TS16GSSD500 **TS32GSSD500**
TS64GSSD500

2.5” SATA Solid State Disk

Description

Due to smaller size (fit the standard dimensions of 2.5” SATA Hard Disk Drives), huge capacity, high speed, and low power consumption, Solid State Disk is perfect replacement storage device for PCs, Laptops, gaming systems, and handheld devices.

- Fully compatible with SATA II 3Gb/s standard
- Built-in ECC and wear-leveling to ensure reliability of data transfer
- Support Trim and NCQ command

Placement

Features

- RoHS compliant
- SLC NAND Flash
- Fully compatible with devices and OS that support the SATA II 3Gb/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
- 64MB DRAM cache
- Support Trim and NCQ command
- Shock resistance
- Support Hardware Purge function

Dimensions

Side	Millimeters	Inches
A	100.30 ± 0.40	3.949 ± 0.016
B	69.85 ± 0.20	2.750 ± 0.008
C	9.50 ± 0.15	0.374 ± 0.004

Specifications

Physical Specification		
Form Factor		2.5-inch HDD
Storage Capacities		16 GB to 64 GB
Dimensions (mm)	**Length**	100.3 0 ± 0.40
	Width	69.85 ± 0.20
	Height	9.50 ± 0.15
Input Voltage		5V ± 5%
Weight		N/A
Connector		SATA 7+15 pins combo connector

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

Performance

Model P/N	Sequential Read*	Sequential Write*	Random Read (4KB QD32)*	Random Write (4KB QD32)*	IOPS Random Read (4KB QD32)**	IOPS Random Write (4KB QD32)**
TS16GSSD500	246.6	148.9	50.62	12.81	9,859	1,788
TS32GSSD500	257.7	239.5	48.37	26.88	9,168	4,556
TS64GSSD500	258.7	237.8	44.69	35.04	8,946	5,336

Note: Maximum transfer speed recorded
* 25 ℃, test on ASUS P8Z68-V PRO, 4GB, Windows® 7 Professional with AHCI mode, benchmark utility CrystalDiskMark (version 3.0), copied file 1000MB, unit MB/s
** Random read/write performance based on IOmeter2006 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

Actual Capacity				
Model P/N	**LBA**	**Cylinder**	**Head**	**Sector**
TS16GSSD500	31,277,232	16,383	16	63
TS32GSSD500	62,533,296	16,383	16	63
TS64GSSD500	125,045,424	16,383	16	63

Power Requirements		
Input Voltage		5V ± 5% @25℃
Mode P/N / Power Consumption		**Typical (mA)**
TS16GSSD500	**Read**	394
	Write	384
	Idle	158
TS32GSSD500	**Read**	415
	Write	645
	Idle	157
TS64GSSD500	**Read**	420
	Write	654
	Idle	155

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

Reliability		
Data Reliability	Supports BCH ECC 16/24 bits in 1024 bytes	
Data Retention	10 years	
MTBF	1,000,000 hours	
Endurance (Terabytes Written)	16G	533 TBW
	32G	1066 TBW
	64G	2133 TBW

Vibration	
Operating	3.0G(peak-to-peak), 5 - 800Hz
Non-Operating	3.0G(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.

