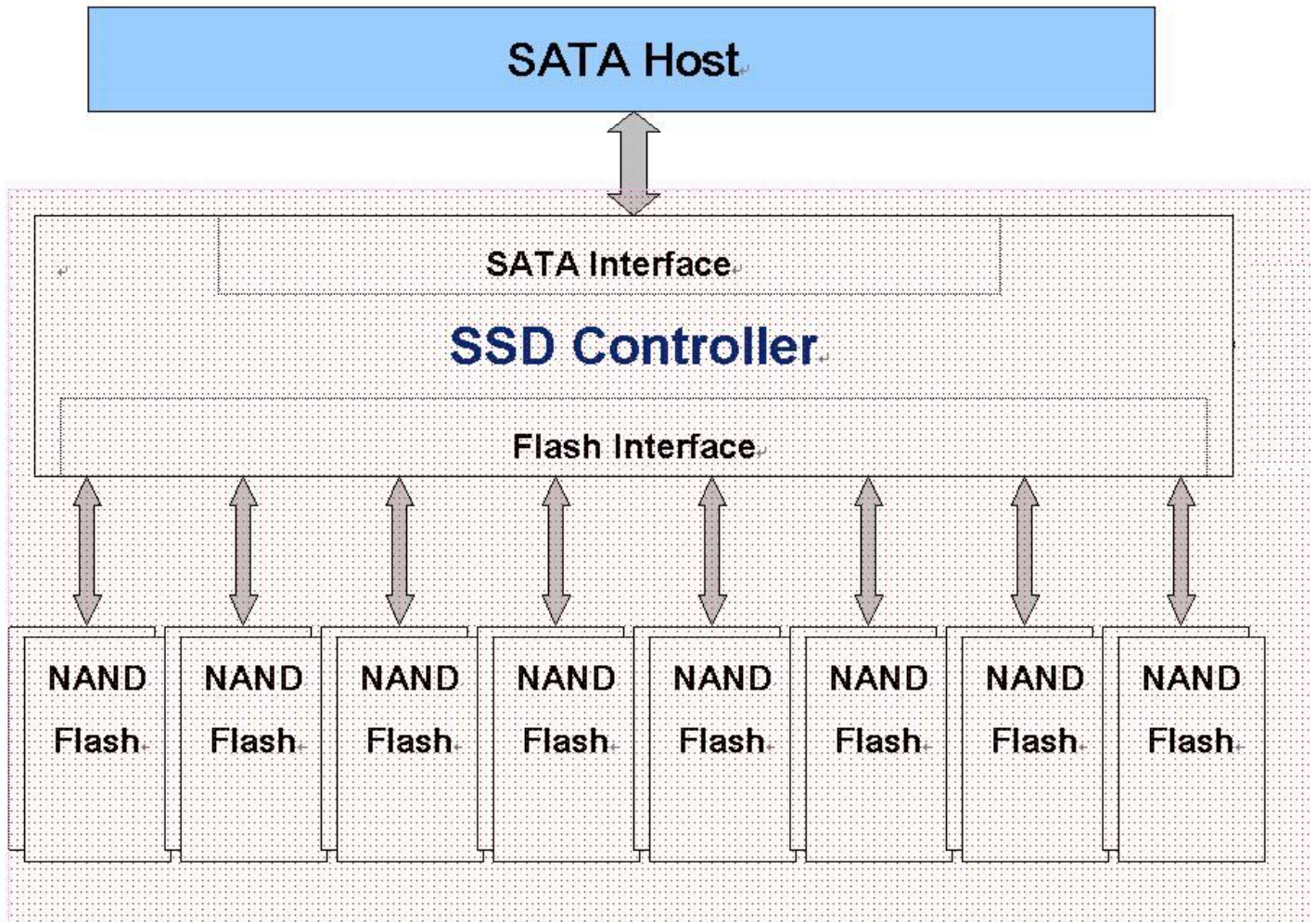
TS64GSSD320  
TS256GSSD320

TS128GSSD320



2.5" SATA Solid State Disk

## Block Diagram



\*The quantity of NAND flash varies by capacity.