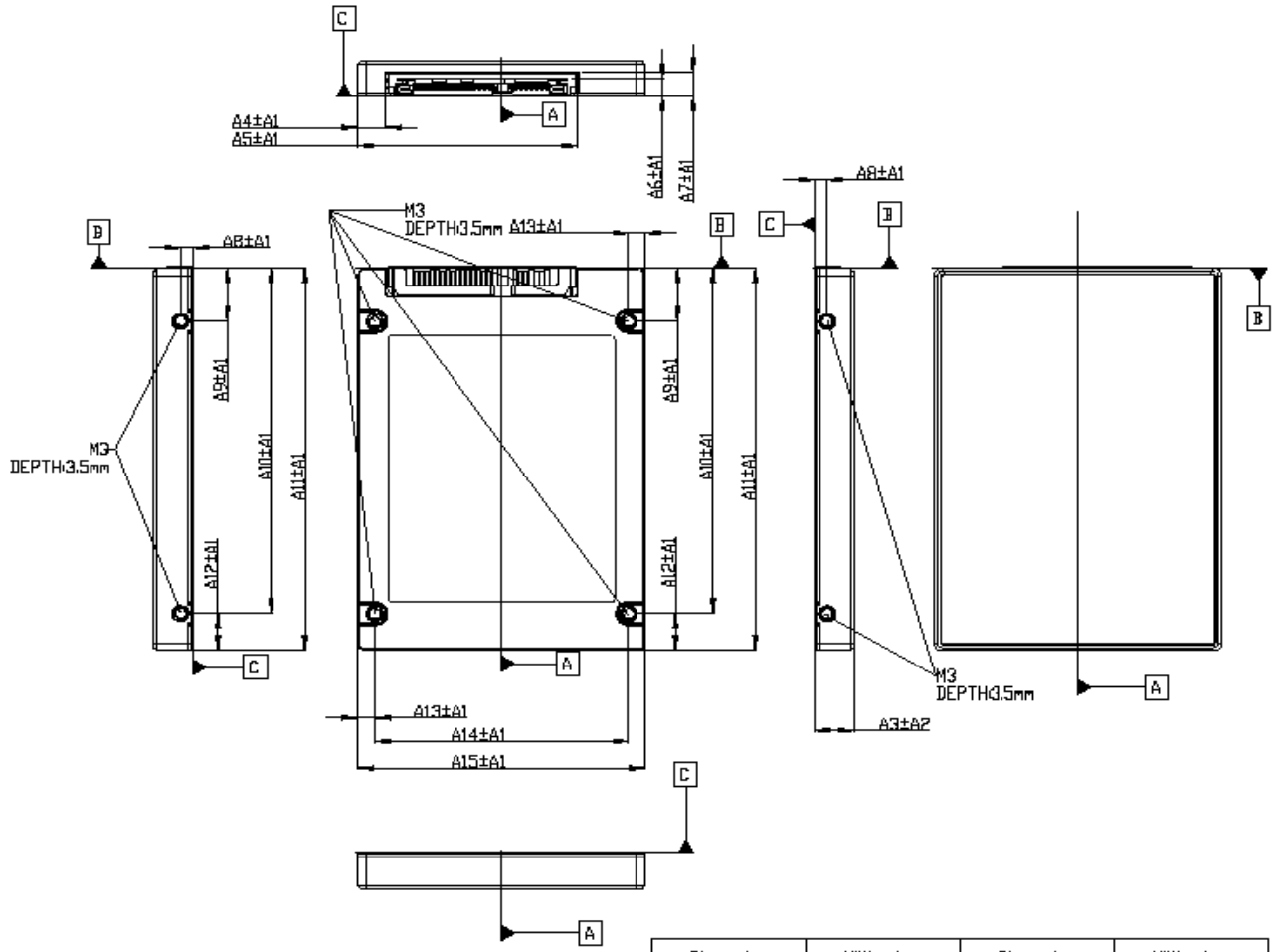
Shock	
Operating	1500G, 0.5ms
Non-Operating	1500G, 0.5ms

* 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

Package Dimensions

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



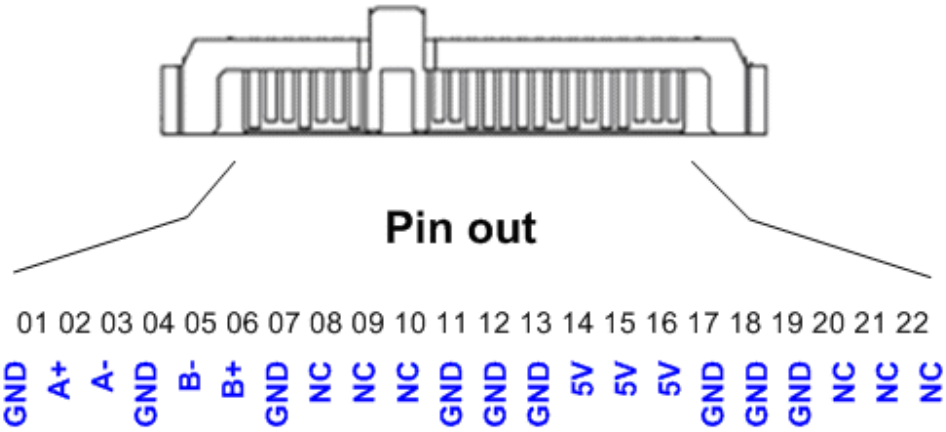
Dimension	Millimeter	Dimension	Millimeter
A1	0.25	A9	14.00
A2	0.15	A10	90.60
A3	9.50	A11	100.3
A4	6.75	A12	9.70
A5	53.52	A13	4.06
A6	4.93	A14	61.72
A7	6.34	A15	69.85
A8	3.00		