## **Reliability**

### **Wear-Leveling algorithm**

The controller supports static/dynamic wear leveling. When the host writes data, the controller will find and use the block with the lowest erase count among the free blocks. This is known as dynamic wear leveling. When the free blocks' erase count is higher than the data blocks', it will activate the static wear leveling, replacing the not so frequently used user blocks with the high erase count free blocks.

### **ECC algorithm**

The controller uses 55 bit ECC algorithm per 512 bytes. ECC can correct up to 55 random error bits within 512 data bytes.

### **Bad-block management**

When the flash encounters ECC failed, program fail or erase fail, the controller will mark the block as bad block to prevent the used of this block and caused data lost later on.



## ATA Command Register

This table with the following paragraphs summarizes the ATA command set.

**Command Table**

Command Name	Code	PARAMETERS USED					
		SC	SN	CY	DR	HD	FT
CHECK POWER MODE	E5h	X	X	X	O	X	X
EXECUTE DIAGNOSTICS	90h	X	X	X	O	X	X
FLUSH CACHE	E7h	X	X	X	O	O	X
FLUSH CACHE EXT	EAh	X	X	X	O	O	X
IDENTIFY DEVICE	ECh	X	X	X	O	X	X
IDLE	E3h	O	X	X	O	X	X
IDLE IMMEDIATE	E1h	X	X	X	O	X	X
INITIALIZE DEVICE PARAMETERS	91h	O	X	X	O	O	X
READ BUFFER	E4h	X	X	X	O	X	X
READ DMA	C8h or C9h	O	O	O	O	O	X
READ DMA EXT	25h	O	O	O	O	O	X
READ FPDMA QUEUED	60h	O	O	O	O	O	O
READ LOG EXT	2Fh	O	O	O	O	O	O
READ MULTIPLE	C4h	O	O	O	O	O	X
READ MULTIPLE EXT	29h	O	O	O	O	O	X
READ SECTOR(S)	20h or 21h	O	O	O	O	O	X
READ SECTOR(S) EXT	24h	O	O	O	O	O	X
READ VERIFY SECTOR(S)	40h or 41h	O	O	O	O	O	X
READ VERIFY SECTOR(S) EXT	42h	O	O	O	O	O	X
RECALIBRATE	10h	X	X	X	O	X	X
SECURITY DISABLE PASSWORD	F6h	X	X	X	O	X	X
SECURITY ERASE PREPARE	F3h	X	X	X	O	X	X
SECURITY ERASE UNIT	F4h	X	X	X	O	X	X
SECURITY FREEZE LOCK	F5h	X	X	X	O	X	X
SECURITY SET PASSWORD	F1h	X	X	X	O	X	X
SECURITY UNLOCK	F2h	X	X	X	O	X	X

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

SEEK	7xh	X	X	O	O	O	X
SET FEATURES	EFh	O	X	X	O	X	O
SET MULTIPLE MODE	C6h	O	X	X	O	X	X
SLEEP	E6h	X	X	X	O	X	X
SMART	B0h	X	X	O	O	X	O
STANDBY	E2h	X	X	X	O	X	X
STANDBY IMMEDIATE	E0h	X	X	X	O	X	X
WRITE BUFFER	E8h	X	X	X	O	X	X
WRITE DMA	CAh or CBh	O	O	O	O	O	X
WRITE DMA EXT	35h	O	O	O	O	O	X
WRITE DMA FUA EXT	3Dh	O	O	O	O	O	X
WRITE FPDMA QUEUED	61h	O	O	O	O	O	O
WRITE MULTIPLE	C5h	O	O	O	O	O	X
WRITE MULTIPLE EXT	39h	O	O	O	O	O	X
WRITE MULTIPLE FUA EXT	CEh	O	O	O	O	O	X
WRITE SECTOR(S)	30h or 31h	O	O	O	O	O	X
WRITE SECTOR(S) EXT	34h	O	O	O	O	O	X

**Note:**

O = Valid, X = Don't care

SC = Sector Count Register

SN = Sector Number Register

CY = Cylinder Low/High Register

DR = DEVICE SELECT Bit (DEVICE/HEAD Register Bit 4)

HD = HEAD SELECT Bit (DEVICE/HEAD Register Bit 3-0)

FT = Features Register

## Identify Device Information Default Value

Word	Value	F/V	Description
0	0C5Ah	F 15 0 = ATA device X 14-8 Retired X 7-6 Obsolete X 5-3 Retired V 2 Reserved X 1 Retired 0 Reserved	General configuration bit-significant information:
1	3FFFh	F	Number of logical cylinders 16383 (above 16GB capacity)
2	C837h	V	Specific configuration
3	0010h	F	Number of logical heads
4-5	0000h	X	Retired
6	003Fh	F	Number of logical sector per logical track
7-8	0000h	X	Reserved for assignment by the CompactFlash_ Association
9	0000h	X	Retired
10-19	XXXXh	F	Serial number (20 ASCII characters)
20-21	0000h	X	Retired
22	0004h	X	Obsolete
23-26	XXXXh	F	Firmware revision (8 ASCII characters)
27-46	XXXXh	F	Model number (40 ASCII characters)
47	8010h	F 15-8 80h F 7-0 00h = Reserved F 01h = Maximum number of 1 sectors on READ/WRITE MULTIPLE commands	
48	4000h	F	Reserved
49	2F00h	Capabilities F 15-14 Reserved for the IDENTIFY PACKET DEVICE command. F 13 1 = Standby timer values as specified in this standard are supported 0 = Standby timer values shall be managed by the device F 12 Reserved for the IDENTIFY PACKET DEVICE command. F 11 1 = IORDY supported 0 = IORDY may be supported F 10 1 = IORDY may be disabled F 9 1 = LBA supported F 8 1 = DMA supported. X 7-0 Retired	
50	4000h	Capabilities F 15 Shall be cleared to zero. F 14 Shall be set to one. 13-2 Reserved. X 1 Obsolete F 0 Shall be set to one to indicate a device specific Standby timer value minimum.	

51-52	0200h	X	Obsolete
53	0007h	F F F X	15-3 Reserved 2 1 = the fields reported in word 88 are valid 0 = the fields reported in word 88 are not valid 1 1 = the fields reported in words 70:64 are valid 0 = the fields reported in words 70:64 are not valid 0 1 = the fields reported in words 58:54 are valid 0 = the fields reported in words 58:54 are not valid
54	XXXXh	X	Number of current cylinders
55	00XXh	X	Number of current heads
56	XXXXh	X	Number of current sector per track
57-58	XXXXh	X	Current capacity in sectors
59	0110h	V V	15-9 Reserved 8 1 = Multiple sector setting is valid 7-0 xxh = Setting for number of sectors that shall be transferred per interrupt on R/W Multiple command
60-61	XXXXh	F	Total number of user addressable sectors
62	0000h	X	Obsolete
63	0407h	F V V V F F F	15-11 Reserved 10 1 = Multiword DMA mode 2 is selected 0 = Multiword DMA mode 2 is not selected 9 1 = Multiword DMA mode 1 is selected 0 = Multiword DMA mode 1 is not selected 8 1 = Multiword DMA mode 0 is selected 0 = Multiword DMA mode 0 is not selected 7-3 Reserved 2 1 = Multiword DMA mode 2 and below are supported 1 1 = Multiword DMA mode 1 and below are supported 0 1 = Multiword DMA mode 0 is supported
64	0003h	F	15-8 Reserved 7-0 Advanced PIO modes supported
65	0078h	F	Minimum Multiword DMA transfer cycle time per word
66	0078h	F	Manufacturer's recommended Multiword DMA transfer cycle time
67	0078h	F	Minimum PIO transfer cycle time without flow control
68	0078h	F	Minimum PIO transfer cycle time with IORDY flow control
69	4200h		Reserved
70	0000H		Reserved
71-74	0000h		Reserved for the IDENTIFY PACKET DEVICE command
75	001Fh	F	Queue depth 15-5 Reserved 4-0 Maximum queue depth – 1