*Note: Tighten mounting screws with no more than 1.0Kg-cm (0.07ft-lbs) of torque.

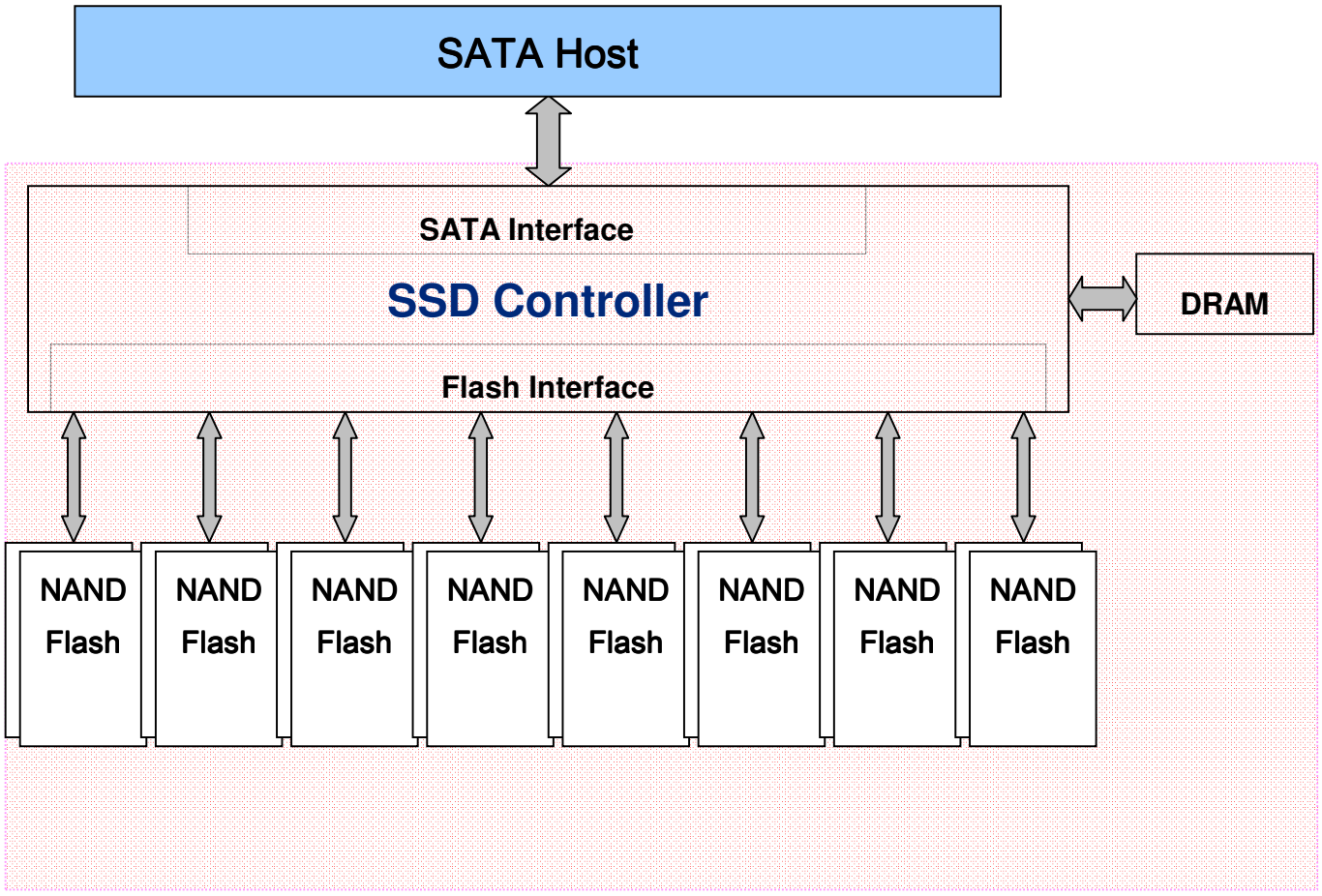
Pin Assignments

Pin No.	Pin Name	Pin No.	Pin Name
01	GND	02	A+
03	A-	04	GND
05	B-	06	B+
07	GND	08	NC
09	NC	10	NC
11	GND	12	GND
13	GND	14	5V
15	5V	16	5V
17	GND	18	GND
19	GND	20	NC
21	NC	22	NC

Pin Layout



Block Diagram



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 BCH16/BCH24 ECC algorithm per 1024 bytes. BCH16/BCH24 can correct up to 16 or 24 random error bits within 1024 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
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	0040h		General configuration bit-significant information:
		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
1	3C8Ah	F	Number of logical cylinders
	3FFFh		15498 (8GB capacity)
			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	0000h	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	0000h	F	Reserved
49	2F00h		Capabilities
			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
			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	0000h	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	0007h	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
69-70	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	0506h		Serial ATA Capabilities 15-11 Reserved for Serial ATA F 10 1 = Supports Phy Event Counts F 9 1 = Supports receipt of host initiated power management requests F 8 1 = Supports the NCQ feature set 7-3 Reserved for Serial ATA F 2 1 = Supports SATA Gen2 Signaling Speed (3.0Gb/s) F 1 1 = Supports SATA Gen1 Signaling Speed (1.5Gb/s) F 0 Shall be cleared to zero