76	C70Eh	F	Serial ATA Capabilities 15-11 Reserved for Serial ATA 10 1 = Supports Phy Event Counts 9 1 = Supports receipt of host initiated power management requests 8 1 = Supports the NCQ feature set 7-3 Reserved for Serial ATA 2 1 = Supports SATA Gen2 Signaling Speed (3.0Gb/s) 1 1 = Supports SATA Gen1 Signaling Speed (1.5Gb/s) 0 Shall be cleared to zero
77	0004h		Reserved for Serial ATA
78	004Ch	F	Serial ATA feature supported 15-7 Reserved for Serial ATA 6 1 = Device supports Software Settings Preservation 5 Reserved for Serial ATA 4 1 = Device supports in-order data delivery 3 1 = Device supports initiating power management 2 1 = Device supports DMA Setup auto-activation 1 1 = Device supports non-zero buffer offsets 0 Shall be cleared to zero
79	00XXh	V	Serial ATA feature enabled 15-7 Reserved for Serial ATA 6 1 = Software Settings Preservation enabled 5 Reserved for Serial ATA 4 1 = In-order data delivery enabled 3 1 = Device initiated power management enabled 2 1 = DMA Setup auto-activation enabled 1 1 = Non-zero buffer offsets enabled 0 Shall be cleared to zero
80	01FCh	F	Major version number 0000h or FFFFh = device does not report version 15 Reserved 14 Reserved for ATA/ATAPI-14 13 Reserved for ATA/ATAPI-13 12 Reserved for ATA/ATAPI-12 11 Reserved for ATA/ATAPI-11 10 Reserved for ATA/ATAPI-10 9 Reserved for ATA/ATAPI-9 8 Reserved for ATA/ATAPI-8 7 1 = supports ATA/ATAPI-7 6 1 = supports ATA/ATAPI-6 5 1 = supports ATA/ATAPI-5 4 1 = supports ATA/ATAPI-4 3 Obsolete 2 Obsolete 1 Obsolete 0 Reserved
81	0110h	F	Minor version number

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

82	746Bh	X 15 Obsolete F 14 1 = NOP command supported F 13 1 = READ BUFFER command supported F 12 1 = WRITE BUFFER command supported X 11 Obsolete F 10 1 = Host Protected Area feature set supported F 9 1 = DEVICE RESET command supported F 8 1 = SERVICE interrupt supported F 7 1 = release interrupt supported F 6 1 = look-ahead supported F 5 1 = write cache supported F 4 Shall be cleared to zero to indicate that the PACKET Command feature set is not supported. F 3 1 = mandatory Power Management feature set supported F 2 1 = Removable Media feature set supported F 1 1 = Security Mode feature set supported F 0 1 = SMART feature set supported
83	7469h	Command and feature sets supported F 15 Shall be cleared to zero F 14 Shall be set to one F 13 1 = The FLUSH CACHE EXT command is supported F 12 Shall be set to one to indicate that the mandatory FLUSH CACHE command is supported F 11 1 = The DCO feature set is supported F 10 1 = The 48-bit Address feature set is supported F 9 1 = The AAM feature set is supported F 8 1 = SET MAX security extension supported 7 Reserved F 6 1 = SET FEATURES subcommand required to spinup after power-up F 5 1 = Power-Up In Standby feature set supported F 4 1 = Removable Media Status Notification feature set supported F 3 1 = Advanced Power Management feature set supported F 2 1 = CFA feature set supported F 1 1 = READ/WRITE DMA QUEUED supported F 0 1 = DOWNLOAD MICROCODE command supported
84	6163h	Command and feature sets supported F 15 Shall be cleared to zero F 14 Shall be set to one F 13 1 = The IDLE IMMEDIATE command with UNLOAD feature is supported 12-11 Reserved for TLC X 10-9 Obsolete F 8 1 = The 64-bit World wide name is supported F 7 1 = The WRITE DMA QUEUED FUA EXT command is supported F 6 1 = The WRITE DMA FUA EXT and WRITE MULTIPLE FUA EXT commands are supported F 5 1 = The GPL feature set is supported F 4 1 = The Streaming feature set is supported F 3 1 = The Media Card Pass Through Command feature set is supported F 2 1 = Media serial number is supported F 1 1 = SMART self-test supported F 0 1 = SMART error logging supported

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

85	7428h	X F F F X V F V V V V F F X V V	Command and feature sets supported or enable (Depend on the host enabling) 15 Obsolete 14 1 = The NOP command is supported 13 1 = The READ BUFFER command is supported 12 1 = The WRITE BUFFER command is supported 11 Obsolete 10 1 = HPA feature set is supported 9 Shall be cleared to zero to indicate that the DEVICE RESET command is not supported 8 1 = The SERVICE interrupt is enabled 7 1 = The release interrupt is enabled 6 1 = Read look-ahead is enabled 5 1 = The volatile write cache is enabled 4 Shall be cleared to zero to indicate that the PACKET Command feature set is not supported. 3 Shall be set to one to indicate that the mandatory Power Management feature is supported 2 Obsolete 1 1 = The Security feature set is enabled 0 1 = The SMART feature set is enabled
86	B449h	F  F F F F V V  F V X V F F F	Command and feature sets supported or enable (Depend on the host enabling) 15 1 = Words 119-120 are valid 14 Reserved 13 1 = FLUSH CACHE EXT command supported 12 1 = FLUSH CACHE command supported 11 1 = The DCO feature set is supported 10 1 = The 48-bit Address feature set is supported 9 1 = The AAM feature set is enable 8 1 = The SET MAX security extension is enabled by SET MAX SET PASSWORD 7 Reserved for Address Offset Reserved Area Boot Method 6 1 = SET FEATURES subcommand required to spin-up after power-up 5 1 = The PUIS feature set is enabled 4 Obsolete 3 1 = The APM feature set is enabled 2 1 = The CFA feature set is supported 1 1 = The TCQ feature set is supported 0 1 = The DOWNLOAD MICROCODE command is supported
87	6163h	F F F  X F F F F X V V F F	Command and feature sets supported or enabled (Depend on the host enabling) 15 Shall be cleared to zero 14 Shall be set to one 13 1 = The IDLE IMMEDIATE command with UNLOAD feature is supported 12-11 Reserved for TLC 10-9 Obsolete 8 1 = The 64-bit World wide name is supported 7 1 = The WRITE DMA QUEUED FUA EXT command is supported 6 1 = The WRITE DMA FUA EXT and WRITE MULTIPLE FUA EXT commands are supported 5 1 = The GPL feature set is supported 4 Obsolete 3 1 = The Media Card Pass Through Command feature set is supported 2 1 = Media serial number is supported 1 1 = SMART self-test supported 0 1 = SMART error logging supported

88	XX7Fh		Ultra DMA modes (XX depends on the host selecting)
			15 Reserved
		V	14 1 = Ultra DMA mode 6 is selected 0 = Ultra DMA mode 6 is not selected
		V	13 1 = Ultra DMA mode 5 is selected 0 = Ultra DMA mode 5 is not selected
		V	12 1 = Ultra DMA mode 4 is selected 0 = Ultra DMA mode 4 is not selected
		V	11 1 = Ultra DMA mode 3 is selected 0 = Ultra DMA mode 3 is not selected
		V	10 1 = Ultra DMA mode 2 is selected 0 = Ultra DMA mode 2 is not selected
		V	9 1 = Ultra DMA mode 1 is selected 0 = Ultra DMA mode 1 is not selected
		V	8 1 = Ultra DMA mode 0 is selected 0 = Ultra DMA mode 0 is not selected
			7 Reserved
		F	6 1 = Ultra DMA mode 6 and below are supported
		F	5 1 = Ultra DMA mode 5 and below are supported
		F	4 1 = Ultra DMA mode 4 and below are supported
		F	3 1 = Ultra DMA mode 3 and below are supported
		F	2 1 = Ultra DMA mode 2 and below are supported
		F	1 1 = Ultra DMA mode 1 and below are supported
		F	0 1 = Ultra DMA mode 0 is supported
89	0001h	F	15-8 Reserved 7-0 Time required for Normal Erase mode SECURITY ERASE UNIT command
90	0000h	F	15-8 Reserved 7-0 Time required for Enhanced Erase mode SECURITY ERASE UNIT command
91	00FEh	V	Current APM level value
92	FFFEh	V	Master Password Identifier
93	0000h	X	Hardware reset result
94	0000h	F	Current AAM value
		V	15-8 Vendor's recommended AAM value 7-0 Current AAM value
95-99	0000h		Reserved
100-103	XXXXh	X	Total Number of User Addressable Logical Sectors for 48-bit commands (QWord)
104-105	0000h		Reserved
106	4000h		Physical sector size / logical sector size
		F	15 Shall be cleared to zero
		F	14 Shall be set to one
		F	13 1 = Device has multiple logical sectors per physical sector
		F	12 1 = Device Logical Sector longer than 256 Words
			11-4 Reserved
107-118	0000h	F	3-0 2x logical sectors per physical sector
			Reserved