77	0000h		Reserved for Serial ATA
78	0044h		Serial ATA feature supported 15-7 Reserved for Serial ATA F 6 1 = Device supports Software Settings Preservation 5 Reserved for Serial ATA F 4 1 = Device supports in-order data delivery F 3 1 = Device supports initiating power management F 2 1 = Device supports DMA Setup auto-activation F 1 1 = Device supports non-zero buffer offsets F 0 Shall be cleared to zero
79	00XXh		Serial ATA feature enabled 15-7 Reserved for Serial ATA V 6 1 = Software Settings Preservation enabled 5 Reserved for Serial ATA V 4 1 = In-order data delivery enabled V 3 1 = Device initiated power management enabled V 2 1 = DMA Setup auto-activation enabled V 1 1 = Non-zero buffer offsets enabled F 0 Shall be cleared to zero
80	01F0h		Major version number 0000h or FFFFh = device does not report version 15 Reserved F 14 Reserved for ATA/ATAPI-14 F 13 Reserved for ATA/ATAPI-13 F 12 Reserved for ATA/ATAPI-12 F 11 Reserved for ATA/ATAPI-11 F 10 Reserved for ATA/ATAPI-10 F 9 Reserved for ATA/ATAPI-9 F 8 Reserved for ATA/ATAPI-8 F 7 1 = supports ATA/ATAPI-7 F 6 1 = supports ATA/ATAPI-6 F 5 1 = supports ATA/ATAPI-5 F 4 1 = supports ATA/ATAPI-4 F 3 Obsolete X 2 Obsolete X 1 Obsolete 0 Reserved
81	0000h	F	Minor version number

82	346Bh		Command and feature sets supported
		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	7D09h		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 suported
		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	4063h		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