119	401Ah	F F F F F F F 0	Commands and feature sets supported (Continued from words 84:82) 15 Shall be cleared to zero 14 Shall be set to one 13-6 Reserved 5 1= The Free-fall Control feature set is supported 4 1 = The DOWNLOAD MICROCODE command with mode 3 is supported 3 1 = The READ LOG DMA EXT and WRITE LOG DMA EXT commands are supported 2 1 = The WRITE UNCORRECTABLE EXT command is supported 1 1 = The Write-Read-Verify feature set is supported 0 Reserved for DDT
120	4018h	F F V F F F V 0	Commands and feature sets supported or enabled (Continued from words 87:85) 15 Shall be cleared to zero 14 Shall be set to one 13-6 Reserved 5 1= The Free-fall Control feature set is enabled 4 1 = The DOWNLOAD MICROCODE command with mode 3 is supported 3 1 = The READ LOG DMA EXT and WRITE LOG DMA EXT commands are supported 2 1 = The WRITE UNCORRECTABLE EXT command is supported 1 1 = The Write-Read-Verify feature set is enabled 0 Reserved for DDT
121-126	0000h		Reserved for expended supported and enabled settings
127	0000h	X	Obsolete
128	0009h	F V F F V V V V V F	Security status 15-9 Reserved 8 Security level 0 = High, 1 = Maximum 7-6 Reserved 5 1 = Enhanced security erase supported 4 1 = Security count expired 3 1 = Security frozen 2 1 = Security locked 1 1 = Security enabled 0 1 = Security supported
129-159	0000h	X	Vendor specific
160-216	0000h		Reserved
217	0001h	F	Nominal media rotation rate
218-221	0000h		Reserved

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

222	103Fh		Transport Major Revision 0000h or FFFFh = device does not report version
		F	<b>Bits Description</b> 15:12 Transport Type 0h = Parallel 1h = Serial 2h - Fh = Reserved
			11:6 Reserved
		F	5 SATA Rev 3.0
		F	4 SATA Rev 2.6
		F	3 SATA Rev 2.5
		F	2 SATA II: Extensions
223	0000h	F	1 SATA 1.0a
		F	0 ATA8-AST
224-254	0000h		Reserved
255	52A5h	X	Integrity word 15-8 Checksum 7-0 Signature

Key:

F/V = Fixed/variable content

F = the content of the word is fixed and does not change. For removable media devices, these values may change when media is removed or changed.

V = the contents of the word is variable and may change depending on the state of the device or the commands executed by the device.

X = the content of the word may be fixed or variable.

TS64GSSD320  
TS256GSSD320

TS128GSSD320



2.5" SATA Solid State Disk

## SMART Data Structure

ID	Hex	Attribute Name	Description
9	0x09	Power-On Hours (POH)	Count of hours in power-on state. The raw value of this attribute shows total count of hours in power-on state.
12	0x0C	Device Power Cycle Count	This attribute indicates the count of full power cycles.
171	0xAB	Program Fail Count	Counts the number of flash program failures
172	0xAC	Erase Fail Count	Counts the number of flash erase failures.
174	0xAE	Unexpected Power Loss Count	Counts the number of unexpected power loss events since the drive was deployed.
177	0xB1	Wear Range Delta	Returns the percent difference in wear between the most-worn block and least-worn block.
194	0xC2	Temperature	Temperature assuming an on-board sensor connected via ISTW interface to the SF-2000.
230	0xE6	Drive Life Protection Status	Indicates when the drive is operating under extreme conditions requiring protection measures to be activated.
231	0xE7	SSD Life Left	Indicates the approximate percentage of SSD life left.
241	0xF1	Lifetime Writes from Host	Indicates the total amount of data written from hosts since the drive was deployed.
242	0xF2	Lifetime Reads from Host	Indicates the total amount of data read to hosts since the drive was deployed.