85	3XXXh		Command and feature sets supported or enable (Depend on the host enabling)
		X	15 Obsolete
		F	14 1 = The NOP command is supported
		F	13 1 = The READ BUFFER command is supported
		F	12 1 = The WRITE BUFFER command is supported
		X	11 Obsolete
		V	10 1 = HPA feature set is supported
		F	9 Shall be cleared to zero to indicate that the DEVICE RESET command is not supported
		V	8 1 = The SERVICE interrupt is enabled
		V	7 1 = The release interrupt is enabled
		V	6 1 = Read look-ahead is enabled
		V	5 1 = The volatile write cache is enabled
		F	4 Shall be cleared to zero to indicate that the PACKET Command feature set is not supported.
		F	3 Shall be set to one to indicate that the mandatory Power Management feature is supported
		X	2 Obsolete
		V	1 1 = The Security feature set is enabled
		V	0 1 = The SMART feature set is enabled
86	BC01h		Command and feature sets supported or enable (Depend on the host enabling)
		F	15 1 = Words 119-120 are valid
			14 Reserved
		F	13 1 = FLUSH CACHE EXT command supported
		F	12 1 = FLUSH CACHE command supported
		F	11 1 = The DCO feature set is supported
		F	10 1 = The 48-bit Address feature set is supported
		V	9 1 = The AAM feature set is enable
		V	8 1 = The SET MAX security extension is enabled by SET MAX SET PASSWORD
			7 Reserved for Address Offset Reserved Area Boot Method
		F	6 1 = SET FEATURES subcommand required to spin-up after power-up
		V	5 1 = The PUIS feature set is enabled
		X	4 Obsolete
		V	3 1 = The APM feature set is enabled
		F	2 1 = The CFA feature set is supported
		F	1 1 = The TCQ feature set is supported
		F	0 1 = The DOWNLOAD MICROCODE command is supported
87	406Xh		Command and feature sets supported or enabled (Depend on the host enabling)
		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
		X	4 Obsolete
		V	3 1 = The Media Card Pass Through Command feature set is supported
		V	2 1 = Media serial number is supported
		F	1 1 = SMART self-test supported
		F	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	001Eh		15-8 Reserved
		F	7-0 Time required for Normal Erase mode SECURITY ERASE UNIT command
90	001Eh		15-8 Reserved
		F	7-0 Time required for Enhanced Erase mode SECURITY ERASE UNIT command
91	0000h	V	Current APM level value
92	FFFEh	V	Master Password Identifier
93	0000h	X	Hardware reset result
94	0000h		Current AAM value
		F	15-8 Vendor’s recommended AAM value
		V	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
		F	3-0 2x logical sectors per physical sector
107-118	0000h		Reserved

119	4004h		Commands and feature sets supported (Continued from words 84:82)
		F	15 Shall be cleared to zero
		F	14 Shall be set to one
			13-6 Reserved
		F	5 1= The Free-fall Control feature set is supported
		F	4 1 = The DOWNLOAD MICROCODE command with mode 3 is supported
		F	3 1 = The READ LOG DMA EXT and WRITE LOG DMA EXT commands are supported
		F	2 1 = The WRITE UNCORRECTABLE EXT command is supported
		F	1 1 = The Write-Read-Verify feature set is supported
			0 Reserved for DDT
120	400Xh		Commands and feature sets supported or enabled (Continued from words 87:85)
		F	15 Shall be cleared to zero
		F	14 Shall be set to one
			13-6 Reserved
		V	5 1= The Free-fall Control feature set is enabled
		F	4 1 = The DOWNLOAD MICROCODE command with mode 3 is supported
		F	3 1 = The READ LOG DMA EXT and WRITE LOG DMA EXT commands are supported
		F	2 1 = The WRITE UNCORRECTABLE EXT command is supported
		V	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	0021h		Security status
		F	15-9 Reserved
		V	8 Security level 0 = High, 1 = Maximum
		F	7-6 Reserved
		F	5 1 = Enhanced security erase supported
		V	4 1 = Security count expired
		V	3 1 = Security frozen
		V	2 1 = Security locked
		V	1 1 = Security enabled
		F	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