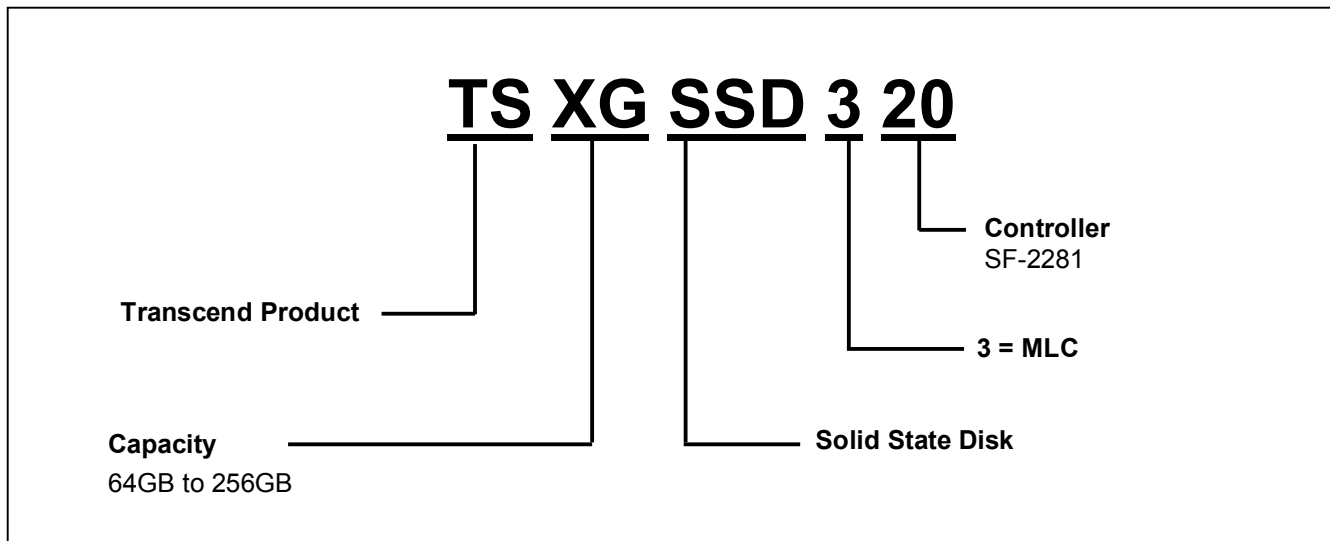
**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

## Ordering Information



The above technical information 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.



### TAIWAN

No.70, XingZhong Rd., NeiHu Dist., Taipei, Taiwan, R.O.C  
TEL +886-2-2792-8000  
Fax +886-2-2793-2222  
E-mail: [sales-tw@transcend-info.com](mailto:sales-tw@transcend-info.com)  
<http://tw.transcend-info.com>

### USA

#### Los Angeles:

E-mail: [sales-us@transcend-info.com](mailto:sales-us@transcend-info.com)

#### Maryland:

E-mail: [sales-us@transcend-info.com](mailto:sales-us@transcend-info.com)  
<http://www.transcend-info.com>

### CHINA

E-mail: [sales\\_sh@transcendchina.com](mailto:sales_sh@transcendchina.com)  
<http://cn.transcend-info.com>

### GERMANY

E-mail: [vertrieb-de@transcend-info.com](mailto:vertrieb-de@transcend-info.com)  
<http://de.transcend-info.com>

### HONG KONG

E-mail: [sales-hk@transcend-info.com](mailto:sales-hk@transcend-info.com)  
<http://hk.transcend-info.com>

### JAPAN

E-mail: [sales-jp@transcend-info.com](mailto:sales-jp@transcend-info.com)  
<http://jp.transcend-info.com>

### THE NETHERLANDS

E-mail: [sales-nl@transcend-info.com](mailto:sales-nl@transcend-info.com)  
<http://nl.transcend-info.com>

### United Kingdom

E-mail: [sales-uk@transcend-info.com](mailto:sales-uk@transcend-info.com)  
<http://uk.transcend-info.com>

### KOREA

E-mail: [sales-kr@transcend-info.com](mailto:sales-kr@transcend-info.com)  
<http://kr.transcend-info.com>

**TS64GSSD320**  
**TS256GSSD320**

**TS128GSSD320**



**2.5" SATA Solid State Disk**

---

Revision History			
Version	Date	Modification Content	Modified Page
1.0	2012/07/17	First Release	
1.1	2012/09/21	Update placement, Update product weight, Update package dimensions	1,2,5
1.2	2013/04/23	Update performance and power requirements table	2,3
1.3	2013/08/20	Update performance, power consumption and TBW table	2,3