222	101Fh	F F F F F F F	Transport Major Revision 0000h or FFFFh = device does not report version **Bits Description** 15:12 Transport Type 0h = Parallel 1h = Serial 2h - Fh = Reserved 11:6 Reserved 5 SATA Rev 3.0 4 SATA Rev 2.6 3 SATA Rev 2.5 2 SATA II: Extensions 1 SATA 1.0a 0 ATA8-AST
223	0000h	F	Transport Minor Revision
224-254	0000h		Reserved
255	7BA5h	X	Integrity word 15-8 Checksum 7-0 Signature

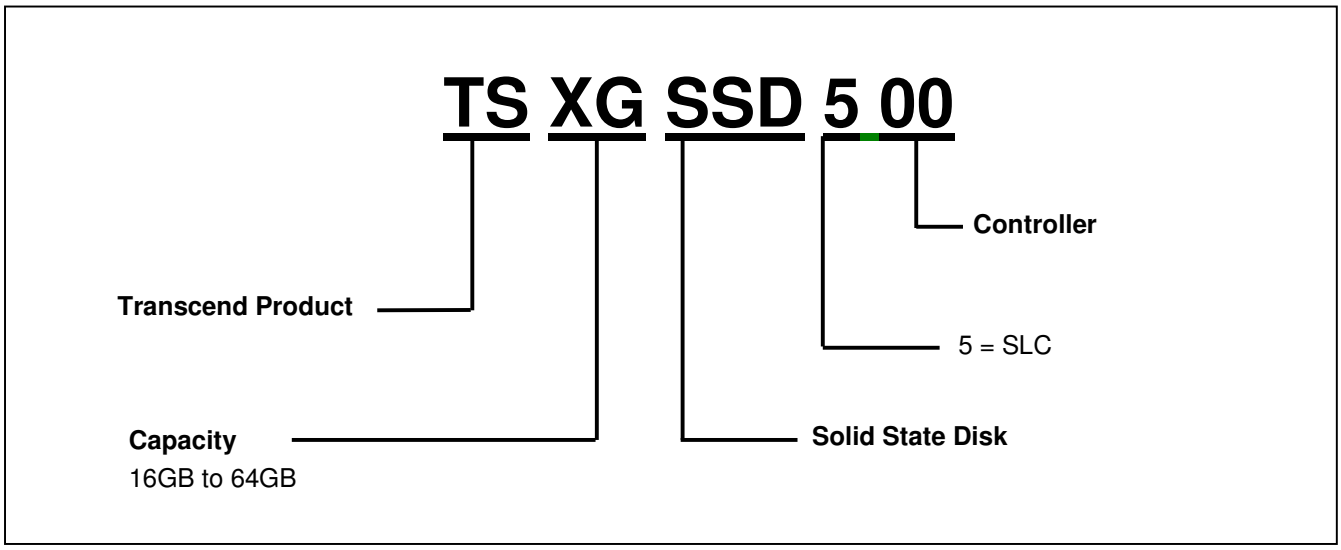
Key:
F/V = Fixed/variable content
F = the content of the word is fixed and does not change. For removable media devices, these values may change when media is removed or changed.
V = the contents of the word is variable and may change depending on the state of the device or the commands executed by the device.
X = the content of the word may be fixed or variable.

SMART Data Structure

ID	Description	Detail Information	
		Byte	Description
09h	Power-On hours Count	5.6	Power-On Hours Count
0Ch	Drive Power Cycle Count	5.6	Power-On Cycle Count
A8h	SATA PHY Error Count	5.6	SATA PHY Error Count
AAh	Bad Block Count	5.6 7.8 9.10	Maximum Bad Block Number Of Die Total Bad Block Number of System Later Bad Block Number of System
ADh	Erase Count	5.6 7.8 9.10	Average Erase Count Maximum Erase Count Minimum Erase Count

AFh	Bad Cluster Table Count	5.6	ECC Fail Count
C0h	Unexpected Power Loss Count	5.6	Power Loss Count
C2h	Temperature	3.5 7 9	Current Temperature Minimum Temperature Maximum Temperature
ECh-FFh	Reserved		

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.

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Revision History			
Version	**Date**	**Modification Content**	**Modified Page**
V1.0	2012/02/15	Initial	